THE SINGER Manufacturing Company

CATALOGUE

MACHINES FOR EVERY STITCHING PROCESS

CATALOGUE

OF

SINGER SEWING-MACHINES,

ILLUSTRATING

THEIR CONSTRUCTION, : : :

THEIR VARIETY,

AND

THEIR SPECIAL USES BY

: : : MANUFACTURERS.

THE SINGER MANUFACTURING CO.,

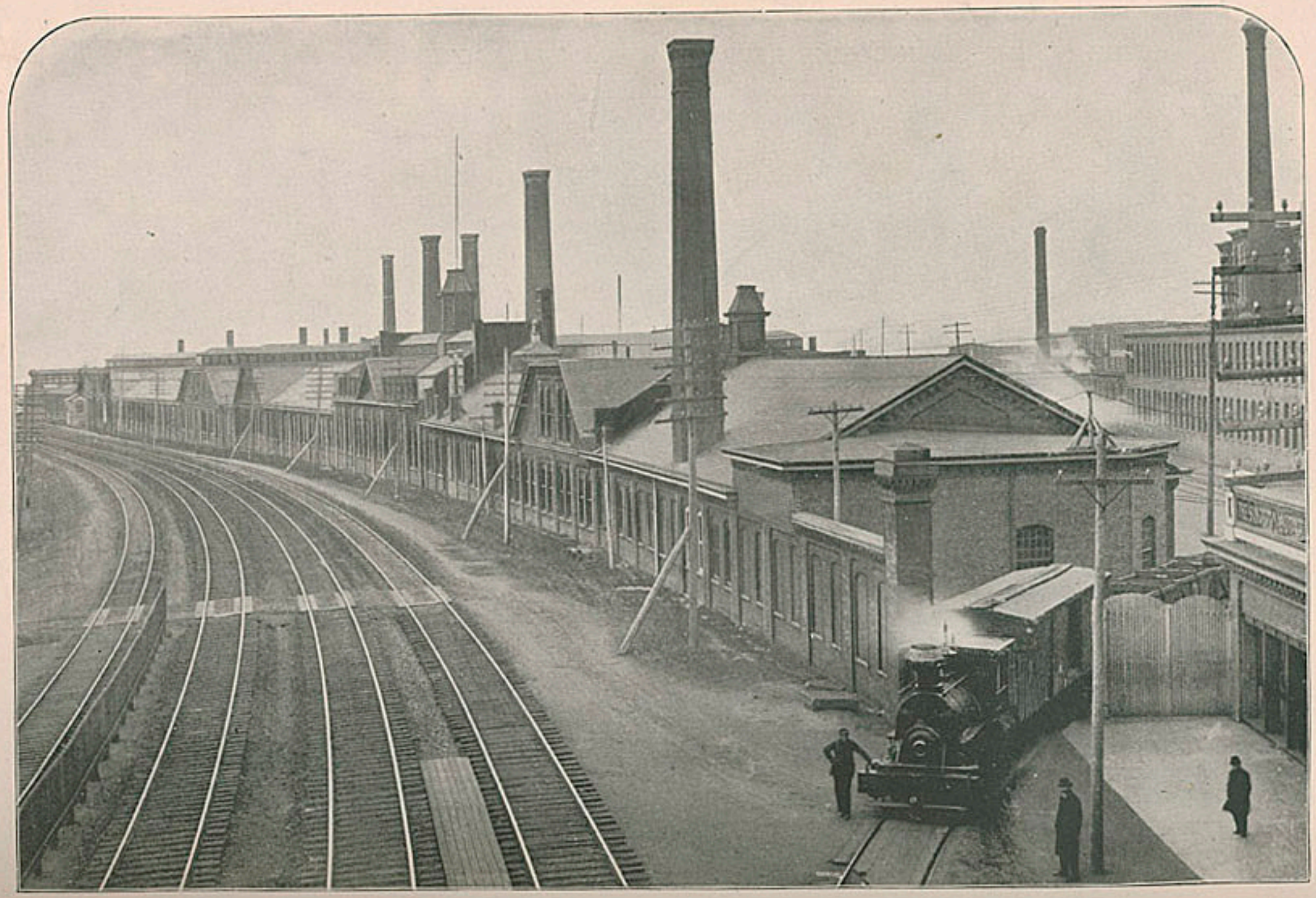
EXECUTIVE OFFICES,

149 BROADWAY, NEW YORK.

BRANCH OFFICES EVERYWHERE.

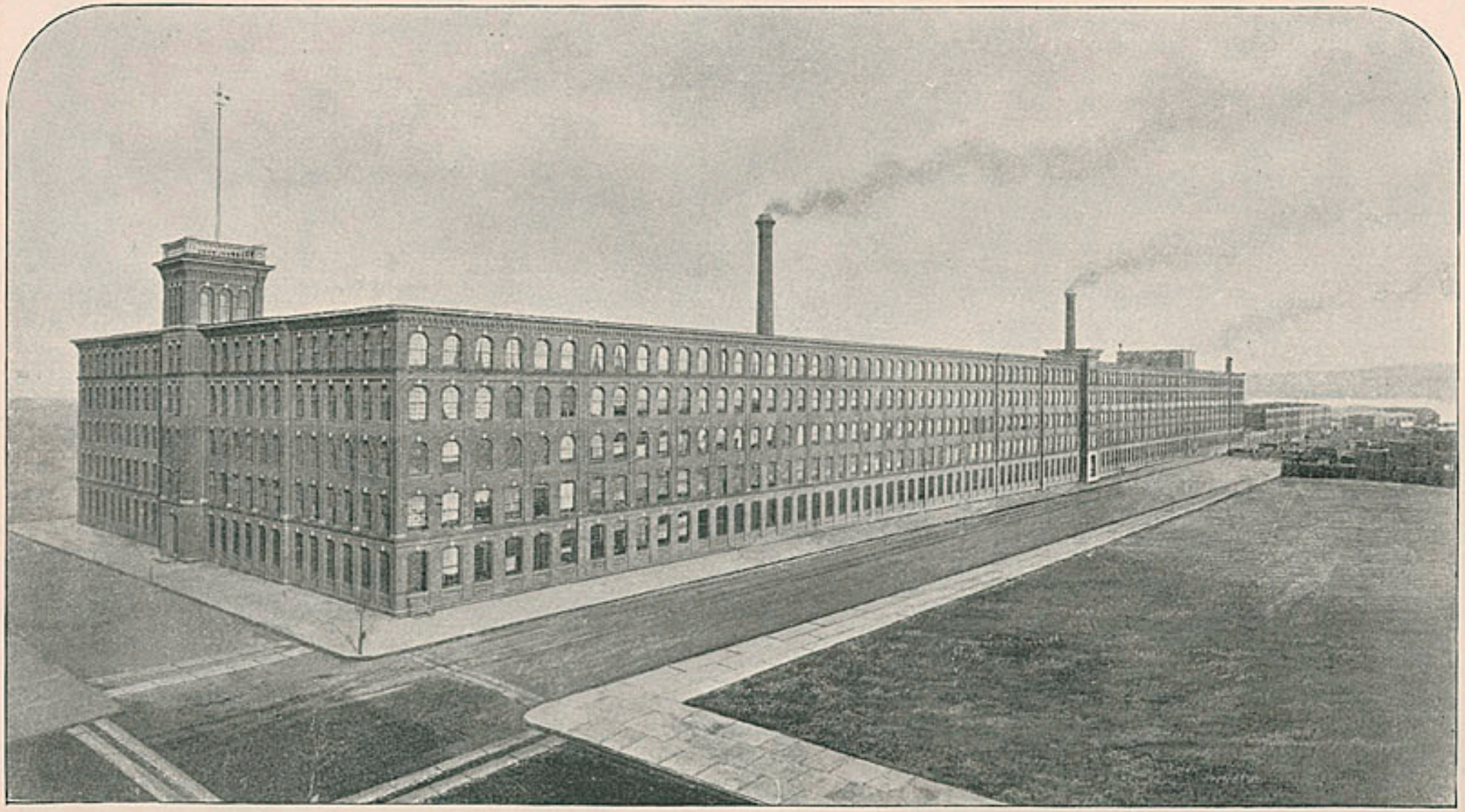
CAULON PRESS, 20 VESEY STREET, NEW YORK.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



FOUNDRY AND FORGE SHOPS ADJOINING CENTRAL RAILWAY OF NEW JERSEY.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

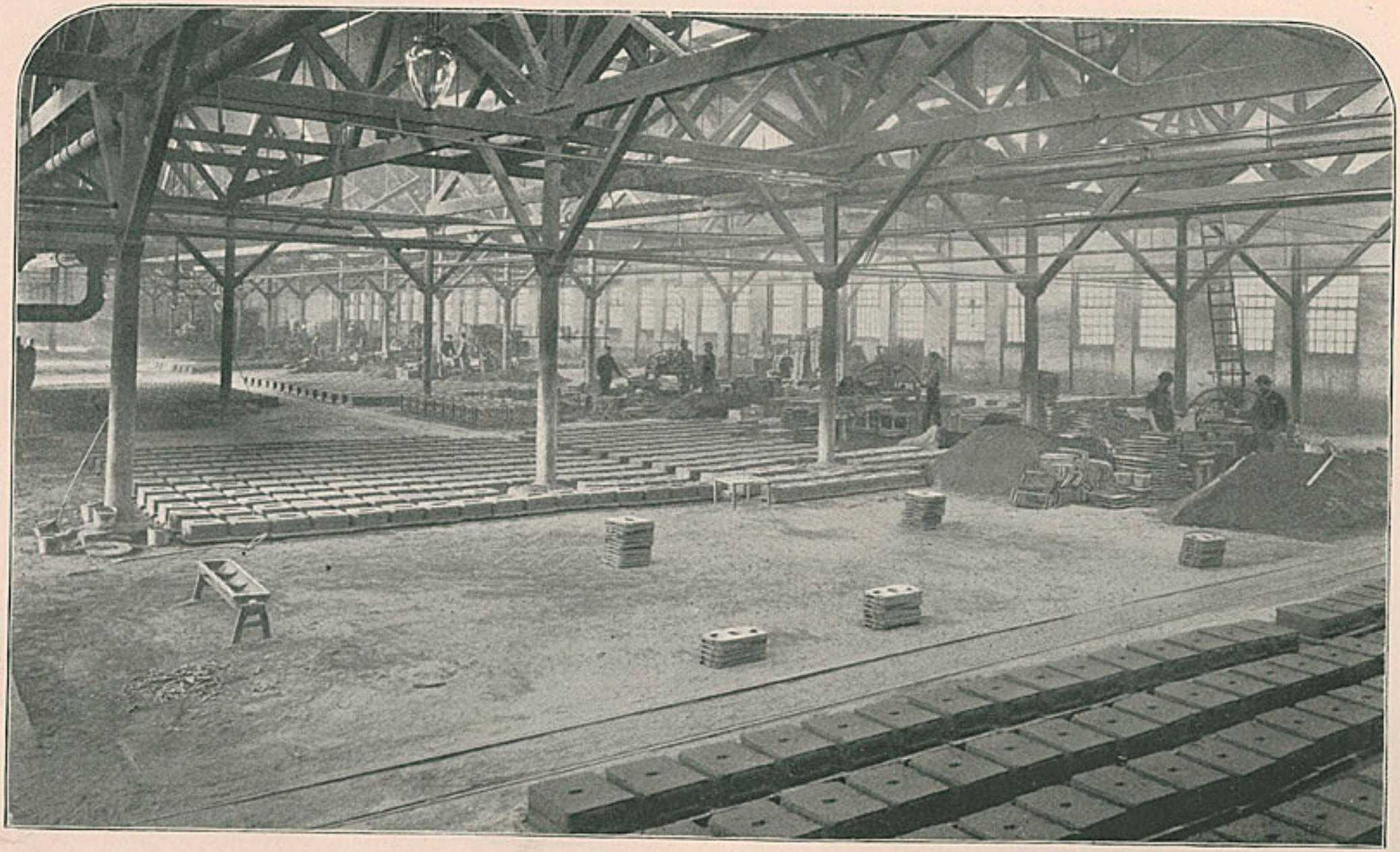


THE MAIN BUILDING—STREET FRONT.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT.

At Elizabethport, N. J., in the suburban district of the city of New York, is situated one of the factories of one of the largest industrial establishments in the world—THE SINGER MANUFACTURING CO. Although located in such close proximity to a crowded metropolis the surroundings are pastoral and quiet, conducive to the good morals and excellent discipline generally prevailing among the thousands of men and women employed here. The ground occupied by the Singer Manufacturing Company's plant at this point has an area of about 50 acres with a water frontage on Newark Bay of about 1,600 feet, and a building frontage about a mile in length; 1,090 feet of this is five stories in height, 500 feet is three stories and the remainder is one and two stories. The entire factory contains 18 acres of floor-space, filled with material and machinery, and forming a veritable hive of industry for thousands of operatives employed in the manufacture of sewing-machines. The five-story main buildings shown in the illustration have a ground area of 230 x 60 feet fronting the park and 800 x 50 feet on the side street. The buildings fronting on the tracks of the Central Railroad of New Jersey are 1,750 feet long and comprise the Foundry Department and Forging Shops. The illustrations fail to adequately represent the great extent of this plant because the buildings are so arranged as to surround and enclose, except on the water front, the land used for factory purposes. The entire block of land adjoining the north-west side of the main building has been transformed into a beautiful park by the Singer Manufacturing Company, to whom it belongs, and who keep it in perfect condition for the benefit of the public.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN FOUNDRY—READY TO POUR.

THE FOUNDRY.

The Singer Manufacturing Co. are makers of Sewing-Machines in the truest sense, because everything entering into the finished machine begins its evolution in their works from the crude material; iron in the "pig," steel in the bar, the rod, or the ingot, brass in the sheet, lumber in the log.

The operations at Elizabethport not only include all the vast detail which this statement implies, but the distinctive feature that most impresses a visitor to this hive of industry is the originality of the special tools and processes in use, many of them invented by ingenious employees at these works.

Beginning with the foundry: There are four cupola furnaces in blast, consuming daily about 12,000 pounds of coal and 14,000 pounds of coke, melting more than 100 tons of various kinds of pig-iron, properly blended to form absolutely flawless castings. The casting room of this foundry has a floor space of about two and one-half acres, the views presented showing but a small part of this area.

Here the arm and bed of the machine, its stand and the pulleys and balance wheels are formed from the molten iron. The view on the opposite page shows the moulds laid out ready to receive the liquid metal. The view on the next page shows the preparation of the moulds in hydraulic presses and a car loaded with castings in the foreground.

The facilities for preparing the moulds and turning out work rapidly are of the most approved type, as indeed they must be to keep up a daily output exceeding 60,000 pieces of all sizes. These include, not only the great variety required for the many different classes of Singer Sewing-Machines, but also those for tool construction and repairs. Some of the pieces are so small that 100 of them weigh less than one pound; single castings are made here weighing 14,000 pounds.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

VIEW IN FOUNDRY—EMPTYING THE MOULDS.

THE FOUNDRY—CONTINUED.

That the foundry practice at these works exemplifies the most advanced state of the art in all its details, is well attested by its products, which have achieved a world-wide reputation for strength and fineness.

After the castings are removed from the moulds they are taken to the Rumbling Room, 50 feet wide and 200 feet in length, where they are tumbled about in revolving barrels in company with other castings of a form especially intended to produce movement and friction, thus wearing off all sand and roughness.

Many of the castings are taken directly from the Rumbling Room to the Foundry Drilling Department, where automatic drilling machines specially devised for the purpose, bore the holes required for the insertion of bolt, screw or pin. All the holes in each piece are bored at once so they are always exact and in precisely the same relative position on each part

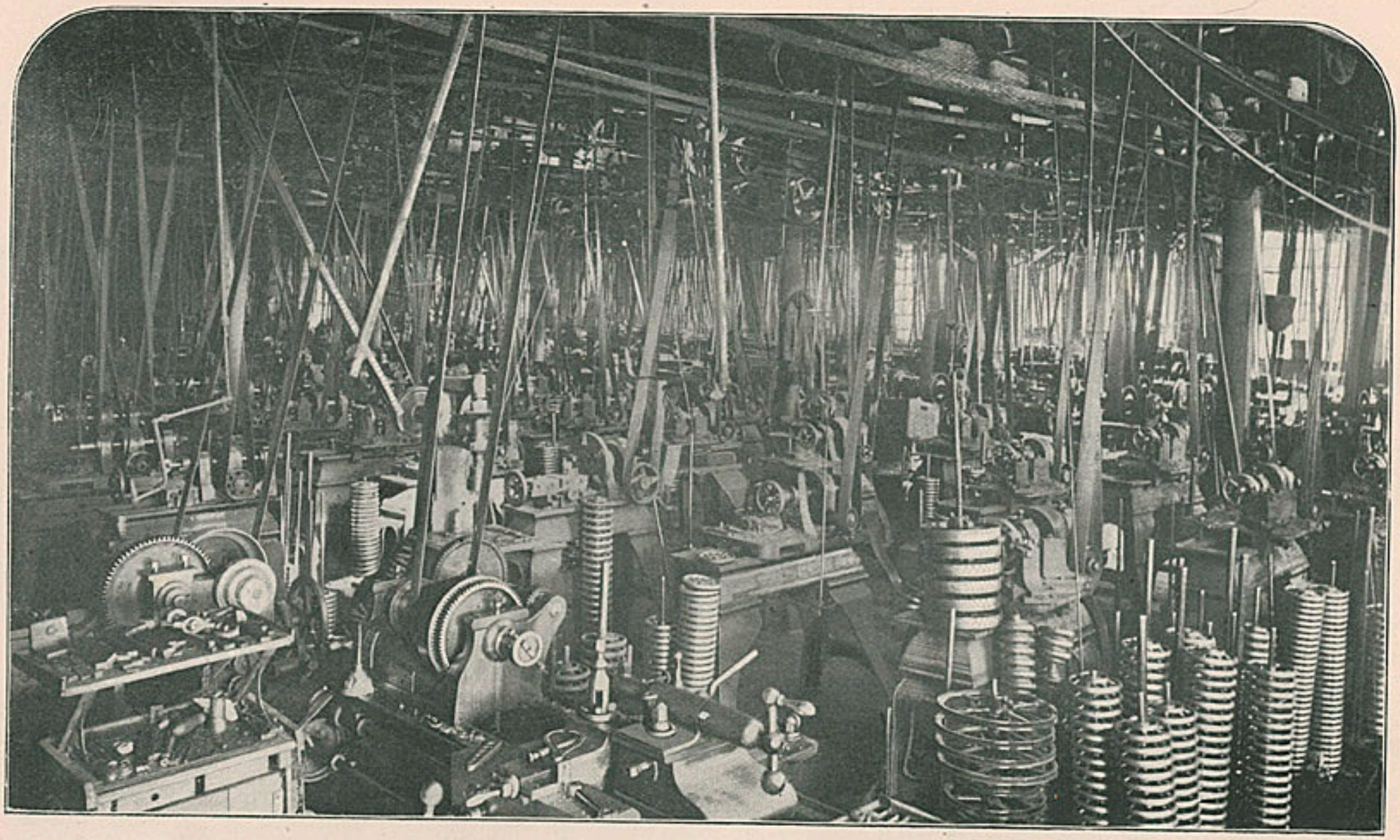
Everything of cast iron pertaining to the stand, is japanned and finished here, ready for "setting up," a process which will be shown later.

All other parts are collected in great bins in the Stock Room, thence to be distributed as required. Each bin bears a card which constantly shows the number of pieces it contains.

All the labor expended thus far has been on the ground floor. The processes to which the products of the foundry are next subjected, involve more intricate manipulation, performed in many Departments, on various floors.

The distribution to these points is effected by means of a network of railway, connecting all the buildings on the plant, over which five locomotives are constantly running.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



THE WHEEL DEPARTMENT.

THE WHEEL DEPARTMENT.

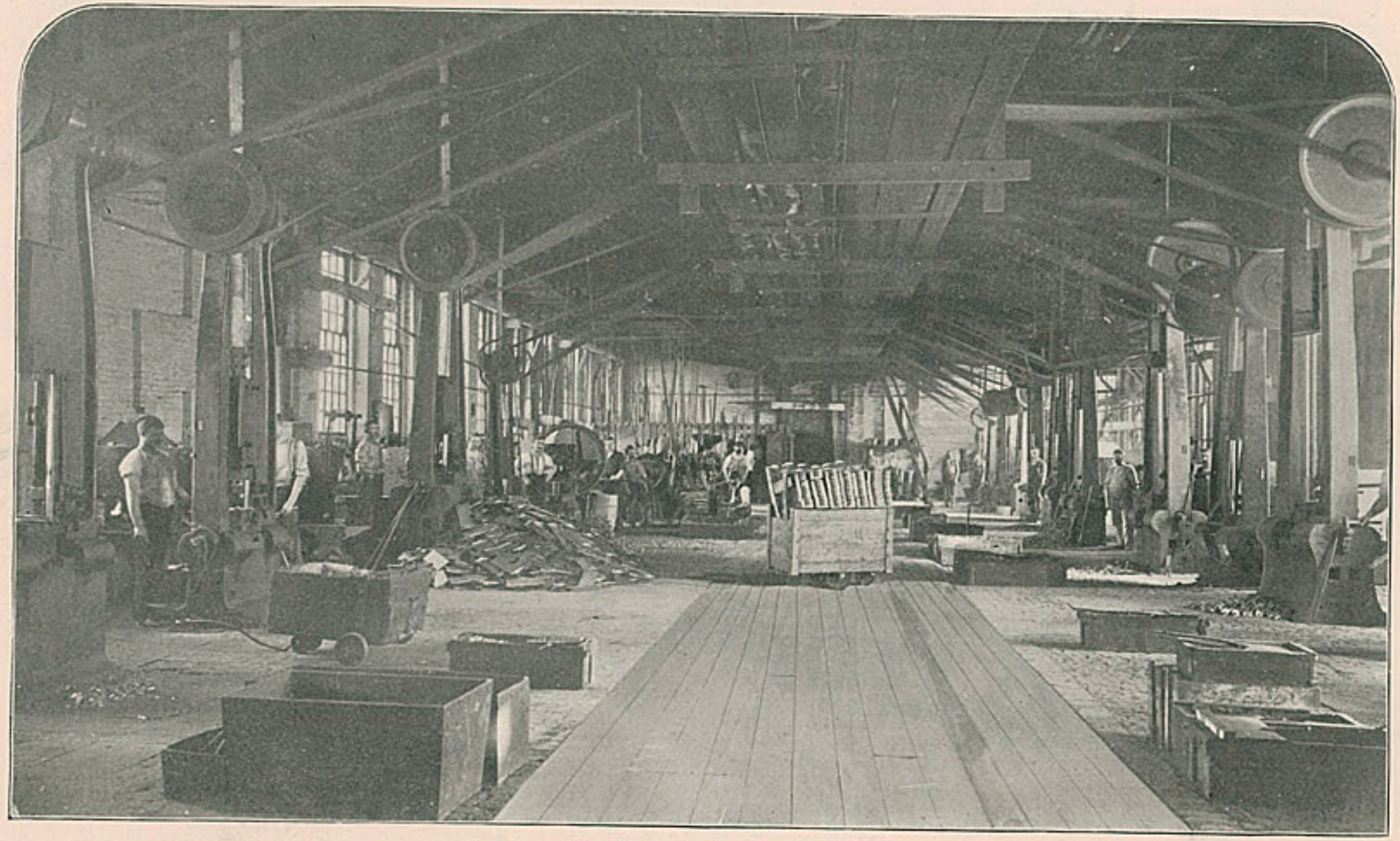
The large and varied assortments of wheels and pulleys used on the different classes of machines are taken from the Foundry to the Wheel Department, where they are bored for the admission of the shaft, and otherwise finished.

The illustration of this Department shows a forest of belts and a mass of machinery, but the extent to which these machines have been made automatic in their action is beyond the power of the camera to depict.

The boring and reaming of the hole, and the turning and facing of the hub are successive operations done by the same machine, which stops automatically when the wheel is finished, all these operations being thus performed with the most perfect and uniform accuracy.

Each wheel is then revolved on a shaft of the exact size on which it is to run and is tested in several ways to ascertain that it fits perfectly, runs true and is in precise balance.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN FORGING DEPARTMENT—THE HAMMER SHOP.

FORGING.

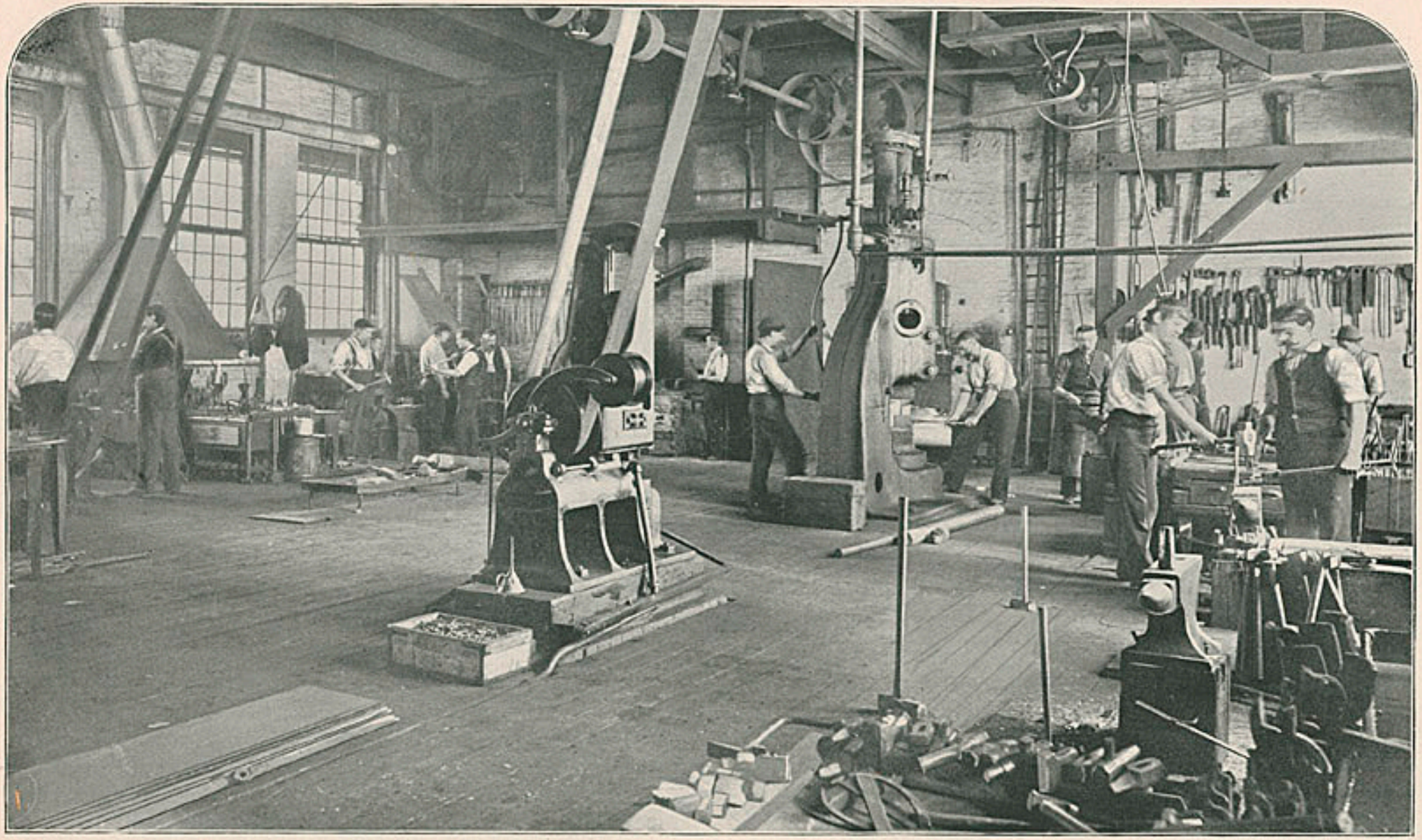
Since the days of Tubal Cain, the worker at the forge has furnished the theme for song and story; the excellence of his work still greatly depends on that manual skill and unerring judgment acquired only by experience based on natural aptitude. These are the essentials to successful forging. Good blacksmiths are born, not made; modern mechanical appliances only supplement and enlarge their sphere of action.

In the Forging Department of The Singer Manufacturing Co., the forge, the steam hammer, the die and press are each brought into play to form the great number of sewing-machine parts requiring great strength in small compass. Every branch of the blacksmith's art is practised here, this being a base of supply of wrought, pressed and finished stock used in other Departments that are engaged in finishing and fitting its products.

The pattern boards in this Department now contain nearly 1,000 different shapes of forged pieces and 1,500 parts that are formed in as many different dies either by a falling hammer, by pressure, or by dies; some of these parts measure but four one-thousandths of an inch in thickness. Masses of iron up to 8 inches in thickness are often heated and hammered here for special purposes.

Here are made all the drip pans and similar sheet-metal work for use in connection with the sewing-machine.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN FORGING DEPARTMENT—THE BLACKSMITH SHOP.

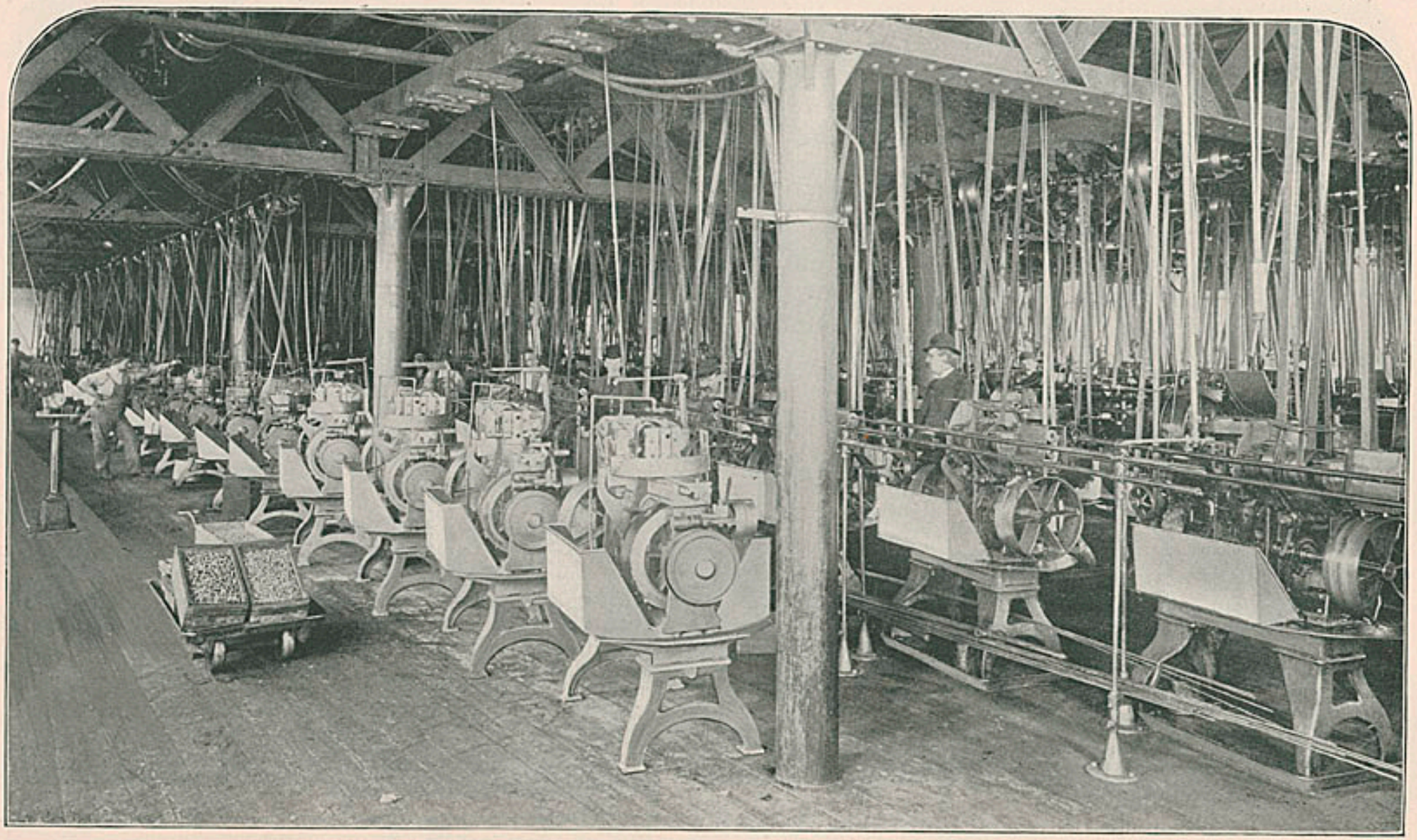
FORGING—CONTINUED.

For drop-forging there are 18 hammers, ranging from 40 pounds in weight to one weighing 1,800 pounds and having a fall of 7 feet. There are four trip-hammers and a large number of presses. About two million pounds of iron, steel and brass are used in this Department annually and a large number of skilled workmen are steadily employed. The illustrations only show the Hammer Shop and the Blacksmith's Shop. Other divisions of the Department comprise the manufacture of all the steel dies used for drop-forging and pressed work, the Press Room, the Stock Room and also a machine shop for general repairs.

The work of these divisions not only includes the delicate manipulation required to make the steel dies by which most intricate forms are instantly shaped to the utmost exactness, by a single stroke, but here are made the great hammers through the weight of which the heaviest masses of iron are wrought, welded and molded. Repairs of all sorts are also executed here, including those for the railway rolling stock and the fixed plant.

The blacksmith is the universal mender and tinker: he must, through the cunning of his brain and the strength of his arm, be ready to shape anything and everything of iron. He must be skilled in all the diverse processes of tempering and annealing metals so as to secure the exact degree of elasticity and hardness best adapting the part to its purpose.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN SCREW DEPARTMENT.

SCREW MAKING.

The making of machine screws has been confined to comparatively crude means until recent years, most of them having been produced by hand through the use of tap and die or by lathe. These methods were utterly unsuited to a system requiring absolute uniformity from year to year, in each part produced.

The product of the Machine-Screw Department of THE SINGER MANUFACTURING CO. would require the labor of several thousand skilled mechanics, were it not for the wonderfully ingenious machines constantly engaged in absorbing wire rod and discharging a variety of screws, rollers, pins, bushings and bolts in all sorts of shapes and in myriad sizes.

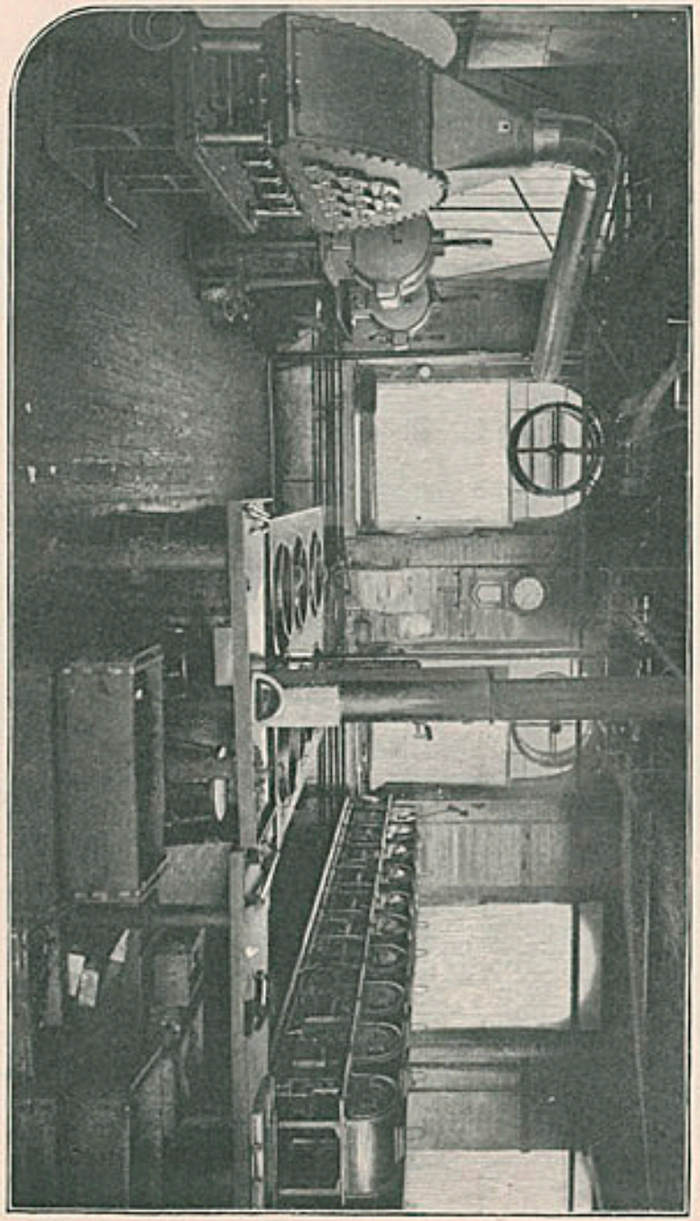
The extent of this variety is indicated by the fact that the list already includes 833 different kinds of screws, some of them so small that 100 weigh but eleven-sixteenths of an ounce, while there are others weighing nearly one pound each. The thread on some of the smallest screws has 100 turns to the inch; it is so fine that its shape can hardly be distinguished by the naked eye. There are rolls having diameters ranging from that of a needle up to that carrying the cable for the power carpet sewer.

The illustration indicates graphically the crowded condition of this Department, which occupies about 40,000 square feet of floor space and employs about 300 men.

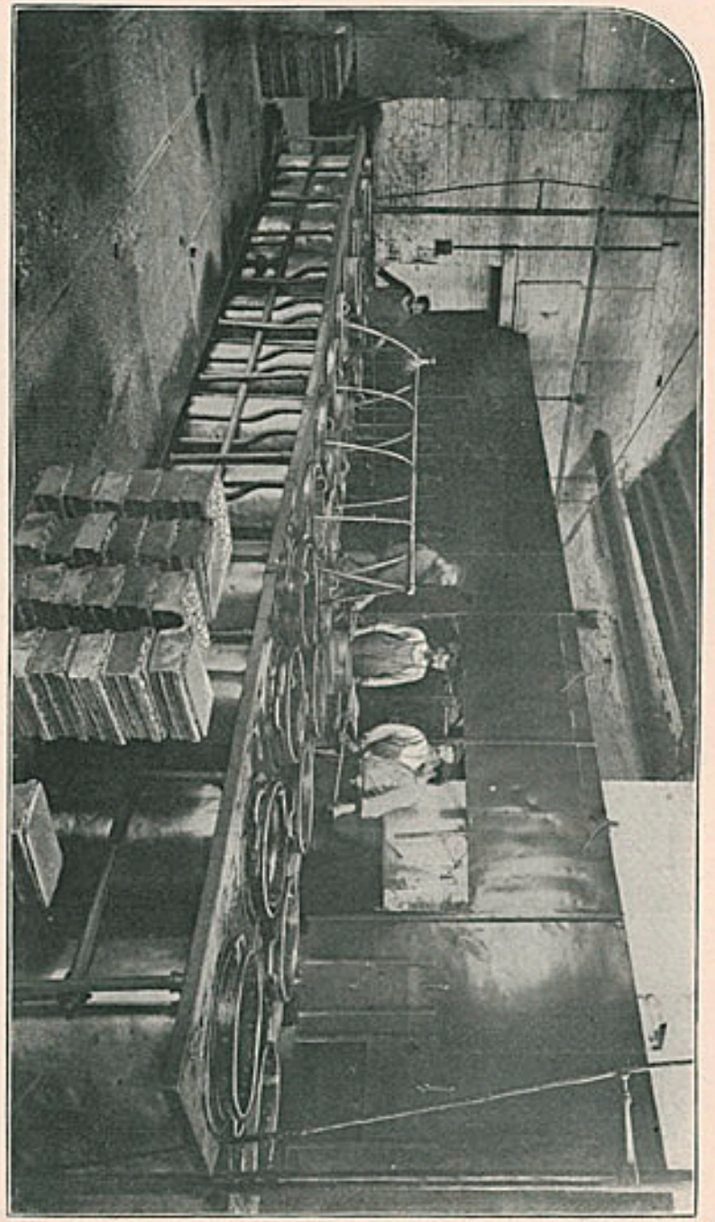
The machinery is largely automatic and here the specialization is again prominent that has previously been noted. These machines are fitted to perform their work in various ways peculiar to this establishment, using special appliances of unusual efficiency, that were invented by its employees.

The solid cutters for shaping, threading and cutting-off, secure greatest ease of action and the most exact uniformity of shape, however irregular it may be. Each kind of screw, bolt, stud, etc., has its distinctive number in a catalogue that is circulated all over the world; each must fit its appointed place in a SINGER machine, wherever it may be. To absolutely insure this, nothing is left to chance; every one of the 250,000 pieces produced daily by this Department is gauged to test its perfect accuracy.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW No. 2.



VIEW No. 1.

VIEWS IN HARDENING DEPARTMENT.

HARDENING AND TEMPERING.

The hardening processes through which the parts of a Singer machine pass, are the best in the world, and are, in some respects, peculiar to the practice of THE SINGER MANUFACTURING CO.

Illustration No. 1 on the opposite page shows a battery of ovens containing screws, rollers, etc., which are being removed, after exposure to high temperature, carried at uniform intensity. The term of exposure varies from two to twelve hours, according to the size of the parts and the uses for which they are intended. The parts are packed with crushed bone in iron boxes, shown in the foreground; after remaining in the ovens a sufficient time they are dropped into a bath of oil contained in the tanks shown.

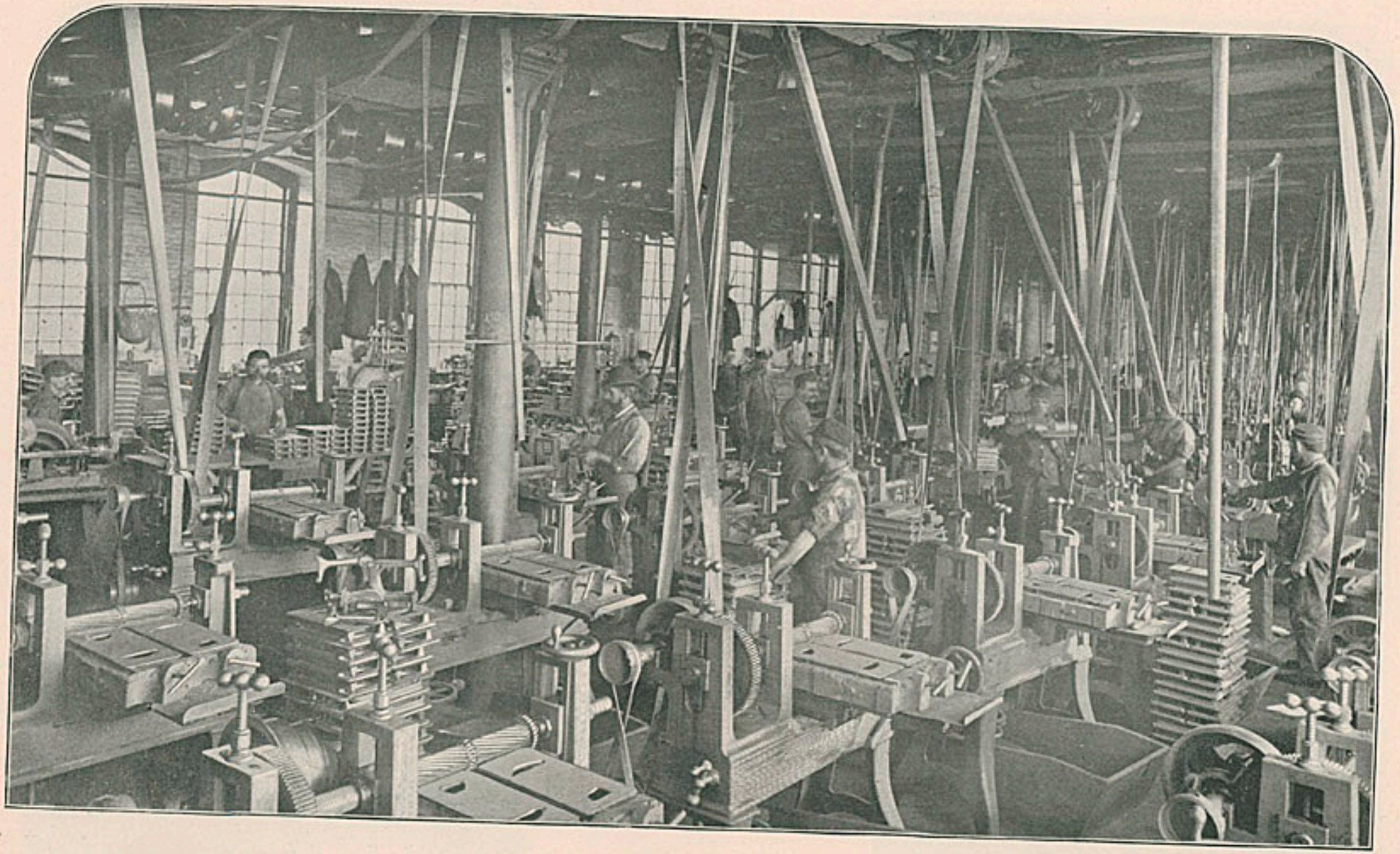
The furnaces are charged twice in 24 hours and are of various kinds, as best adapted to the treatment required by the various parts.

Illustration No. 2 presents a view of a set of furnaces of another form in which the heat is obtained from gas, the parts treated being mostly needles and springs.

Everything passed through the Hardening Department is literally purified by fire, oil and water, the various applications of these agencies being governed by the latest discoveries in metallurgical science and the art of tempering.

The best evidence of their excellence is found in the superior wearing qualities of all the parts in a SINGER sewing-machine.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN MILLING DEPARTMENT.

MILLING.

The origination has been shown in the Foundry Department of the "arm" and "bed" of the sewing-machine; these parts next pass to the Milling Department, a portion of which is illustrated on the opposite page.

The process of milling the "arm" and "bed" for a flat-bed sewing-machine may be briefly described as the work of removing all superfluous metal and of producing surfaces which must be, not only perfect planes, but absolutely uniform in their relation to each other. The top of the bed is milled and its edges are made exactly parallel. The base of the arm is also milled with the utmost exactness, because, upon the fitting of its base depends the height of the arm and the parallelism of its overhang which is to contain the shaft for operating the needle-bar, etc. The milling of the end of the arm is equally important, since it must be in exact relation to the stitch-forming mechanism beneath the bed.

The milling of "bed" and "arm" having been accomplished it is now required to drill and ream the holes for insertion of shafts, etc. Machines have been devised to drill many of these holes at once in order to insure perfect uniformity in their relative position.

Next, the bed and arm are bolted together and tried by an ingenious system of gauges, which test the absolute accuracy of their position in the most minute particular. This having been determined, they are finally secured by tapered steel dowels inserted in such a way as to obtain rigidity and cohesion which cannot thereafter be disturbed.

The work just described is but one of many different operations performed. In this Department alone there are 163 distinct operations performed on one pattern of sewing-machine arm, and 130 operations on its bed. The great variety of tools used here, and the wonderful extent of their application for shaping and drilling all sorts of straight and curvilinear work display the greatest ingenuity and effectiveness.

The view shows a very small proportion of this Department either in its area or the variety and extent of its work. It is only by the maintenance of such an enormous plant of expensive tools that it is possible to produce, in large quantities, so many different types of sewing-machines, each of the highest efficiency for its purpose.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

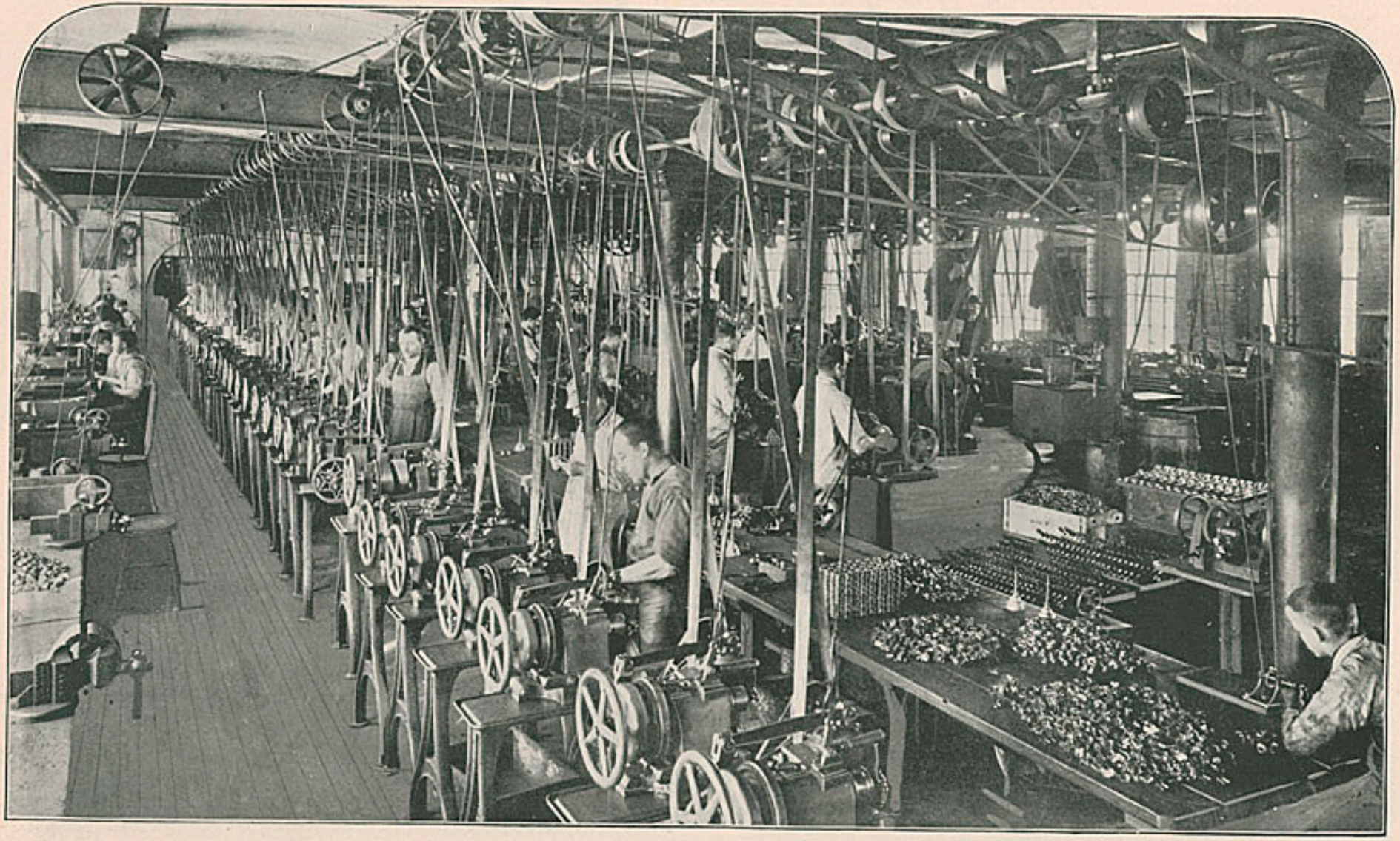
VIEW IN ORNAMENTING DEPARTMENT.

JAPANNING AND ORNAMENTING.

The "arm" and "bed" of the sewing-machine, having been firmly united, form the sewing-machine "head," which now receives its number (running above thirteen million at this time) and becomes a unit in the grand total; it next passes to the Japanning and Ornamenting Department for embellishment. Here it receives successive coatings of japan, each of which is thoroughly baked and hardened, and carefully scoured down until a perfectly smooth and hard surface of a jet black color is obtained. The heads are then taken to the ornamenting room, a view of which is presented on the opposite page. Here the Company's name and monogram are skillfully depicted on the proper places, together with such ornamentation in gold and colors as may be appropriate. This work is artistic and of a character best accomplished by the deft handiwork of women, of whom a large number are constantly employed in this occupation.

After the ornamenting has been applied to the black ground, the whole is covered with the best quality of transparent varnish, and the heads are again baked until they become perfectly dry and hard, and emerge carrying a brilliant gloss of a remarkably durable character. This Department occupies a semi-detached building, having two floors, each 70 x 215 feet.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN SMALL PARTS DEPARTMENT.

SMALL PARTS.

The illustration shows but a minor portion of an immense department in which nothing but the smaller parts of Singer sewing-machines are made.

The long row of machines most prominently presented are for cutting the great variety of cams used in connection with thread take-up, needle-bar and feed mechanisms.

The rock shafts for oscillating shuttles are made here, also small gears in hundreds of different patterns for use in the ornamental-stitch machines, etc. Here are made the burnished races in which the oscillating shuttles run, including the unique hinged chambers containing shuttle races for sewing-machines operating from three to twelve shuttles at once. The automatic bobbin-winder with its worm and gear, parts for the Singer driving attachment—in short, an endless number and an infinite variety of wonderfully ingenious devices are produced here by the use of tools which display ingenuity of an equally high order.

These tools are especially notable for the extent to which their movements have been made automatic and for the absolute accuracy and uniformity of their work. Each part has its standard gauge to which it must exactly conform. Each is numbered and every piece bearing that number must be precisely alike. The list of parts now includes about 14,000 distinct numbers and is daily increasing. Without the complete system rigidly enforced here, the multiplicity of forms would become hopelessly involved. With it, the repair, in any part of the world, of any Singer sewing-machine is a simple and comparatively inexpensive matter.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

VIEW IN SHUTTLE DEPARTMENT—SHUTTLE ROOM.

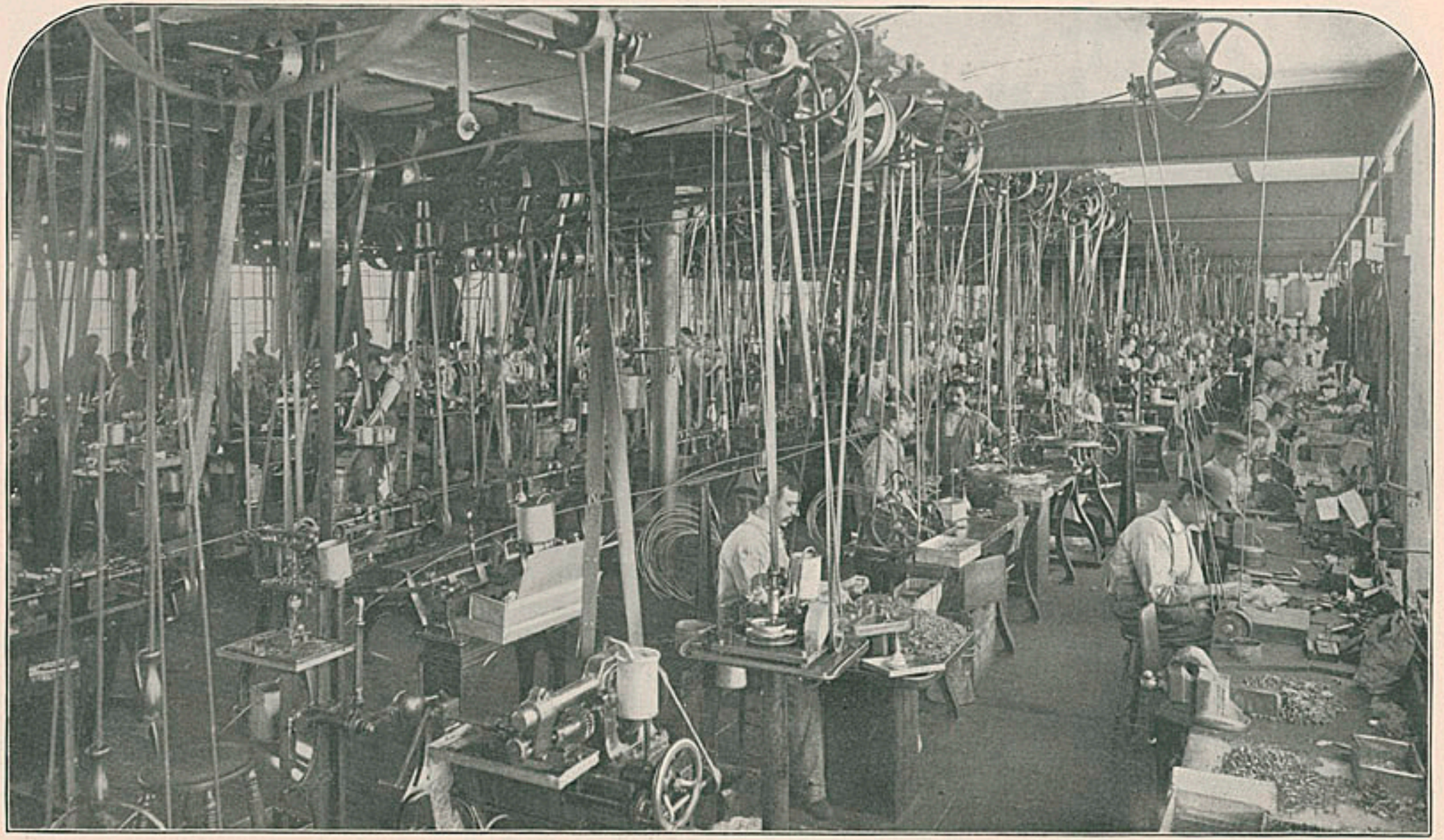
THE SEWING-MACHINE SHUTTLE.

There are three generic classes of shuttles used on Singer Lock-stitch sewing-machines, as best adapted to the duty for which the machines are intended. These are the reciprocating, the vibrating, and the oscillating shuttle, the latter having the action of a hook and shuttle combined.

These classes include thirty distinct species having more than one hundred modifications. The initial process of making the boat-shaped vibrating shuttle is performed in the Forging Department by use of drop hammer and die; most of the ninety-seven distinct operations subsequently required to finish it are performed in the Department illustrated on the opposite page. All of the sixty-four operations for making the Singer oscillating shuttle are done here, their application in this work being entirely original. The oscillating shuttles are worked from solid steel rods about two inches in diameter and eighteen feet long. The machine for the primary process drills the end of the rod to a sufficient depth, forming the axial pin in the centre for the bobbin case at the same time; the hollowed block is then cut off and the rod advanced for the rough formation of another block.

The complexity of the subsequent operations required for the entire completion of this beautiful piece of mechanism is difficult to describe. It seems incredible that this thin irregular shaped shell-like piece can have been formed from a solid steel bar, but such is the fact. The most wonderful ingenuity and effectiveness are displayed in the various milling, sawing, and turning machines employed for this purpose; the shuttle-rim receives the greatest care in the formation, the hardening and tempering, and the polishing, in order to secure perfect exactness of shape, the utmost hardness of substance and absolute smoothness of surface so there shall be the least friction possible.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN SHUTTLE DEPARTMENT—BOBBIN ROOM.

THE SEWING-MACHINE BOBBIN.

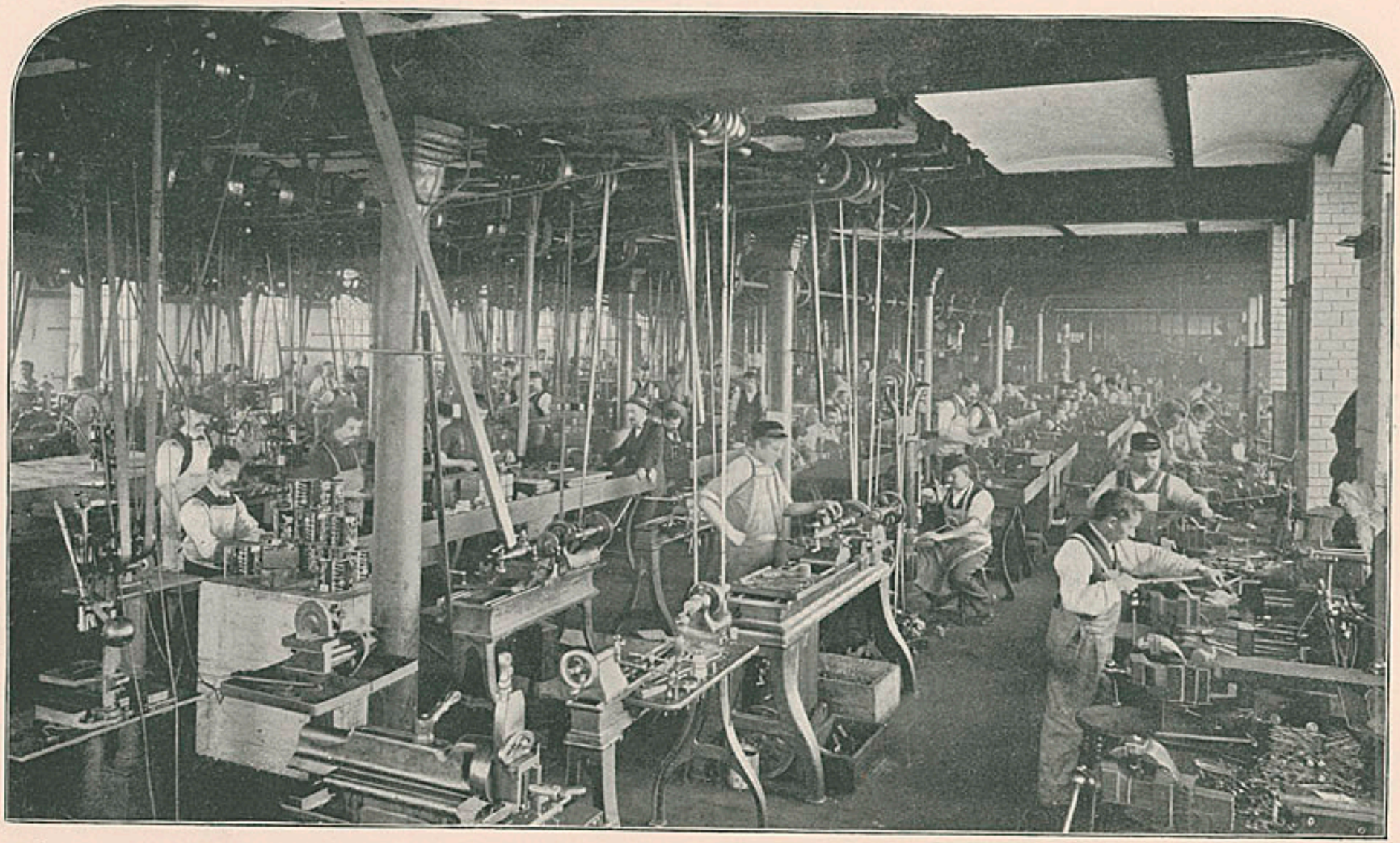
The use of the bobbin is intimately connected with that of the shuttle and their manufacture is also closely related. The variety of bobbins is correspondingly extensive. Although their manufacture does not involve such intricate processes, the same high degree of preciseness in method follows each step, so that every bobbin of a kind shall be exactly the same as to weight, size, and finish.

The stationary bobbin case, around which the oscillating shuttle carries its motion, is a marvel of ingenuity and convenience for its purpose The combination of devices constituting the oscillating shuttle mechanism, is a triumph of mechanical efficiency for use on sewing-machines operated by power at high speed.

The shuttle has no differential motion nor variable speed. There is less friction, consequently less power is required and it wears longer. It is the simplest and uses all kinds of thread with greatest economy.

There are many other parts of the sewing-machine the manufacture of which is comprised in the operations of this Department. These include a great variety of needle-bars; also springs, both flat and coiled, in about one thousand different sizes and shapes.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN ATTACHMENTS DEPARTMENT.

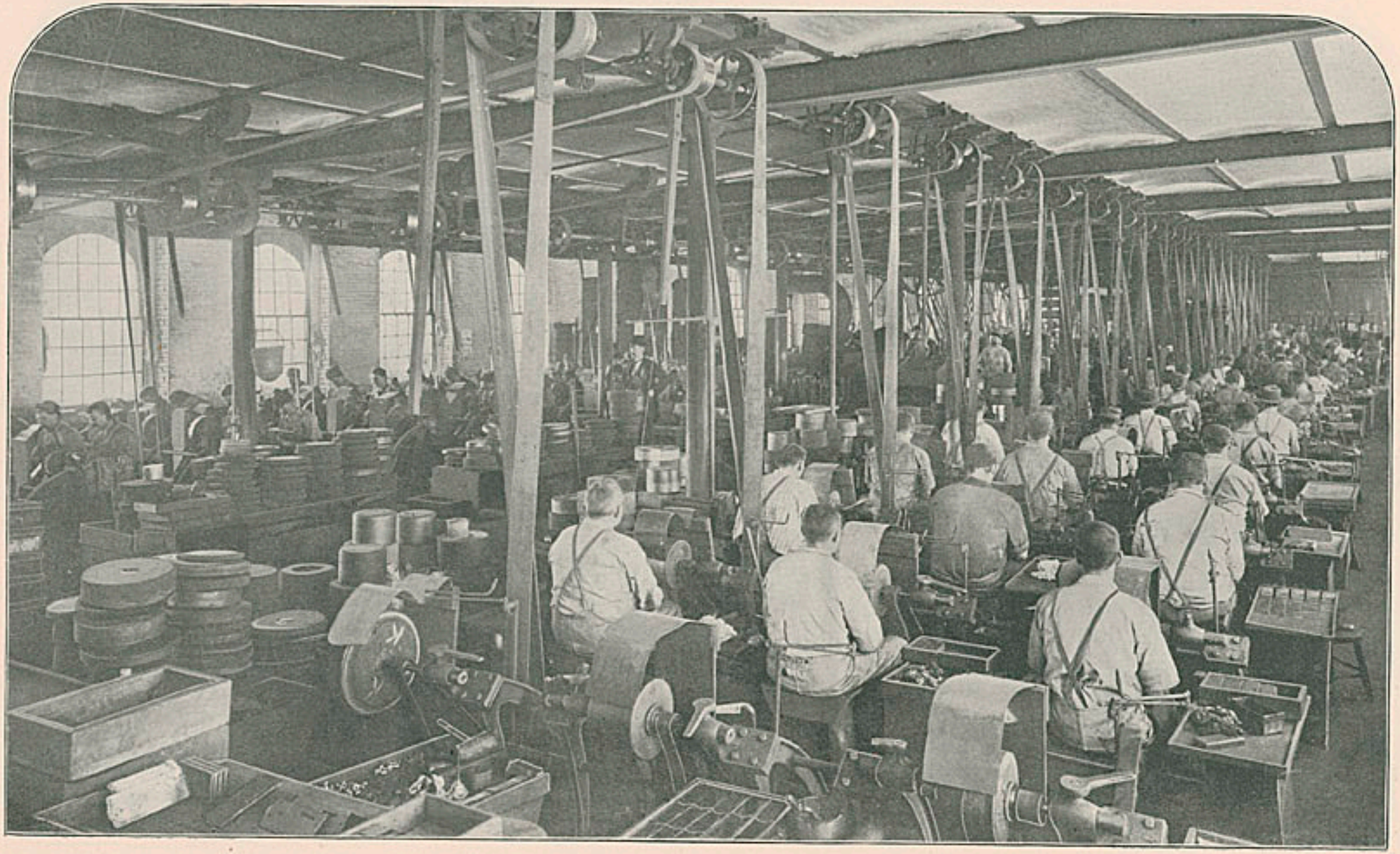
ATTACHMENTS.

The needs of mankind are constantly increasing, the satisfaction of one is usually followed by the creation of another on the same lines. Thus the general use of the machine for plain sewing was immediately succeeded by a demand for means to enable its use for hemming, ruffling, tucking, cording, binding, braiding, quilting, etc. The attachments made for these purposes by THE SINGER MANUFACTURING CO. are noted for their efficiency; their manufacture constitutes an industry of very large proportions, employing about 150 men, and occupying about 14,000 square feet of floor area.

In addition to making the regular sets of attachments and accessories for the family machines, each set comprising some twenty or more different pieces, a tremendous variety and an enormous quantity of special attachments are made for the use of manufacturers in the myriad processes to which the sewing-machine is being adapted.

Different manufacturers demand different attachments to perform the same process, others wish to perform a certain process, or effect a desired economy, and require the invention of an attachment that will accomplish it. These wants are made known to the Company through its agents all over the world so that this Department becomes a universal clearing house for ideas relating to this subject. In this way a fund of information relating to this particular work has been accumulated that is peculiar to this establishment and is unequaled for its extent and value.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN POLISHING DEPARTMENT.

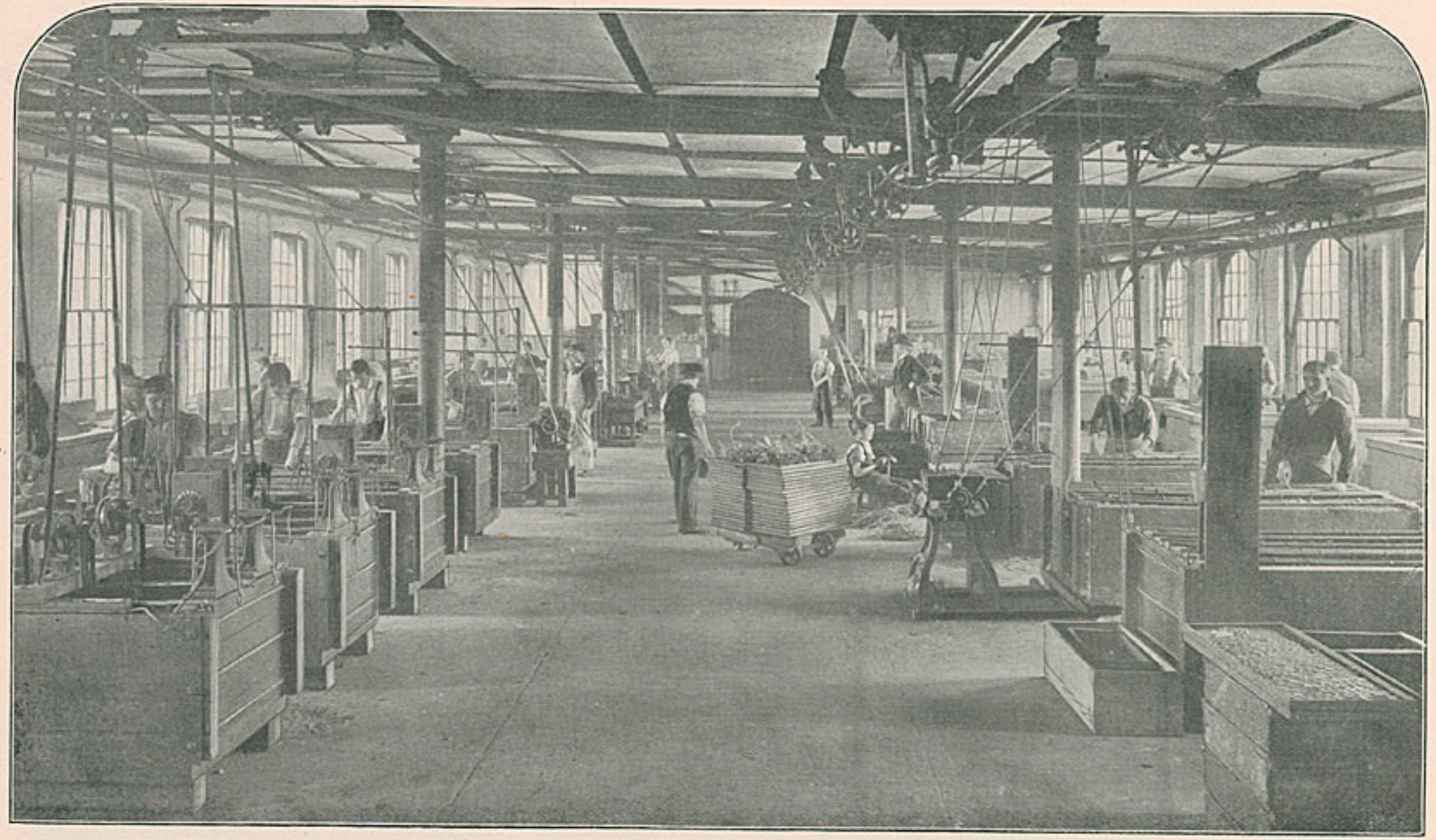
POLISHING.

In order to secure the greatest ease of motion attainable, some operating parts of the sewing-machine are highly polished, while others require a surface suitable for plating. The view on the opposite page represents the place where this work is done, forming a part of the largest polishing works in the United States—about two hundred men being constantly employed here. Work of this character is usually performed under conditions making it very injurious to health, because of the inhalation of the fine dust thrown off by the rapidly revolving polishing wheels; the dust also settles, covering every object so that dirt and grime prevail everywhere. These objectionable features have all been removed here, by the use of immense fans which suck the dust away as fast as it is thrown from the wheels and discharge it into a water tank located on the ground.

The polishing wheels comprise a great variety of sizes and shapes, as best suited to the pieces to be polished, all being made on the premises.

After being polished, all pieces to be plated are next conveyed to the Plating Department, located in an adjoining room.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN PLATING DEPARTMENT.

PLATING.

About four-fifths of the electro-plating applied to Singer Sewing-Machine parts and attachments is of nickel, the remainder being of silver, gold, etc.

An idea of the extent of this work is best conveyed by a statement of the fact that about TWO TONS of nickel are used here each year for this purpose alone.

The unique and beautifully etched face and covering plates on Singer Sewing-Machines, for family use, are plated in this department and are good examples of the highest proficiency in the art.

The plant comprises ten dynamos for generating the electric current required. The pieces to be plated are suspended on wires in tanks containing the chemical solution. Each of these tanks has a capacity of 200 gallons.

A well-equipped chemical laboratory is connected with this department, for the purpose of analyzing and testing chemicals and supplies, which must all be of the best quality.

About one million pieces are plated per week, thirty to fifty men being constantly employed here. After receiving a sufficient coating of nickel, etc., the parts are then taken to the Buffing Department, where they receive their final polish.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

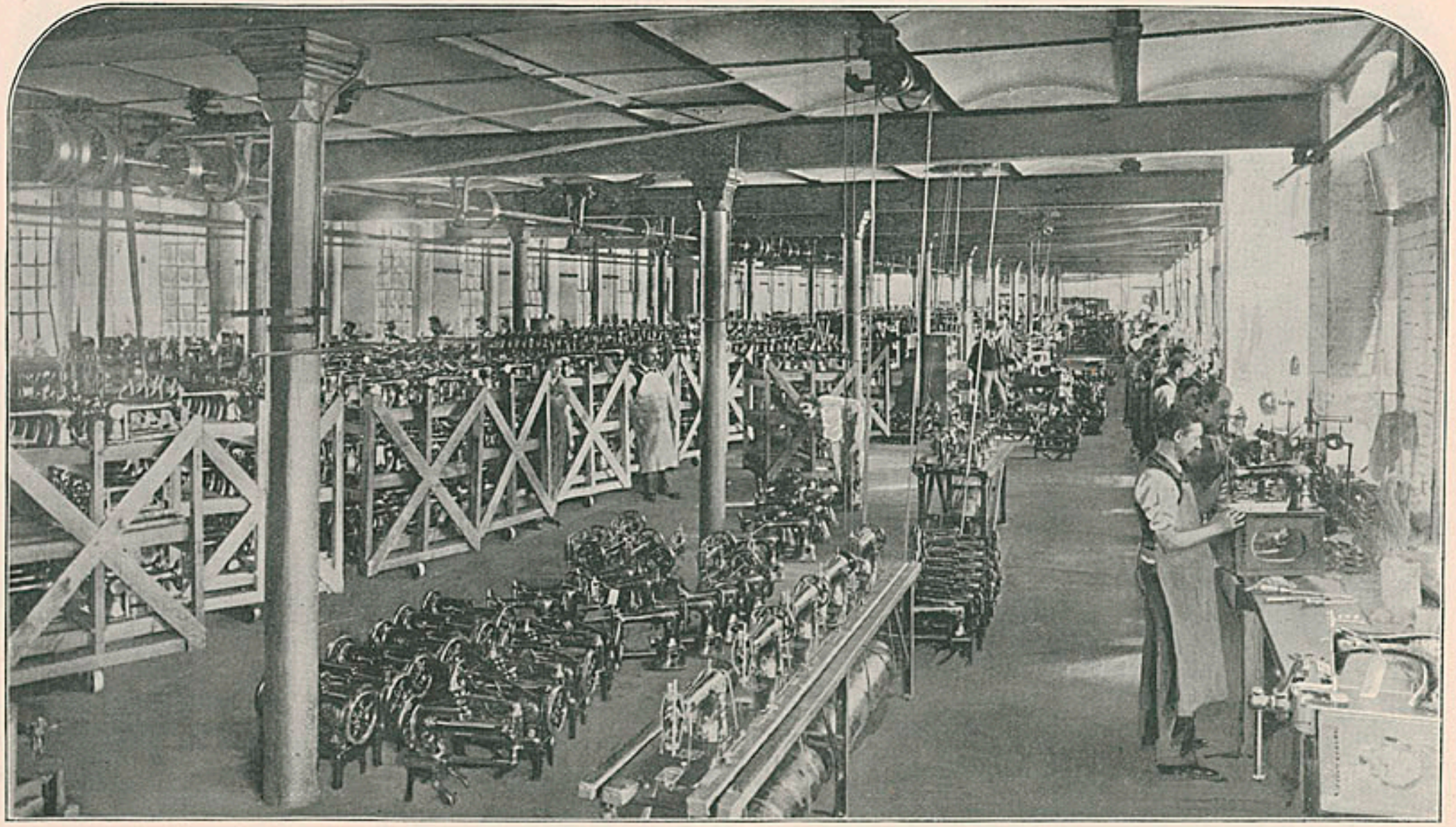
MACHINE ASSEMBLING—FIRST SECTION.

ASSEMBLING.

The preceding descriptions have covered, in a general manner, the making of the principal component parts of the sewing-machine. The underlying principle which gives peculiar excellence to Singer sewing-machines consists in the fact that each part is made by a machine specially constructed for the purpose, thus securing a uniform accuracy far beyond that attainable by the most skilled hand-labor, nothing being left to the eye or hand of the workman. Every piece has been accurately gauged by special gauges measuring to the finest divisions of the scale. The small parts are sent, as fast as they are finished and inspected, to a general Stock Department, there to be kept in perfect order and readily accessible for distribution as required for orders from all over the world or to be sent to the Assembling Department as called for. The general stock room is 60 feet wide and 230 feet long, and is filled with rows of high cases, conveniently arranged for the storage of each of the thousands of kinds, shapes and sizes.

The machine heads, having been japanned and ornamented, are brought to the ASSEMBLING DEPARTMENT; the working parts are "assembled" here and each placed in its proper working position. Each of these parts has been so accurately made that all are perfectly interchangeable and require no adjustment, each fitting properly to its intended position, and resulting in a complete and harmonious whole.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



MACHINE ASSEMBLING—SECOND SECTION.

ASSEMBLING—CONTINUED.

The "assembling" of all the parts having been accomplished, the machine is now built. Each part has been subjected to successive tests throughout the different stages of its evolution. The assembled parts must now be tested as a whole.

In the second section of the Assembling Department, the machines are operated by power at a high rate of speed and every one is carefully examined to ascertain that each operating part runs smoothly and properly. There is nothing in the whole science of kinetics, not excepting a watch, in which the timing and movement require greater accuracy than a sewing-machine. Each part is interdependent and all must work harmoniously in order to produce a perfect stitch at the high speed now required in the factory operation of sewing-machines.

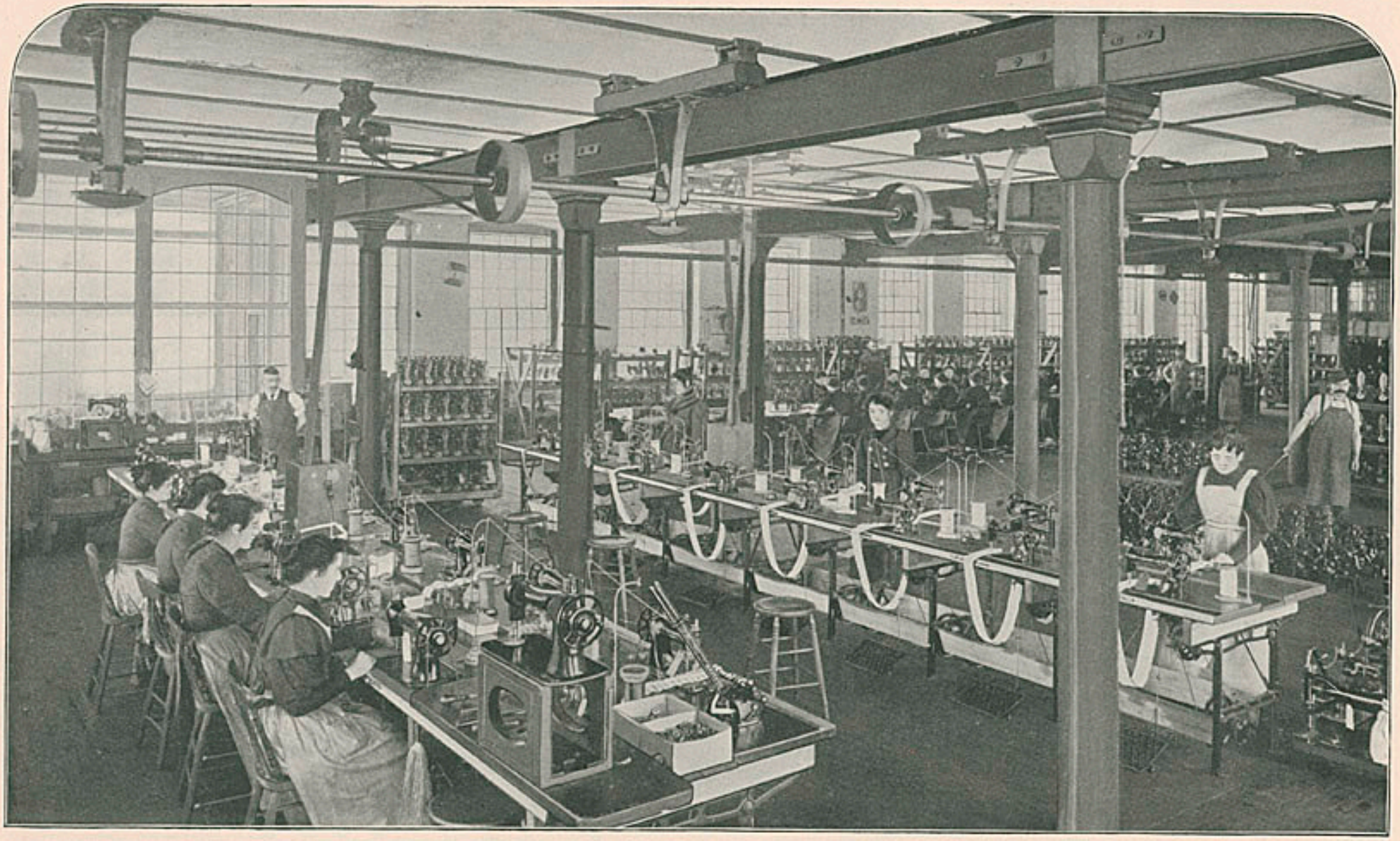
Results make reputation. Singer sewing-machines lead all others in factory use.

This is due to the extreme care taken to use only the best materials and the most effective means for their fine mechanical manipulation.

It is only by the use of such means that really first-class sewing-machines can be made. Such machines excel the products of minor establishments lacking these facilities, in the same degree that the modern high-class chronometer excels the equally modern timepiece intended simply for waking the servant.

The latter has no permanent value and soon wears out. The former renders accurate service during a lifetime or more. The difference between the cost of a high-class sewing-machine, embodying the best of materials and workmanship, and its spurious imitation, made of cheap materials in the cheapest way, is soon eaten up by the added cost of the latter for repairs and lost time in the work room.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

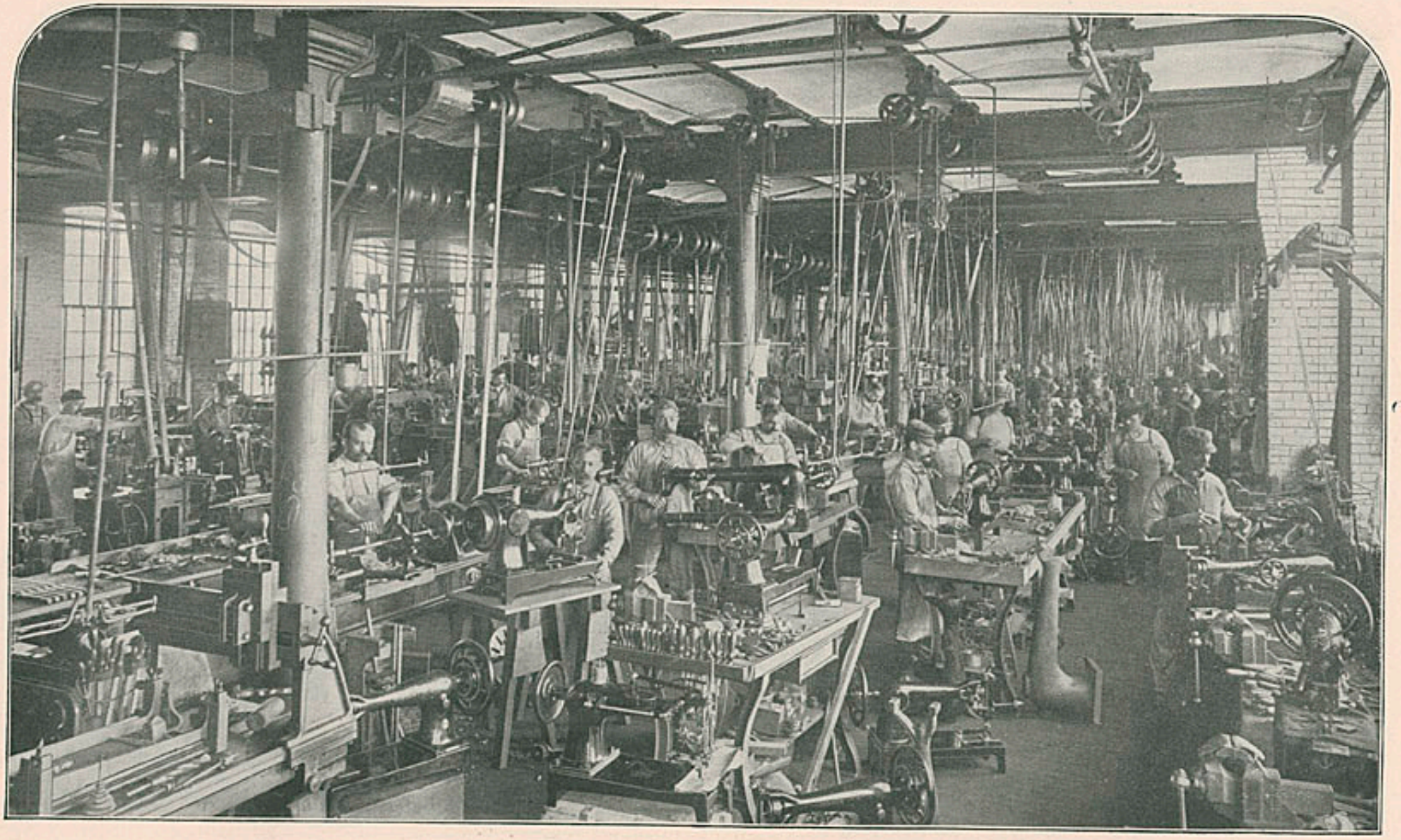


VIEW IN TESTING DEPARTMENT.

TESTING.

After the machines have shown their running qualities and passed the inspection of the Assembling Department, which means that they are "mechanically" correct, they are next sent to the Testing Department. Here they are practically tested by actual stitching on the particular work for which they are intended. Thousands of yards of material, both textile and leather, are annually consumed in this work, and no machine is passed that does not perform its work perfectly in every respect. Every machine has previously received its series number, and a record is kept of its performance through the successive stages of its evolution. A distinct report is made for each and the records show just how it was tested and by whom, so that, should complaint be subsequently made by its purchaser, its good condition and capacity for satisfactory work at the time of leaving the factory are capable of proof.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN SPECIAL MACHINE DEPARTMENT.

SPECIAL SEWING-MACHINES.

The various germ ideas respecting the sewing-machine obtained publicity more than a century ago. They had no commercial value and produced no effect on industry until Singer's clever combination was effected, and resulted in a practical transformation of the stitching industry.

The family stitching industries have become gradually concentrated into factories with the result that sewing-machines are now constantly being specialized and adapted to distinct factory processes, in order to attain highest efficiency, and new and diversified industries have thus been created.

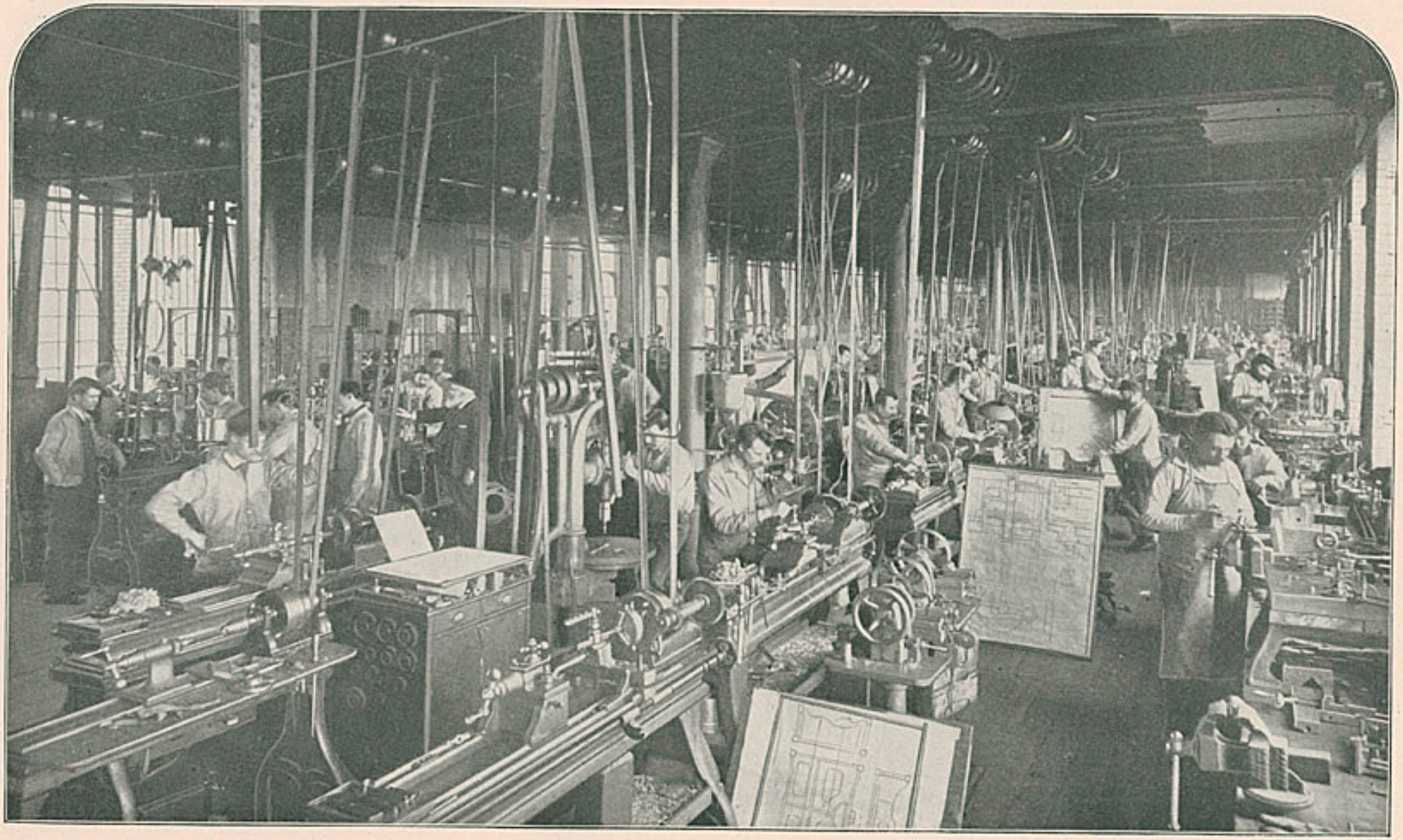
A machine that is well devised to do a definite work will perform it better than one having possible application to many varieties of work, and for this reason THE SINGER MANUFACTURING Co. aim to so specialize their sewing-machines that each shall be the best for its purpose. This development of special stitching appliances for use in the factory has not only been of tremendous benefit to the world at large, by causing a great reduction in the cost to the consumer of many articles in common use, but it has brought commercial success to many users of the sewing-machine, who could not have achieved it without the means thus furnished. The illustrations and descriptions which follow in this Catalogue, relating particularly to these special machines, will best convey an idea of their wide range of form and purpose, and special attention is invited thereto.

Collectively, when considered in regard to their extent and value, their extraordinary variety and special excellences, as also for the originality and ingenuity they display, the machines turned out by this Department are not paralleled by the products of any other similar establishment in the world.

They are characterized by extreme refinement in every detail of design to obtain correct proportions that have been well worked out in determining strength and form, and the proper disposition of material to take full share of duty; their construction shows the best quality of material in every part, each part being exactly and precisely fitted and displaying first-class workmanship at every point.

To accomplish this result requires superior facilities in the shape of the best of machine tools manipulated by the best of machinists.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN TOOL DEPARTMENT.

SPECIAL TOOLS.

Since the first application of the fundamental principles of the sewing-machine, its development has been on lines to meet the demand for diversified applications and uses.

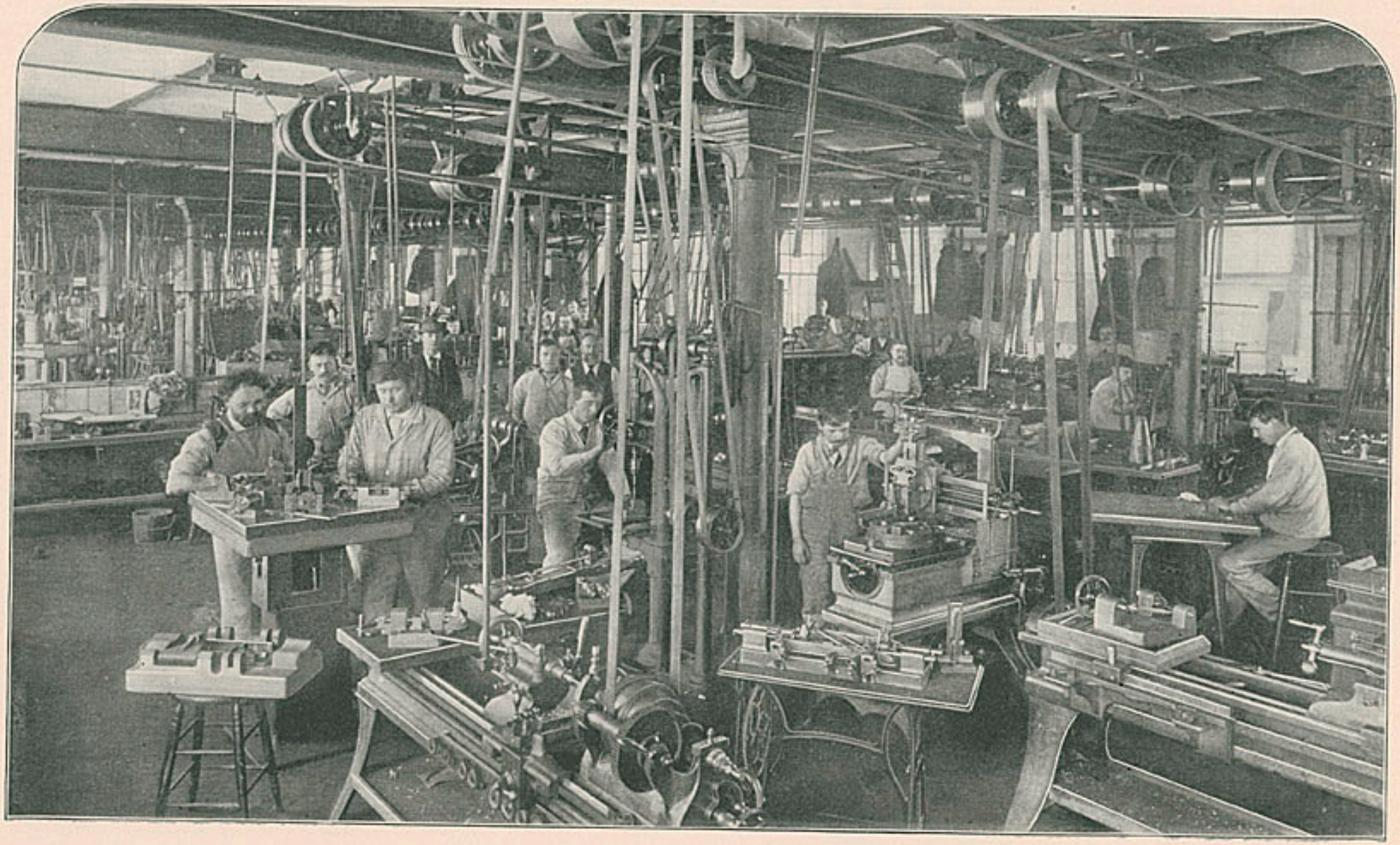
New combinations of old principles; improvements in the details of design and construction—these are constantly occurring. The ingenuity displayed by an inventor frequently has no value whatever until some equally bright mind is able to plan a way by which the invention can be made commercially available.

Each variety of sewing-machine has its peculiar parts requiring special tools for their manufacture; these tools are devised and built at the Singer works and display great originality and ingenuity. The development of labor-saving machine-tools for making labor-saving sewing-machines is carried to its utmost limit here, and the high efficiency and durability of Singer sewing-machines are largely due to this basis of originality in the processes of their construction.

After a new form of sewing-machine, a part or an attachment has been designed or modeled, then all the tools necessary for its reproduction must be built.

The department partially illustrated on the opposite page is that for designing and constructing the tools required to accurately make the thousands of different kinds of sewing-machine parts so that every one of a kind shall be exactly duplicate and interchangeable with its fellow.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A



VIEW IN GAUGE DEPARTMENT.

THE SINGER GAUGE SYSTEM.

The manufacture of articles by the use of machines specially designed for the production of each component part, the various parts being subsequently "assembled" to form the finished product, was first carried out on a large scale in the United States. It is still generally known throughout the world as "the American system."

With the advancement of mechanical art through the general use of machine tools, absolute precision in the execution of its processes was made possible. But the assembling system requires this perfect accuracy to be exactly uniform on each piece. In order to preserve a perfect uniformity of the dimensions of each corresponding part, it is necessary to use gauges that shall test the truth of each, as compared with its standard, to such a minute fraction that it seems hardly possible for the senses to detect it.

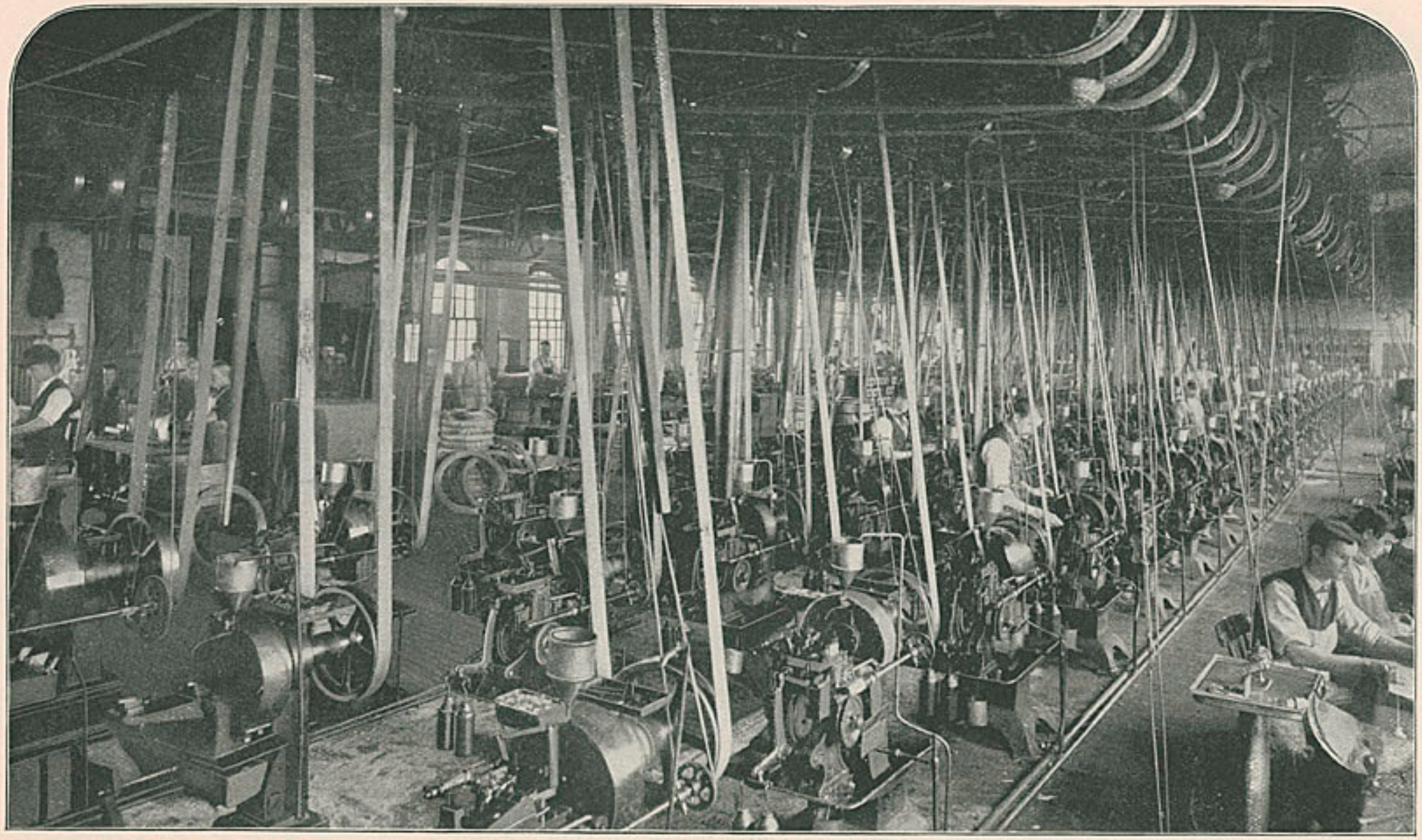
Such gauges are systematically and rigidly used at every point in the construction of a Singer sewing-machine.

The invention, manufacture, and proper care of standard gauges are such important and essential features in the construction of Singer sewing-machines as to form the duty of a distinct department. The number of standard gauges now in use exceeds fifteen thousand.

The investment in this single item of the Singer's Company's plant is sufficient to pay for the entire equipment of an ordinary factory. Some of these contrivances are so finely adjusted that the deposit of a slight dust plainly disturbs them. To adequately illustrate or describe their manifold uses is not within the limits of this article. One, in most common use for measuring diameters, consists of a steel plate containing two perforations, the diameters of which differ from each other only by one two-thousandth of an inch. Measuring these diameters with a standard rule, the eye fails to detect the slightest difference between them, yet the piece that they are intended to test must fit tightly into one and drop freely from the other or it is rejected.

In order to preserve the perfect accuracy of trial gauges used by the workmen, they are frequently compared with the standard gauges retained by the department, and tested to expose any deviation arising from wear, etc. Many of these ingenious contrivances for securing absolute mechanical accuracy are unique and peculiar to this establishment. Their number is so large and their use so extensive, they would soon become scattered and lost were it not for the rigid system in force to prevent this. They are carefully kept so as to be readily accessible, but none can be taken from its place without a record showing who has it and where it is in use.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.



VIEW IN NEEDLE DEPARTMENT—FORMING AND SWAGING.

NEEDLE MANUFACTURE.

Needles of exactly the proper shape and of the very best quality are absolutely essential to good work with a sewing-machine. SINGER COLD-SWAGED NEEDLES have achieved a reputation that has made them the subject for numerous spurious imitations that can only be detected by use; therefore it is only safe to purchase sewing-machine needles at a Singer Agency.

The importance of keeping the quality of its needles up to the highest standard is fully realized by THE SINGER MANUFACTURING CO., and the most careful attention is given to every detail in their manufacture.

The operations of this Department form one of the most interesting features of the entire establishment. The needles made here are of various lengths and patterns to suit the requirements of different varieties of Singer sewing-machines, but they are all classified in two general divisions, viz., CLOTH and LEATHER.

The different kinds of points made are called ROUND, TWIST, REVERSE TWIST, WEDGE, CROSS, CHISEL, REVERSE CHISEL, and DIAMOND points.

The list of conditions through which each needle passes is a long one, but may be described in a general way as follows:

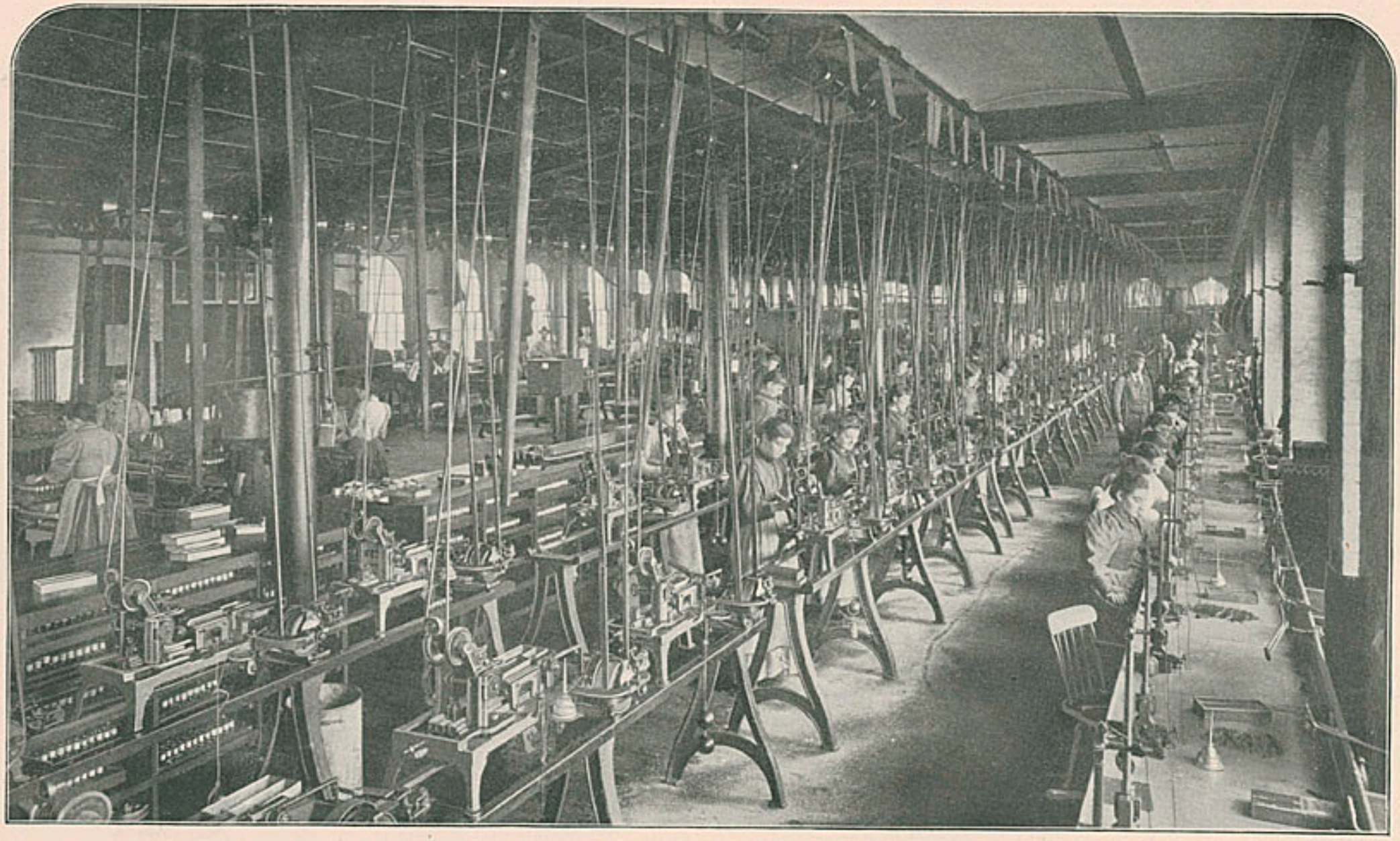
MAKING THE BLANK:—Only the very best quality of steel wire is used; this is passed through the first machine, the straightener and cutter, which takes out the bend and removes a short piece of wire of the proper length to make the size of needle wanted. This piece of wire is called the "blank," and is usually about one-third the length of the needle to be made from it.

RUMBLING:—The blanks are placed in small iron cylinders that are rotated in such a manner as to keep the blanks constantly in motion and in friction. By this means, all scale and dirt are removed and the blanks are next taken to the swaging machines.

COLD SWAGING:—The blade of the needle is formed by this process, which is the best in the world for this purpose and greatly increases the strength and elasticity of the blade. In the operation of the machine the blanks are placed in a hopper from which they are taken automatically, one at a time, and one end is presented to the action of a set of revolving sectional steel dies. These dies are constantly opening and shutting, while rotating, so that the end of the blade is compressed and drawn out, thus forming the needle blade.

CLIPPING AND STAMPING:—The prominent feature of this machine is the ingenious arrangement of the screw-feed for simultaneously carrying the needles across, so that the ends of the shanks are aligned against a fence, and forward, so that the points are presented to a cutter which trims all to a uniform length; passing the cutter they receive a blow from a die that stamps the descriptive number on the shank of each one. This machine handles only the round-shanked needles; flat-shanked needles require a special machine for stamping.

GROOVING:—The grooving-machine is another wonderful example of automatic mechanism; here the short groove on one side of the needle and the long one on the other are simultaneously made by two circular saws, past which it is fed automatically. The saws are pressed in against the needle, and then withdrawn at such times as will give the required depth and contour to the groove.



VIEW IN NEEDLE DEPARTMENT—EYE-PUNCHING AND FINISHING.

PUNCHING THE EYE:—Here manual dexterity and good eyesight are essential. The illustration shows the girls engaged in this work. The correct position of the needle in the machine is insured by a central plate, which fits into the groove on the blade of the needle, the punch descends at the will of the operator and passes through the needle into a hole in the central guide-plate.

ROUND POINTING:—In this operation the needles are again carried by a screw-feed, but differing from that previously described in the fact that it is arranged to cause the needles to revolve as they are carried along and passed under a swiftly turning emery wheel which grinds the round point.

FLAT POINTING:—In this process two operators are required to each machine. One arranges forty to fifty needles in flat-jawed tongs so they all lie with long and short grooves uniform and the shanks outward from the tongs, in which position the other operator withdraws them into other tongs so the ends are reversed and the points outward. These tongs are adjustable to permit the grinding of the points at various angles as required for leather stitching.

HARDENING AND TEMPERING:—The needles are heated by gas to a cherry-red, passed through an oil bath, and tempered in special ovens previously illustrated on page 22. Special processes are employed to accurately test the temper of each needle, and none are passed that fall below the high standard adopted for this essential feature.

FINISHING:—The needle can now be considered as having its shape and quality, and the remainder of the processes may be classed as finishing. The operator arranges sixty to seventy needles in flat-jawed tongs and holds them against a scratch-brush of brass wire, which revolves 8,000 times a minute and polishes the grooves; this is followed by a bristle brush. The needles are then threaded in gangs on cotton threads covered with oil and emery, the thread is drawn back and forth while the needles are in various slanting positions, so the polishing powder shall act upon all parts of the eye. Being removed from the thread, the needles are cleaned by a revolving brush, and then pass the first inspection, the eyes, points, and blades being carefully examined with the aid of a glass. Imperfect ones are thrown aside, and the good ones sent to the hand straightener. In this operation nothing has yet been discovered equal to manual dexterity and human judgment. The needles are rolled on an anvil, at the level of the eye of an expert operator, who detects the slightest curvature, and corrects it by a tap of a small hammer. The needles are then required to pass a second inspection.

The final operations are FINISH-POINTING on a fine emery, and FINISH-POLISHING by a revolving brush with crocus and alcohol. They are then ready for packing.

It is impossible to describe the amount of detail, infinite care, patient manipulation, and consummate skill, bestowed on the proper manufacture of a sewing-machine needle. It will readily be seen from the outline given that it is of great proportions and that good needles cannot be produced by any but a fully equipped and well organized plant. A large number of hands are employed in this department, which turns out about twenty-five millions of finished needles per annum.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

VIEW IN PACKING AND SHIPPING DEPARTMENT.

PACKING AND SHIPPING.

From the Testing Department, all machine heads are sent to the Packing Department. If intended for use on power tables, they are boxed immediately and loaded on railroad cars or steamers for transportation to various parts of the world. If they are for foot power they are "set up" or placed upon their appropriate stands in a division of the Packing Department specially devoted to this purpose. Here, the legs of the stand, the treadle, pitman, crank-shaft and band-wheel, dress-guard, drip-pan, and table are assembled, and each band-wheel, after pitman connection to the treadle, is operated by power at a high rate of speed, and carefully inspected to insure its perfect ease of running.

The heads are again inspected before they are attached to the tables, then all attachments and accessories belonging to the machines are placed in the table drawers. The machines are then carefully crated, if intended for short distance shipment, but if they are to be transported a long distance involving transhipment, they are carefully taken apart, the heads, woodwork and stands each being packed in separate boxes.

The building occupied by the Packing Department measures 450 by 150 feet, thus having a ground area of nearly one and one-half acres. Railroad tracks extend its entire length close to each side and across one end, so that a number of cars can be loaded at once.

The entire product of the plant is finally collected at this point for proper packing and distribution.

Hundreds of men are busily employed, packing and shipping by rail and water from fifteen to twenty thousand packages per week.

The immense area of this department and the intense activity constantly prevailing throughout, are but faintly indicated by the comparatively small section illustrated.

The tremendous amount of detail involved is governed by perfect system and correct method.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

VIEW IN SHIPPING SHED ON WHARF.

PACKING AND SHIPPING—CONTINUED.

Since most of the Singer cabinet-work used in this country is sent directly to the Company's Central Agencies from its cabinet-works at South Bend, Indiana, by far the greater portion of the shipments from Elizabethport consists of iron work carefully boxed.

Although much of it is loaded directly into the cars for rail transportation, a very large quantity is daily taken by steamer to New York for use by the manufacturers of that city or for shipment to foreign countries. The marks on the cases shown in the illustration indicate the range of these foreign shipments, some of them being for Germany, others for Mexico and Japan.

During the long experience of this company, in both domestic and foreign shipments, its system of packing and loading has been developed to the highest excellence, and consignees can feel well assured of the most careful attention to every detail of package requisite to safe carriage with least weight and bulk possible.

THE SINGER SEWING-MACHINE FACTORY AT ELIZABETHPORT, N. J., U. S. A.

VIEW IN GENERAL OFFICE.

THE GENERAL OFFICE.

The work of accurate accounting for the operations of such an industrial establishment as has been illustrated, demands a system that shall be comprehensive without undue complexity, so that the net result of each Department's operations can not only be readily ascertained at stated intervals, but its daily work shall be faithfully mirrored before the manager. The correspondence is of tremendous proportions; every order received involves a definite promise, a word that carries serious meaning here. Every employee who may have any responsible connection with the fulfillment of an order, however small, is obliged to acknowledge its receipt, stating the date when his part will be done, and trouble ensues for those who are careless or dilatory. Prompt service by all is as essential in an office so crowded with detail as it is in the working parts of a machine, and every precaution is taken to secure as high efficiency in the office service as exists in the mechanical products of the establishment.

CONCLUSION.

In what has been presented we have tried to trace the evolution of a Singer sewing-machine through its progress from the crude material to its final shipment ready for use.

The application of the sewing-machines to new purposes is steadily increasing; attempts to improve them for existing uses are constantly being made. The results of these attempts are often impractical and useless, causing needless expense, effecting no substantial economy and disappointing the deluded purchaser.

An Industrial establishment covering so wide a field as the one just described, possesses unusual facilities for carefully testing the advantages offered by a newly suggested attachment, modification or application and THE SINGER MANUFACTURING CO. put nothing upon the market that has not been thus tested.

Here the true democratic spirit prevails, giving to each employee the place for which he is best fitted, with ample scope for developing what talent he may have.

In such an establishment scarcely a day passes in which successful ingenuity does not make some really valuable addition to the productive power of the sewing-machine.

With such continuous progress in the improvement of the sewing-machine, it is evident that those who use it must have the courage to abandon their old machines as fast as improved forms prove to be of real importance. If a careful account could be kept of the cost of operating the best sewing-machines, as compared with machines of inferior form and construction, so often unwisely clung to by short-sighted manufacturers, the cause of failure, of decreasing profits and of lost or declining trade could be very easily explained. These little marginal savings aggregate astounding totals.

The manufacturers of textiles who have been the most successful are those who have kept to the front in the use of the latest and best mechanical appliances. Sewing-machine users are the largest consumers of textiles, and their plants probably earn more, in proportion to their cost, than those of any other manufacturing industry; they can only afford to use the best of machines and can well afford to discard any that are not fully up to date. The best economy in the stitching room can only be secured by using sewing-machines of highest efficiency. These machines can only be successfully produced by an establishment having facilities such as have been illustrated and described on the preceding pages.

Numerical Catalogue

of

Singer Sewing Machines

for

Manufacturing.

PREFACE.

The purpose of The Singer Manufacturing Company in presenting to the public this classified Catalogue of its Sewing-Machines, is to furnish the users of Sewing-Machines with more accurate information and a better knowledge of what has been accomplished, not only in the regular production of Machines for all the usual stitching processes employed in manufacturing, but also the unequaled facilities of this Company for producing such machines for special purposes in any branch of trade.

The Company's vast business interests have been extended to every civilized nation on the globe, necessitating the establishment of factories for the manufacture of its machines in several countries.

The factory at Elizabethport, N. J., illustrated and described on the preceding pages, is but one of a series; another factory, equally large and well equipped, is in full operation at Kilbowie, a suburb of Glasgow, Scotland. The Cabinet Factory at South Bend, Indiana, and its adjunct at Cairo, Illinois, compose one of the largest and most complete wood-working establishments in a country that is celebrated for the supreme excellence of its woods, and for the highest attainments in cabinet making.

Large factories are also operated in Montreal, Hamburg and Vienna, and the Company's selling agencies are located in every city in the world.

By this direct connection with all the manufacturing centres of the world, the Company is able to keep in touch with the needs of every class of manufacture in which it is possible to use a sewing-machine; as special devices are required to accomplish any desired economy in the stitching room, the resources of this Company are constantly being drawn upon to supply them. In this way has been accumulated the great variety of machines for special work which it is now able to present to manufacturers.

The Company has discontinued its method of designating the different machines by names that in most cases have indicated the use for which they were intended, and has adopted the system of classification used in this Catalogue, giving a number to each distinct class of machine. In connection with this Class-number there is added to it another, which is intended to designate the particular variety or modification of the class and its special attachments. Such classes of machines as have been heretofore designated by a number, as, for instance, the old numbers 2 and 3, and the later numbers 5, 6 and 7, still retain these numbers; the "Improved Family" and "Improved Manufacturing," heretofore known as I. F. and I. M., now take the Class-numbers 15 and 16,

respectively. A plate is attached to each machine, having engraved upon it the CLASS and VARIETY number of the machine, and the user, in ordering Parts, Attachments or Needles, or when asking for information, should refer to the machine by the number thus given. It is not intended to give a distinct number to a machine on account of any little difference in Feed or added Attachment, because that would complicate rather than simplify the system; therefore, it is only when a change is made in a machine of any Class that is of distinct importance that it will be given a new variety number. In no case will a number be duplicated; when a machine has passed out of use the number will become obsolete. The Numerical system for Parts and Attachments has also been adopted, by which a series of numbers is given to Screws, Nuts and Rollers, Parts of Machines, Attachments, Stands for Foot Power, Power-Table Fittings and Cabinet Work, and each part has a distinctive number that will never be duplicated. All numbers of Parts and Attachments appearing in this Catalogue are in accordance with this system.

It is intended from time to time to revise and publish new editions of this Catalogue, but, in the interim, leaflets, describing new machines, will be issued, and such leaflets can be inserted in their proper places, that all may be well informed as to what is being accomplished in the way of bringing out new inventions.

For convenience of reference the following classified list of machines is arranged in numerical order without regard to their forms or intended uses; following this list are illustrations of some of the various types of machines, with detailed description and explanation of their operation and applications to special kinds of work.

THE SINGER MANUFACTURING CO.

OFFICES IN EVERY CITY IN THE WORLD.

NUMERICAL CATALOGUE.

Singer Sewing-Machines for Manufacturing.

EXPLANATORY NOTES.

1. The **CLASS** number designates the type or form of machine.
2. The **VARIETY** number following the Class number designates machines of that Class having special and distinctive features.
3. The **HYPHEN** should appear between the Class and the Variety number.
4. The prices for machines include Heads only, fitted as described, **WITHOUT STANDS** or tables. When the description includes driving attachment or other mechanism requiring connections below the table, the price covers all necessary parts for such connections.
5. Drip pans are included with machine heads but **NOT** with stands.
6. Knee Lifters, Special Hemmers, Binders, Folders, etc., must be specially ordered unless covered by the description.
7. Samples of material to be used, also specimens of finished work, should accompany all orders so far as practicable.

Machines of Class 2.

Bed 18 inches in Length, 10 inches from Needle to Base of Arm.
Reciprocating Shuttle.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
2-1	Wheel Feed, No. 5 shuttle	Maba.
2-2	" " " " vibrating presser	Maback.

Machines of Class 3.

Bed 24 inches in Length, 16 inches from Needle to Base of Arm.
Reciprocating Shuttle.

	DESCRIPTION.	
3-1	Wheel Feed, No. 9 shuttle, vibrating presser, for carriage trimming, etc.	Mabacis.
3-2	Wheel Feed, No. 9 shuttle, roller presser	Mabacto.

Machines of Class 5.

Bed 32½ inches in Length, Extension to Left 9 inches, 19 inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.
For Canvas or Rubber Belting up to 28 inches wide and ¾-inch in thickness.

	DESCRIPTION.	
5-1	Roller Feed driven by ratchet, roller or flat presser, sliding guide, belt shifter	Mabaddo.
5-2	Roller Feed driven by clutch, roller or flat presser, sliding guide, belt shifter	Mabadus

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
5-3	Roller Feed driven by ratchet, roller or flat presser, screw guide, belt shifter	Mabasa.
5-4	Roller Feed driven by clutch, roller or flat presser, screw guide, belt shifter	Mabalien.
5-5	Two Shuttles (box), roller feed driven by ratchet, ½-inch to 1 inch gauge, screw guide, belt shifter	Maban.
5-6	Two Shuttles (box), roller feed driven by clutch, ½-inch to 1 inch gauge, screw guide, belt shifter	Mabare.
5-7	Two Shuttles (cylinder), roller feed driven by ratchet, 1 inch gauge and above, screw guide, belt shifter	Mabati.
5-8	Two Shuttles (cylinder), roller feed driven by clutch, 1 inch gauge and above, screw guide, belt shifter	Mabator.
5-9	Roller Feed driven by ratchet, *overseaming* ⅜-inch needle throw	Mabatose.

Machines of Class 6.

Bed 25¼ inches in Length, 14 inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
6-1	Wheel Feed, roller or flat presser, belt shifter, for cloth or leather up to ¾-inch in thickness	Mabbess.
6-2	Wheel Feed, roller or flat presser, Singer driving attachment, for cloth or leather up to ¾-inch in thickness	Mabbott.
6-3	Drop Feed, roller or flat presser, belt shifter, for cloth or leather up to ¾-inch in thickness	Mabbea.
6-4	Drop Feed, roller or flat presser; Singer driving attachment, for cloth or leather up to ¾-inch in thickness	Mabbeda.
6-5	Wheel Feed, vibrating and assisting pressers, belt shifter, for sweat pads up to 1½ inches in thickness	Mabbello.
6-6	Wheel Feed, vibrating and assisting pressers, Singer driving attachment, for sweat pads up to 1½ inches in thickness	Mabbin.
6-7	Drop Feed, vibrating and assisting pressers, belt shifter, for sweat pads	Mabbo.
6-8	Drop Feed, vibrating and assisting pressers, Singer driving attachment, for sweat pads	Mabbola.
6-9	Drop Feed, vibrating presser, Singer driving attachment, for blank books, etc., up to ¾-inch in thickness	Mabboris.
6-10	Drop Feed, vibrating presser, belt shifter, for blank books, etc., up to ¾-inch in thickness	Mabbosit.
6-11	Drop Feed, vibrating presser, attachment for guiding buff wheels to make *Circular* rows of stitching ⅜-inch apart in cotton buffs up to 1 inch thick, Singer driving attachment	Mabbotan.
6-12	Drop Feed, vibrating presser attachment for guiding buff wheels to make *Circular* rows of stitching ⅜-inch apart in cotton buffs up to 1 inch thick, belt shifter	Mabbotas.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
6-13	Drop Feed, vibrating presser, radial guiding attachment for stitching cotton buff wheels up to 1 inch thick in a continuous *Spiral* from near centre to circumference. Rows of stitches $\frac{3}{8}$-inch apart, belt shifter	Mabboter.

Machines of Class 7.

Bed 25¼ inches in Length, 16 inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.
For Fabrics or Leather up to 5/8-inch in thickness.

	DESCRIPTION.	
7-1	Drop Feed, two-speed pulley balance wheel for foot power stand	Mabca.
7-2	Drop Feed, one-speed pulley balance wheel, for power table	Mabcaba.
7-3	Drop Feed, Singer driving attachment, for power table	Mabcafii.
7-4	Drop Feed, belt shifter, for power table	Mabcairn.
7-5	" " vibrating presser, two-speed pulley balance wheel, for foot power stand	Mabcala.
7-6	Drop Feed, vibrating presser, balance wheel for power table	Mabcam.
7-7	Drop Feed, vibrating presser, Singer driving attachment	Mabcampo.
7-8	" " " " belt shifter	Mabcanni.
7-9	" " alternating pressers, Singer driving attachment	Mabcape.
7-10	" " adjustable presser, either vibrating or stationary, belt shifter	Mabcart.
7-11	Drop Feed, reversible, 1 inch stitch, guide for single strip, for book work, Singer driving attachment	Mabcasso.
7-12	Drop Feed, reversible, 1 inch stitch, guide for connected strips, for book binding, Singer driving attachment	Mabcatas.
7-13	Drop Feed, vibrating presser, 1 inch stitch, for pamphlet stitching, Singer driving attachment	Mabcavi.
7-14	Upper Feed, presser foot feed points for $\frac{1}{8}$, $\frac{1}{10}$ and $\frac{1}{12}$-inch stitch in heavy leather, Singer driving attachment	Mabcea.
7-15	Drop Feed, vibrating presser, 1 inch stitch, for pamphlet stitching, belt shifter	Mabceco.
7-16	Drop Feed, ¼-inch stitch, No. 14 needle for heavy thread, for oil press bags, etc.	Mabceda.
7-17	Drop Feed, ¼-inch stitch, No. 14 needle, for heavy thread, for oil press bags, etc., Singer driving attachment	Mabcel.
7-18	Drop Feed, ¼-inch stitch, No. 14 needle for heavy thread, for oil press bags, etc., belt shifter	Mabcelta.
7-19	Upper Feed, bed plate cut away close to needle for horse brushes, two-speed balance wheel for foot power	Mabceno.
7-20	Upper Feed, bed plate cut away close to needle for horse brushes, Singer driving attachment	Mabcense.
7-21	Upper Feed, bed plate cut away close to needle for horse brushes, belt shifter	Mabcentic.
7-22	Two Shuttles, Drop Feed, adjustable presser, either vibrating or stationary, belt shifter	Mabcentos.

Machines of Class 8.

Bed 4 feet in Length, 28 inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
8-1	Roller Feed driven by ratchet, roller or flat presser, sliding rod guide, belt shifter, for canvas belting up to ¾-inch in thickness	Mabcera.
8-2	Roller Feed driven by ratchet, roller or flat presser, screw guide, belt shifter, for canvas belting up to ¾-inch in thickness	Mabcerbe.
8-3	Two Shuttles (cylinder), gauge between needles not less than 1 inch, roller feed driven by ratchet, roller or flat presser, sliding rod guide, belt shifter, for canvas belting	Mabcerris.
8-4	Two Shuttles (cylinder), gauge between needles not less than 1 inch, roller feed driven by ratchet, roller or flat presser, screw guide, belt shifter, for canvas belting	Mabcerta.
8-5	Drop Feed, vibrating presser, belt shifter, for heavy work requiring great length under arm	Mabciba.

Class 9.

Bed 18 feet in Length. Oscillating Shuttle Mechanism.

	DESCRIPTION.	
9-1	Two Shuttles, roller feed, for canvas belts up to 100 inches wide and 1½ inches thick	Mabcilia.

Class 10, Cylinder Bed.

Balance Wheel at Right Hand.
Bed 23 inches in Length, 14 inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
10-1	Large Cylinder Shuttle, upper feed, stitch setting points for ⅛, 1/10 and 1/12-inch stitch, Singer driving attachment, for harness tugs and heavy leather up to ¾-inch in thickness	Mabcimis.

Machines of Class 11, Cylinder Bed.

Side Wheel at Right Hand.
Bed 29 inches in Length, 21 inches from Needle to Base of Arm, except as otherwise specified.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
11-1	Drop Feed across arm, leather	Mabcind.
11-2	" " up " leather	Mabcinna.
11-3	" " across " alternating presser, leather	Mabcion.
11-4	" " up " vibrating " leather	Mabcippus.
11-5	" " " " cloth	Mabciro.
11-6	" " across " alternating presser, cloth	Mabcis.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
11-7	Drop Feed up arm, ½-inch stitch	Mabcita.
11-8	" " " " (reversible) ½-inch stitch	Mabcla.
11-9	" " across arm cloth	Mabclen.
11-10	" " up " *overseaming*, 30 inches from needle to base of arm	Mabclis.

Machines of Class 14.

For Lacing Jacquard Pattern Cards.
Multiple Heads, adjustable for every size of Cards.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
14-1	Wheel Feed with guide pins, for lacing Jacquard pattern cards, 3 heads	Mabcobis.
14-2	Wheel Feed with guide pins, for lacing Jacquard pattern cards, 4 heads	Mabcoca.
14-3	Wheel Feed with guide pins, for lacing Jacquard pattern cards, 5 heads	Mabcodi.
14-4	Wheel Feed with guide pins, for lacing Jacquard pattern cards, 6 heads	Mabcoin.

Machines of Class 15.

Square Bed, 14⅝ inches in Length, 6½ inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.
For Factory use in stitching Light Fabrics and Leather.

	DESCRIPTION.	
	NOTE: Machines Nos. 15-1 to 15-21, inclusive, are OBSOLETE.	
15-23	Drop Feed, cloth	Mabcolos.
15-24	" " leather	Mabcolun.
15-25	Wheel " "	Mabcomat.
15-26	Drop " trimming attachment, leather	Mabcomed.
15-27	Wheel " " " "	Mabcomix.
15-28	Drop " alternating pressers	Mabcona.
15-29	" " upper and lower, alternating pressers	Mabconal.
15-31	Central Bobbin, Drop Feed, cloth	Mabconeo.
15-32	" " " " leather	Mabconera.
15-33	" " Wheel " "	Mabconest.
15-34	" " Drop " special for collars and cuffs	Mabconeto.
15-35	" " " " " " shirts, linen and cotton goods	Mabconeri.
15-36	" " Wheel Feed, trimming attachment, yielding presser, special, for glove work	Mabcopa.
15-37	Central Bobbin, Drop Feed, trimming attachment, leather	Mabcopis.
15-38	" " Wheel " " " "	Mabcoram.
15-39	" " Drop " alternating pressers	Mabcorist.
15-40	" " " " upper and lower, alternating pressers	Mabcos.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
15-41	Central Bobbin, Drop Feed, H. O. needle bar for round shank needles, C. S. M. for home manufacturing	
15-42	C. B. Drop Feed from left to right, for shirt and collar work	Mabcosafa.

Machines of Class 16.

Bed 19 inches in Length, 10½ inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

NOTE: Machines Nos. 16-1 to 16-25 are OBSOLETE.

16-26	Drop Feed, cloth	Macdart.
16-27	" " leather	Macdarra.
16-28	Wheel " "	Macdaten.
16-29	Drop " trimming attachment, cloth	Macdawn.
16-30	" " " " leather	Macday.
16-31	Wheel " " " "	Macdeal.
16-32	Drop " alternating presser	Macdeba.
16-33	" " vibrating "	Macdebit.
16-34	Wheel " " "	Macdecar.
16-35	Central Bobbin, Drop Feed, cloth	Macdeck.
16-36	" " " " leather	Macdedi.
16-37	" " Wheel " leather	Macdeem.
16-38	" " Drop " trimming attachment, cloth	Macdefa.
16-39	" " " " " " leather	Macdelen.
16-40	" " Wheel " " " leather	Macdell.
16-41	" " Drop " alternating presser	Macdemo.
16-42	" " " " vibrating "	Macdent.
16-43	" " Wheel " " "	Macdero.
16-44	Two Shuttles, $\frac{1}{32}$-in. to $\frac{5}{64}$-in. gauge, drop feed	Macdesca.
16-45	" " " " " " " wheel "	Macdes.
16-46	" $\frac{3}{32}$ " " $\frac{15}{64}$ " " drop "	Macdesti.
16-47	" $\frac{1}{4}$ " " $\frac{19}{64}$ " " " "	Macdeten.
16-48	" $\frac{5}{16}$ " and above, drop feed	Macdeva.
16 71	Central Bobbin, Drop Feed, with cam on needle bar, leather	Macdonor.
16-72	" " Wheel " " " " " " leather	Macdora.
16-76	" " " " *Adjustable* trimming attachment, leather	Macdrain.
16-79	Drop Feed, reversible, cloth	Macdrill.
16-80	Central Bobbin, Drop Feed, reversible, cloth	Macdrop.
16-81	" " " " 1 inch stitch for book work	Macdrum.
16-82	" " Upper and Lower, alternating pressers	Macdul.
16-83	" " No feed parts, for lace darning	Macdulas.
16-84	Two Shuttles, drop feed, alternating pressers	Macdulen.
16-85	Central Bobbin, Drop Feed, high lift, for carpet mitres, etc.	Macduma.
16-86	" " Outside Feed Bar, trimming attachment, cloth, trims from $\frac{3}{32}$-inch to $\frac{1}{4}$-inch from seam in light or heavy cloth	Macdumen.
16-87	Central Bobbin, Wheel Feed, trimming attachment, yielding presser, special for glove work	Macdunis.

Machines of Class 16 With National Mechanisms.

For Buttonholes, Eyelets, Tacking, Button Sewing, Etc.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
16-51	With National buttonhole mechanism, automatic cutter, hand presser lifter, no stop	Macdida.
16-52	With National buttonhole mechanism, automatic cutter, hand presser lifter and stop	Macdiet.
16-53	With National buttonhole mechanism, automatic cutter, foot presser lifter, no stop	Macdila.
16-54	With National buttonhole mechanism, automatic cutter, foot presser lifter and stop	Macdime.
16-55	C. B. with National interlocked square bar buttonhole mechanism, hand presser lifter, automatic cutter, no stop	Macdimis.
16-56	C. B. with National interlocked square bar buttonhole mechanism, automatic cutter, foot lift and stop	Macdion.
16-57	With National E. E. buttonhole mechanism for eyelet buttonholes and stop	Macdire.
16-58	With National E. E. buttonhole mechanism, for straight buttonholes, with automatic cutter and stop	Macdisa.
16-59	With National eyelet mechanism, for cloth, with hand lift	Macdisba.
16-60	" " " " " knee "	Macdisco.
16-61	" " " for leather, " hand "	Macdita.
16-62	" " " " " knee "	Macdivo.
16-63	" tacking " no stop, hand "	Macdoce.
16-64	" " " with stop " "	Macdocto.
16-65	" " " no stop, foot "	Macdoda.
16-66	" " " with stop, " "	Macdoe.
16-67	" shoe tacking mechanism, with stop, foot lift	Macdoit.
16-68	" 2-hole button sewer, no stop, hand lift	Macdolce.
16-69	With National 4-hole button sewer (for 2 and 4-hole and bar buttons), stop motion and foot lift, universal clamp	Macdolo.
16-70	With National 4-hole button sewer (for 2 and 4-hole and bar buttons), stop motion, foot lift and automatic clamp	Macdomin.

Machines of Class 17, Cylinder Bed.

Balance Wheel at Right Hand.
Bed 16½ inches in Length, 10½ inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
17-1	Drop Feed at left of needle, roller presser	Mefaba.
17-2	" " " right of "	Meface.
17-3	Wheel " " " " " with roller presser	Mefacti.
17-4	" " " " " " for stitching in ends of cylindrical boxes	Mefacul.
17-5	Drop Feed, for horse boots and other concave or convex articles	Mefacr.
17-6	Drop Feed up the arm, for stitching tubular or cylindrical articles	Mefagot.
17-7	Two Shuttles, drop feed across arm, gauges from $\frac{1}{16}$-inch to $\frac{3}{4}$-inch	Mefaina.
17-8	Drop Feed, alternating pressers	Mefairo.
17-9	Wheel " " "	Mefallo.
17-10	Drop Feed up the arm and reverse	Mefalun.
17-11	" " trimming attachment, leather	Mefamil.
17-12	Upper Feed, for horse boots and other concave or convex articles	Mefana.
17-13	Drop Feed, up arm, with feller for cotton and linen goods	Mefarba.
17-14	" " off " " " " " "	Mefarbin.
17-15	" " for portfolios and pocket books	Mefarbos.
17-16	" " reversible, for portfolios and pocket books	Mefasca.
17-17	" " special, extension to left of needle 1⅝-inches, for cap work	Mefusel.
17-18	Drop Feed, throat plate and presser foot special, for helmet work	Mefasema.

Machines of Class 18, Cylinder Bed.

Balance Wheel at Left Hand.
Bed 16 inches in Length, 10½ inches from Needle to Base of Arm.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
18-1	Drop Feed at right of needle, roller presser	Megabel.
18-2	" " " left " "	Megabi.
18-3	Wheel " " " " " roller presser	Megabro.
18-4	Drop " " " " " cylinder bed 2 inches diameter	Megada.
18-5	Two Shuttles, drop feed, gauges from $\frac{1}{32}$-inch to $\frac{1}{8}$-inch	Megage.
18-6	" " wheel " " " " " " " "	Megain.
18-7	Central Bobbin, Drop Feed at left of needle, cylinder bed 2 inches diameter	Megala.

Machines of Class 19, Cylinder Bed.

Side Wheel at Right Hand.
Bed 16½ inches in Length, 10 inches from Needle to Base of Arm.
Feed Lengthwise of Arm only.
Oscillating Shuttle Mechanism.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
19-4	Two Needles, One shuttle, drop feed, gauges from $\frac{3}{64}$-inch to $\frac{3}{16}$-inch	Melacer.
19-5	Two Needles, Two shuttles, drop feed, gauges from $\frac{3}{32}$-inch to $\frac{5}{16}$-inch	Melack.
19-8	Central Bobbin, Drop Feed, up arm, *overseaming*	Melaman.
19-9	" " " " " " cylinder bed $1\frac{13}{16}$ inches diameter	Melana.
19-10	Central Bobbin, Drop Feed, up Arm, cylinder bed $1\frac{13}{16}$ inches diameter, *overseaming*	Melance.
19-11	Drop Feed, reversible, cloth	Meland.
19-12	" " " leather	Melandas.
19-13	Central Bobbin, Drop Feed, reversible, cloth	Melander.
19-14	" " " " " leather	Melandon.
19-15	Two Needles, Two shuttles, drop feed, low bed, for hinged lap seam feller, gauges from $\frac{1}{8}$ to $\frac{5}{16}$-inch	Melaneac.
19-16	Two Needles, Two shuttles, drop feed, low bed, for feller for closing shirts, gauges from $\frac{1}{8}$ to $\frac{5}{16}$-inch	Melanecos.

Machines of Class 23.

For Buttonholes in Clothing, Shoes, Etc.
Looper Mechanism.

	DESCRIPTION.	
	FOR LEATHER.	
23-1	Leather, for buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long	Menabo.
23-2	Leather, for buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long, with taper barring attachment	Menacas.
23-3	Leather, for buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long, with automatic stop	Menacre.
23-4	Leather, for buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long, with straight barring attachment and automatic stop	Menadir.
23-5	Leather, for buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long, with taper barring attachment and automatic stop	Menafi.
23-6	Leather, for *eyeless* buttonholes $\frac{3}{8}$ to $1\frac{1}{8}$ inches long, with taper barring attachment and automatic stop	Menailo.
	FOR CLOTH.	
23-7	Short Needle, for cotton thread on linen and cotton fabrics	Menaki.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
23-8	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment	Menamer.
23-9	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment and taper barring attachment up to $1\frac{3}{8}$ inch	Menandos.
23-10	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment and automatic stop	Menarce.
23-11	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment, straight barring attachment and automatic stop	Menarcon.
23-12	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment, taper barring attachment up to $1\frac{3}{8}$ inch, with automatic stop	Menarro.
23-13	Cloth, for *eyeless* buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment, taper barring attachment up to $1\frac{3}{8}$ inch, and automatic stop	Menasa.
23-14	Short Needle, for cotton thread on linen and cotton fabrics, with cutting attachment	Menatal.
23-16	Cloth, for 2 inch buttonholes, with cutting attachment	Menatro.
23-18	Short Needle, for cotton thread on linen and cotton fabrics, with straight barring attachment and automatic stop	Menatus.
23-19	Cloth, for buttonholes $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, with cutting attachment, and straight barring attachment with hand tripping lever	Menavan.
23-20	Cloth, for buttonholes up to 2 inches long, with cutting attachment, and straight barring attachment with hand tripping lever	Menavel.

FOR EYELETS.

23-15	For Eyelets	Menatka.

FOR BARRING OR FINISHING.

23-17	For barring or finishing ends of binding	Menatti.

Machines of Class 24.

10 inches in Length, 5 inches from Needle to Arm.
Single Thread, Chain Stitch.
Rotating Hook.

	DESCRIPTION.	
24-3	Automatic Tension	Meraca.
24-4	Two Needles, Two Loopers, automatic tension	Merack.
24-5	Plain Tension	Meraddo.
24-6	" " $\frac{3}{16}$-inch stitch	Meradian.
24-7	" " 4 to 12 stitches to the inch	Meradix.
24-8	Two Needles, Two Loopers, plain tension	Merago.
24-9	Automatic Tension, side plaiting attachment, knee lifter	Merail.
24-10	Plain Tension with power tucker	Meralla.
24-11	Automatic Tension with power tucker	Meramen.
24-12	" " " adjustable gathering feed	Meritia.

Machines of Class 25. Cylinder Bed.

8½ inches in Length, 5 inches from Needle to Arm.
Single Thread, Chain Stitch.
Rotating Hook.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
25-1	Automatic Tension, 8 to 30 stitches to the inch	Merome.
25-2	Plain " " " " "	Merondo.
25-3	Automatic " 4 to 12 " " "	Meroota.
25-4	Plain " " " " "	Meroove.

Machines of Class 26.

Single Thread, Chain Stitch, DOUBLE MACHINE.

	DESCRIPTION.	
26-1	Automatic Tension, distance between needles adjustable from 2½ inches to 16 inches	Meropal.
26-2	Automatic Tension, distance between needles adjustable from 2½ inches to 24 inches	Meropama.

Machines of Class 29.

Universal Feed Arm.
Lower Arm and Bed 17 inches in Length. 12¼ inches from Needle to Base of Upper Arm.
Oscillating Horizontal Shuttle in Lower Arm.

	DESCRIPTION.	
29-1	Upper Feed, moving in any required direction	Merubic.
29-2	" " " " " " " heavy needle bar lever	Merubo.

Machines of Class 31.

Bed 18¾ inches in Length, 10½ inches from Needle to Base of Arm.
Central Bobbin, Link Thread Take-up.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
31-3	Drop Feed, cloth, knee lifter	Mosacon.
31-4	No Feed Motion, automatic stop, for ornamental flossing on corsets, etc	Mosacora.
31-5	Drop Feed, cloth, knee lifter, C. S. M. for foot power stand	Mosacorst.
31-6	Drop Feed, leather, knee lifter, roller presser	Mosacoris.
31-7	Wheel " " " " " "	Mosacoru.
31-8	Reversible Drop Feed, cloth	Mosacosa.

Machines of Class 32.

Bed 15¾ inches in Length, 7⅝ inches from Needle to Base of Arm.
Central Bobbin, Vertical Shuttle, for Overseaming and Ornamental Stitching.

	DESCRIPTION.	
32-1	Overseaming, ¼-inch needle throw, needle vibrates both sides of centre line	Mosacro.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
32-24	Overseaming, $\frac{1}{8}$-inch needle throw, needle vibrates to right of line	Mosatin.
32-25	Overseaming, $\frac{1}{8}$-inch needle throw, needle vibrates to left of line	Mosaur.
32-26	Overseaming, $\frac{1}{8}$-inch needle throw, needle vibrates both sides of centre line	Mosave.
32-27	No Feed Motion, automatic stop, for tacking shoes, pockets, etc. Needle makes one stitch in movement to the left, and two stitches in movement to the right; sixteen stitches in complete tack	Mosavon.
32-28	No Feed Motion, automatic stop, for tacking shoes, pockets, etc. Needle makes three stitches in each movement to the right, and three to the left; eighteen stitches in the complete tack; short stitches at the ends and long ones in centre of tack	Mosax.
32-32	Upper Wheel Feed, and special guide for blind stitch serging carpet edges	Mosaxed.
32-36	Overseaming, for sewing ingrain carpets	Mosaxeno.
32-38	" for serging clothing and with cord guiding foot for tacking	Mosaxis.
32-39	Overseaming, reciprocating presser, for window shades	Mosaxita.
32-45	" , upper and lower feed, alternating pressers, special guide, for sewing Ingrain carpets	Mosaxeva.

Eyelet Machines.—Class 32.

	DESCRIPTION.	
32-29	For Eyelets up to $\frac{1}{2}$-inch outside diameter. Rotating feed and presser foot	Mosaxal.
32-41	For Eyelets up to $\frac{1}{4}$-inch outside diameter. Concave rotating feed, small stationary presser foot. For fine work in shirts, muslins, etc.	Mosaxua.
32-42	For Covering Metallic Eyelets, up to $\frac{1}{4}$-inch outside diameter, in shoes, etc. Concave rotating feed, small stationary presser foot	Mosaxuten.
32-43	For Eyelets up to $\frac{1}{2}$-inch outside diameter. Rotating feed and presser foot. Has device by which three parallel circles of stitching can be made in each eyelet if desired; also fastening device for making a line of plain stitches around the outside of eyelet	Mosaxutis.
32-44	For Eyelets, 2 needles, 1 shuttle. Rotating feed and presser foot, $\frac{3}{32}$-inch gauge between needles, $\frac{5}{32}$-inch needle bar throw. Makes eyelets up to $\frac{1}{2}$-inch diameter	Mosaxutor.

Machines for Ornamental Stitching.—Class 32.

32-2	Ornamental Stitch No. 2	Mosadue.
32-3	" " " 3	Mosaga.
32-4	" " " 4	Mosalam.
32-5	" " " 5	Mosalif.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
32-6	Ornamental Stitch No. 6	Mosalma.
32-7	" " " 7	Mosalso.
32-8	" " " 8	Mosalva.
32-9	" " " 9	Mosami.
32-10	" " " 10	Mosampa.
32-11	" " " 11	Mosana.
32-12	" " " 12	Mosand.
32-13	" " " 13	Mosanita.
32-14	" " " 14	Mosanton.
32-15	" " " 15	Mosapan.
32-16	" " " 16	Mosaplin.
32-17	" " " 17	Mosarco.
32-18	" " " 18	Mosardel.
32-19	" " " 19	Mosardon.
32-20	" " " 20	Mosarlac.
32-21	" " " 21	Mosarsa.
32-22	" " " 22	Mosata.
32-23	" " " 23	Mosatel.
32-30	" " " 24	Mosaxana.
32-31	" " " 25	Mosaxanos.
32-34	" " " 26	Mosaxefi.

Class 33.

Bed 15¾ inches in Length, 7⅝ inches from Needle to Base of Arm.
Central Bobbin, Vertical Shuttle.

	DESCRIPTION.	
33-1	Upper Feed, for *Hemstitching*	Minaker.

Machines of Class 34 (Post).

Bed 19¼ inches in Length, 10½ inches from Needle to Base of Arm.
Horizontal Oscillating Shuttle.

	DESCRIPTION.	
34-1	Drop Feed, post 11 inches high	Minecro.
34-2	" " " 7 " "	Minegra.
34-3	Upper " " 11 " "	Minegus.

Machines of Class 35.

The Hand Carpet Sewer.
Two-Thread Chain Stitch.

	DESCRIPTION.	
35-1	Spool Tensions	Minepto.
35-2	Disc "	Minere.

Class 36.

The Power Carpet Sewer.
Two-Thread Chain Stitch.
Automatic Starting, Stopping and Returning Mechanism.

	DESCRIPTION.	
36-1	Positive Feed, machine travels on track to which carpet is suspended	Mineste.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
	Single Track consisting of Ten Sections with countershaft and pulleys, to be driven by steam power	Minetasa.
	Single Track of Ten Sections with ½ horse power electric motor	Minetea.
	Double Track of Ten Sections with counter shaft and pulleys, to be driven by steam power	Minetelo.
	Double Track of Ten Sections with 1 horse power electric motor	Minetelen.
	The length of each section is 3 ft. 7 in.	

Machines of Class 37.

Bed 15¾ inches in Length, 7½ inches from Needle to Base of Arm.
Central Bobbin, Vertical Shuttle, for Stay-Stitch.

	DESCRIPTION.	
37-2	Two Needles, one shuttle, drop feed	Minnetos.
37-3	" " " " upper feed diagonal stitch, for hat sweats, with cord guiding attachment	Minettum.
37-4	Four Needles, 1 shuttle, for ornamenting glove backs	Minetuba.

Machines of Class 41.

For Simultaneously Making Parallel Rows of Stitching.
Base 18¾ inches in Length, 10½ inches from Needle Bar to Base of Arm.
Least Distance Between Needles ⅜-inch.
Shuttles for Ready Wound Cops Only.

		DESCRIPTION.	
41-3	3 Needles, 3 Shuttles		Miniato.
41-4	4 " 4 "		Minibus.
41-5	5 " 5 "		Minica.
41-6	6 " 6 "		Minicaba.
41-7	7 " 7 "		Minicadis.
41-8	8 " 8 "		Minicadent.
41-9	9 " 9 "		Minicalo.
41-10	10 " 10 "		Minicane.
41-11	11 " 11 "		Minicapis.
41-12	12 " 12 "		Minicarlo.

Machines of Class 42.

Bed 19 inches in Length, 10⅛ inches from Needle to Base of Arm.
Very Large Shuttle, for Coarse Thread and Heavy Work.
Oscillating Shuttle Mechanism.

	DESCRIPTION.	
42-1	Central Bobbin, Drop Feed at left of needle, roller presser, cam on needle bar, leather	Minictus.
42-2	Central Bobbin, Drop Feed both sides of needle, hinged presser foot, linked needle bar connection, cloth	Minictuto.
42-3	Central Bobbin, Drop Feed both sides of needle, vibrating presser, link needle bar connection, cloth	Minictuva.
42-4	Drop Feed at left of needle, roller presser, link needle-bar connection, cylinder shuttle, leather	Minida.

Machines of Class 43, Cylinder Bed.

Balance Wheel at Right Hand, 10½ inches from Neede to Base of Arm.
Very Large Shuttle, for Coarse Thread and Heavy Work.
Oscillating Shuttle Mechanism.
Cylinder Bed 3-⅞ inches Diameter.

CATALOGUE NO.	DESCRIPTION.	TEL. CIPHER.
43-1	Central Bobbin, Drop Feed at left of needle, roller presser, cam on needle bar, leather	Minoba.
43-2	Central Bobbin, Drop Feed both sides of needle, hinged presser foot, link needle bar connection, cloth	Minobada.
43-4	Drop Feed at left of needle, roller presser, link needle bar connection, cylinder shuttle, leather	Minobal.

Machines of Class 46 K (Post.)

Double Chain Stitch.

	DESCRIPTION.	
46K 1	For stitching Piqué gloves. Top of post ¼-inch in diameter	
46K 2	For stitching Piqué gloves, children's sizes	

Machines of Class 51.

For Barring Buttonholes, Tacking Shoes, Clothing, Etc.
Makes Long Stitches which are afterwards covered and reinforced by short cross stitches.
Automatic Stop.

	DESCRIPTION.	
51-1	Makes bar up to ¼-inch long, 6 long stitches, 10 cross stitches	Minocas.
51-2	Makes tack up to ⅜-inch long, 6 long stitches, 12 cross stitches	Minocen.
51-3	Makes tack up to 7/16-inch long, 10 long stitches, 24 cross stitches	Minocid.
51-4	Makes tack up to ⅜-inch long, 8 long stitches, 8 cross stitches *in centre* of tack	Minocola.
51-5	Makes tack up to ⅝-inch long, 34 stitches in complete tack	Minocot.

Machines of Class 52.

Bed 14½ inches in length. 6½ inches from Needle to base of Arm. For simultaneously making parallel rows of Single Thread Chain Stitching.
Least distance between needles ⅛ inch.
Oscillating Hooks for Single Thread.

52-2	2	Needles,	2	Hooks	Modabar.
52-3	3	"	3	"	Modabate.
52-4	4	"	4	"	Modabeam.
52-5	5	"	5	"	Modabeck.
52-6	6	"	6	"	Modabeda.
52-7	7	"	7	"	Modabell.
52-8	8	"	8	"	Modabemo.
52-9	9	"	9	"	Modabeni.
52-10	10	"	10	"	Modaberis.
52-11	11	"	11	"	Modabeto.
52-12	12	"	12	"	Modabetus.

Illustrated Catalogue

of

Singer Sewing Machines

for

Manufacturing.

TO MANUFACTURERS.

In presenting this Illustrated Catalogue of Sewing-Machines, designed especially for manufacturing purposes, we invite the attention of all manufacturers stitching textiles, leather, paper or other fabrics, to the extensive variety and exceptional excellence of these machines for their respective purposes.

We make machines for stitching every kind of material which can be sewed, from the thinnest lawn to fabrics two inches in thickness, applied in an infinite variety of forms and successfully overcoming difficult conditions. We believe that there are many lines of manufacture where work now done by hand may be far better and more cheaply performed by the use of sewing-machines.

We have illustrated on the following pages a large assortment of sewing-machines of our regular sizes and forms. By a selection from this assortment, together with special attachments and appliances which we are prepared to furnish, we can supply, at short notice, machines for performing any stitching process required.

These machines are substantially built of the best material, and are guaranteed to do first-class work and produce satisfactory results, not only in the superior quality and quantity of their product, but also in their durability and small expense for repairs.

If you do not find described in this Catalogue the machine or special fittings you need, please send to us, at any of our offices, a description of the work you wish to accomplish, a sample finished as you now do it, a separate sample of the material and thread, and we will promptly inform you how we can aid you.

Our facilities for handling such special work are unequaled, this department being in charge of practical and experienced men who fully understand the requirements of factory stitching, as well as the whole subject of special attachments and appliances.

We furnish estimates for and are prepared to supply factories with complete outfits, not only of Sewing-Machines, but of Power Tables, Shafting, Driving Attachments, etc., covering everything necessary for their complete equipment.

THE SINGER MANUFACTURING CO.

OFFICES IN EVERY CITY IN THE WORLD.

Classes 2 and 3.

For Carriage Trimming, Harness Manufacture, etc.

THESE are the standard lock-stitch machines having reciprocating shuttle for leather work; they are simple, strong and efficient, and were especially designed for and are extensively used by Carriage Trimmers and Harness Manufacturers.

They can be operated either by foot or mechanical power and can be effectively used in a wide range of work in leather, etc. The balance wheel is 13 inches in diameter and its momentum greatly promotes ease of operation and steadiness of motion. All the machines of these classes are provided with powerful Wheel Feed.

Through the excellence of workmanship on these machines and the accurate adjustment of their various parts, great ease of operation is obtained and the wide range of their capacity enables the sewing of either soft or hard material with the greatest facility.

For stitching patent leather and other material having a hard surface difficult to perforate, the machines are furnished with an iron cup to hold a drying oil through which the thread passes.

Boiled linseed oil, mixed with litharge as used by painters, is sometimes used for this purpose; there are also several special preparations in the market.

This method of oiling the thread prevents heating the needle and makes leather stitching as rapid and easy as cloth sewing. The linen thread or silk twist, after being oiled, dries rapidly and its surface becomes as smooth and perfect as if no oil had been used, while the firmness of the seam is improved by such use.

CLASS 2.

The machines of Class 2 have a bed 18 inches in length, with a clear space of 10 inches from needle to base of arm. They carry a No. 5 reciprocating shuttle and have a large feed-wheel which secures a steady movement of the material.

Machine No. 2-2 is provided with the Singer Vibrating Presser; the movement of this form of presser conforms to the movement and varying thickness of the material so that the top and bottom plies are evenly fed. By its use a uniformly strong and perfect feed is secured in working material having rough, uneven or adhesive surfaces, with soft goods liable to pucker or in stitching around curved edges.

CLASS 3.

MACHINE No. 3-1.....LARGE SHUTTLE, VIBRATING PRESSER.

The machines of Class 3 correspond in their general design to those of Class 2 but are larger and carry a larger shuttle having correspondingly increased capacity for thread. Their bed is 24 inches in length and there are 16 inches of clear space from needle to base of arm. These machines are especially adapted for Carriage Trimming and Harness work.

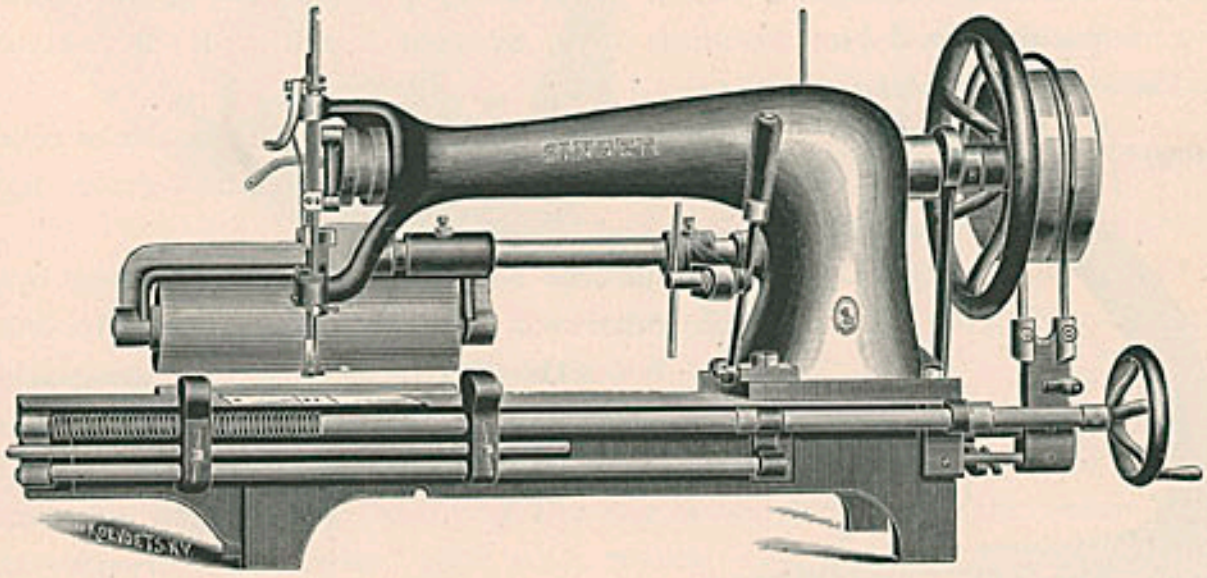
Machine No. 3-1 is provided with the Vibrating Presser and **Machine No. 3-2** with the Roller-Presser. The roller-presser holds the material down upon the wheel-feed beneath; while it exerts a firm and constant pressure it offers less resistance than the ordinary presser-foot and does not mar the most highly finished surface.

A large number of these machines have been sold and put into successful operation; they are unexcelled for simplicity, durability and efficiency.

SINGER SEWING-MACHINES FOR MANUFACTURING.

Classes 5, 8 and 9.

Adjustable Driven Feed-Rolls, for Mechanical Power.



MACHINE No. 5-3.....OPERATED BY MECHANICAL POWER.

THE powerful and efficient machines comprised by Classes 5, 8 and 9 are especially designed for the strong stitching, in long lengths, of several plies of rubber, canvas, or leather, and are extensively employed for the manufacture of BELTING used for power transmission ; they can be used for sewing any kind of fabric, capable of needle puncture, of a thickness not exceeding three-quarters of an inch.

MACHINES OF CLASS 5.

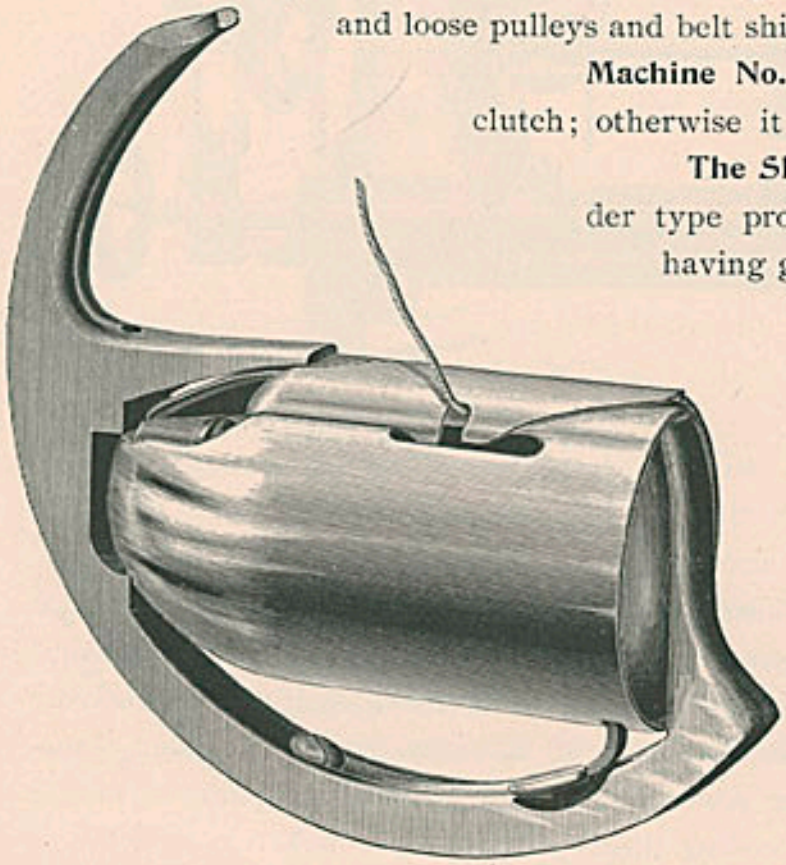
Several varieties of Class 5 are made, but all are provided with Adjustable Driven Feed-rolls, which draw the material through Adjustable Guides and under a flat or a roller-presser, as may be desired. The Feed-rolls may be driven by either a clutch or a ratchet, the latter method being employed in the machine illustrated. The extreme length of the bed is thirty-two inches, and the clear space on the bed from needle to base of arm is nineteen inches. The machines of this class will stitch to the centre of a belt thirty-eight inches in width. Two forms of guides are made, and the machines may be fitted with either as desired; one form is arranged to slide on a round rod, the other is operated by means of a screw, as illustrated. Each full turn of the hand-wheel at the end of the screw-rod moves the guide one-quarter of an inch.

Machine No. 5-1 has feed-rolls driven by ratchet, has either flat or roller-presser, as desired, and is provided with sliding guides. Power is received by flat belt running over tight and loose pulleys of 1¾-inch face, having belt shifter.

Machine No. 5-2 has feed-rolls driven by a clutch, but in all other respects is the same as No. 5-1.

Machine No. 5-3 has feed-rolls driven by ratchet, has either flat or roller-presser, as desired, and is provided with screw-guide, tight and loose pulleys and belt shifter.

Machine No. 5-4 has feed-rolls driven by a clutch; otherwise it is driven the same as No. 5-3.

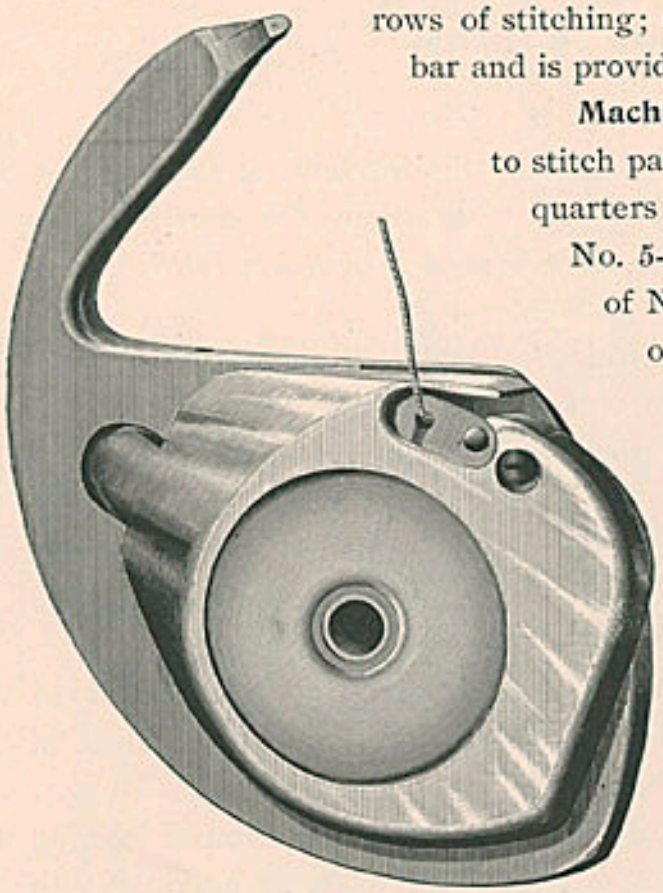


The Shuttle is of the oscillating-cylinder type provided with very large bobbin, having great capacity for coarse thread.

The length of stitch is adjustable through the motion of the feed rolls, and has a range up to one-half inch; the motion of the thread take-up is so regulated, in conjunction with the oscillation of the long-beak shuttle, as to enable the use of thread large enough to fill the needle hole so that a perfect stitch of the greatest strength is obtained.

TWO-NEEDLE MACHINES.

All of the machines in Class 5, carrying variety numbers from 5 to 8, inclusive, are of the twin-needle type for simultaneously making two parallel rows of stitching; each carries two needles on one needle-bar and is provided with two shuttles.



Machines No. 5-5 and No. 5-6 are arranged to stitch parallel rows either one-half inch or three-quarters inch apart, as ordered, the feed-rolls of No. 5-5 being driven by a ratchet and those of No. 5-6 by a clutch. Two Box-shuttles of the size illustrated in the margin are used in these two varieties of this class.

Machines No. 5-7 and No. 5-8 can be gauged to make the rows of stitching either 1 inch, 1¼ inches or 1½ inches apart, as ordered. Two Cylinder-shuttles of the size illustrated on the preceding page are used in these two varieties of this class.

THE OVERSEAMING MACHINE.

Machine No. 5-9 performs straight stitching, and also makes the overseaming or zig-zag stitch. The Needle-bar is carried in a pivoted frame, producing a reciprocating motion from side to side.

The length of side throw of the Needle-bar is adjusted by means of a pitman in front of the arm. When the adjusting thumb-screw on this pitman is set at the lower extremity of the slot in which it moves the needle has no vibrating motion, and a straight stitch results; when fastened at the top the full length of throw is obtained, making an overseaming stitch three-eighths of an inch wide. Within these extremes a great variation in the form of the stitch may be effected.

The extreme length of stitch is one inch, and the machine is readily adjusted to make any shorter length by means of the mechanism controlling the movement of the feed-rolls; this mechanism can be either a Clutch or a Ratchet, as previously explained.

The Shuttle is of the Oscillating-cylinder type, and carries a large bobbin having a great capacity for thread.

MACHINES OF CLASS 8.

Bed four feet long, 28 inches from Needle to Base of Arm.

Oscillating Shuttle Mechanism.

Corresponding in their general features to the machines in Class 5, previously described, the machines in Class 8 are designed for the same purpose, viz.: the strong stitching, in long lengths, of several plies of heavy fabric of any thickness not exceeding three-quarters of an inch.

The machines in this Class are capable of stitching to the centre of a belt 56 inches wide; they have a longer arm at an increased height from the bed, upon the face of which a clear space of twenty-eight inches is obtained from the needle to the base of the arm.

Machine No. 8-1 is provided with feed-rolls driven by ratchet, and has either a flat or a roller-presser, as desired. It has tight and loose pulleys, with conveniently arranged belt-shifter; its guides slide on a round rod.

Machine No. 8-2 is identical with No. 8-1, excepting in the fact that the guides are operated by a screw, thus obtaining an exact known movement of the guide for each revolution of the hand-wheel.

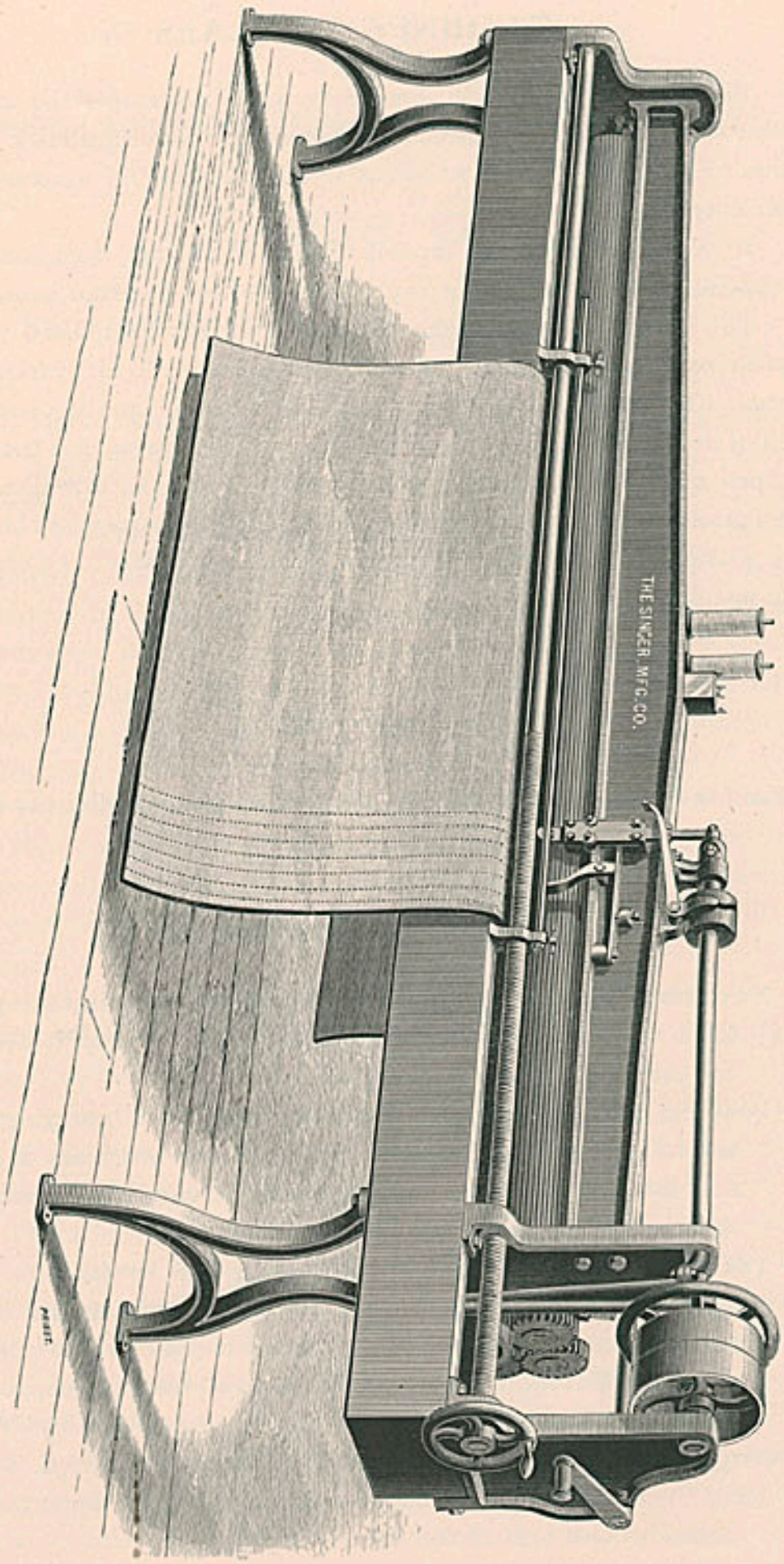
Machine No. 8-3 is of the twin-needle type for simultaneously making two parallel rows of stitching one inch apart, the machine being provided with two Cylinder-shuttles and a Needle-bar carrying two needles; otherwise it is the same as Machine No. 8-1.

Machine No. 8-4 also makes two parallel rows of stitching one inch apart; it has either Flat or Roller-presser, Screw Guide and tight and loose pulleys with belt shifter.

Machine No. 8-5 is single needle, and has drop-feed and vibrating presser. It is capable of a great variety of work, especially on thick, soft goods, such as Bed Comfortables, etc., for which it can be specially fitted with an auxiliary presser.

The Vibrating Presser, as constructed in regular course, has a lift of 1½ inches from the bed. It moves forward at each stitch in conjunction with the feed, and is then automatically lifted and returned to its former position, thus preventing any pushing back of the upper portion of the material.

The Special Auxiliary Presser for soft or padded goods is attached to and works in conjunction with the needle-bar, pressing the soft material down so as to give free action to the vibrating presser, and fully protecting the needle from being caught or sprung out of place.



MACHINE No. 9-1.....FOR LARGE CANVAS BELTS, etc.

Bed, 18 feet long.

MACHINES OF CLASS 9.

The illustration on the preceding page represents the largest sewing-machine ever constructed, especially designed for simultaneously making parallel rows of stitching on heavy Canvas or other Belting of unusual width, or for similar duty.

It will stitch any fabric, capable of needle puncture, from one eighth to one and one-half inches thick and of any width up to one hundred inches.

The bed is eighteen inches long and weighs over 5,000 pounds; it has power-driven feed-rolls and special guides adjustable for various widths of material. The end of the frame, at the left hand, can be opened so that a wide and heavy belt can be not only stitched lengthwise, but the ends can also be lapped and stitched together before taking it from the machine.

This machine cannot be better described than by quoting the language of the award which it received, together with a medal, at the World's Columbian Exposition, as follows:

AWARD.

Machine No. 9-1: For Stitching two Parallel Rows on Canvas or Rubber Belting:

POINTS OF EXCELLENCE.

1.—Two needles and two oscillating shuttles for forming two parallel lock-stitch seams in heavy canvas and rubber belting up to 100 inches wide and one and one-half inches thick.

2.—Powerful feed rolls sixteen feet long, capable of carrying material of several tons' weight, having a bearing the entire width of the material, thus insuring uniformity and regularity in carrying forward the several thicknesses and giving elasticity to the stitching.

3.—The mechanical arrangement for raising and lowering the upper feed roller by means of a horizontal shaft extending the entire length of the machine, connected with the hinged bearings of the roller by bevel gears at each end, and so operated as to be easily adjusted to any thickness of material.

4.—Largest and strongest sewing-machine ever constructed, having a bed eighteen feet in length, with overhanging arm supported by and attached to both ends of the bed.

SINGER SEWING-MACHINES FOR MANUFACTURING.

Class 6.

For Stitching Heavy Fabrics by Mechanical Power.

THE machines in Class 6 are designed especially for strong lock-stitching, by mechanical power, of heavy fabrics of all kinds, not exceeding one inch in thickness.

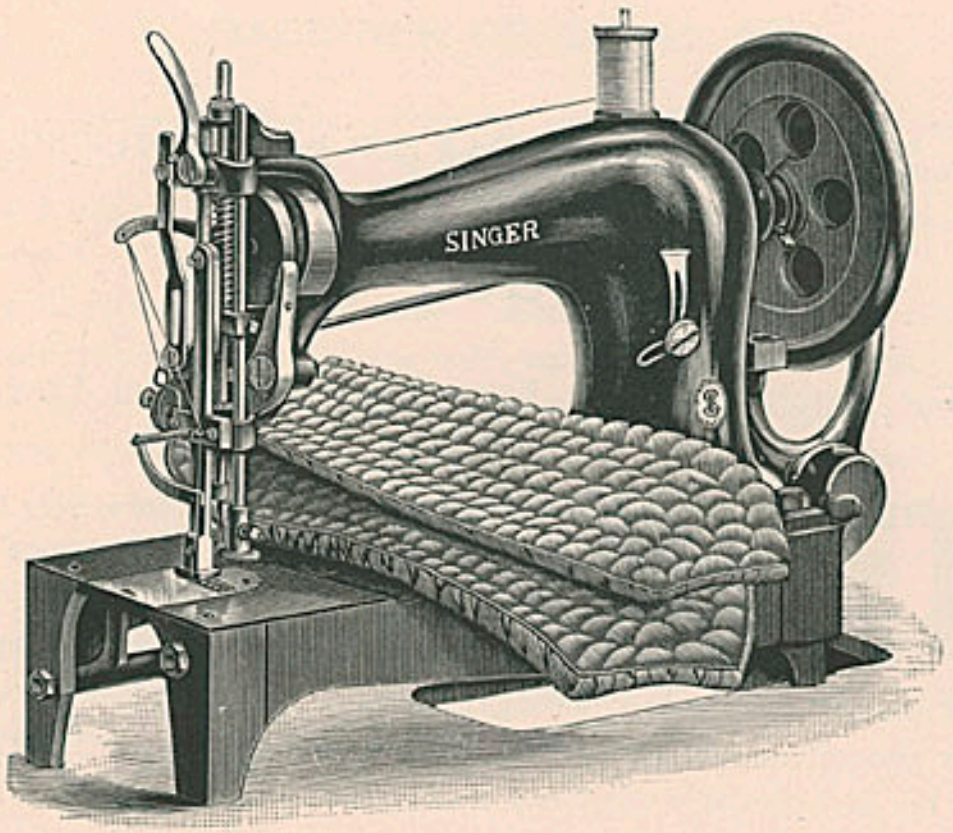
The Oscillating Shuttle-motion is used on these, as on all other Singer Lock-stitch Sewing-Machines for operation by mechanical power for general manufacturing. Practical experience proves that this method produces the best results in combined ease, speed and capacity. It is the most effective stitch-forming mechanism, because it has no differential motion nor variable speed, has less friction, requires less power and is more durable at high speed. It is the simplest and uses all kinds of thread to the best advantage.

The Feed and Shuttle used on the machines of Class 6 are of special size and form to secure the utmost efficiency in stitching heavy material requiring an unusually powerful feed and great capacity for thread. All machines of this class have a bed that is 25¼ inches long with 14 inches clear space from needle to base of arm.

These machines are in practical and successful use for stitching Heavy Canvas for Oil Strainers in Oil Refineries, sewing Harness, Carriage Tops and Cushions, Sails, etc.

Referring to the different varieties, Machines No. 6-1 and No. 6-2 are fitted with Wheel-feed, and Machines No. 6-3 and No. 6-4 with Drop-feed, all four having plain presser, either roller or flat. Machines No. 6-1 and No. 6-3 are driven by a flat belt running over tight and loose pulleys with belt-shifter on the machine, and Machines No. 6-2 and No. 6-4 have the Singer Friction Driving attachment. Machines No. 6-9 and No. 6-10 have vibrating presser; Machine No. 6-9 is provided with Friction Driving attachment, and Machine No. 6-10 with tight and loose pulleys and belt-shifter.

The Vibrating Presser, acting on two or more plies of material, serves to prevent the lower plies from being carried forward faster than the upper ones by the action of the feed; it is especially effective for book stitching and on rough, uneven or adhesive surfaces, also on soft goods liable to pucker.



MACHINE No. 6-6.....OPERATED BY MECHANICAL POWER.

The above illustration shows a modification of the No. 6 Machine especially adapting it for the stitching of Sweat Pads, or similar forms containing a mass of soft or fibrous material to be quilted or otherwise strengthened or secured.

Four regular styles of machines are made for the purpose named, but differing in the form of feed, as best suited to the work to be performed, and also in the method of communicating motion. No. 6-5 and 6-6 have Wheel-feed, and No. 6-7 and No. 6-8 have Drop-feed.

No. 6-5 and No. 6-7 are operated by flat belt running over tight and loose pulleys on the machine and are provided with belt-shifter, which may be operated by means of a treadle or by the hand. No. 6-6 and No. 6-8 have the Singer Friction Driving attachment, as illustrated above.

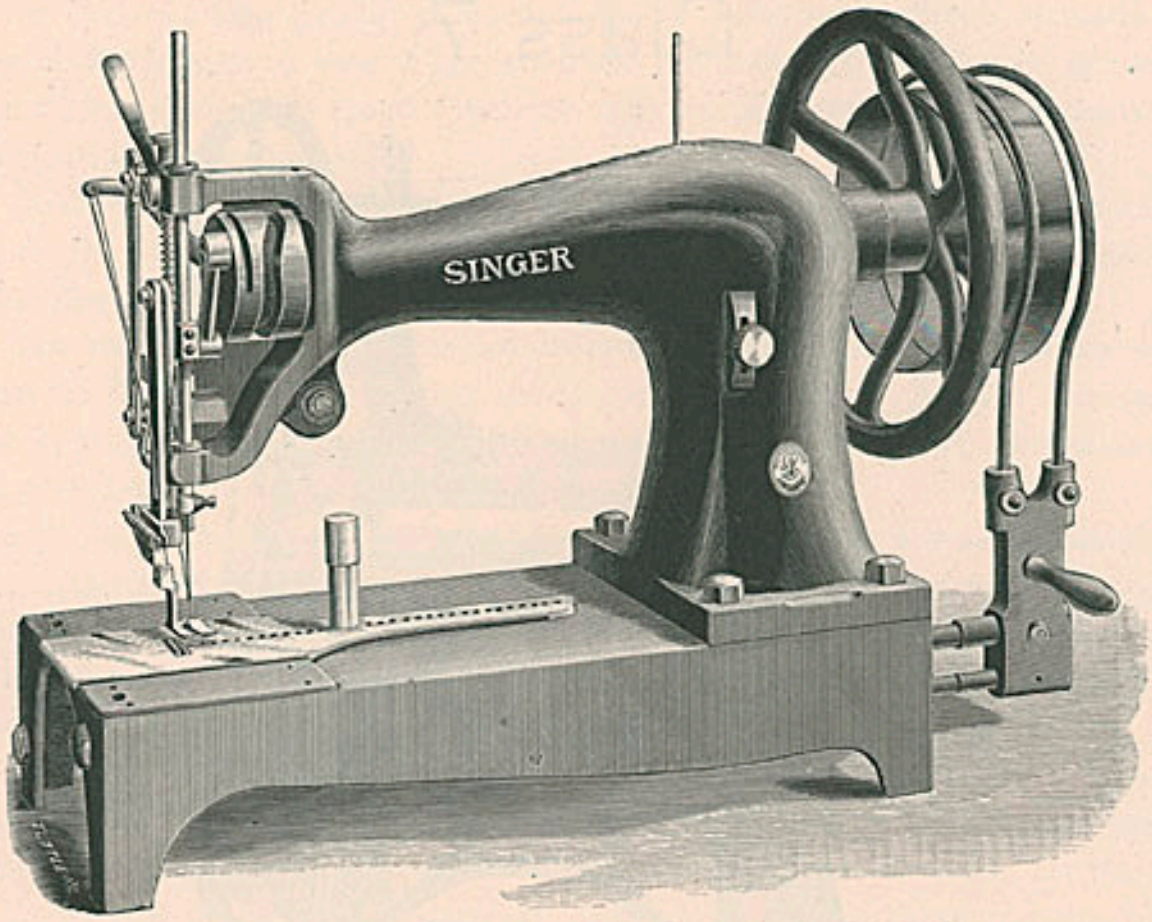
The Vibrating Presser on these machines, as constructed in regular course, has a lift of one and three-quarters inches from the bed; it moves forward at each stitch in conjunction with the feed and is then automatically lifted and returned to its former position, thus preventing any pushing back of the upper portion of the material.

The vibrating presser is aided by an auxiliary presser attached to and working in conjunction with the needle-bar, pressing the soft material down so as to give free action to the vibrating presser, and fully protecting the needle from being caught or sprung out of place.

The shape of the auxiliary presser-foot may be modified to suit the work to be performed.

The length of stitch is adjustable, and has a range up to one inch. The stitching capacity of this machine covers any work of the class described.

The machine may be modified and adapted for special requirements, and has been successfully used for the manufacture of small Mattresses and similar work, by increasing the height of lift to the presser.



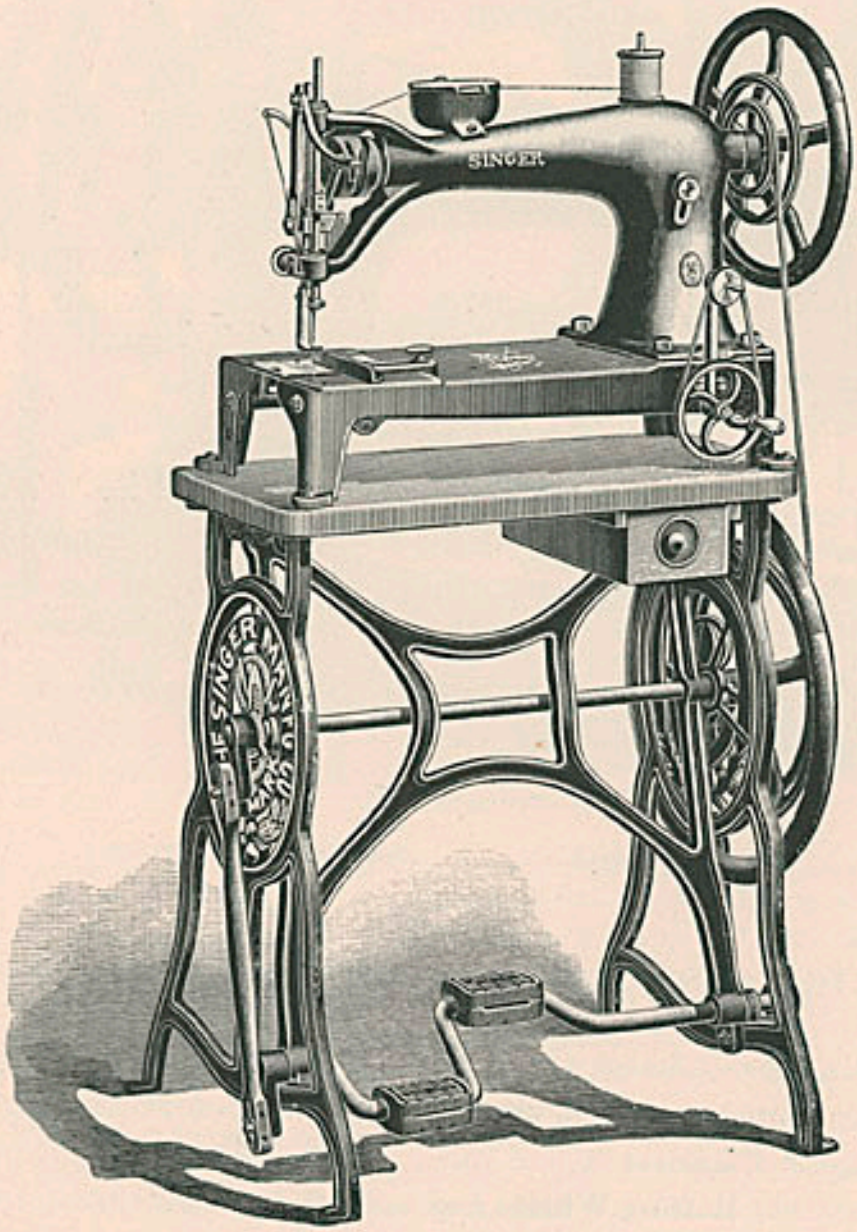
MACHINE No. 6-12.....FOR CIRCULAR STITCHING.

FOR THE MANUFACTURE OF BUFFING WHEELS, ETC.

The machines of Class 6 are adapted for strong lock-stitching in parallel circles or in a continuous spiral, at one operation, of a number of plies of material up to an aggregate thickness of one inch. They are used for the manufacture of **Cotton or Leather Buffing Wheels** and work of a similar character.

Machine No. 6-12, with drop-feed and vibrating presser, has an attachment for guiding the material to make CIRCULAR rows of stitching, $\frac{3}{8}$-inch apart, and is provided with tight and loose pulleys and belt-shifter, as illustrated above. Machine No. 6-11 is precisely similar, excepting that it is provided with the Singer Driving attachment.

Class 7.



MACHINE No. 7-1.....FOR FOOT POWER.

On Revolving Treadle Stand.

THE machines in Class 7 are provided with large long-beak shuttle and powerful mechanism for the strong lock-stitching of heavy fabrics of all kinds, not exceeding §-inch in thickness; they have sixteen inches of clear space from needle to base of arm. The varieties of this class, numbered from 1 to 4, both inclusive, have plain presser-feet and drop-feed. The extreme length of stitch made on these four varieties is one-half inch; various sizes and forms of feed are used, as best suited to the work to be performed.

Machine No. 7-1, illustrated opposite, is fitted for operation by foot-power; the stand can be provided with either rocking or revolving treadle; the latter enables the operator to stop or start the machine without touching the balance-wheel and to run at high speed without great exertion. The balance-wheel used with the revolving treadle on Machine No. 7-1 is fourteen inches in diameter, its momentum promoting ease of operation and steadiness of motion; it carries pulleys for two changes of speed. For the ordinary rocking treadle the balance-wheel is ten inches in diameter.

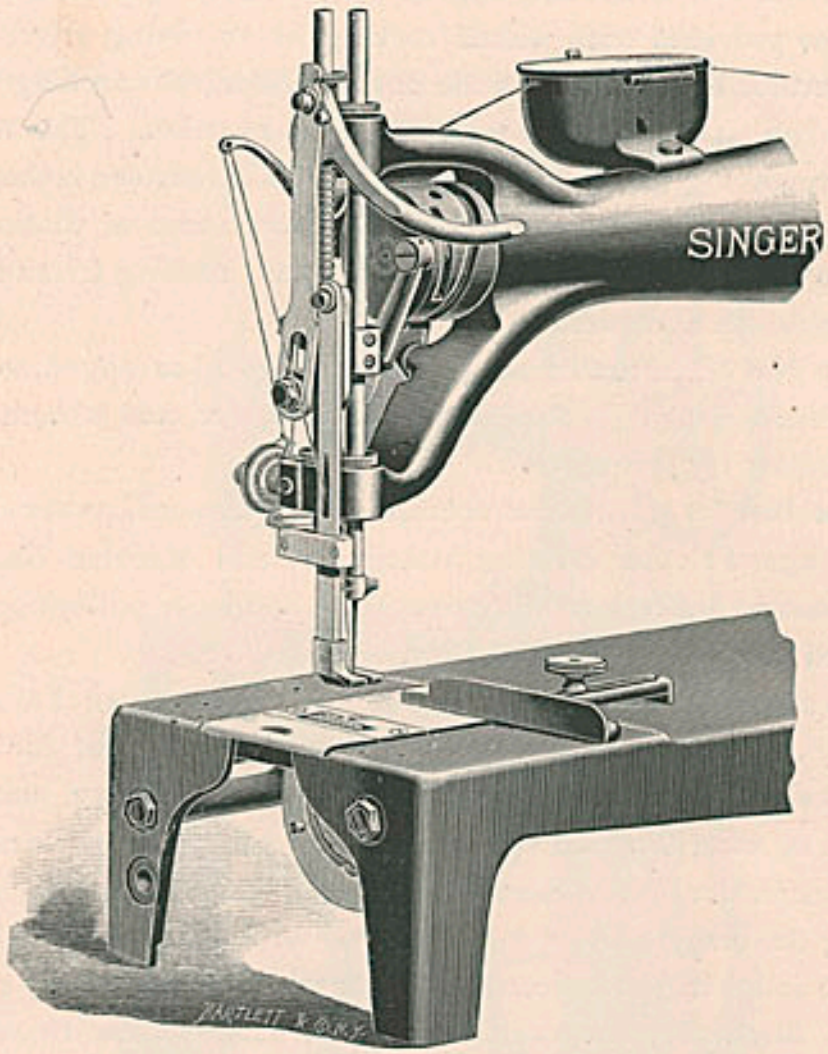
Machine No. 7-2 carries a smaller balance-wheel arranged for mechanical power communicated through the Singer Under-driver, and is therefore provided with but one pulley for driving belt.

Machine No. 7-3 is fitted for operation by mechanical power communicated through the Singer Friction Driving attachment and Machine No. 7-4 receives motion by means of flat belt running over tight and loose pulleys on the machine and is provided with our convenient form of belt-shifter.

All the machines of Class 7 are fitted with presser-foot having unusually high lift; they carry very coarse thread and are pre-eminent for strength and efficiency in the accomplishment of strong stitching of heavy material such as Leather, Canvas, etc.; they are so built in every point as to perform the greatest amount of work in the best manner and with the least expense for repairs.

Among the many articles manufactured on the machines of Class 7 may be mentioned the following as indicating the range of their capacity: Leather and Canvas Mail Bags, Trunks and Valises, Harness, Horse Brushes, Carriage Work, Belting, Sails, Tents, Carriage Tops, Camel's-hair Strainer-cloths for Chemicals, Canvas Strainer-cloths for Oil Refiners, Cushions, Hassocks, Jute Bags, Book and Pamphlet stitching, etc.

On the following pages will be found illustrations and descriptions relating to the varieties of this class, numbered from 5 to 22, both inclusive, showing more particularly their special features and stating some of the principal uses for the respective varieties.



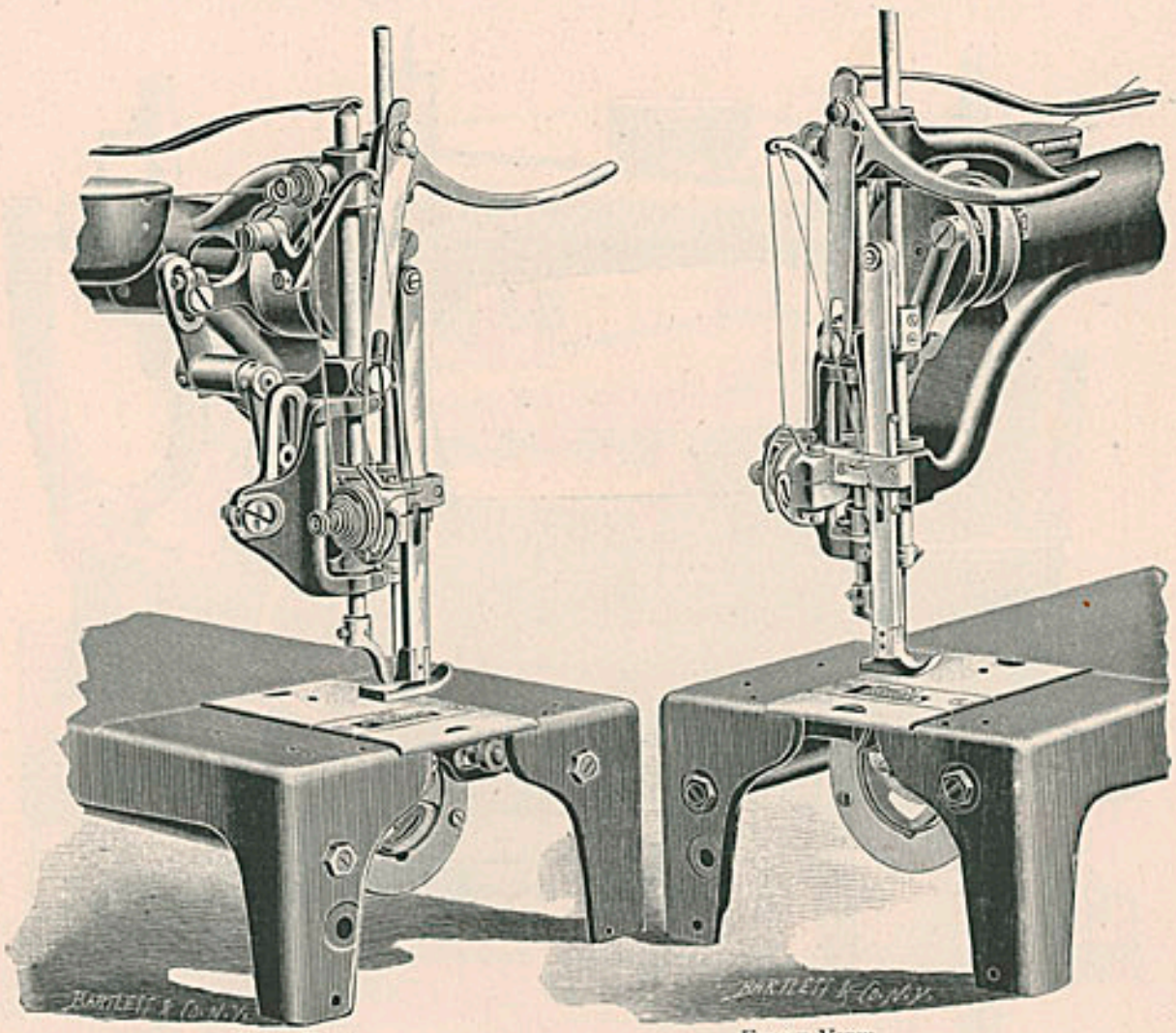
SECTION OF MACHINE No. 7-8.....SHOWING VIBRATING PRESSER.

For Mechanical Power—Tight and Loose Pulleys.

The preceding general description of machines in Class No. 7 applies to the varieties of this Class numbered from 5 to 8, both inclusive, excepting that the latter are provided with the **Vibrating Presser** illustrated above; by the use of this]presser a uniformly strong and perfect feed is secured with fabrics having rough, uneven or adhesive surfaces, with soft goods liable to pucker or in stitching around curved edges.

Machine No. 7-10 is extensively used for Harness manufacture; it has drop-feed and an adjustable presser which may be used either as a vibrating or a plain presser as best adapted to the work.

Machine No. 7-22 has the same form of adjustable presser as No. 7-10, but has two needles and two shuttles for making two independent lock-stitch seams at one operation, thus adapting it for the manufacture of articles requiring great strength of seam or where the stitch has to be made through several plies or thicknesses of heavy material, as in putting on strips over seams and stitching on handles for Coal and Ballast Bags, or in strip-stitching any heavy fabric. The distance between needles is gauged, as ordered, from ½-inch to 1 inch, using a box shuttle, and from 1 inch to 1¼ inch, using a cylinder shuttle.



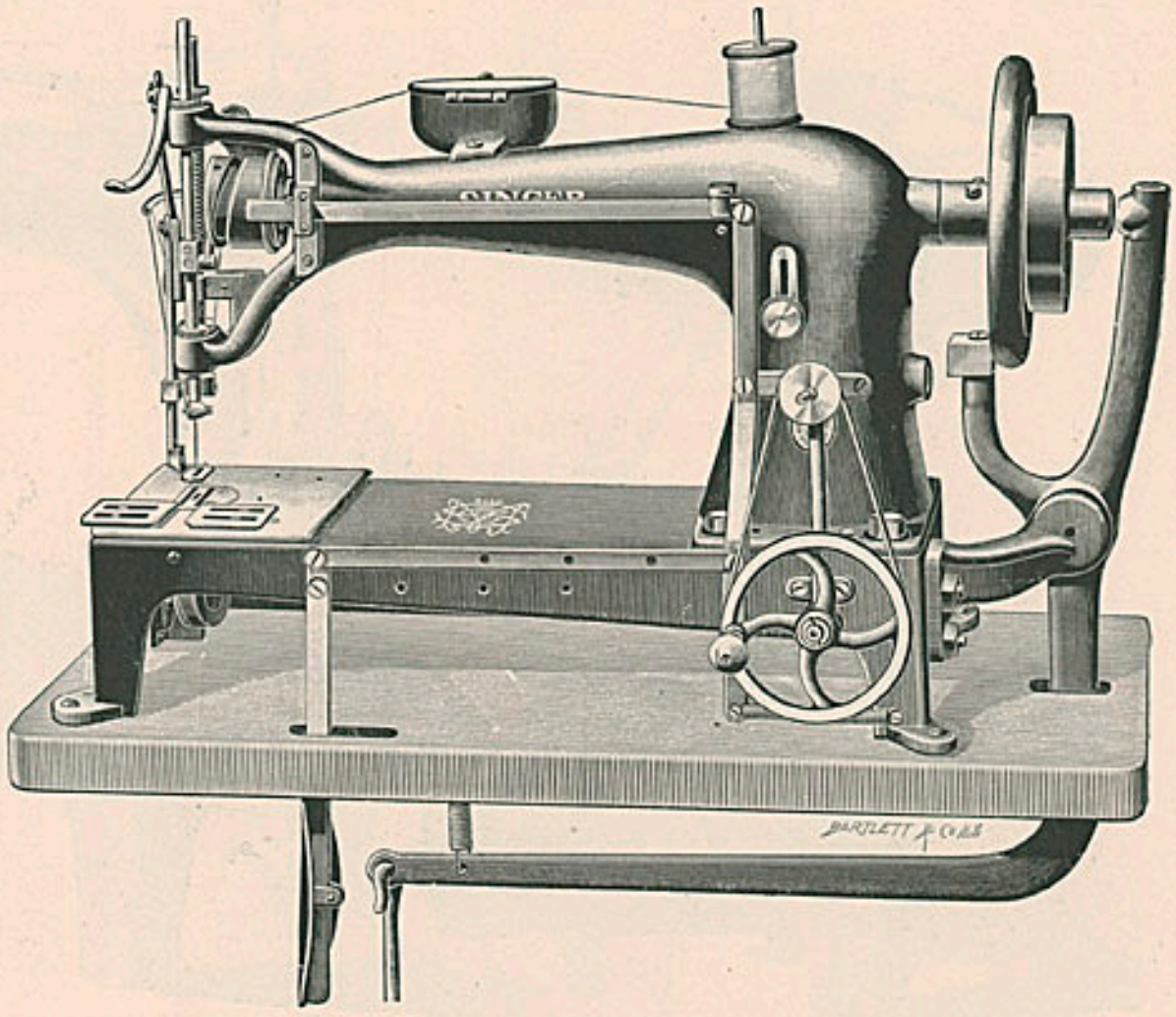
REAR VIEW. FRONT VIEW.

MACHINE No. 7-9..... ..WITH ALTERNATING PRESSERS.
End Sections Showing Front and Rear Views.
For Mechanical Power—Singer Driving Attachment.

Machine No. 7-9 corresponds in its general form and efficiency of operation to all others of this class, but differs in the fact that it is provided with **Alternating Pressers**. This device comprises two pressers acting separately and alternately; the first moves forward with the feed, is then lifted and returned to its position; the other holds the material down while the first rises and until it descends upon the fabric, but is raised while the material is carried by the feed. Each presser, while resting upon the work, forms a fulcrum upon which the other is raised, consequently the height of their movement always corresponds to the thickness of the fabric, thus allowing the free passage of material which varies in thickness and securing the perfect formation of the stitch.

By the use of this device two or more pieces of material are moved with perfect uniformity so that their edges are even at the completion of the stitching.

Machines of Class 7, having this form of presser, are extensively used in the manufacture of Burlap Bags, Furniture Cushions, Cushions for Railway Cars, Leather Work for Carriages, etc.



MACHINE No. 7-11.... .....FOR BOOK-BINDING.

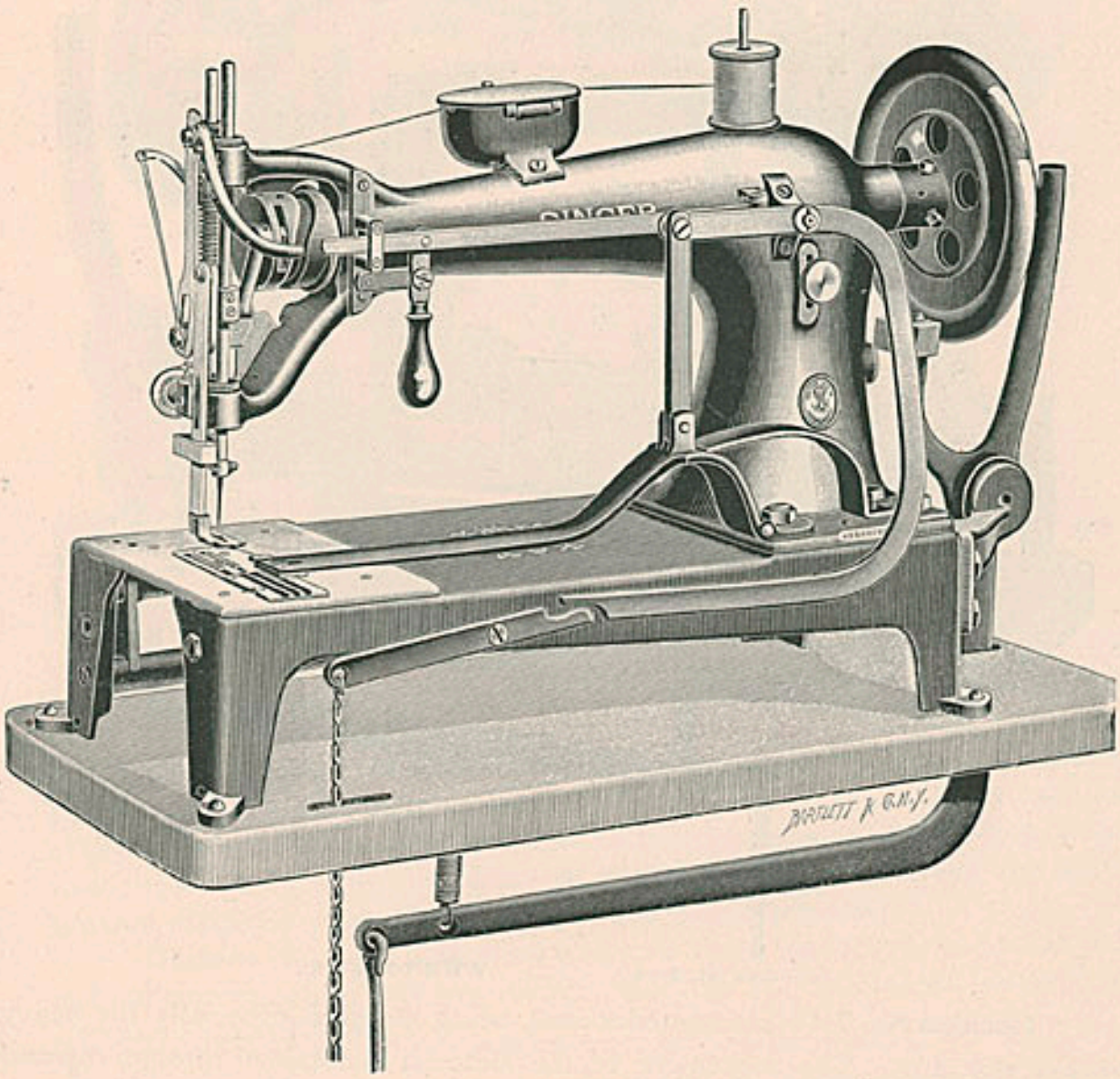
For Mechanical Power—Singer Driving Attachment.

Machine No. 7-11 is especially designed for Book-binders' use in "Single Strip" stitching, in which service it has proved to be of remarkable efficiency in stitching a specially prepared strip to the various sections of a book preparatory to binding.

Guides are provided for the accurate delivery of the strip under the centre fold of the section to which it is stitched for the purpose of strengthening the fold and increasing the flexibility of the book.

The length of stitch is adjustable up to **one inch** and the formation of stitch is so regulated that both the down and the up-take of thread through the needle-hole is accomplished while the needle is out of the material, thus enabling the use of thread sufficiently large to entirely fill the needle-hole, and a perfect stitch having the greatest strength is thereby obtained.

A feed-reversing lever is provided for operation by knee-pressure, so that either one or both ends of the seam may be readily double-stitched for the purpose of securing the thread and strengthening the work.

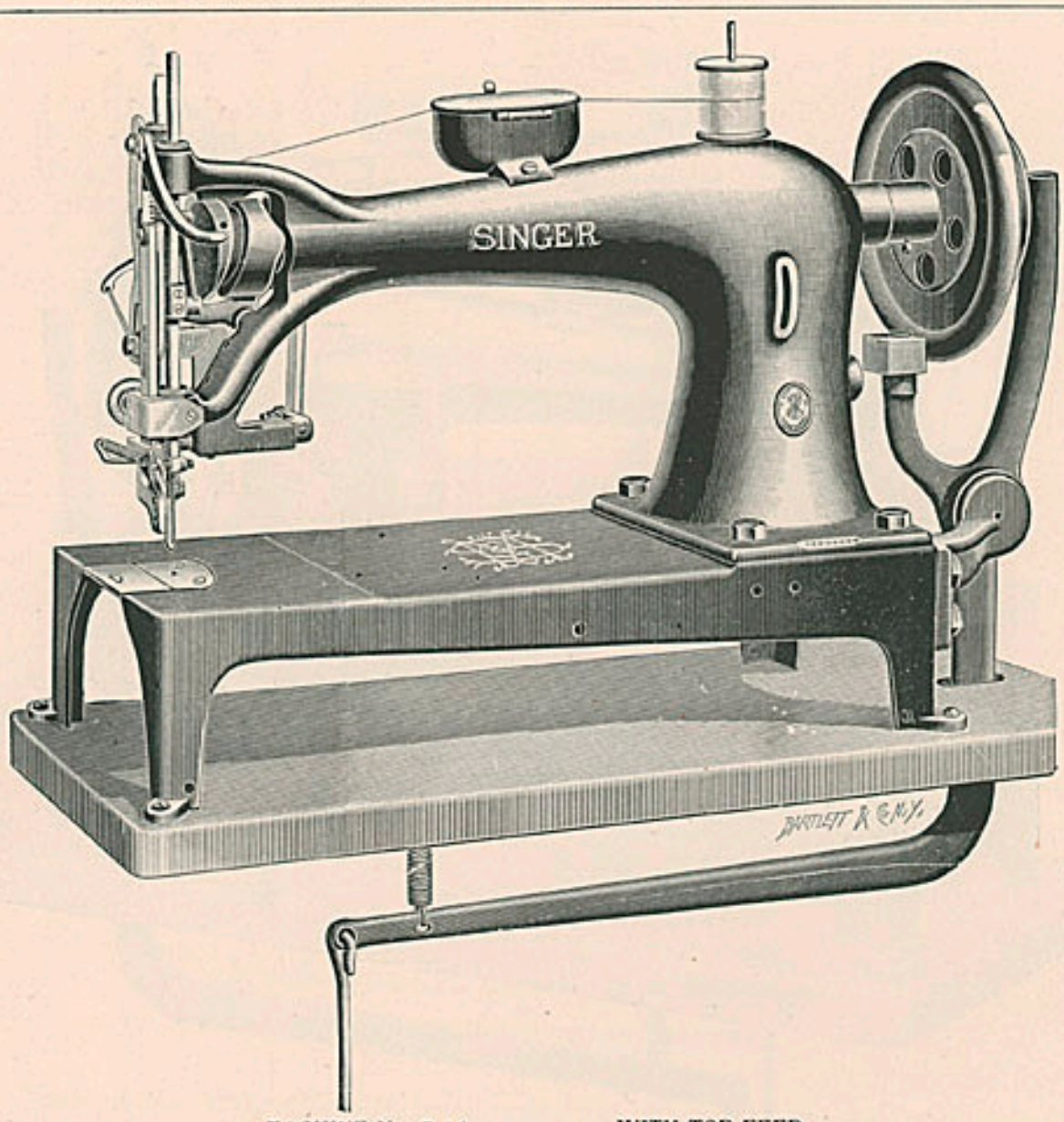


MACHINE No. 7-12... .....FOR BOOK-BINDING.

For Mechanical Power—Singer Driving Attachment.

The machine illustrated above is for Book-binders' use in "continuous strip" stitching; the strips are used in specially prepared sheets which are fed in exactly the proper position by means of grooved top and bottom guides.

The illustration shows the arrangement of these guides, which are especially adapted for the accurate and effective performance of this work; this device is of the highest efficiency and is in extensive practical use by the largest book-binding establishments.

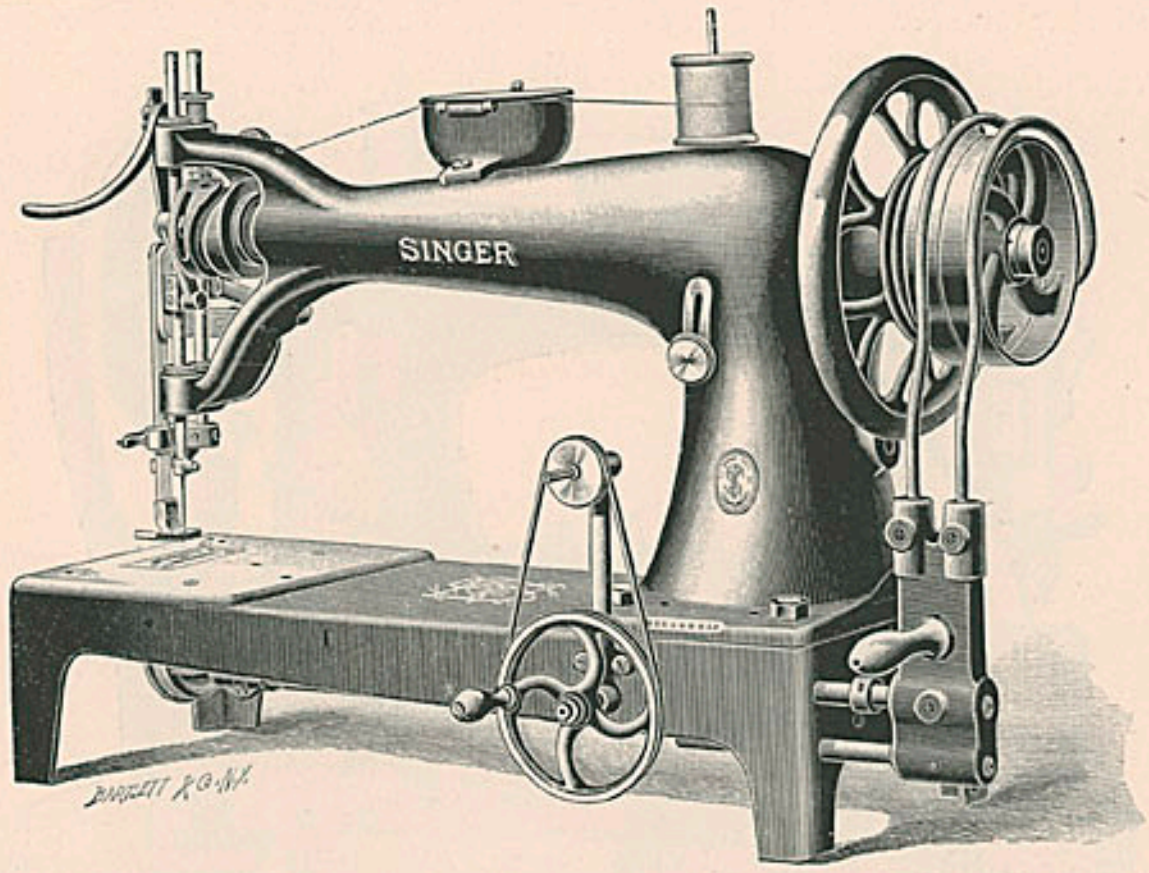


MACHINE No. 7-14 ..... WITH TOP FEED.

Machine No. 7-14 has no under-feed, being adapted especially for heavy leather stitching. The movement of the material is obtained through top and forward pressure applied to its upper surface by a special device used in place of the ordinary presser-foot. This device is furnished with a set of changeable presser-points making respectively 8, 10 and 12 points or stitches per inch These points, acting as a feed, also set up the stitch, giving it a very superior finish and leaving the leather without feed mark on either side.

The movement of the presser-points is communicated from a cam on the main driving shaft to one end of a parallel shaft which engages the pivoted presser-bar when in contact with the material and at the instant when the needle is withdrawn, thus causing the bar to swing and move the material a distance corresponding to the length of the stitch.

The range of work accomplished by Machine No. 7-14 is indicated by the fact that it is extensively used for the manufacture of Heavy Traces, Horseshoe Pads, Trunk-handles, Foot Balls, Punching Bags, Leather Covers on iron rings, etc.



MACHINE No. 7-15.....FOR STITCHING BOOKS, PAMPHLETS, ETC.

The size and proportions of the No. 7 Machine peculiarly fit it for heavy work and the space under the arm makes it especially convenient for book-binders' use.

Machines No. 7-13 and No. 7-15 have **Vibrating Presser** and the feed is adapted to make any length of stitch up to **one inch,** the capacity in perforation of paper being up to **five-eighths of an inch** in thickness; a presser-foot of special form is provided for the most effective manipulation of paper, and for securing greatest efficiency in book, magazine and pamphlet stitching.

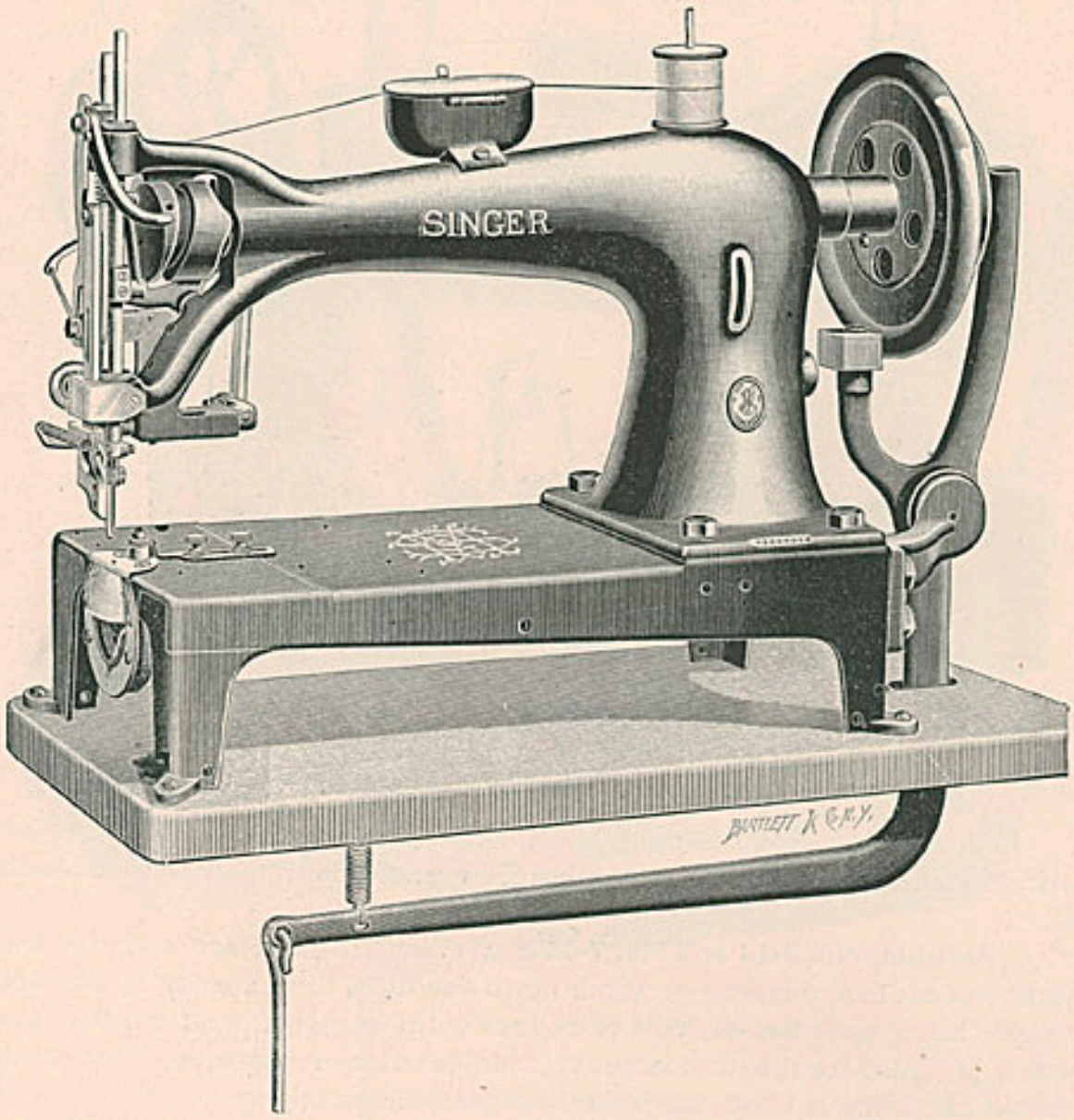
Machine No. 7-15, illustrated above, is fitted with tight and loose pulleys and our convenient form of belt-shifter; Machine No. 7-13 has the Singer Friction Driving attachment.

FOR STITCHING HEAVY BAGGING.

The machines of Class 7, having the variety numbers 16, 17 and 18, are especially adapted for the manufacture of Bags for Cotton-seed Compressers, for the carriage of heavy weight and similar uses where great strength of seam is required.

These machines use either a heavy Cotton, Linen or Camel's-hair thread, the size and shape of needle being especially designed for such use; the thread take-up is provided with a roller over which the thread is carried in order to prevent chafing.

The length of stitch is one-quarter inch and a No. 14 needle is used. Machine No. 7-16 has plain balance-wheel to receive power from an under-driver; Machine No. 7-17 has the Singer Friction Driver and Machine No. 7-18 has tight and loose pulleys and belt-shifter for flat belt.



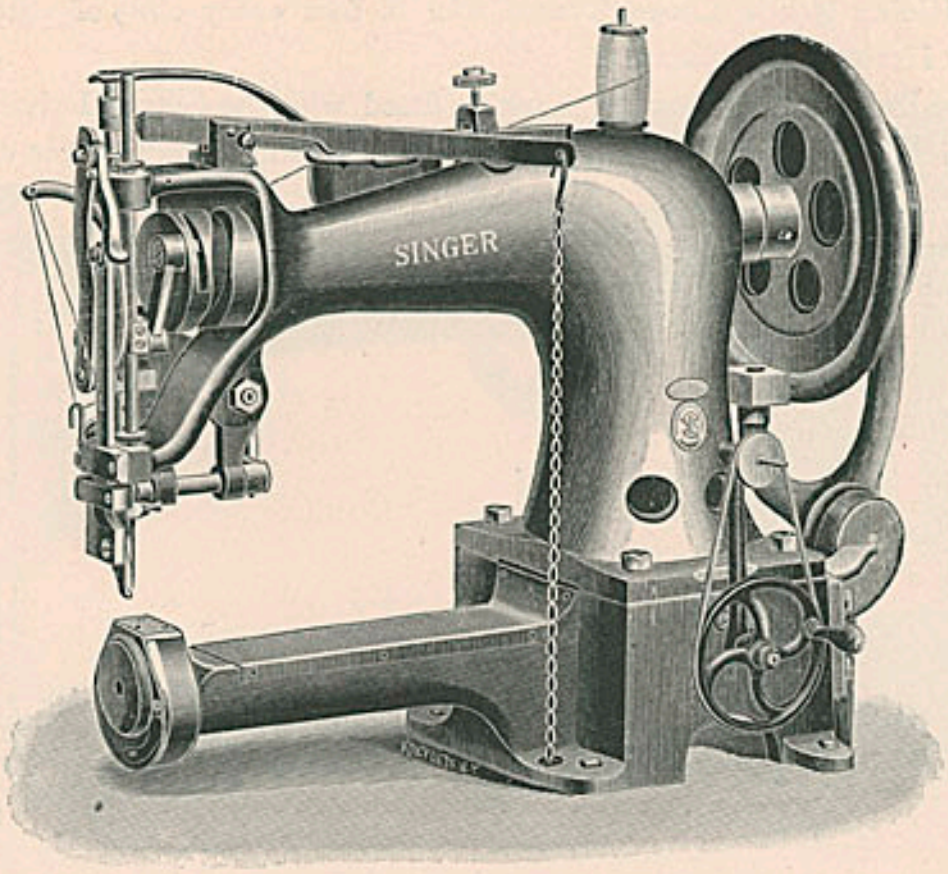
MACHINE No. 7-20..... .....FOR HORSE BRUSHES, ETC.

There are three varieties of top-feed machines in Class 7 that are especially adapted for the manufacture of oval Leather-back Brushes and similar work where it is required that strong stitching shall be performed close to the edge of objects having irregular shape.

To enable the convenient and efficient performance of such work the bed-plate is cut away close to the needle, as shown in the machine illustrated, which is intended for mechanical power and provided with the Singer Driving attachment.

Machine No. 7-21 has tight and loose pulleys for flat belt and our regular belt-shifter; Machine No. 7-19 is for foot-power and is provided with a heavy balance-wheel having pulleys for two changes of speed; it is operated on a stand having revolving treadles as previously illustrated and described on page 94.

Class 10.



MACHINE No. 10-1..... .....FOR LEATHER WORK.

Cylinder Bed—Oscillating Shuttle.

THIS machine, for heavy leather stitching by mechanical power, is provided with a cylinder bed 23 inches in length, measuring 4½ inches across the end, and having 14 inches clear space from needle to base of arm.

The end of the bed is cut down from the shuttle-race back to the base of arm, leaving a raised throat-plate extending one-eighth inch outside of needle-hole. The shuttle and needle action are close to the end of cylinder, thus enabling the operator to sew closely up to buckles or any parts of the work which may project or hang downward.

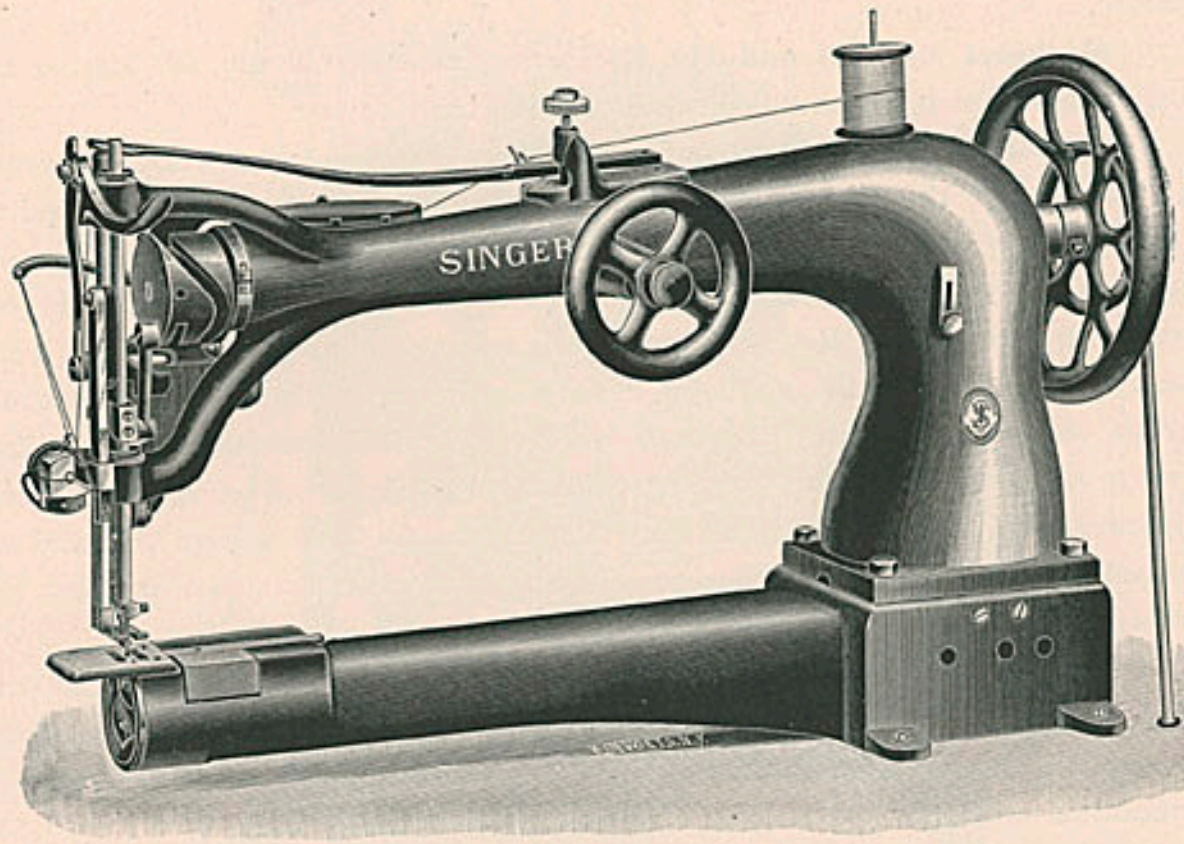
There is no under-feed; the movement of the material is obtained through top and forward pressure applied to its upper surface by a special device used in place of the ordinary presser-foot. This device is provided with adjustable

points made to gauge any desired length of stitch, those furnished in regular course being, respectively, 8, 10 and 12 per inch. These points acting as a feed also set up the stitch, giving it a very superior finish, and leaving the leather without any marks of a feed on either side. This machine is extensively employed on traces, back-straps, and other work where harness or similar soft-finished leather is used, and is especially adapted to making Saddles, Saddle Skirts, Rolls on Saddles, Rolls on Pockets, Money Belts, Curved Rings, Gig Saddles, Riding Bridle Loops, Traces, and in fact every class of stitching performed in Harness Manufacture.

The illustration shows the machine fitted with the Singer Driving attachment, which is the most simple, durable and effective appliance ever devised for this purpose.

It enables the instant starting or stopping of the machine by a very light pressure of the foot on a treadle near the floor.

Class 11.



MACHINE No. 11-6.....ALTERNATING PRESSER.

Cylinder Bed 21 Inches from Needle to Base of Arm.

THE Cylindrical Bed or Work-supporting Arm of the machines of Class 11 is distinguished for its unusual length; it readily enables the stitching of long boot legs, leather and canvas mail bags, coal bags and other long tubular or cylindrical articles. The great length of the bed from needle to base of arm is also of special advantage in quilting comfortables, mattresses and similar work.

These machines are fitted as ordered for either Cloth or Leather stitching and are extensively and successfully used for felling up trouser legs made of canvas, heavy denim, etc. The bed is $3\frac{1}{8}$ inches in diameter at its outer end, which incloses mechanism carrying a long-beak oscillating shuttle. A hand-

wheel is located on the arm in front of the operator, to enable convenient starting and stopping of the machine.

The points of difference in the machines of Class 11 are described as follows:

Machine No. 11-1 and No. 11-9, arranged, respectively, for leather and cloth, feed across the arm; Machines No. 11-2 (for leather) and No. 11-5 (for cloth) feed up the arm; Machines No. 11-1 and No. 11-2 can be fitted with Roller Presser if desired, but, in the regular course, all four machines have the Yielding Presser.

Machines No. 11-3 and No. 11-6, arranged, respectively, for leather and cloth, feed across the arm and have the Alternating Presser.

The Alternating Presser device comprises two pressers, acting separately and alternately; the first moves forward with the feed and is then lifted and returned to its position; the other holds the material down while the first rises and until it again descends upon the fabric, but is raised while the fabric is moved forward by the feed. Each presser, while resting upon the work, forms a fulcrum upon which the other is raised, consequently the height of their movement always corresponds to the thickness of the material, thus allowing the free passage of material having varying thicknesses, without affecting the perfect uniformity and integrity of the stitch. These pressers have a high lift, and are especially efficient in the quilting or stitching of thick cotton comfortables, felt goods or similar thick and soft material.

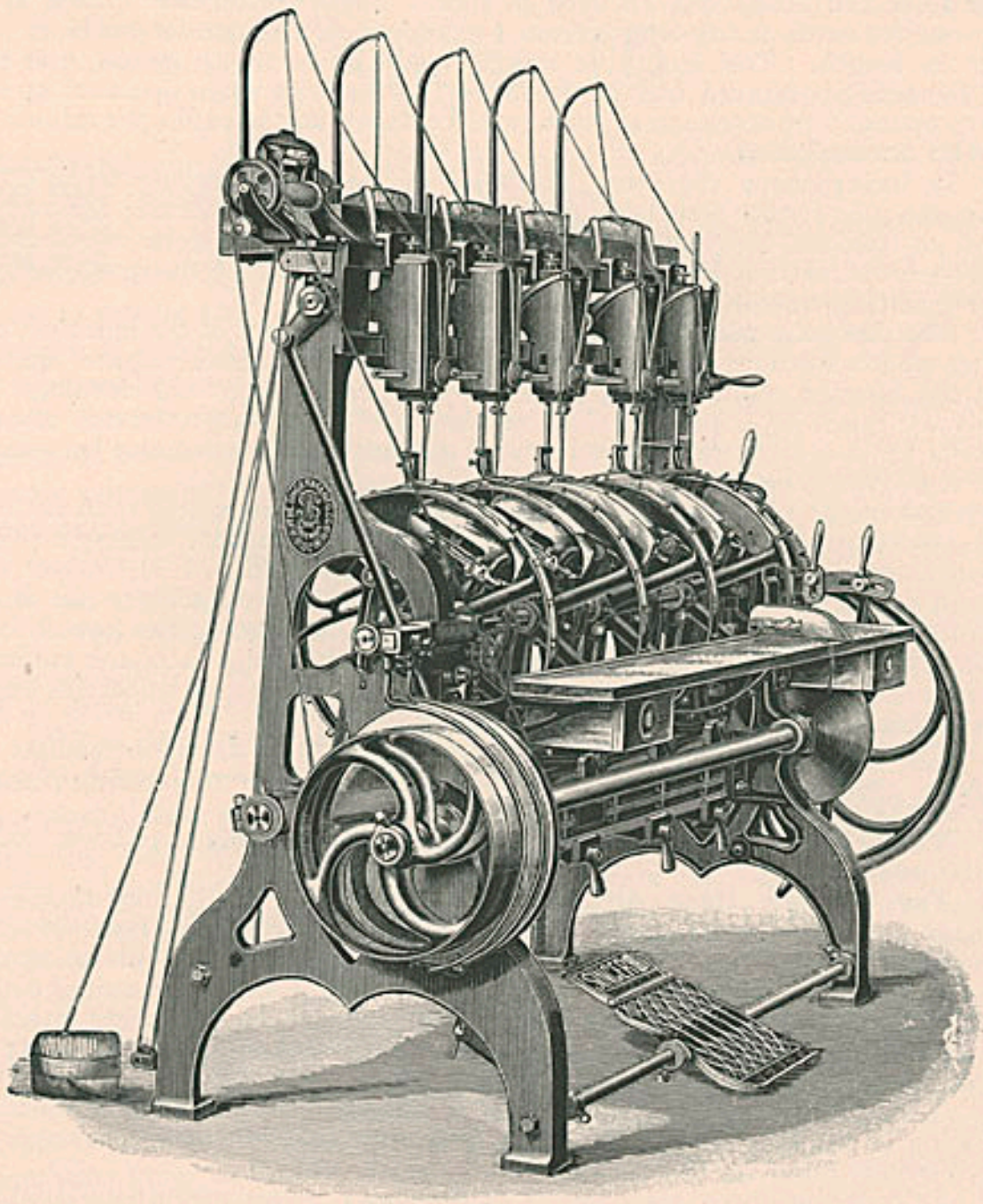
Machine No. 11-4, for leather, also feeds across the arm, but is fitted with the Vibrating Presser, which moves with the material and secures the uniform movement of two or more thicknesses or plies of fabric; it is especially effective on material having rough, uneven or adhesive surfaces.

Machine No. 11-7 feeds up the arm, making any length of stitch up to one-half inch; Machine No. 11-8 is precisely similar to No. 11-7, excepting that the feed is reversible, which enables tying the end or any other point on the seam. The reverse stitch can be arranged to carry thread through the same needle-hole as the forward stitch, or it can be brought between the forward stitch, as desired.

Machine No. 11-10, for seaming long boot legs, feeds up the arm and makes the overseaming stitch; the arm is 30 inches long from needle to its inner end.

Class 14.

MULTIPLE HEAD MACHINE FOR LACING JACQUARD PATTERN CARDS.



MACHINE No. 14-3 ....OSCILLATING SHUTTLE MECHANISM.

ALL manufacturers using Jacquard cards will at once appreciate the economic value of a machine that laces from 15 to 30 cards per minute, doing it with perfect accuracy and without a specially expert operator.

The Singer machines of the class illustrated are unequaled in their efficiency for this work. They are made with three, four, five or six heads, each having its needle and shuttle.

The number of these heads is regulated by the number of lines of lacing necessary to join together the longest card required; two horizontal slides enable the operator to easily bring the heads into proper position to sew different lengths. In this way the entire range of cards of any manufacturer can be put through this machine, although their variations may be considerable.

Each head can be adjusted to the right or left independent of another, and one or all of the heads can be used at once. These machines are made in two sizes: one for cards of any length from 4 to 26 inches, and one for cards up to 42 inches in length. The length of stitch is adjustable to 2½ inches, and from 15 to 18 cards per minute can be laced on this machine when operated by foot-power; operated by mechanical power at 80 revolutions, 28 cards per minute can easily be accomplished.

In lacing them together, lace-holes in the cards, varying in their distances, are used for the insertion and fastening of the cord or braid; this requires a feed of various movements, which is obtained by a system of cams and ratchet-wheels, so that all needful variations are obtained by the mere changing of these ratchet-wheels.

The cards are placed by the operator, sitting in front of the machine, upon feeding wheels having carrying pins which retain and accurately space the cards while the forward motion of the wheels feeds them between the needles. The wheels are much superior to chains, because they never vary; there is always a tendency for chains to stretch, and it is very essential that the distance between the cards shall always be exactly uniform.

The cards are laced on this machine far more regularly than by hand; knots, so often the cause of breakage, are entirely avoided. Being a regular lock-stitch sewing-machine each separate tie is a perfect lock.

A distinctive feature of the machine is the unusual capacity of the shuttle bobbin; it holds a greater quantity of cord or braid than any other bobbin in use for this purpose. With the smallest cord used for lacing Jacquard cards, the bobbin holds sufficient to lace 3,300 cards 2½ inches broad, while it carries enough of the thickest braid commonly used to lace 1,100 cards.

The machine is most simple in its operation, is under immediate and complete control, and its speed is only limited by the time required to place the cards on the spacing wheels.

The best proof of its speed is the fact that 900 cards have been laced on it in twenty minutes.

The Multiple Head Stitching Machines, with oscillating shuttle mechanism for stitching Jacquard cards, are intended for that class of textile manufacturers who prefer to stitch their pattern cards instead of lacing them. The stitching machines are of the same general design and appearance, with the same number of heads and wide range of adjustment as the lacing machines. The shuttles are of the cylinder type, with a large thread-holding capacity, and the length of stitch is adjustable up to ½-inch.

Economy of room is often a great consideration, and the Singer machines for lacing or stitching Jacquard cards occupy but about one-third the space required by any other for this purpose.

In ordering these machines it is necessary to forward a few hand-laced cards of all the different widths that the machine will be required to lace or stitch, so as to give the correct space that is to be allowed between each card. It is also necessary to furnish a sample of the cord, braid or thread that is to be used in lacing or stitching the cards.

Class 15.

THE machines of Class 15 are especially adapted for making a fine lock-stitch on light fabrics at high speed.

This class comprises machines of the type formerly known as "I. F.," having the oscillating shuttle, and "I. F. C. B.," having oscillating shuttle and central bobbin. These machines are compact and light-running so that they can be easily operated at a high rate of speed, either by foot or mechanical power.

The Singer Oscillating Shuttle: This shuttle mechanism is the simplest and most effective method extant for making a lock-stitch. There is but one simple conversion of motion—rotating to oscillating—no differential movement nor variable speed. The steadily increasing use of this type of sewing-machines by manufacturers is the best evidence of its practical superiority in combined ease and speed of operation, capacity and durability.

The Central Bobbin: The bobbin does not oscillate with the shuttle but is held stationary. It has capacity for 100 yards of No. 60 cotton and the delivery of its thread to the material is perfect under all conditions.

The Tension Release: This is an automatic device which acts in conjunction with the lever for raising the presser-foot. Whenever this lever is lifted the tension discs are automatically opened and allow free passage of the upper thread. This enables the operator to draw down the thread easily in order to cut it at the end of a seam or to remove the work for any purpose. All danger of withdrawing the upper thread from the needle when starting the machine is entirely obviated and the correct tension is instantly restored when the presser-foot is lowered.

Much time is saved and a distinct increase of product gained by the use of this device.

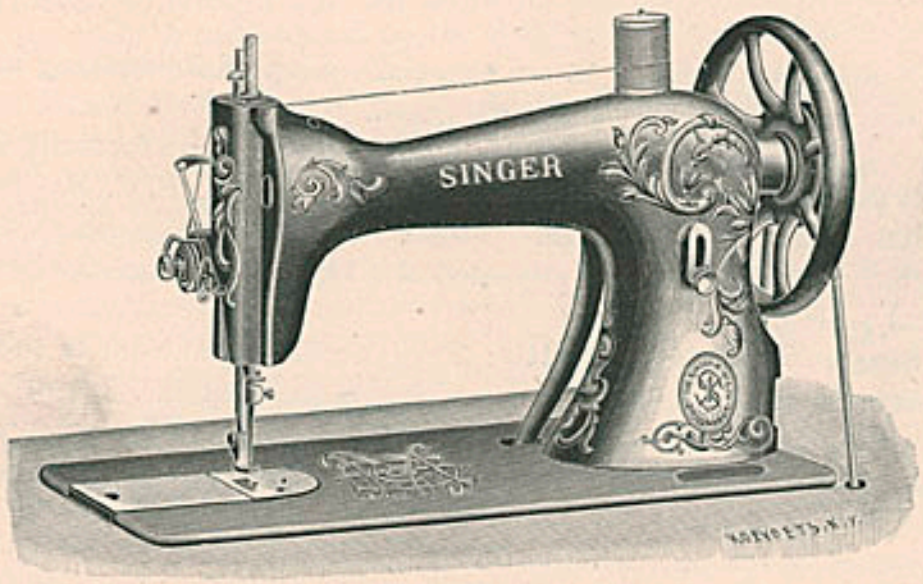
The Knee Lift: The machines are fitted with a device for instantly lifting the presser-foot at will, by means of knee pressure against a lever hanging beneath the table, thus leaving the operator's hands free and greatly promoting the facility and convenience of operation.

Special Fittings: Various forms of feed, throat-plate and presser are made for the respective varieties of machines, as best adapted to the particular kind of work for which they are intended; they are also fitted with hemmers, binders, folders, etc., for special purposes as ordered.

Every machine is practically tested before leaving the Factory, as to its performance of the work for which it is intended.

In ordering machines to be used for special purposes, it is desired that samples be furnished, of the material to be used and also of the finished work.

The following descriptions only include the varieties of Class 15 that have the Central Bobbin.



MACHINE No. 15-31... ....FOR POWER.

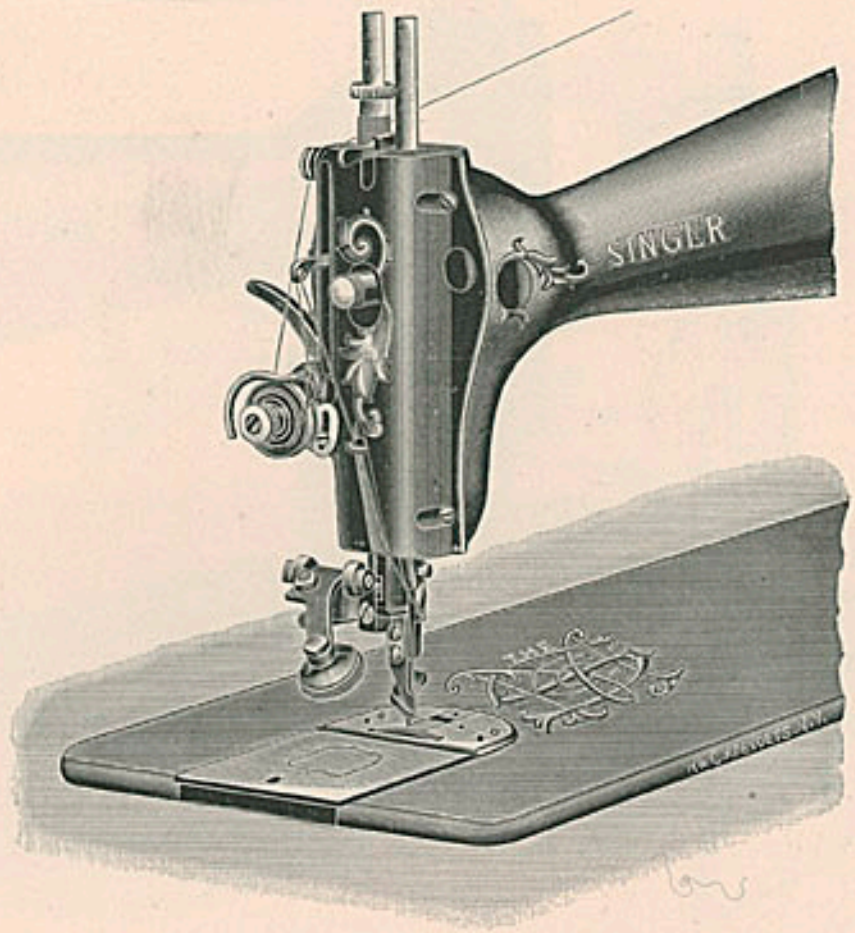
The above illustration shows the plain head as furnished for use on power table, for manufacturing purposes.

Machine No. 15-31, is for the general stitching of textiles and has drop-feed and yielding presser.

It is most extensively used in the manufacture of Colored and Outing Shirts, Corsets, Ladies' Shirt-Waists, Silk Waists and Blouses, Ladies' Dresses, Suits, Costumes and Dress-Skirts, Ladies' Wrappers and Tea Gowns, Linen and Muslin Underwear, Children's and Infants' Wear, Bathing Suits, Silk Lamp-Shades, for hemming Handkerchiefs, Suspender Ends, Umbrella Covers, etc.

Machine No. 15-32 has drop-feed and **Machine No. 15-33** has wheel-feed, both machines being adapted for fine work on leather in the manufacture of Fine Shoes, Gloves, etc.

Machine No. 15-34 is specially fitted for the manufacture of Collars and Cuffs and **Machine No. 15-35** for White Shirts and Linen goods.



MACHINE No. 15-36.....FOR GLOVE WORK.

There are three varieties of machines in Class 15 that are provided with an attachment for trimming the edge of the fabric as it is being stitched; they are described as follows:

Machine No. 15-36, illustrated above, has wheel-feed; it is specially adapted for Glove manufacture and cuts a clean, smooth edge on the soft leather used for this work.

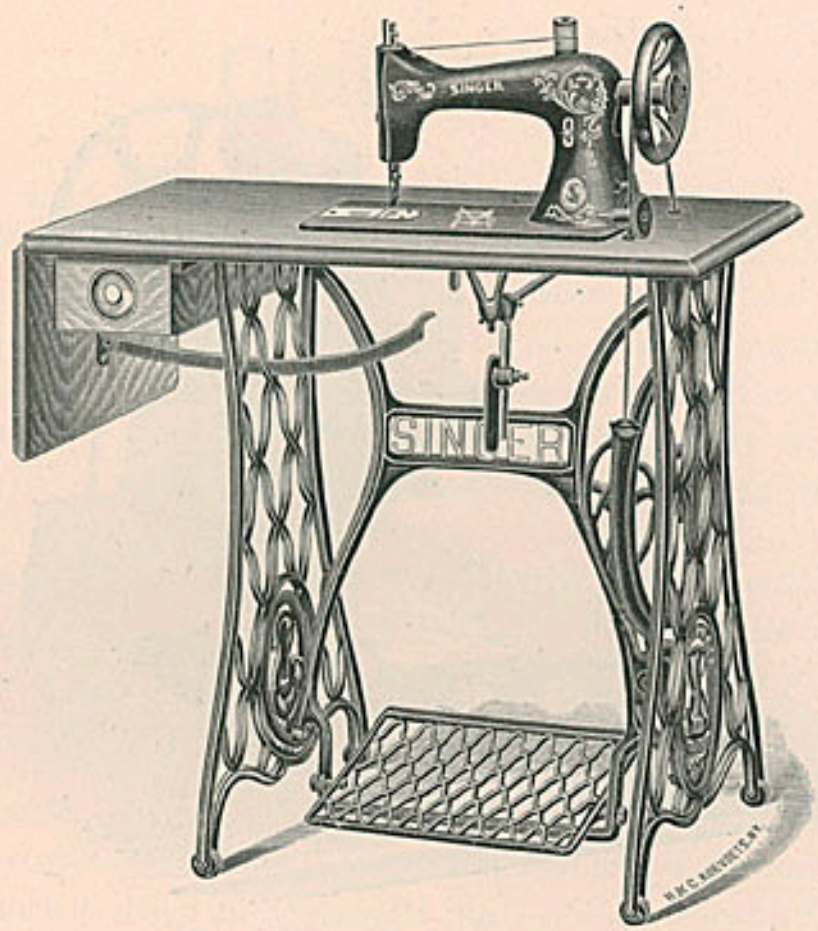
Machines No. 15-37, drop-feed, and **No.15-38,** wheel-feed, are for general leather work and are used in the manufacture of Shoes, Leather Belts, covering Rings and Buckles with leather, Leather Boxes, Novelties, etc.

MACHINE No. 15-40.....UPPER AND LOWER FEED.

Alternating Presser.

Machine No. 15-40, illustrated above, has both upper and lower feed, working in conjunction, and a presser that firmly holds the fabric to the bed during the formation of the stitch; the presser is raised with the needle so as to permit free movement of the material by the simultaneous action of the upper and lower feed mechanism working alternately with the presser. This alternate action secures the most positive and accurate movement of two or more plies of fabric, preventing puckering, freely passing inequalities of thickness and carrying all the plies uniformly so that they are even at the end of the seam.

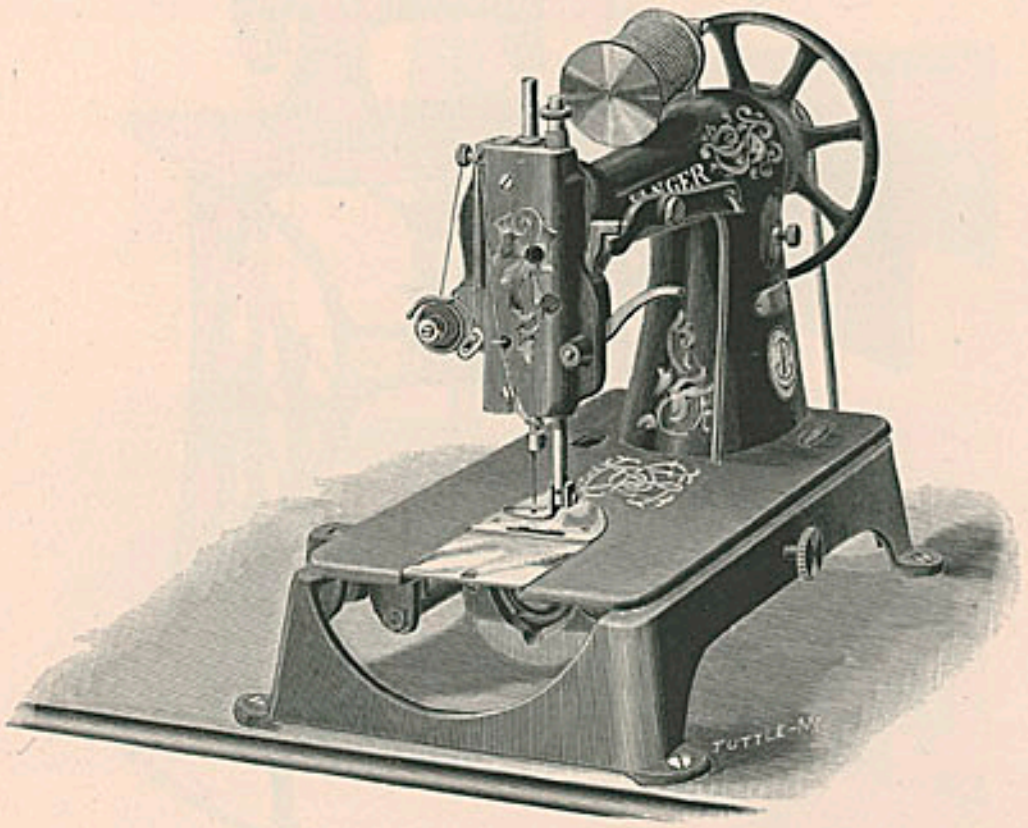
It is especially useful in binding Corsets as it will stitch the binding around curved edges, attaching it very smoothly and uniformly.



MACHINE No. 15-41.....ON STAND.

The machines of Class 15 are especially adapted, by their light-running qualities, for operation by foot power and they are extensively used in this manner for manufacturing purposes. For operation by foot power they are furnished with stands and plain table; the balance wheel is fitted so that it can be run loose on the shaft for the purpose of winding bobbins without operating the machine.

The above illustration represents Machine No. 15-41 on stand with Ash table (No. 5204). The table is 16 inches wide and 31½ inches long with the end leaf down; with the leaf up it is 41 inches long. A solid Black Walnut table (No. 5071) is also furnished, measuring 16x29 inches.



MACHINE No. 15-42.... .....FEED FROM LEFT TO RIGHT.

Machine No. 15-42, illustrated above, is specially designed for fine lock-stitching at high speed in Collar and Cuff manufacture. Although but recently introduced, its practical operation is so satisfactory that it is rapidly coming into extensive use.

The bed of the machine is raised from the table and stands on an iron base, the end of the bed being towards the operator and the feed is *from left to right.*

This arrangement enables quick access to bobbin and greatly facilitates the fast handling of work, thus securing increased production.

Class 16.

CLASS 16 comprises manufacturing machines of the type formerly known as "I. M.," having the oscillating shuttle, "I. M. C. B.," having oscillating shuttle and central bobbin, and "I. M.," two needles and two shuttles. The following descriptions of single needle machines in this class only comprise those having the Central bobbin.

The machines of Class 16 are adapted to a great range of work, both in textiles, leather and paper, the number used for manufacturing purposes largely exceeding the aggregate number of all other makes.

Their simple and efficient mechanism enables them to attain the greatest production; the superior workmanship and material used in their construction secure the longest term of high efficiency with the least cost for repairs.

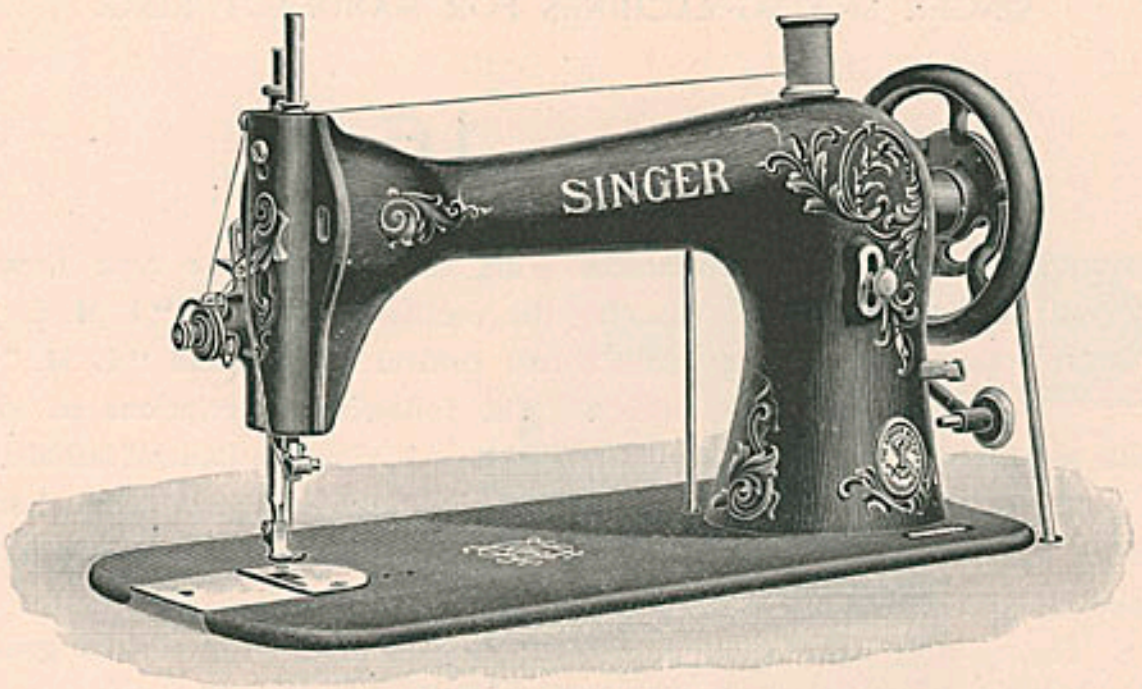
These machines are light running and can be operated either by foot or mechanical power at a high rate of speed. The shape and construction of the bed and arm secure great strength and stability; the bed is 19 inches long on the table, the clear space on bed from needle to base of arm is 10½ inches.

The shuttle is made from one solid piece of steel, hardened and polished; its simple and regular oscillating motion requires the least power and is the most efficient and economical for high-speed lock-stitch sewing-machines. The Central bobbin has capacity for 100 yards of No. 60 cotton, and its delivery of under thread to the material is perfect.

The machines are fitted with a device for lifting the presser-foot by means of a lever under the table; this lever is actuated at will by pressure of the knee, thus leaving the operator's hands free. A tension-release acts automatically when the presser-foot is lifted, thus facilitating the removal of the work.

Various forms of feed, throat-plate and presser are made for the respective varieties of machines in this class, as best adapted to the particular work for which they are required, also hemmers, binders, folders, etc., for special purposes.

In ordering machines to be specially fitted, it is desirable that samples of the material to be used, also specimens of the finished work, be furnished; every machine is operated at the factory and practically tested as to its performance of the duty proposed, before it is sent out.



MACHINE No. 16-35.....OSCILLATING SHUTTLE, CENTRAL BOBBIN.

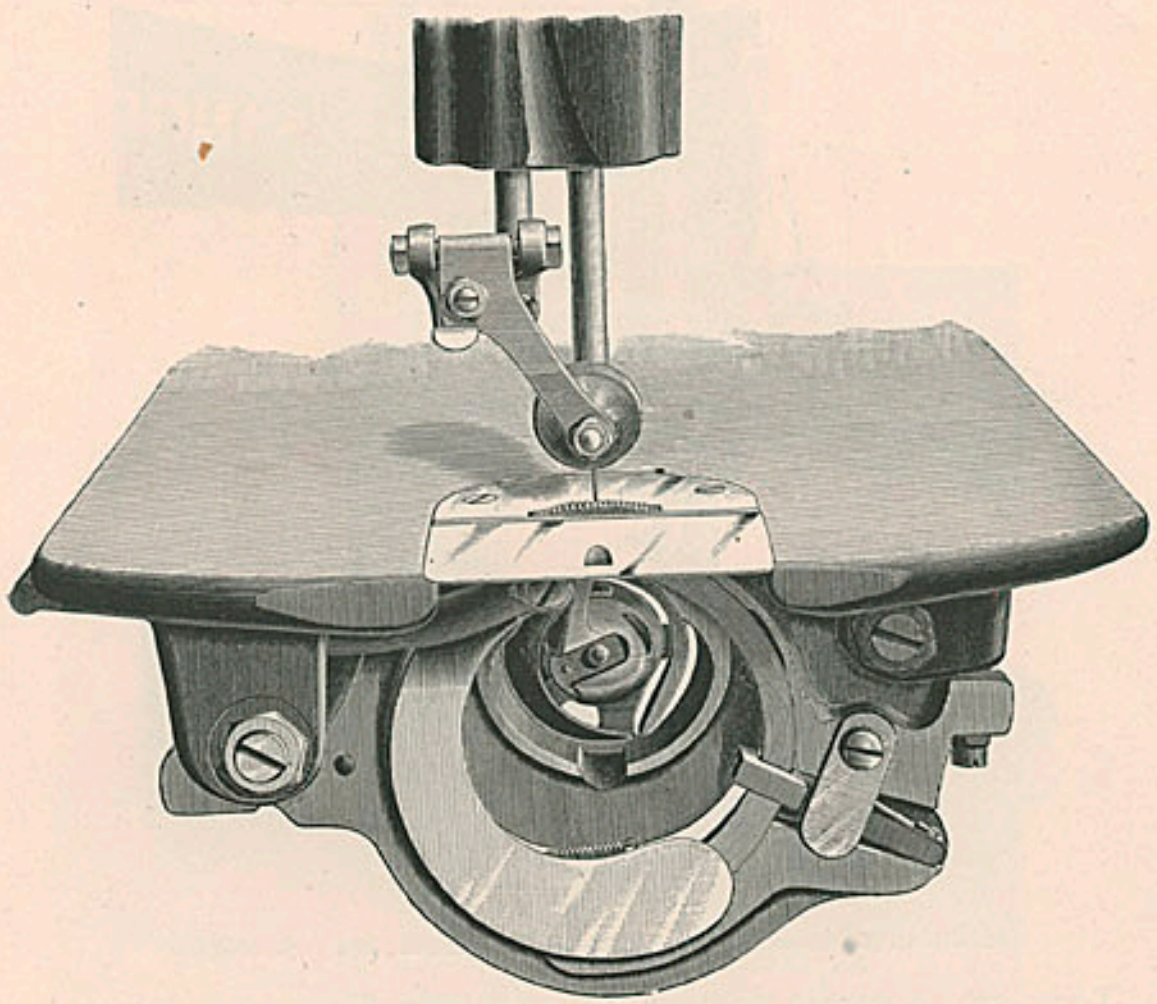
Machine No. 16-35 has drop-feed and a plain yielding presser for stitching cloth.

It is extensively used in the manufacture of Men's Clothing, in Custom Tailoring, the manufacture of Bicycle Suits, Pants, Overalls, Mackintoshes and other rubber garments, Ladies' Wrappers and Tea Gowns, Cloaks, Suits, Waists, Skirts and Muslin Underwear, Bed Quilts, Comfortables, Horse Blankets, etc. Special feeds, pressers and throat-plates are furnished for work on Shirts, Collars and Cuffs, Corsets, Tents, etc., these being more specifically enumerated and illustrated in the complete list of parts pertaining to all the machines of this class.

Machine No. 16-80 corresponds to the preceding description, excepting that its feed-movement is reversible, thus enabling the doubling of the seam at the ends or at any other point, or of making a distinct row of stitching, feeding the material towards the operator.

Machine No. 16-36 has drop feed and both a roller-presser and a plain presser that are interchangeable on the same presser-bar; and its feed-dog and throat-plate are fitted **for stitching leather.** It is used for edge-stitching and closing Shoes, stitching Gloves, Leather Belts, Razor Strops, Carriage Trimming, Light Harness work, etc.

Machine No. 16-71 also has drop-feed for leather, but is provided with cam on needle-bar.

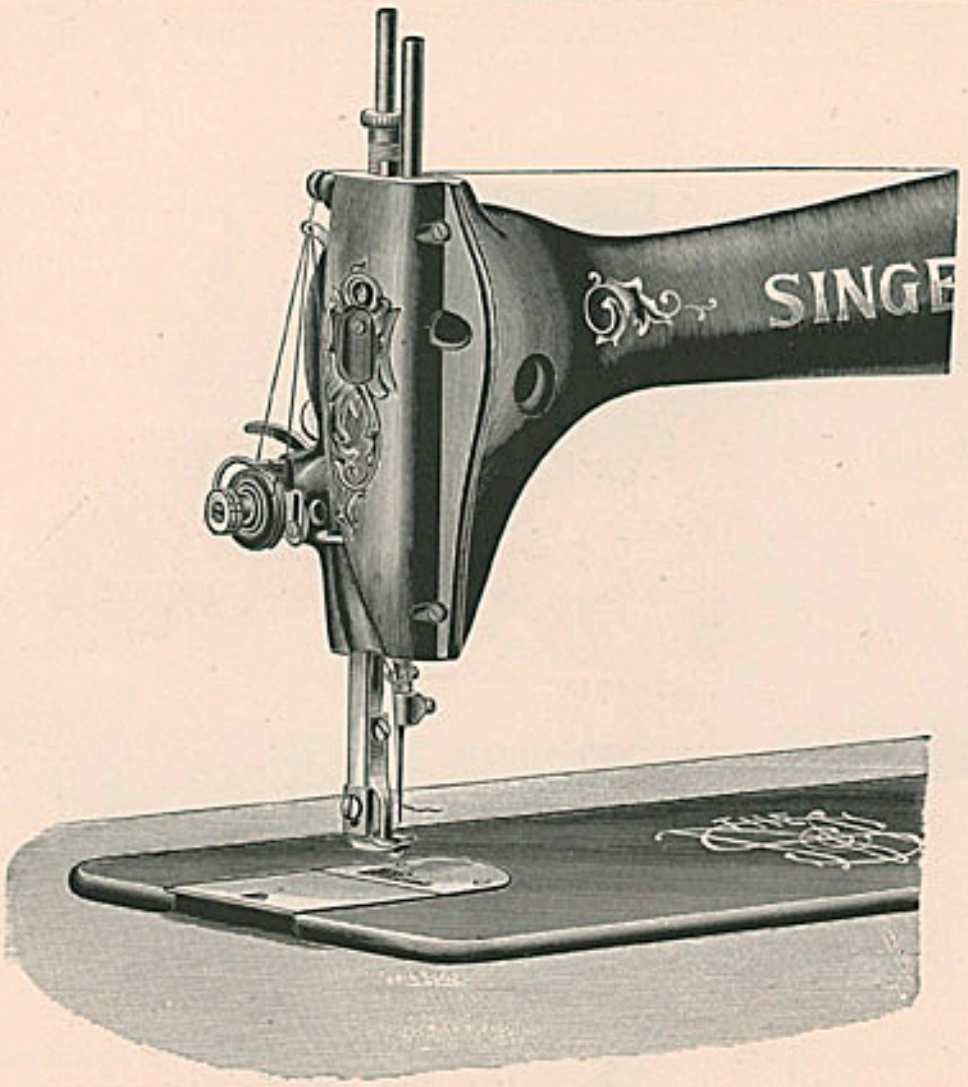


MACHINE No. 16-37..... .....SHOWING ROLLER-PRESSER, WHEEL-FEED AND OSCILLATING SHUTTLE PARTS.

The Wheel-Feed is principally used in connection with a roller-presser for stitching around curves in scolloped work, etc., on leather. This feed-movement, which secures a constant pressure of the material against the feed, is sometimes preferred to the four-motioned drop-feed, for this class of work.

The serrated feed-wheel is revolved by means of a friction and clutch device that is positive in its action and has a motion that is in exact relation to the stitch-forming mechanism.

Machines No. 16-37 and **No. 16-72** have wheel-feed for leather stitching and are used in Shoe manufacture for vamping and closing, machine No. 16-72 having cam on needle-bar.



MACHINE No. 16-41.. .....SHOWING ALTERNATING PRESSERS.

There are three varieties of Class 16 having **Alternating Pressers,** viz: Machines No. 16-41, No. 16-82, and No. 16-84. The Alternating Presser comprises two pressers acting separately and alternately; the first moves forward with the feed and is then lifted and returned to its position; the other holds the material down while the first rises and until it descends upon the fabric, but is raised while the material is carried by the feed. Each presser while resting upon the work, forms a fulcrum upon which the other is raised, consequently the height of their movement always corresponds to the thickness of the fabric, thus allowing free passage of material which varies in thickness, and securing perfect formation of the stitch.

By the use of this device, two or more pieces of material are moved with perfect uniformity so that their ends are even at the completion of the stitching.

Machine No. 16-41 is extensively used for binding Awnings and similar scolloped work, binding the edges of Flannels, Hats, Mattress-ticks, School-bags, etc.

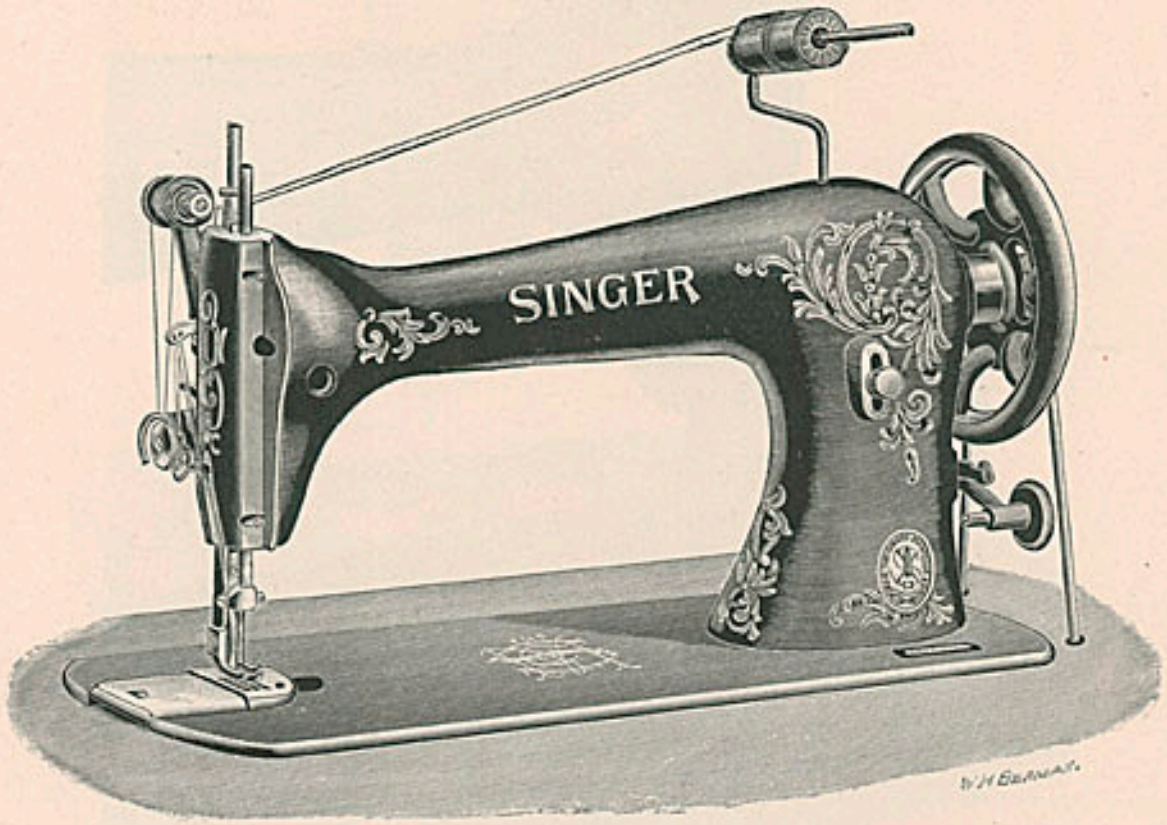
Special binding attachments can be furnished, orders for which should be accompanied by samples of the binding and of the material to be bound.

Machine No. 16-82 has upper and lower feed and an alternating presser; it is illustrated and described on page 119.

Machine No. 16-84 has 2 needles and 2 shuttles and alternating pressers; it is illustrated and described on page 120.

MACHINE No. 16-82.....UPPER AND LOWER FEED.
Alternating Presser.

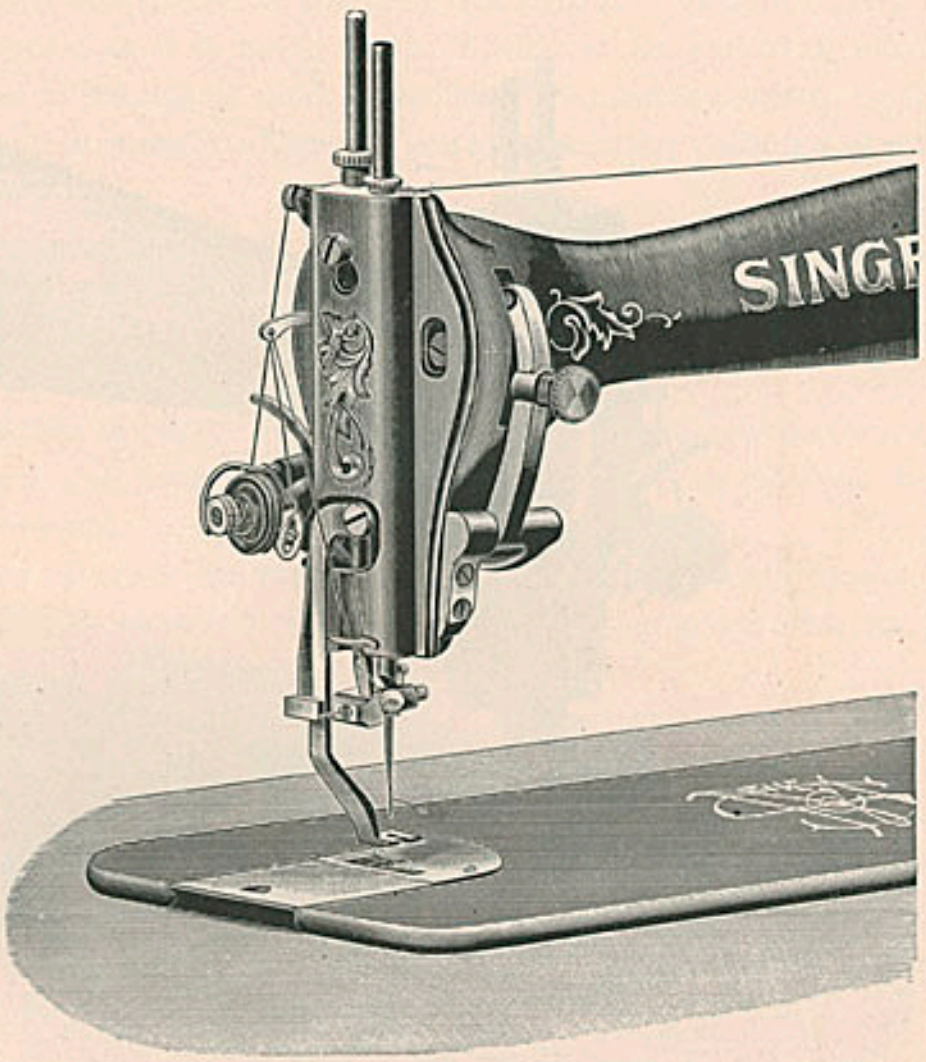
Machine No. 16-82, illustrated above, has both upper and lower feed, working in conjunction, and a presser that firmly holds the fabric to the bed during the formation of the stitch; the presser is raised with the needle so as to permit free movement of the material by the simultaneous action of the upper and lower feed-mechanism working alternately with the presser. This alternate action secures the most positive and accurate movement of two or more plies of fabric, preventing all puckering, freely passing any unevenness of thickness and carrying all the plies uniformly so that they are even at the end of the seam. It is especially useful in binding Corsets, as it will stitch the binding around curved edges, attaching it very smoothly and uniformly. It is also used for binding blankets and for stitching the double waistbands for boys' pants; these uses partly indicate the wide range of its capacity.



MACHINE No. 16-84 .. .. 2 NEEDLES AND 2 SHUTTLES.

Alternating Presser.

Machine No. 16-84 has the same form of Alternating Presser as that used on Machine No. 16-41, previously described, but differs in having two needles and two shuttles for making two parallel rows of stitching at once. It is extensively used for sewing bunting in the manufacture of Flags, where the fabric is soft and spongy and it is essential that the seams be of great strength. For this and similar work this machine is highly efficient.



MACHINE No. 16-42..... ....SHOWING VIBRATING PRESSER.

By the use of our Vibrating Presser, illustrated above, a uniformly strong and even feed is secured in stitching fabrics having rough, uneven or adhesive surfaces or with soft goods liable to pucker.

There are two varieties of Class 16 that are provided with this form of presser, viz: Machine No. 16-42, having drop-feed for cloth or leather, and Machine No. 16-43, having wheel-feed for leather.

These machines are especially adapted for light harness manufacture, for attaching rubber binding to matting, stitching glazed or enameled paper, for binding cap visors, hats, etc.

An adjustable attachment is provided for binding hats (No. 144 A. & A.), by means of which braid is automatically folded over the edge of the object to be bound, immediately in front of the needle-action.

For binding Cap Visors another attachment is used (No. 191 A. & A.).

Samples of the binding and of the material to be bound should accompany all orders for binding attachments.

MACHINE No. 16-76... .....FOR LEATHER.

Showing Adjustable Trimming Attachment.

There are six varieties in Class 16 that are provided with an attachment for trimming the edge of the fabric as it is being sewn. They are provided with a bar which receives vertical reciprocating motion from the top driving shaft. The lower end of the bar carries a cutting-knife having an elongation that passes through an opening in the throat-plate on a line directly back of the needle; a spring slide holds this elongation against the cutting bar, thus steadying and keeping the knife-edge in exactly uniform distance from the line of stitch.

Machine No. 16-76, illustrated above, has an attachment fastened to bed of machine by which the throat-plate is moved so that the distance from the line of stitch to the trimmed edge of fabric can be instantly adjusted to any width desired, not exceeding $\frac{1}{8}$ inch.

The shape and motion of the knife are such as to cause a clean cut of the edge of the fabric as it is being sewn; it will cut on curved or straight lines exactly parallel to the line of stitch, thus being peculiarly adapted for trimming scolloped as well as straight edges. When not in use the knife can be thrown up, out of the way.

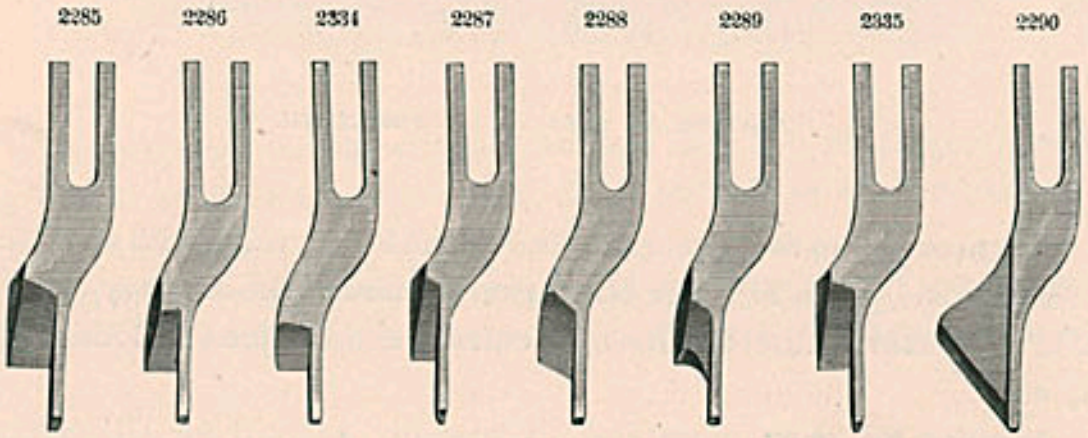
The adjusting attachment is especially useful for manufacturers of Ladies' Shoes, when it is required that the silk or cloth facing material at the tops shall be trimmed at one distance and the leather button-flap at another, because the change of gauge can be instantly made.

Machine No. 16-38, for cloth, has a trimming attachment that is not adjustable; the knife makes a broadside-cut that is set either $\frac{1}{16}$ or $\frac{3}{32}$ of an inch from the needle, as ordered.

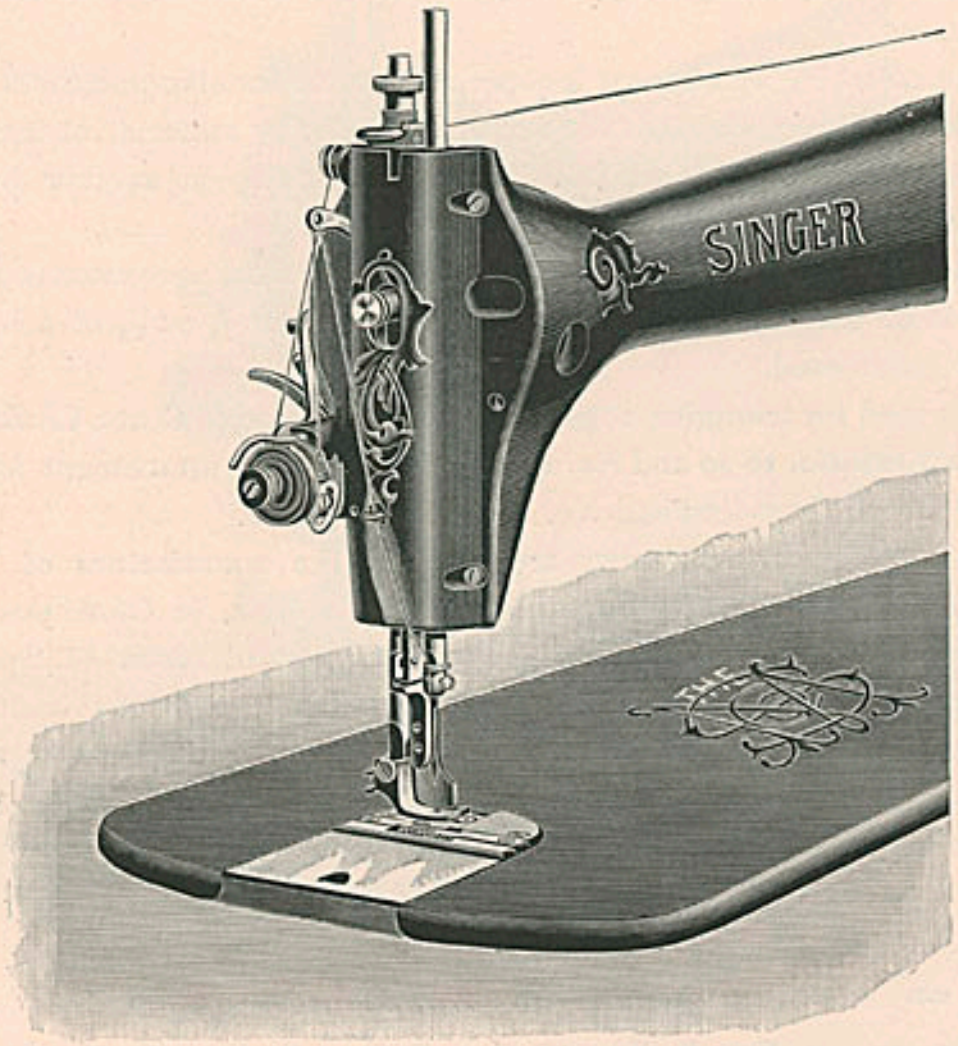
It is used for trimming edges in the manufacture of Coats, Cloaks, etc.

Machines No. 16-39 and **No. 16-40** have trimming attachment for leather, No. 16-39 having drop-feed and No. 16-40 a wheel-feed.

The machines for leather are used in the manufacture of Women's, Misses' and Children's Button Boots, Bicycle Tool Cases, in Glove manufacture, for covering the handles of Traveling Bags, and for all forms of light leather work when it is desirable to use a trimming attachment. Various forms of knives are used, as best adapted to the work to be performed; they can be set to cut either $\frac{5}{128}$ or $\frac{3}{64}$ of an inch from the needle, as ordered. The knives are shown at full size in the following illustration:



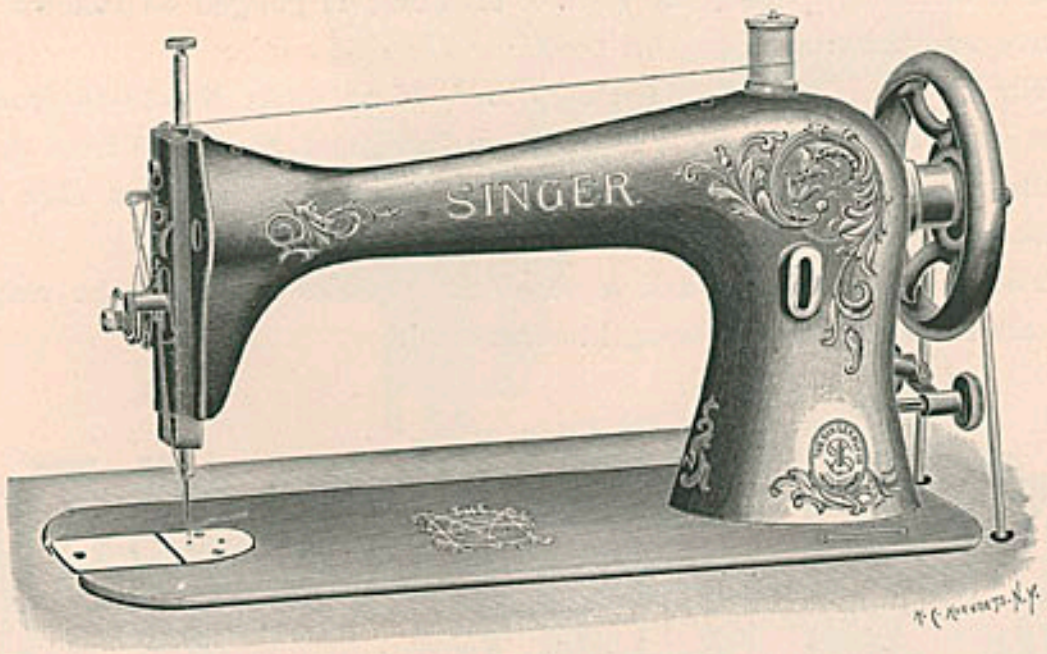
Knife No. 2285 makes a broadside-cut; Knives No. 2286 and No. 2287 make end and side cut; No. 2288 cuts only at end but makes a shearing cut; No. 2289 has concave edge and makes end and side cut; No. 2290 makes a broad, diagonal cut; No. 2334 makes end cut only; No. 2335 is very thin gauge and makes end and side cut.



MACHINE No. 16-86.....FOR CLOTH.

Machine No. 16-86 has outside feed-bar and is provided with an attachment that trims from $\frac{3}{32}$-inch to $\frac{1}{4}$-inch from seam in either light or heavy cloth. It is used in the manufacture of Men's, Women's, and Children's Clothing, Bicycle Suits, etc.

Machine No. 16-87, wheel-feed, is specially adapted for Glove manufacture, and has trimmer and yielding presser arranged for most effective work on this class of goods.



MACHINE No. 16-83..... ...FOR MENDING LACE CURTAINS.

The machine illustrated above has no feed and no presser, the curtain being moved by the operator so as to form stitches of any length and in any direction, as desired.

It is highly efficient for the purpose of mending Lace Curtains, as it enables the formation of a stitch which can be made to closely imitate the lace fabric.

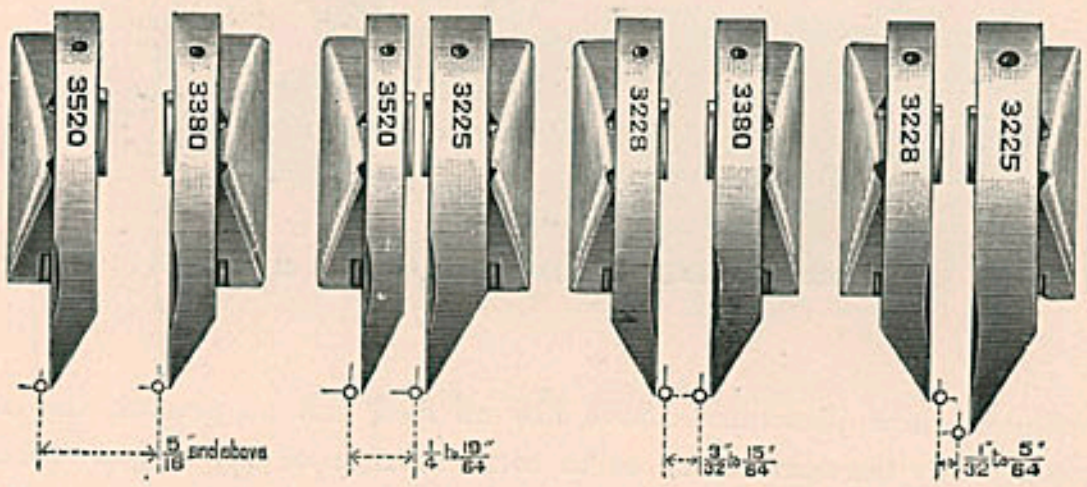
TWO-NEEDLE AND TWO-SHUTTLE MACHINES.

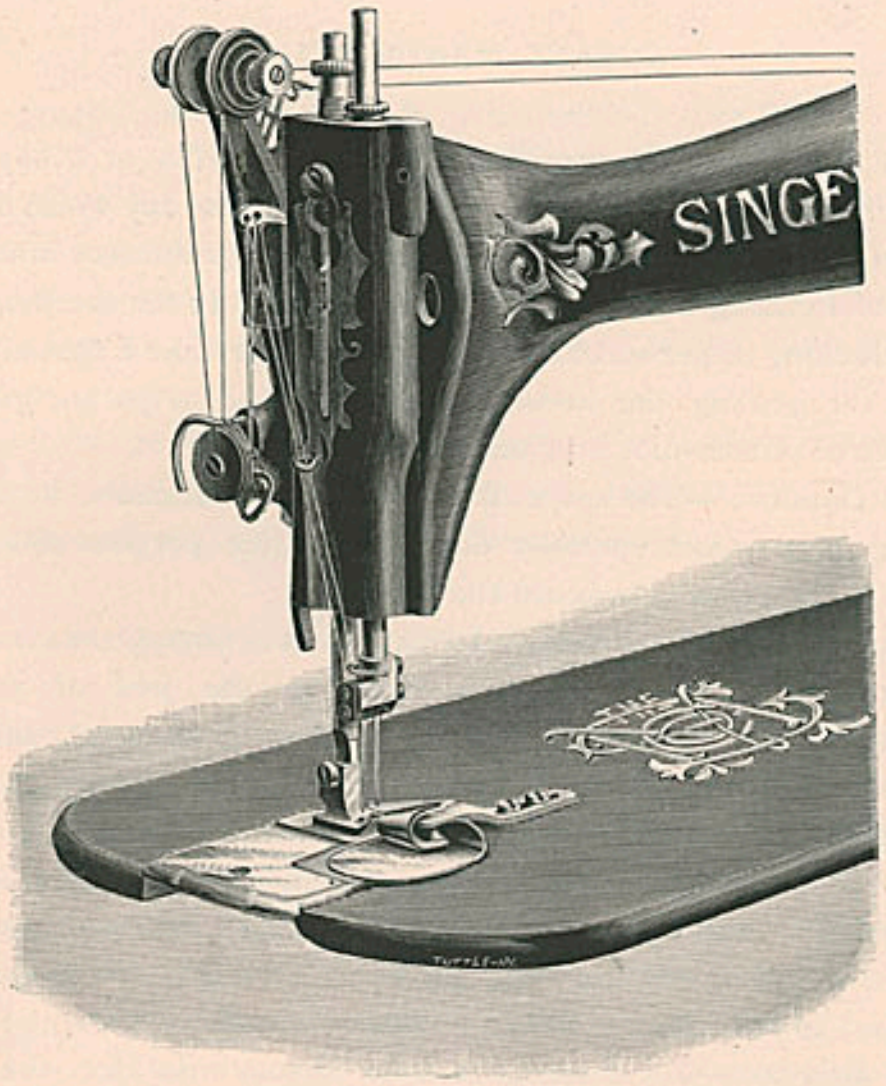
There are five varieties of machines in Class 16 having two needles and two oscillating shuttles for making two rows of lock-stitching at once, that are extensively used in the manufacture of Shoes, Slippers, Overgaiters, Bicycle Tires, Corsets, Corset Waists and Covers, Dress Stays, Shirts and Muslin Underwear, Suspenders and Garters, Collars and Cuffs, Ladies' Cloaks and Jackets, Mackintoshes, Jean Pants, Overalls, Coats, Vests, and Clothing generally.

The distance between the rows of stitching is gauged as follows on the respective machines:

No. 16-44 and No. 16-45 from $\frac{1}{32}$ to $\frac{5}{64}$ of an inch; No. 16-46 from $\frac{3}{32}$ to $\frac{15}{64}$ of an inch; No. 16-47 from $\frac{1}{4}$ to $\frac{19}{64}$ of an inch, and No. 16-48 from $\frac{5}{16}$ to $1\frac{1}{2}$ inch, the exact distance between the needles being fixed on each of the machines as it may be ordered, within the limits specified.

The relative position and style of the shuttles used for the respective gauges are shown in the following illustration.





MACHINE No. 16-47 .....WITH LAP-SEAM FELLER.

The above illustration shows the method of using attachment No. 289 for lap-seam felling on the two-needle and the two-shuttle machines of Class 16.

The attachment for the bed and the special presser-foot are made to order, $\frac{3}{32}$ to $\frac{3}{8}$-inch gauge, as best adapted to the fabric to be stitched.

This attachment is extensively used in the manufacture of Corsets, Corset Waists and Covers, Men's, Women's and Children's Clothing, etc.

The following description comprises some of the principal classes of work on cloth upon which the two-needle machines of Class 16 are successfully employed.

CORSET MANUFACTURE.

Strip Stitching.—A special foot (Parts No. 3758 or 3765) is furnished for guiding, and a tape reel for holding a folded strip of any width desired, both edges of strip being stitched at one operation. A special foot is also furnished for turning and folding both edges of strip as it is fed to the needles.

For stitching upper and lower strip at the same time a special throat-plate is provided for guiding the lower strip; the upper strips are guided by the various forms of presser-foot previously referred to.

Bone Cording.—The spaces for the bones are obtained by the use of a strip-guiding presser-foot specially designed for the purpose and grooved, as ordered, for special widths between the bones.

Stitching Bone-Strips and Inserting at One Operation.—A steel arm is provided which is firmly screwed to the bed of machine and has holes at the end through which the bamboo or bone is guided into the proper spaces between the needles as the strip is being stitched; it may be arranged for any gauge desired.

Lap-Seam Felling.—Attachments are provided (No. 289 A. & A.) which make a very strong and flat seam; they are furnished in three sizes adapted to the thickness of the fabric, as light, medium and heavy. The attachment is firmly fastened to the bed, but can be readily removed.

Lace Binding.—For binding tops of corsets with lace, the machine is provided with reel for holding the lace; the presser-foot is arranged to so guide the material as to keep the rows of stitching at a uniform distance from the edge of the lace.

Staying Seams.—The machine is provided with strip-carrying foot which opens and presses the seam as the stay is being stitched on.

Cording.—These machines can be used for top cording, using attachment No. 259 A. & A., which shows the cord only on the upper side of goods, or for top and bottom cording, using attachment No. 267 A. & A., which shows cord equally on both sides. A cord-guiding attachment is provided (No. 270 A. & A.) for top and bottom cording. Special parts can be made as ordered for six to fourteen cords to the inch.

CORSET WAISTS AND CORSET COVERS.

The two-shuttle machines of Class 16 are adapted to all uses in the making of Corset Waists and Covers when two parallel rows of stitchings are desired, such as cording, lap-seam felling, putting on embroidered strip, etc.

MEN'S, WOMEN'S AND CHILDREN'S CLOTHING.

EDGE STITCHING.—Two parallel rows of any desired gauge can be stitched around a garment at a uniform distance from the edge.

COVERING SEAMS WITH FOLDED STRIP.—The machine is furnished with special folder-foot to carry and turn in the edges of cut cloth for Children's Waists, Jackets, etc.

JOINING SEAMS WITH LAP-SEAM FELLER.—For Ladies' Cloaks, Children's Jackets, Jean Pants, Overalls, Shooting Jackets, Leggins, etc. Feed parts are furnished as best adapted to the various classes of work.

SHIRTS AND MUSLIN UNDERWEAR.

JOINING SHIRT SLEEVE TO BODY WITH LAP-SEAM.—The machine is furnished with a lap-seam feller (No. 289 A. & A.) for turning the edge of the material; this simple device is easily operated and makes a strong and flat joining. The needles are gauged as ordered, usually from $\frac{1}{4}$ to $\frac{3}{8}$ inch.

SEAMING-UP SHIRT SLEEVES AND CLOSING THE BODY.—The attachment is the same as described for Joining Sleeve and makes a lap-seam. The needles are usually gauged from $\frac{1}{8}$ to $\frac{3}{16}$ inch, but can be set as ordered.

INSERTING SHIRT BOSOMS.—The machine is furnished with a folder-foot which folds a cut strip, either straight or bias, and delivers it to the needles while the bosom is being stitched to the body of a shirt. The strip is placed on a reel located on the top of the overhanging arm. The needles are usually gauged from $\frac{3}{16}$ to $\frac{1}{4}$ inch, as ordered.

REINFORCING SHIRT FRONTS.—This operation consists in stitching a strip of cut material from the arm-pit to the bosom and is performed by the use of the same appliances as described for inserting bosoms.

PIECING SHIRT SLEEVES.—Machine No. 16-44 with needles gauged $\frac{1}{16}$ inch apart, is fitted with special presser-foot and feller similar to No. 277 A. & A. for the purpose of piecing shirt sleeves and for similar work requiring fine felling.

BOSOM PLAITING (Either Box or Side Plaiting).—Special attachments are furnished which automatically make a perfect box or side plait. In making a box plait the bosom material is laid, face upward, on the throat-plate in front of

the needles and is folded by the attachment into the proper form and guided under the needles so that both sides of the plait are stitched simultaneously. It is extensively used in the manufacture of Shirt Waists and Negligé Shirts. The side-plaiting attachment folds and stitches two plaits at once and can be used on any ordinary material.

The plaiting attachments are connected to the presser-bar so that the knee-lift operates both.

Sewing on Embroidered Strip.—The machine is furnished with strip-reel and a tubed foot which guides the strip directly to the needles, thus making it possible to stitch very closely to the edge of the strip while making short curves and still retain the same uniformity of distance as in straight work.

COLLARS AND CUFFS.

For Collar and Cuff manufacture the machines are furnished with special forms of drop-feed, presser-foot and throat-plate which are used with a special combination-guide enabling the stitching of two parallel rows very close to, and at a uniform distance from the edge. The distance between the rows of stitching can be gauged as ordered.

FOR JOINING EDGES OF BOLTING CLOTH.

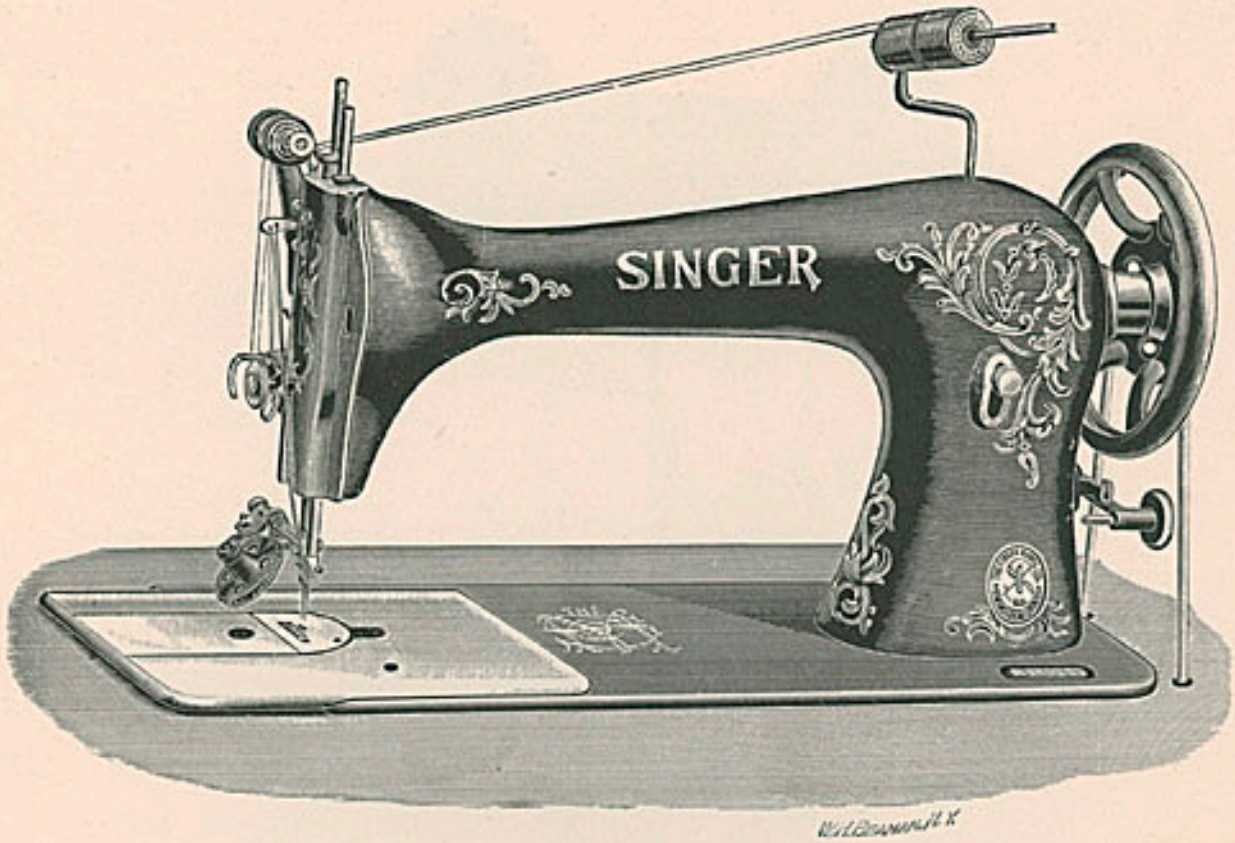
An attachment is furnished for lapping the edges of the material and, if desired, for stitching on an upper strip or stay at the same time. The folders are made in pairs, right and left, and are easily removed from the machine. By their use the thinnest, as well as the heaviest cloth, can be rapidly stitched without puckering.

LADIES' DRESS SHIELDS.

Machine No. 16-48 can be gauged from $\frac{5}{16}$-inch upwards and fitted with a special presser-foot for stitching ladies' dress shields.

SUSPENDERS.

Machine No. 16-48 is fitted with a special attachment for folding both upper and under strips in the manufacture of satin and silk Suspenders. The needles are gauged $1\frac{1}{2}$ inches apart, the edges of the white backing material being folded over so as to make a contrasting finish to the face material; the face material, interlining, and backing are all folded and both edges stitched at one operation.



MACHINE No. 16-45: TWO SHUTTLES. ..... FOR LEATHER.

Machine No. 16-45, illustrated above, is fitted with wheel-feed and roller-presser for leather; it is extensively used in Shoe manufacture for narrow two-row vamping. Machine No. 16-44, drop-feed and roller-presser, is also used for the same purpose.

Machines No. 16-46, No. 16-47 and **No. 16-48** have drop-feed, and are used in Shoe manufacture for wide two-row vamping, for stitching on tips, putting on back stays, and stitching inside stays.

The roller-presser used for narrow two-row vamping is provided with a needle-guard, attached to presser-foot, which keeps the inside needle and the material in proper position.

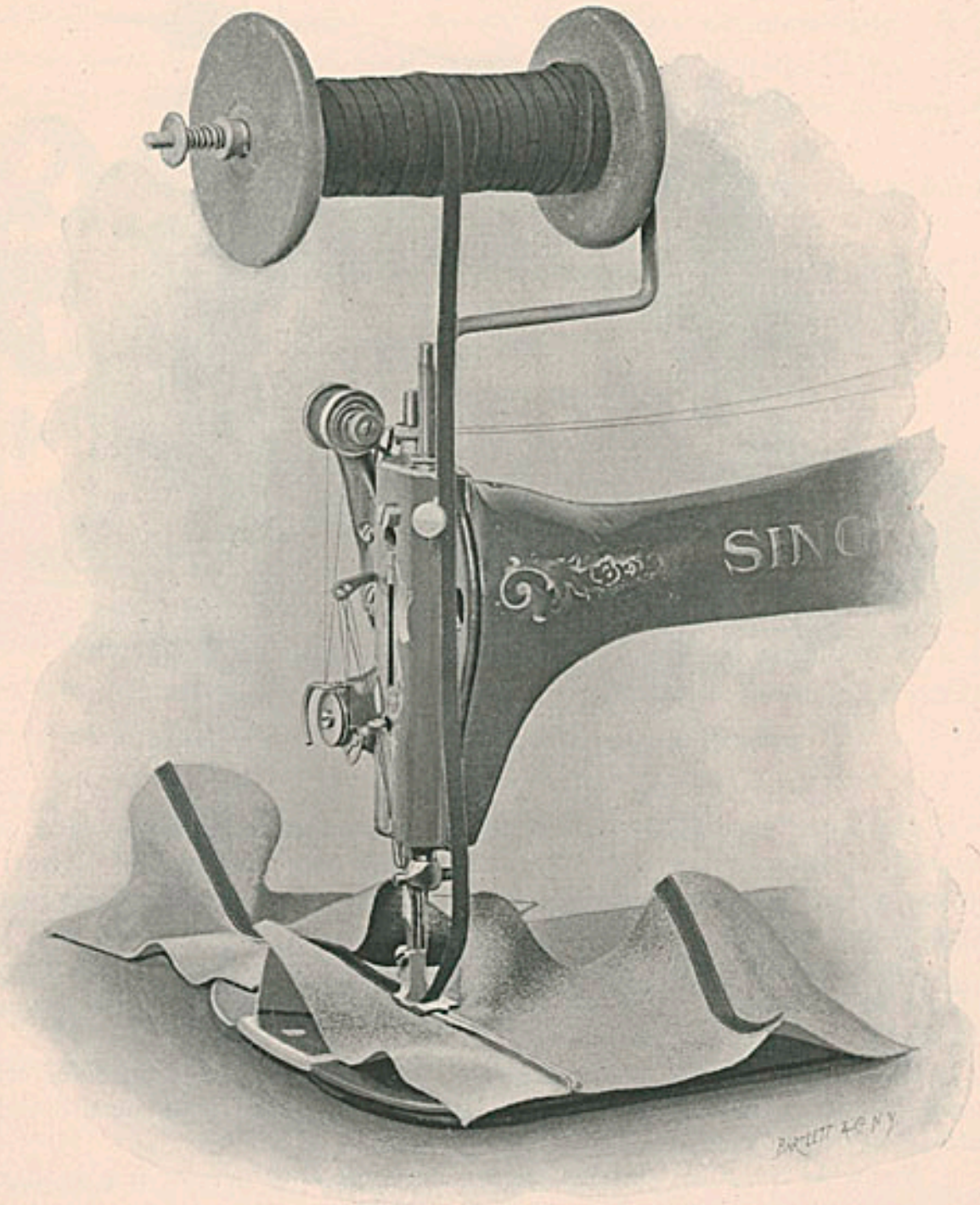
For wide two-row vamping an auxiliary yielding presser-foot is attached to the presser-bar and is used in connection with the roller-presser, thus holding the material flat to the feed so that perfectly true and parallel stitching is secured.

For stitching on Shoe Tips a special form of presser-foot is provided for the purpose of guiding and keeping the lines of stitching an equal distance from the edge of the tip.

For putting on Outside Stays another form of presser-foot is used to hold and guide the stay, and a convenient form of tape-reel is provided.

For stitching Inside Stays the machines are fitted with a special stay-guide and an upper tape-reel.

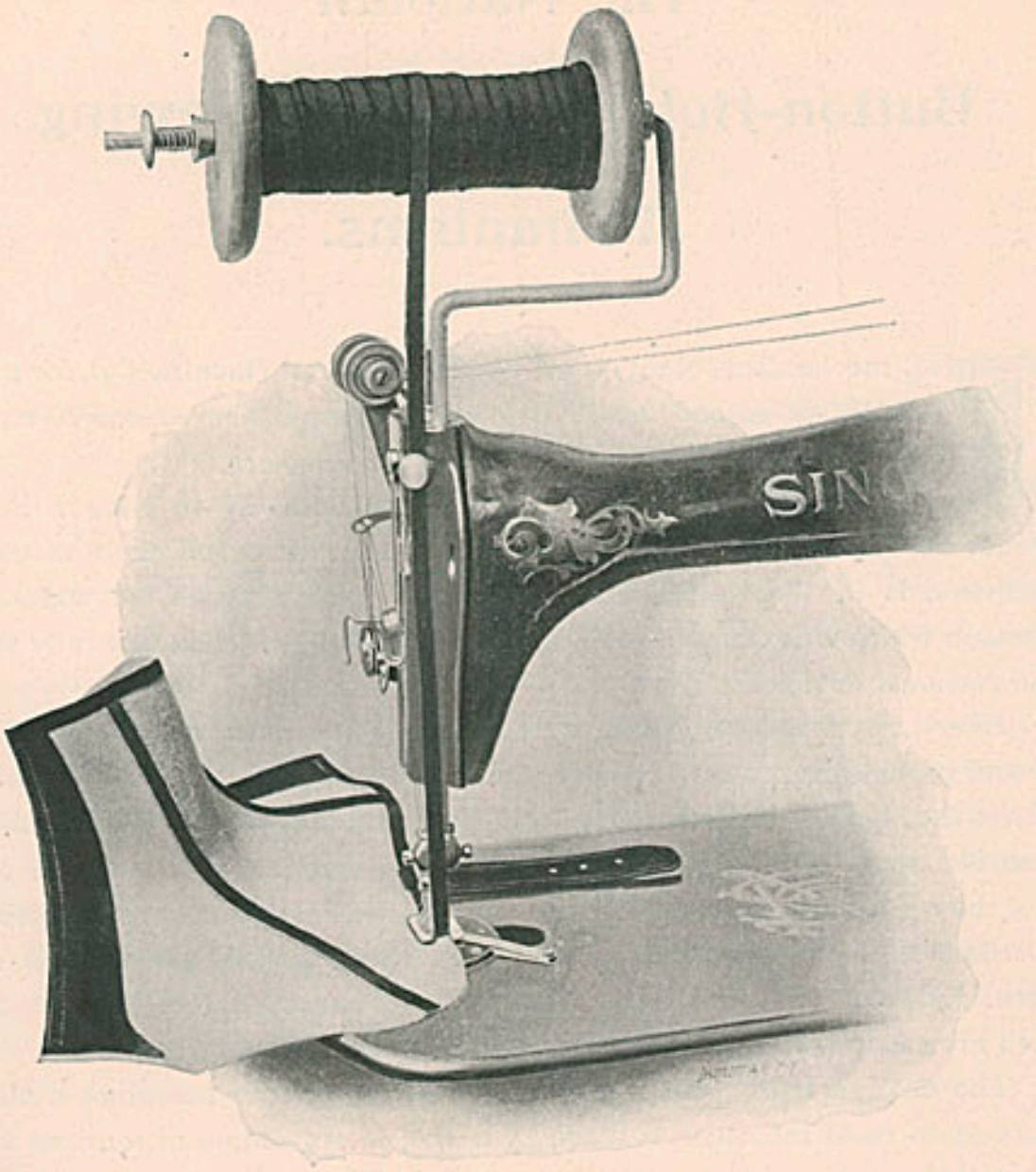
Either of these operations may be performed on the same machine by simply changing the feed, the presser-foot and the throat-plate; the distance between the rows of stitching will be uniform in each operation, the gauge being fixed in the construction of the machine.



MACHINE No. 16-46.....STAYING CLOTH OVERGAITERS.

The above illustration shows the process of staying the front seam on Cloth Overgaiters by the use of Machine No. 16-46.

The tape is delivered through an opening in the presser-foot directly in front of the needles. The presser-foot has a tongue for opening the back of the seam and guiding the material; acting on the opposite side is a thin spring-guide in the throat-plate, which works in conjunction with the top-guide and presser so that the material is perfectly guided without aid from the operator. By the use of these special devices a very smooth and flat seam is made that requires no pressing and the most rapid production is secured.



MACHINE No 16-46..... ....TAPING CLOTH OVERGAITERS.

The above illustration shows the process of taping the outer edge of Cloth Overgaiters on Machine No. 16-46 with needles gauged $\frac{3}{16}$ of an inch apart. A special presser-foot is arranged so that the tape is kept at a uniform distance from the edge of the cloth. The throat-plate is furnished with a yielding spring-guide which sinks into a recess so that the strap passes over it readily.

The National Button-Hole and Button-Sewing Mechanisms.

THE mechanisms constructed by **The National Machine Co.**, for making button-holes and for sewing on buttons, are in extensive and successful practical operation throughout the world.

These devices are attached exclusively to Singer Sewing-Machines of Class 16; their action is entirely automatic and their mechanical construction is the best attainable. Their range of work is the widest; any material in which it is desirable to stitch button-holes can be successfully worked by the National devices.

Every appliance suggested by experience for improving the quality of work and promoting the convenience of the operator, has been so combined as to secure the highest excellence and greatest quantity of output. Their absolute automatism insures perfect uniformity of work, and but ordinary skill on the part of the operator is necessary. Any one competent to run a sewing-machine can become reasonably expert in the use of these devices after a few hours' practice. All changes of adjustment necessary to suit them to different varieties of work are easily and quickly made without requiring change of parts.

The change from "whip" to "purl" stitch, on the machines numbered from 16-51 to 16-54 inclusive, is made by a simple regulation of tensions and by the application to the shuttle-carrier of a thread-slacking device that accompanies each machine. No thread-slacker is required for machines No. 16-55 and No. 16-56, as the change is effected by simply regulating the tensions.

These machines are in extensive use by manufacturers of White Shirts, Percale, Flannel and other Negligé Shirts, Collars and Cuffs, Ladies' Waists, Suits and Wraps, Children's and Infants' wear, Corset Waists, Waistbands, Men's Clothing, Overalls, Jumpers, Pants, Knee-pants, Cardigan Jackets, Muslin and Knit Underwear, Blouses, Coats, Rubber and Mackintosh Garments, Silk Mitts, etc.

Automatic Cutter: The National Automatic Cutting device is absolutely unique and is not used in any other form of button-hole machine.

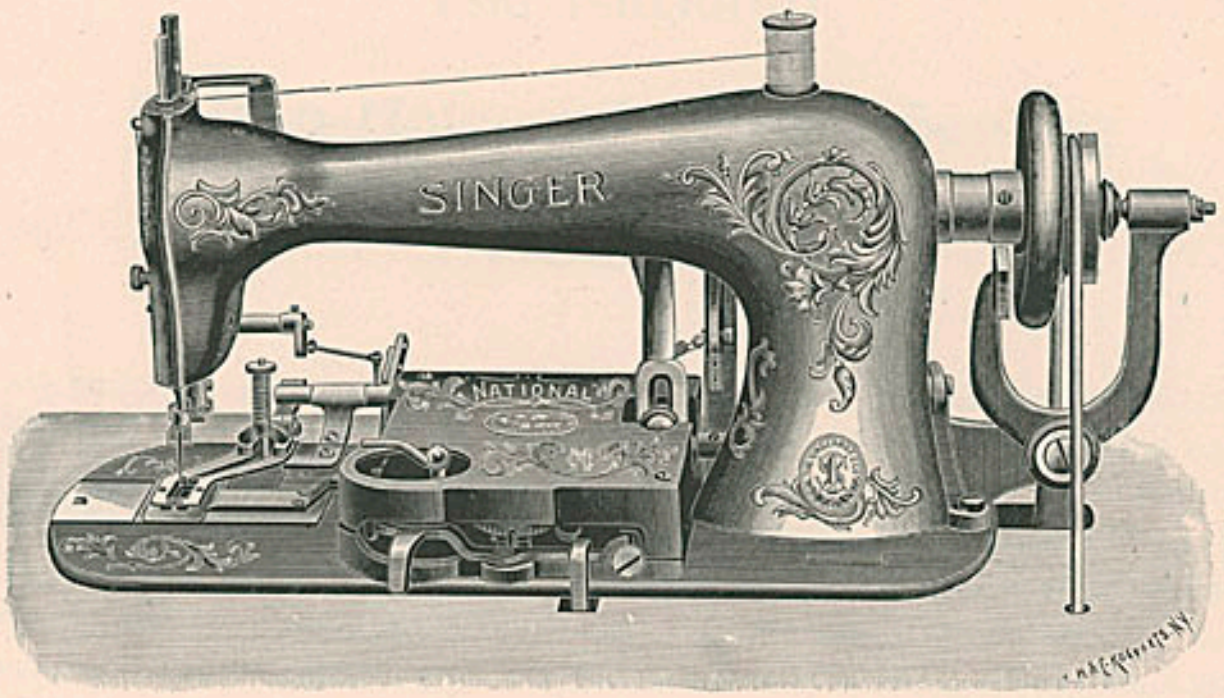
It secures perfect accuracy of work, permitting narrowest cutting space and obtaining clean edges of cut.

Its use effects a clear saving of from 20 to 33 per cent in the cost of making button-holes. The cutting is done by the machine while stitching, so that the operation is performed without any loss of time whatever.

Operatives always prefer this machine because it produces the best work with the least labor. The quantity of its product is only limited by the expertness of the operator in handling the work. The time required for stitching by power and cutting a medium-sized button-hole of good quality is only from 15 to 20 seconds.

These machines, as regularly fitted, will make button-holes of any desired length, from $\frac{1}{8}$-inch to $1\frac{1}{4}$ inches, of finished opening. By special fitting, the length of this opening can be increased to $1\frac{3}{8}$ inches.

Four Cutting blades of different sizes accompany each machine.



MACHINE No. 16-54..... ....FOR STRAIGHT BUTTON-HOLES.

The National Button-hole machine was the first that was successfully used for working straight button holes, by the manufacturing trade.

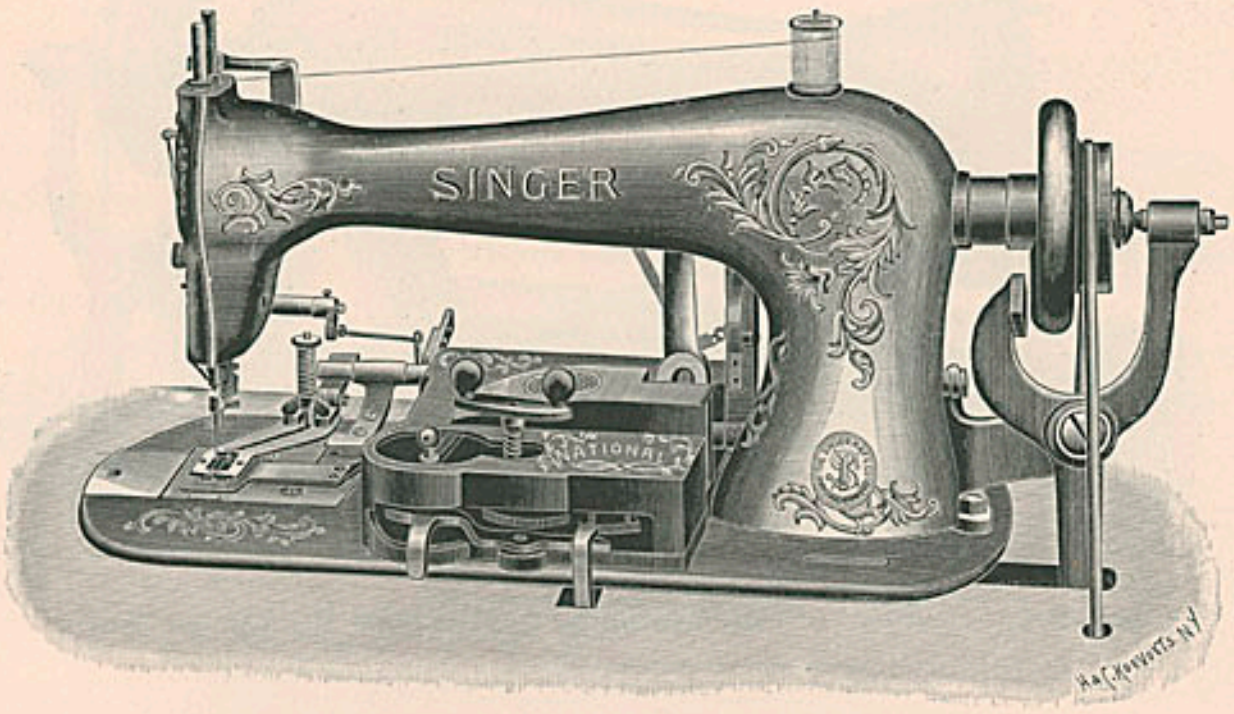
Since its introduction its history has been a record of uninterrupted and increasing success. In the wide field of work that it covers, comprising every class of garment in which a straight button-hole is used, it is the best for its purpose.

Machine No. 16-51 is for foot power. It is provided, in common with the three varieties following, with Automatic Cutter, Tension Release and Bobbin Winder.

Machine No. 16-52 is for operation by mechanical power and has Automatic Stop-motion.

Machine No. 16-53 can be operated by either foot or mechanical power. It has Foot presser-lifter but is not furnished with Automatic Stop-motion.

Machine No. 16-54, illustrated above, is for operation by mechanical power. It has Automatic Stop-motion and Foot presser-lifter. All the machines of this series are distinguished for rapidity of production and accuracy of work.



MACHINE No. 16-56.....FOR INTERLOCKED SQUARE-BAR BUTTON-HOLES.

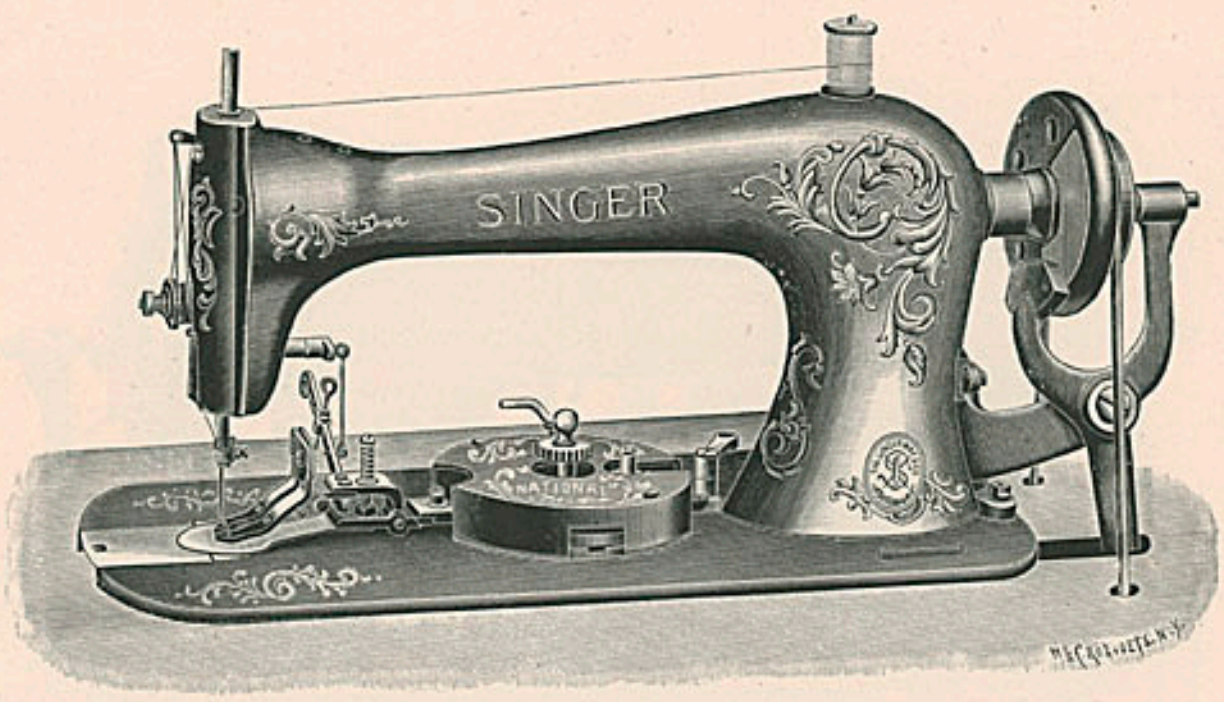
The demand for "fine hand work" led to the introduction of this machine. It is equally adjustable and nearly as rapid as Machine No. 16-54 and is fitted with the same automatic improvements for cutting, stopping, releasing tension, etc.

Its work is of the highest class in either purl or whip stitch; in uniformity and durability it is superior to hand work.

The peculiar feature of the button-hole made by this machine consists of the interlocked square bar that is automatically made at each end of the button-hole. This form of bar gives the most handsome finish and the greatest strength to the button-hole and secures the "fine hand-made" appearance so desirable on first class goods.

Machine No. 16-55 is for operation by foot power; it has no stop-motion and a hand presser-lift is substituted for the foot-lift.

In changing Machine No. 16-55 and No. 16-56 from "purl" to "whip" stitch, no thread-slacker is required, as the change can be effectively made by simply regulating the tension.



MACHINE No. 16-69.....FOR SEWING ON 2 AND 4 HOLE AND BAR BUTTONS.

This machine has had the test of practical work in garment manufactories throughout the world during a number of years, and has become established as the most successful for its purpose.

It is used for sewing Two-hole, Four-hole, or Bar buttons onto any description of garment, obtaining absolutely stronger and neater work than can be produced by any other means.

It is extensively used by manufacturers of Men's Pants, Knee-pants, Blouses, Jumpers, Overalls, Shirts, Knit and Muslin Underwear, Ladies' Suits, Cloaks, Shirt Waists, Wrappers, Cardigan Jackets, Bicycle Suits, Bathing Suits, Children's and Infants' Garments, Rubber and Mackintosh Garments, etc.

It sews with the greatest rapidity, the stitch being uniformly well secured and neatly finished. The peculiarity of its stitch in sewing the button all round greatly increases the strength and beauty of the work, as compared with any other method.

The action of this device is entirely automatic; its mechanism is simple and its construction the best attainable.

It is instantly adjustable for varying sizes and styles of buttons and is fitted to make 8, 12, 16, 20, 24, 28, 32, 36 or 40 stitches as desired; by special fitting any number of stitches can be made, divisible by 4.

Since the number of stitches is an automatic feature of the machine, the operator cannot slight the work by reducing the number, and each button is uniformly well secured.

The machines for sewing on buttons are fitted with a Universal Clamp in any one of three sizes, as ordered, viz:

Small, for attaching buttons up to 16 line.

Medium, for attaching buttons from 16 to 24 line, inclusive.

Large, for attaching buttons over 24 line.

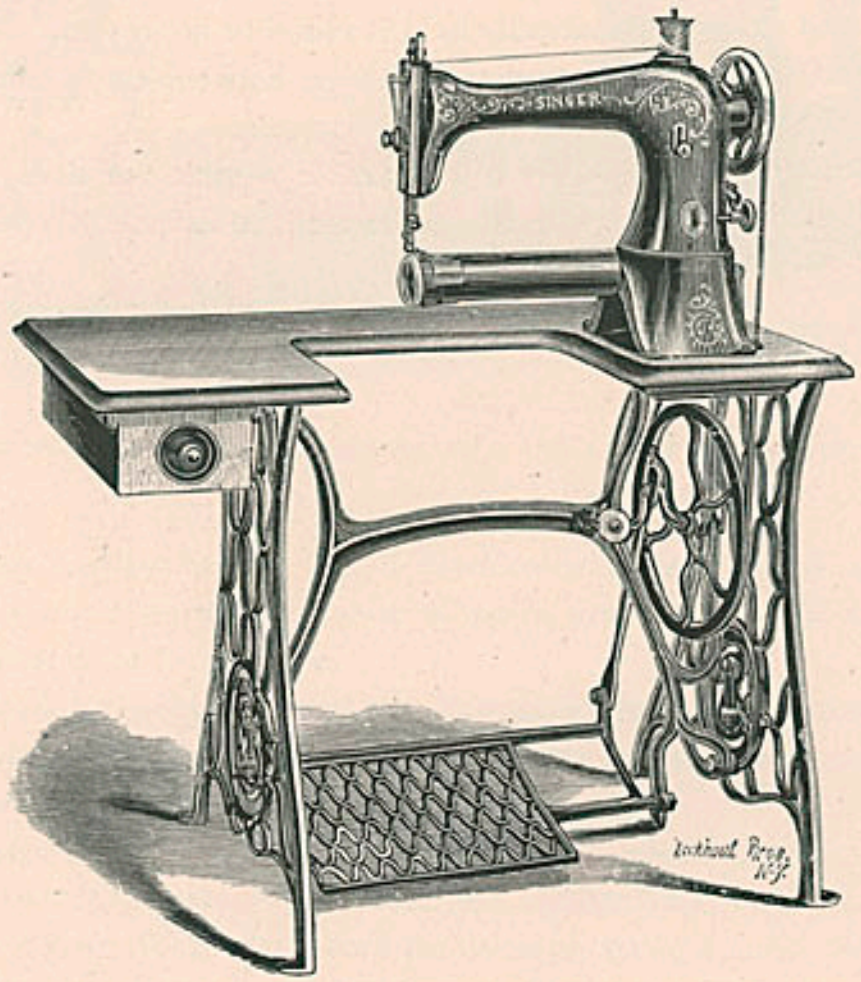
It will be observed that either one of the clamps has sufficient range of work for any single line of goods.

Machine No. 16-70 corresponds to No. 16-69 excepting in the clamp, which opens and closes automatically as it is raised or depressed.

In actual use by manufacturers the choice between this and the Universal Clamp is about equally divided.

In ordering these machines it is desirable to state the sizes of the largest and the smallest buttons on which it is to be used, so that the proper clamp may be fitted.

Class 17.



MACHINE No. 17-1..... ON STAND WITH WALNUT TABLE.

THE machines of Class 17 have balance wheel at right of operator; the oscillating shuttle mechanism is inclosed at the extreme outer end of a cylindrical bed 2½ inches in diameter and 16½ inches in length, the clear space from needle to base of arm being 10½ inches. They may be used either as flat-bed or as cylinder-bed machines, being fitted with an adjustable cloth-plate for such classes of work as make its use desirable.

These machines are adapted for sewing either leather or textiles and for operation by either foot or mechanical power.

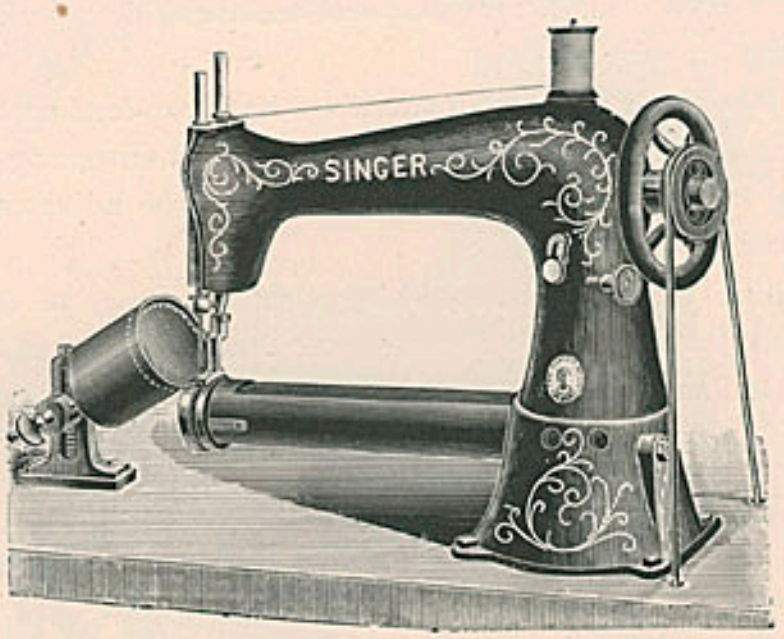
There are sixteen varieties in this class, described as follows:

Machine No. 71-1 has drop-feed across arm at left of needle and is used in

Shoe manufacture for stitching the quarter over the vamp; in other leather work it is used in the manufacture of Pocketbooks, Portfolios, Hand-bags, etc.

Machine No. 17-2 has drop-feed across arm at right of needle and is used for closing the seams of Shot or other bags after they are filled, sewing buckram on Jean Pants, Pocketbook manufacture, etc.

Machine No. 17-3 is for leather only and has wheel-feed at right of needle and a roller-presser; it is used in Shoe manufacture for stitching the vamp over the quarter.



MACHINE No. 17-4.....FOR CYLINDER BOXES.

Machine No. 17-4, illustrated above, for stitching in the ends of Cylindrical Leather Boxes, for Collars, Cuffs, etc., has wheel-feed at right of needle and is provided with an adjustable work-holding attachment.

Machine No. 17-6 has drop-feed up the arm for the convenient stitching of long tubular or cylindrical articles such as Shirt Sleeves, etc. Machine No. 17-10 is precisely similar to No. 17-6 excepting that the feed is reversible, which enables tying the end or any other part of the seam. Machine No. 17-7, drop-feed across the arm, has 2 needles and 2 shuttles for making two exactly parallel rows of stitching at one operation; the gauge or distance between the rows is made as ordered and may be from $\frac{1}{16}$ to $\frac{3}{4}$ of an inch, as desired. This machine is used in Shirt manufacture, for sewing strips on Ladies' Shirt Waists and for similar two-row stitching where the use of a right hand cylinder-bed is desirable.

Machine No. 17-8, drop-feed across arm, and Machine No. 17-9, wheel-feed across arm, are provided with the **Alternating Presser.** This device comprises two pressers, acting separately and alternately; the first moves forward with the feed, is then lifted and returned to its position; the other holds the

material down while the first rises and until it descends upon the fabric, but is raised while the material is carried by the feed. Each presser, while resting upon the work, forms a fulcrum upon which the other is raised, consequently the height of their movement always corresponds to the thickness of the material, thus allowing the free passage of material which varies in thickness, without affecting the integrity of the stitch.

By the use of this device, two or more pieces of material are moved with perfect uniformity so that their edges are even at the completion of the stitching. These machines are used for binding slippers and for similar work requiring short turns and binding into angles.

Machine No. 17-11, for leather stitching, has drop-feed across the arm and is provided with an adjustable attachment for neatly trimming the edge of the work; by setting out the knife, the line of its cut can be adjusted from $\frac{1}{64}$ to $\frac{5}{64}$ of an inch, as desired.

The machines shown in the following illustrations are of the highest efficiency in the manufacture of Felt Shoes, Horse Boots, Musical Instrument Cases, Gun Cases and similar articles of irregular shape requiring very strong stitching.

MACHINE No. 17-5..... ....DROP FEED.

MACHINE No. 17-12.....UPPER FEED.

Machine No. 17-5 has the usual form of drop-feed for leather; machine No. 17-12 has no under-feed, the movement of the material being effected by a special device, used in place of the ordinary presser-foot, which acts on the top surface and sets up the stitch, giving it a very superior finish and leaving the leather without mark on either side.

The work-supporting arm of these machines measures 2¼ inches at its outer end and has 10½ inches clear space from needle to inner end. The sewing mechanism is close to outer end, thus enabling the operator to stitch closely to edge of work.

The slight contact of the fabric with either the raised throat plate or the presser-foot enables the operator to work with facility into the centres or about the edges of concave or convex surfaces; the cylinder-bed is cut down below the line of the throat-plate so that work of irregular form can be readily passed over it.

MACHINE No. 17-13 .....FOR CLOTH STITCHING.

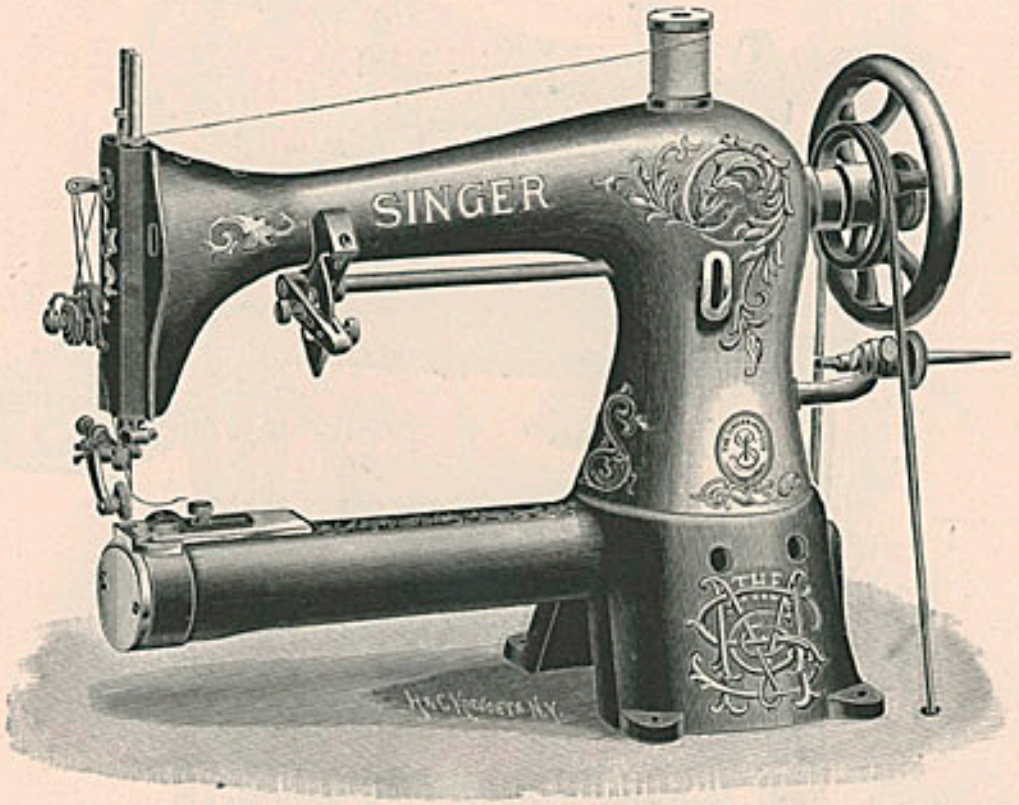
Machine No. 17-13, illustrated above, is for stitching Cotton and Linen goods; it has left-hand feed for carrying the material up the arm, and the hemmer is arranged for convenience of the operator in handling the work from left to right.

On **Machine No. 17-14** the feed is arranged to carry the material off the arm and the position of the hemmer is reversed, each machine being most conveniently arranged for the different methods of operation.

These machines are especially adapted for and extensively used in Shirt manufacture and the manufacture of Women's Undergarments; they are suitable for stitching all textile articles of a form rendering the use of a cylindrical bed desirable.

BOBBIN WINDING.

For use in winding bobbins, the balance wheel is fitted as ordered to run either tight or loose on shaft. There are two different forms of bobbin winders used with the tight balance wheel (Parts No. 5521 and No. 5523). For winding bobbins with loose balance wheel, which runs without operating machine, there are also two different forms of winder (Parts No. 5525 and No. 5527).



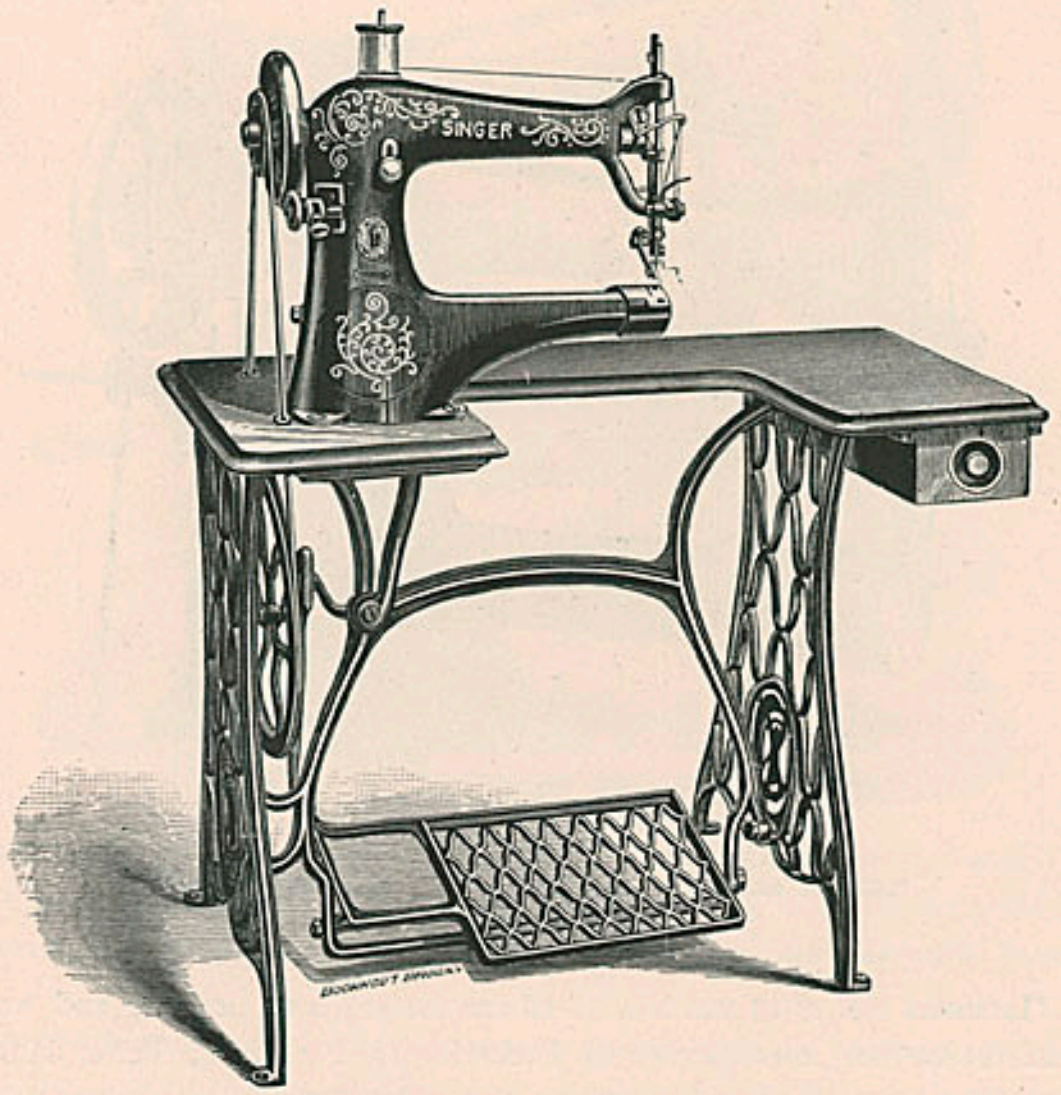
MACHINE No. 17-16..... ...FOR LEATHER STITCHING.

Machines No. 17-15 and No. 17-16 are for stitching leather and are especially useful for the manufacture of Pocketbooks, Portfolios, Belts, Hand-bags and similar articles requiring the strong, fine stitching of short seams.

These machines afford the greatest convenience for this class of work; the drop-feed is close to the outer edge of the raised throat-plate, which forms a flat-bed of most convenient size for handling the work, and a roller-presser and a roller-guide enable the utmost facility in the passage of the fabric.

Machine No. 17-16, illustrated above, has a very effective device, conveniently located under the overhanging arm, for reversing the feed and adjusting the length of stitch. By means of this combination perfect uniformity of stitch is obtained, whether feeding forward or back; the reverse feed enables tying a seam at any point desired.

Class 18.



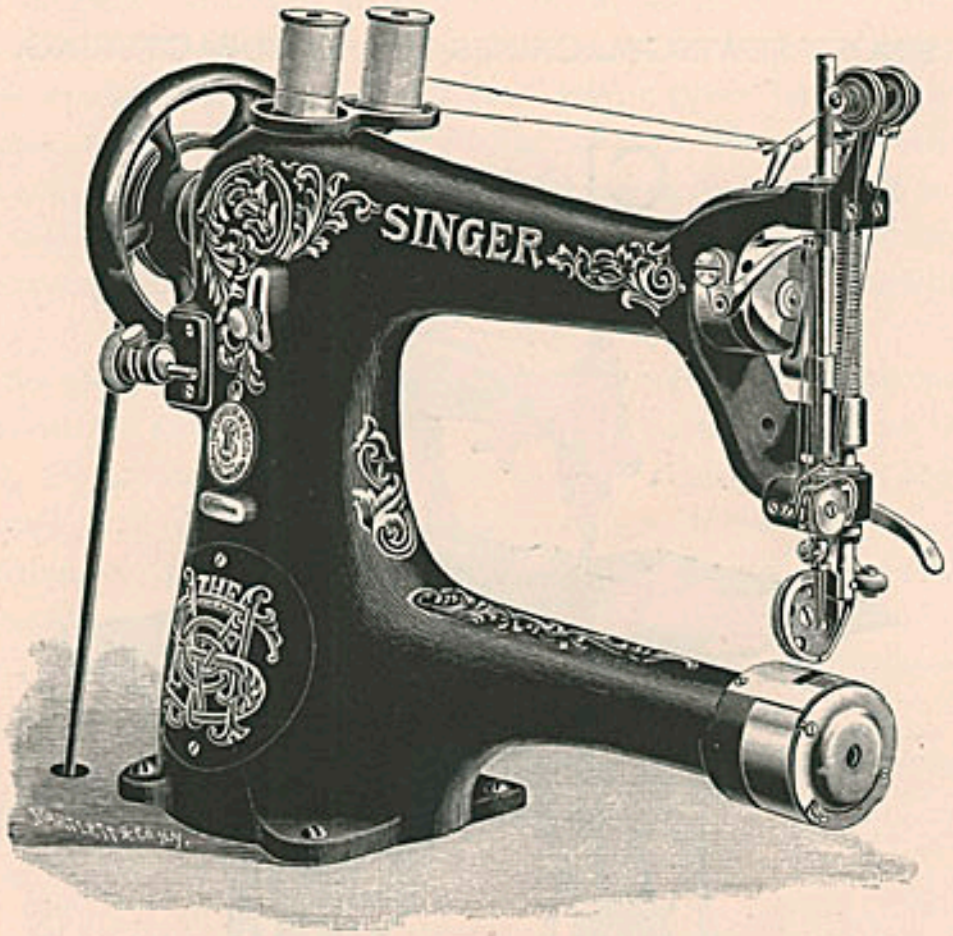
MACHINE No. 18-1.....ON STAND.

THE machines of Class 18 have a cylinder bed or work-supporting arm for the convenient handling of articles having a tubular or concave form; the bed measures 16 inches in length, 10¼ inches from needle to base of arm, and 2½ inches in diameter, excepting machine No. 18-7, which has a bed 2 inches in diameter.

These machines are distinguished for strength and stability, the arm and bed being cast in one piece. This method of construction enables operation at high speed without vibration. The balance wheel is at the left of the operator and the feed motion is across the arm; the machines of this class have the Oscillating Shuttle mechanism, are light running, using either foot or mechanical power, and are especially adapted for Shoe Vamping or similar stitching.

Machine No. 18-1, having drop-feed at right of needle, is generally used for stitching the quarter over the vamp; Machine No. 18-2, having drop-feed, and Machine No. 18-3, having wheel-feed, both feeds being at left of needle, are used for stitching the vamp over the quarter.

Machine No. 18-7 has drop-feed at left of needle and the diameter of cylinder-bed is only two inches, enabling its use on Children's Shoes and other articles having small opening.



MACHINE NO. 18-5 : TWO SHUTTLES.....FOR VAMPING SHOES, ETC.

The machine illustrated above has a cylinder bed or work-supporting arm 2½ inches in diameter, inclosing two oscillating shuttles which operate in conjunction with two needles to make two complete and independent lock-stitch seams that must, under all conditions, be perfectly parallel.

The Singer oscillating shuttle always maintains correct tension of the under thread; it is the most effective device existing for perfectly forming the loop of a lock-stitch when running at high speed.

Machine No. 18-5 has drop-feed at left of needle and a roller-presser; No. 18-6 is precisely similar excepting that it is provided with wheel-feed.

These machines are especially adapted for VAMPING SHOES, for which purpose they are extensively used; they can be furnished in any width of gauge between needles, from $\frac{1}{32}$ to $\frac{1}{8}$ of an inch.

The long-beak shuttles operate so that no slack thread is drawn through the needle-eyes when in the leather or below it, thus permitting use of smaller needles to a given size of thread than is otherwise possible.

These are the only left-hand cylinder machines, making a lock-stitch, that sew two exactly parallel rows at one operation, thereby doubling the production; for speed, strength and perfect uniformity of stitch they are unequaled.

Class 19.

MACHINE No. 19-12..... .....FOR LEATHER.

THE machines in Class 19 have a cylindrical bed 16½ inches in length, with a clear space of 10½ inches from needle to base of arm; the cloth-plate extending outward from the needle varies in length according to the work for which the machine is specially fitted.

The diameter of the work-supporting arm is 2¾ inches, excepting in two varieties hereafter specified; there are eleven varieties in the class, but all have drop-feed arranged to feed lengthwise the arm and all have a balance-wheel located on the side of machine convenient to operator's right hand.

The feed mechanism on all the machines of Class 19 is arranged for reverse motion, so that the fabric can be fed either forward or back and a seam

can be double-stitched at any point. They can be operated by foot or mechanical power, the machine illustrated above (No. 19-12) being mounted on stand for foot-power and having its feed and presser arranged for leather stitching.

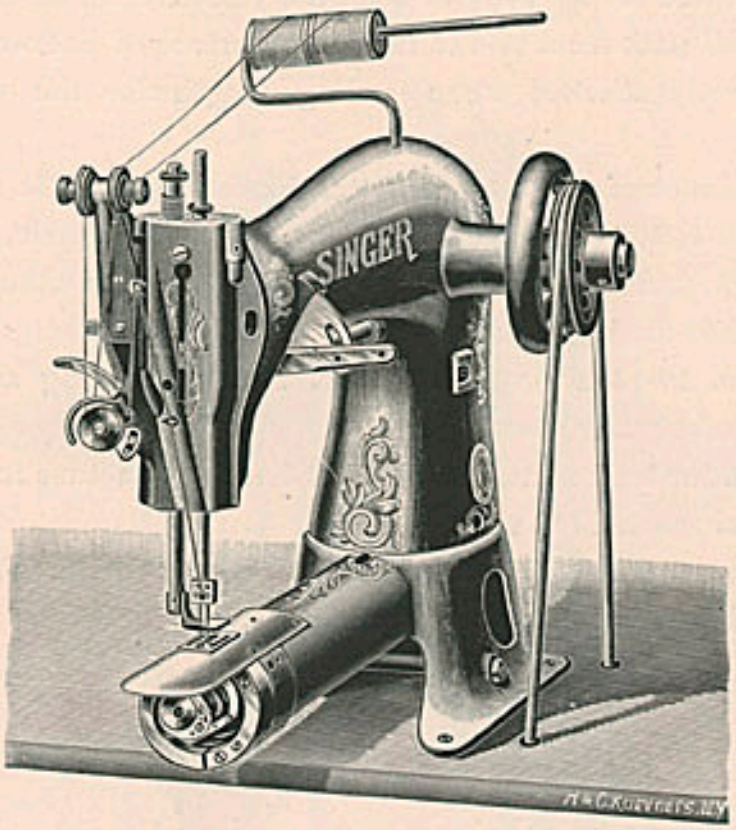
These machines are used for stitching elastic gores, back straps and back seams in shoes, for felling, closing or tacking seams in shirts, trousers and knit goods, and are adapted for all work of a similar character in which it is necessary that the thread shall pass from and to the inner surface of hollow forms that can be more conveniently stitched when feeding lengthwise the work-supporting arm.

All the machines of Class 19 have the Oscillating Shuttle mechanism; the varieties numbered 4, 5, 11 and 12 have the long-beak shuttle, and those numbered 8, 9, 10, 13 and 14 have a solid shuttle which oscillates about a large central bobbin, other distinguishing features being as follows:

Machine No. 19-13 is for cloth and is used for felling and closing shirt-sleeves, overalls and similar work.

No. 19-14 is for leather and is used in Shoe manufacture for inserting back straps and for closing whole vamps.

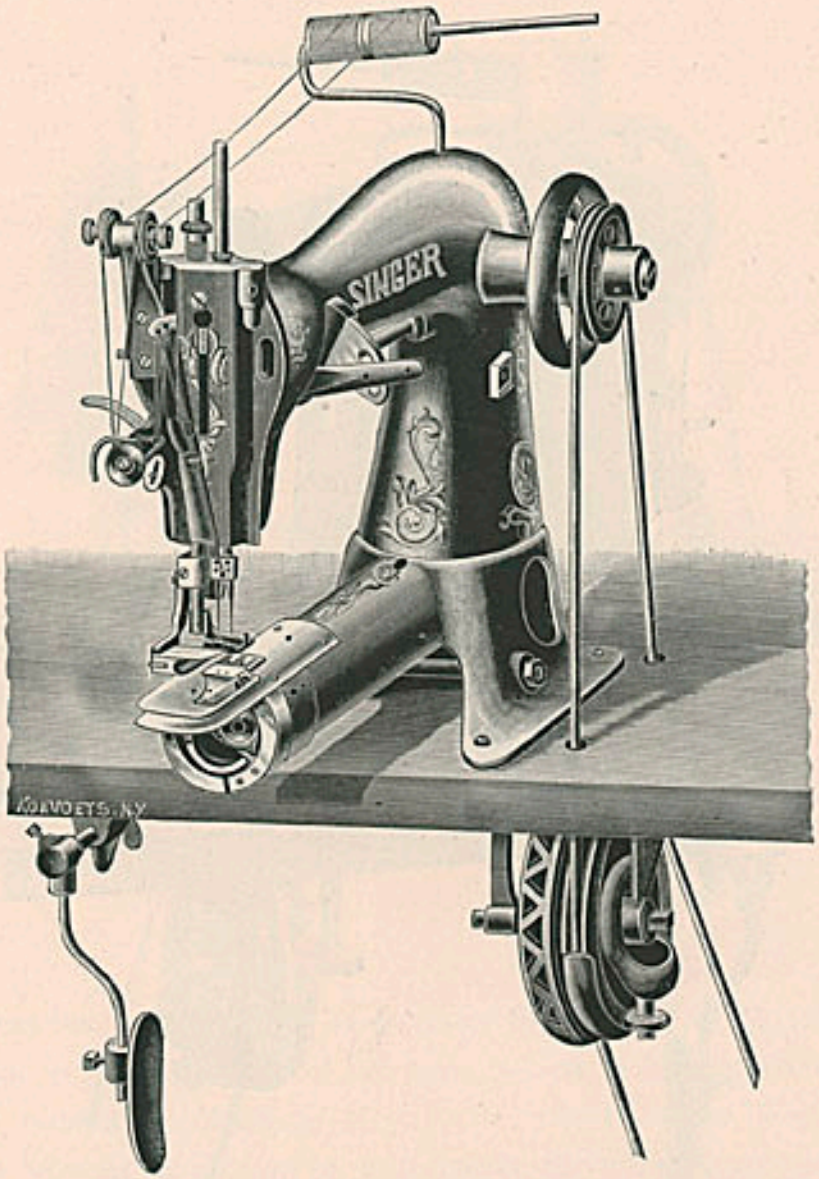
No. 19-9 has an arm which is only $1\frac{3}{16}$ inch in diameter, thus enabling the stitching of cylindrical objects having a small opening.



MACHINE No. 19-5.....FOR TWO-ROW STITCHING.

Machine No. 19-5 has two needles and two shuttles for stitching, at one operation, two parallel rows from $\frac{3}{32}$ to $\frac{5}{16}$ of an inch apart. The distance between the rows is fixed in the construction of the machine and can be made to any gauge ordered, within the limits specified. Machine No. 19-4 has two needles and one shuttle.

These two-needle machines of Class 19 are extensively used for Lap-seam Felling and for closing and staying seams; they are fitted with special attachments, as required for the various kinds of work in the manufacture of Shoes, Shirts, Overalls, Trousers, etc.



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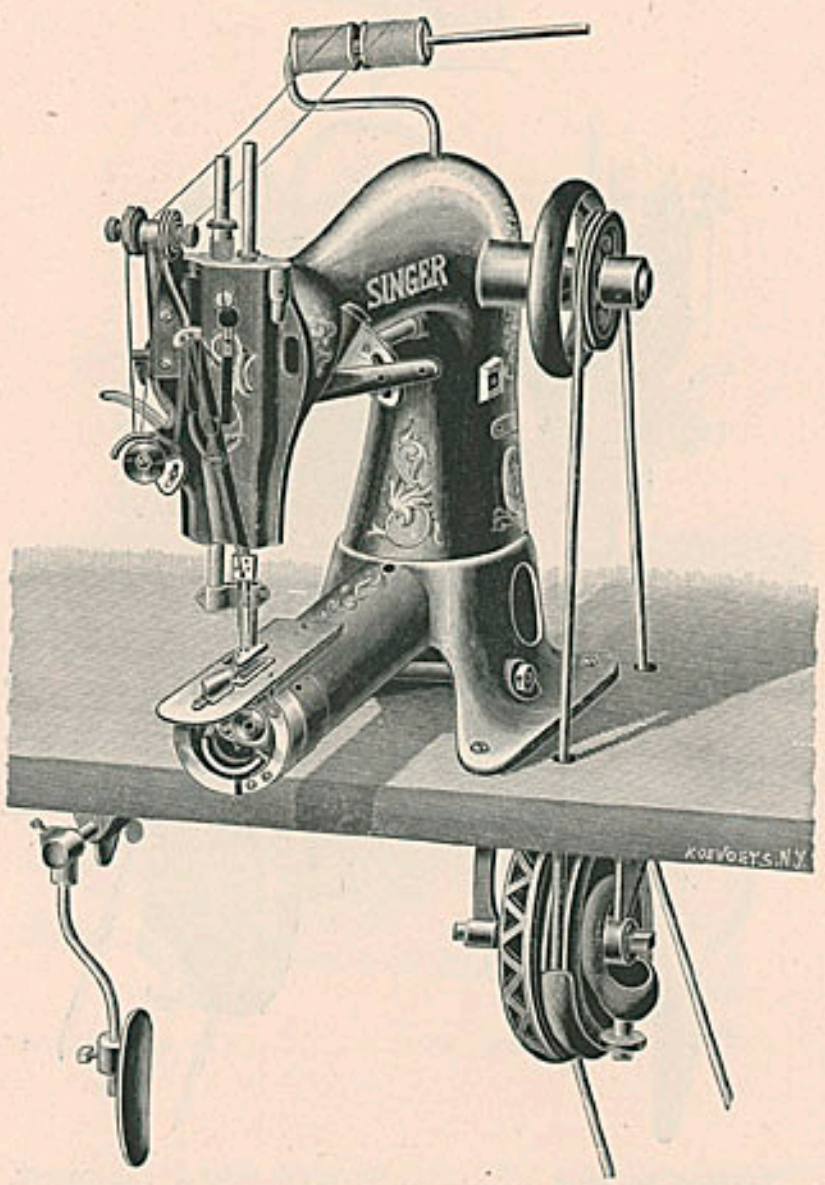
MACHINE No. 19-15 .....WITH FELLING ATTACHMENT.

The above illustration shows Machine No. 19-15 fitted with hinged lap-seam feller (No. ~~588~~ A. and A.) **for closing seams on heavy goods** in the manufacture of Overalls, Jumpers, etc.

This attachment is commonly known to the trade as "the St. Louis feller;" it is only used on Singer sewing-machines and is of the highest efficiency for its purpose because of its convenience and its automatic adjustability to any variation in thickness of fold or seam.

All parts are yielding and so arranged as to secure the greatest facility for quick handling of work in making straight and perfect seams.

The illustration shows the convenient form of knee-lifter (No. 271 P. T. F.) used on power tables with this class of machines, also the Singer Under Driver (Screw Pressure), the most effective device for its purpose.

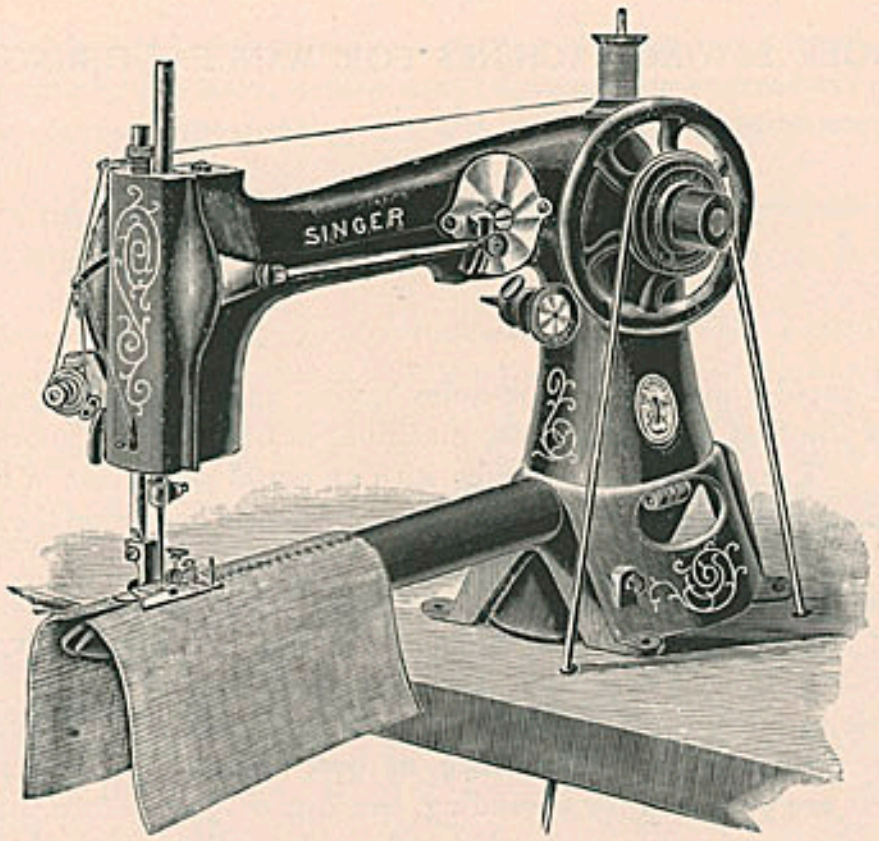


MACHINE No. 19-16.....WITH FELLING ATTACHMENT.

The above illustration shows Machine No. 19-16 fitted with felling attachment **for closing shirts, etc.**

Through the use of this attachment, which is peculiar to Singer sewing-machines, perfect seams can be quickly made by any operator using ordinary care.

The seam is more easily started than by any other method and the work is always in sight. The presser is located directly over the seam, which is carried evenly, without puckering or creasing on either side. Owing to its convenience for handling the work much time is gained by the use of this device, thus securing a distinct increase of product as well as improved quality of work.



MACHINE No. 19-10 .....FOR OVERSEAMING.

Machines No. 19-8 and No. 19-10 make the zig-zag stitch for overseaming; they only differ in the diameter of the arm, which is 2¼ inches on Machine No. 19-8 and 1$\frac{3}{16}$ inches on Machine No. 19-10; the latter is shown in the above illustration as sewing up a seam on knit goods, for which purpose it is especially adapted and extensively used. The stitch made by these machines produces a flat and elastic seam, uniting two raw edges in a manner that is superior to any other. A special form of combined guide and presser is used (Parts No. 7111); the edge of a separator blade or guide drops into a slot in the throat-plate, the raw edges of the fabric are carried against each side of this guide, which is sufficiently far from the feed to prevent its catching the edges. The guide is adjustable and is raised with the presser-foot so that the work can readily be removed.

Machine No. 19-10 is also used for closing the seams of leather cylinders, the edges of which are strongly and squarely united by the ornamental zig-zag stitch; it is used in the manufacture of round leather boxes or other stitching of a similar character.

The diameter of the cylinder permits the closing of a small aperture.

Class 23.

FOR rapidly making Button-holes having the appearance and strength of the best hand work, the machines of Class 23 are unequaled.

They work button-holes with an equal perfection of finish on any class or thickness of fabric, making a "purl" stitch on the finished side of the goods.

The button-holes are of the usual shape and the machines can be fitted to make them of any length, not exceeding 2½ inches, either with or without an eyelet-end, with a straight or a taper bar, or without bar.

The hole is cut in textiles by one blow of the knife. It can be made either before or after the formation of the stitch, as best adapted to the texture of the fabric. Means are provided for spreading the button-hole before working it.

The mechanism is simple, durable and can be easily operated either by foot power or by mechanical power at high speed.

The work is held, face down, in a convenient clamping device which secures absolute accuracy; the feed carries this clamp in exact relation to the speed of the stitch-forming mechanism.

The stitch-forming mechanism consists of loopers and spreaders under the work-plate; these lock together the threads from the upper and lower spools, and form a firm, hard "purl" stitch, a strengthening cord or gimp being laid along the edge of the button-hole and covered by the thread forming the stitch. By using an upper guide, a cord can be laid on the reverse side of the fabric, so that the button-hole will present the same appearance on both sides.

Either silk or cotton thread can be used, or silk upper and cotton lower thread. The length of the stitch and the distance between stitches are adjustable as desired. On closely woven fabrics the stitch can be firmly worked on extreme edge, making a "narrow bead," finely finished button-hole or it can be carried back ⅛ inch on face of fabric, as desired.

Each machine for cloth is provided with loopers for making the stitch with either a single or double thread; the former gives the exact appearance of hand work and uses less thread; the latter increases the strength and durability.

There are seventeen varieties of machines in this class for making button-holes, but most of their parts are interchangeable, those that are special to the respective varieties consisting principally of "deflecting pieces" for forming the taper bar on various lengths of button-holes, feed-wheels for the same purpose, "sliding buttons" for straight barring and special parts for automatic stop-motion.

Five of these varieties are for making button-holes in **leather** and twelve for making button-holes in **textiles.** They are described as follows :

FOR LEATHER.

The machines for leather have no cutting attachment, a hand punch being furnished for cutting the holes before working; they are extensively used in Boot and Shoe manufacture where great strength and finished appearance of product are essential.

Each of these machines can be furnished with feed-wheel to make any of the following lengths of button-holes, as ordered: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 inch, $1\frac{1}{8}$ inch.

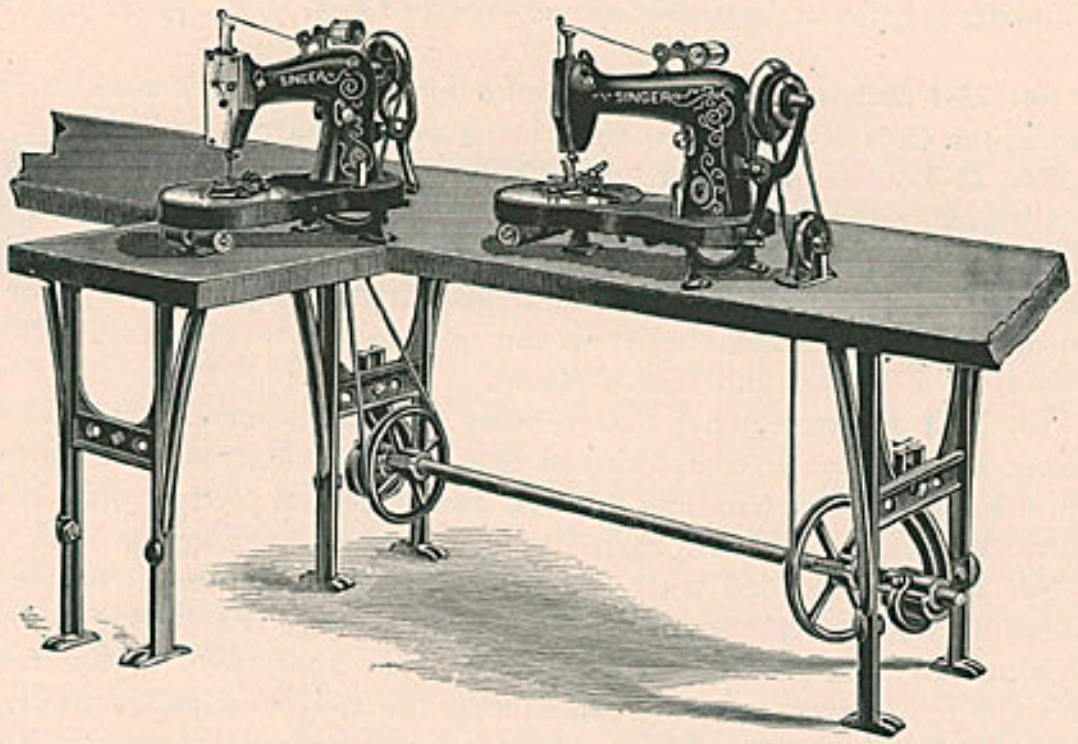
No. 23-1 makes eyeleted button-holes without bar and is used on fine custom work, the ends of the button-holes being usually barred by hand.

No. 23-2 makes eyeleted button-holes having a taper bar. Deflecting pieces are used in the clamps to produce this form of bar, which is carried, in a diagonal direction, past the end of the button-hole a distance of one-eighth inch or more, as desired. In making button-holes having a taper bar it is not necessary to carry the thread and cord from one button-hole to the next. This form of bar is used on Ladies' and Misses' Shoes.

No. 23-3 makes eyleted button-holes without bar and is provided with Automatic Stop-motion at completion of each button-hole, thus securing uniform length, enabling quicker handling of work and increased production. It is used on fine work when the ends are barred by hand or by a barring machine.

No. 23-4 is provided with Automatic Stop-motion and makes eyeleted button-holes with a straight bar, having the appearance of being hand made. The thread is carried from one hole to the next, on the under side of the fabric, to which it and the gimp are usually tacked after the button-holes are made.

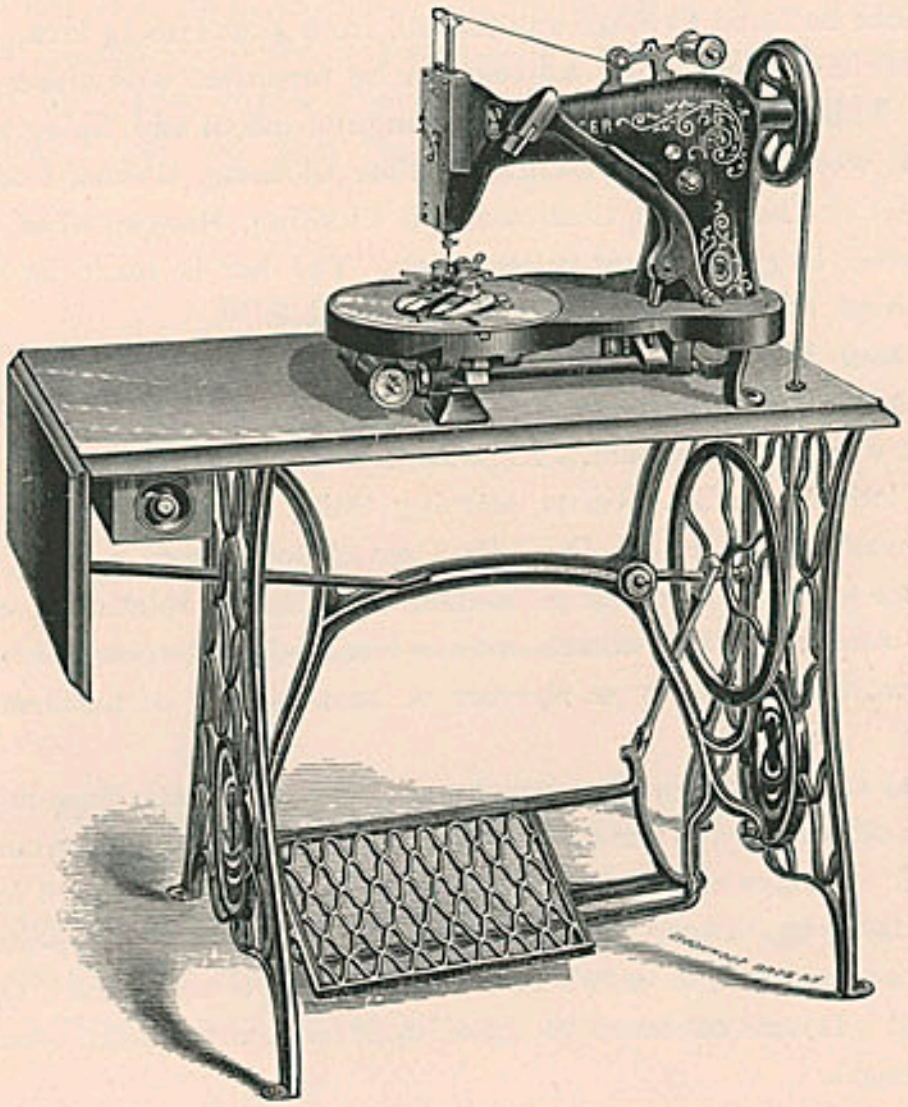
No. 23-5 makes eyeleted button-holes with taper bar the same as No. 23-2, but has Automatic Stop-motion, as described for No. 23-3.



MACHINE No. 23-4.... ... ...ARRANGED IN PAIRS FOR POWER.

The above illustration shows the method of arranging two machines on a power table so as to secure the greatest production of button-holes in the manufacture of Shoes, Over-gaiters, Leggins, etc.

These machines stop automatically upon the completion of a button-hole, so that an operator seated in a revolving chair can run both machines. By this method the time occupied by one machine in automatically stitching a button-hole is utilized by the operator in changing the work and starting the other machine. More than 7,500 button-holes have been stitched in one day of ten hours on a pair of these machines arranged as shown above.



MACHINE No. 23-8 .....ON STAND FOR FOOT POWER.

FOR TEXTILES.

Twelve varieties of Class 23 are for making button-holes in cloth, nine of them for woolen goods and three especially for linen and cotton fabrics.

They are all suitable for either foot or mechanical power and are described as follows:

No. 23-7 is especially adapted to operate a short needle using cotton thread on cotton or linen fabrics. By means of a peculiar looper and loop spreader for the under thread, a very short needle can be used for the upper thread. This is an obvious advantage in collar and cuff work requiring a formation of the stitch through several plies of material, because vibration of needle is avoided and a perfect stitch secured. This machine has no cutting attachment, and can be fitted to make any size of button-hole from ½ inch to 1½ inch long, the hole having a very small eyelet suitable for this class of work and no bar.

No. 23-8 has cutting attachment and makes an eyeleted button-hole without bar; it can be fitted to make any length, from ½ inch to 1½ inch, on any kind of textile fabric. The cutting knives can be furnished with either a large or a small eye. This machine has the widest range of use of any, being employed on all classes of work in the manufacture of Fine Clothing, Cloaks, Ladies' Dresses of silk, cotton or linen, Suits, Costumes, Oil Clothing, Mackintoshes, Gossamers, Canvas Goods, Leggins, Over-gaiters, etc. The bar is made by hand or by special machine, after the formation of button-hole.

No. 23-9 has cutting attachment, and can be fitted to make eyeleted button-holes from ½ inch to 1½ inch in length; it makes the taper bar on all lengths not exceeding 1⅜ inch. It is used in the manufacture of the cheaper grades of Clothing, Ladies' Waists, Bathing Suits, Cardigan Jackets, Oil Clothing, Mackintoshes, Gossamers, Overalls, Canvas Goods, etc.

No. 23-10 has Automatic Stop-motion at the completion of each button-hole; in all other respects it corresponds to No. 23-8. It is used in manufacturing on fine work where a large number of button-holes of uniform length are required.

No. 23-11 has Straight Bar attachment and Automatic Stop-motion. It is used in manufacturing the cheaper classes of Mackintoshes, Gossamers, etc., and can be fitted to make eyeleted button-holes from ½ inch to 1½ inch in length.

No. 23-12 has Taper Bar attachment and Automatic Stop-motion. It is used in the manufacture of Men's Pants, Boys' Jackets and Pants, Over-gaiters, Leggins, etc. It can be fitted to make eyeleted button-holes from ½ inch to 1½ inch in length.

No. 23-13 makes **Eyeless** button-holes with a Taper Bar and has Automatic Stop-motion. It can be fitted for any length of button-hole from ½ inch to 1½ inch, making the Taper Bar on all lengths not exceeding 1⅜ inch. It is used in the manufacture of Collars and Cuffs, Ladies' Shirt Waists, Wrappers, Silk Waists, etc.

No. 23-14 has short needle for using cotton thread on linen and cotton fabrics, corresponding in its uses to No. 23-7, from which it only differs in having a cutting attachment.

No. 23-16 is for making all lengths of button-holes not exceeding 2 inches and is extensively used in Cloak manufacture. It has a cutting attachment and does not make a bar.

No. 23-18 has short needle for using cotton thread on linen or cotton fabrics and is provided with Straight Barring attachment and Automatic Stop-motion. It has no cutting attachment, and is extensively used in Collar and Cuff manufacture.

No. 23-19 for button-holes ½ to 1½ inch long, and **No. 23-20**, for button-holes from ½ to 2 inches long inclusive, have cutting attachment, and are also

provided with straight barring attachment and a hand-tripping lever, so that a straight bar can be made at any instant in the formation of the button-hole.

These machines are used by button-hole manufacturers having a variety of lengths to make. They enable quick changes and the formation of any length, within the limits specified, thus largely increasing the output of this class of work.

FOR EYELETS (Purl Stitch).

Machine No. 23-15 is adapted for making Eyelets in Textiles or Leather; the eyelets are finished with a "purl" stitch that is unequaled for strength and finished appearance.

It is used in Shoe manufacture, in the manufacture of Clothing for the Navy and for work of a similar character; it is of the highest efficiency for finishing eyelet holes requiring this form of stitch.

FOR BARRING OR FINISHING SELVAGE ENDS.

Machine No. 23-17 is designed for barring or finishing, with the button-hole stitch, the cut ends of binding after it is stitched on to a garment.

It is extensively used for this purpose in the manufacture of Corsets.

Classes 24, 25 and 26.

THE Chain-stitch Sewing Machines of Classes 24, 25 and 26 have a rotary hook for forming the loop and are distinguished for compactness, high speed, noiselessness and light-running qualities; they are furnished with either Automatic or Plain tension, as desired.

These machines are of the highest type for all purposes in which a single thread chain-stitch can be used; owing to their simple design, the small number of wearing parts and the superior workmanship and material used, they are of remarkable durability and efficiency and attain the highest rate of speed.

They are adapted to a wide range of work upon almost every variety of fabric, their capacity under the arm being greater than that of any similar machine.

The frame of the machine is cast in one piece, and is remarkably rigid and free from vibration.

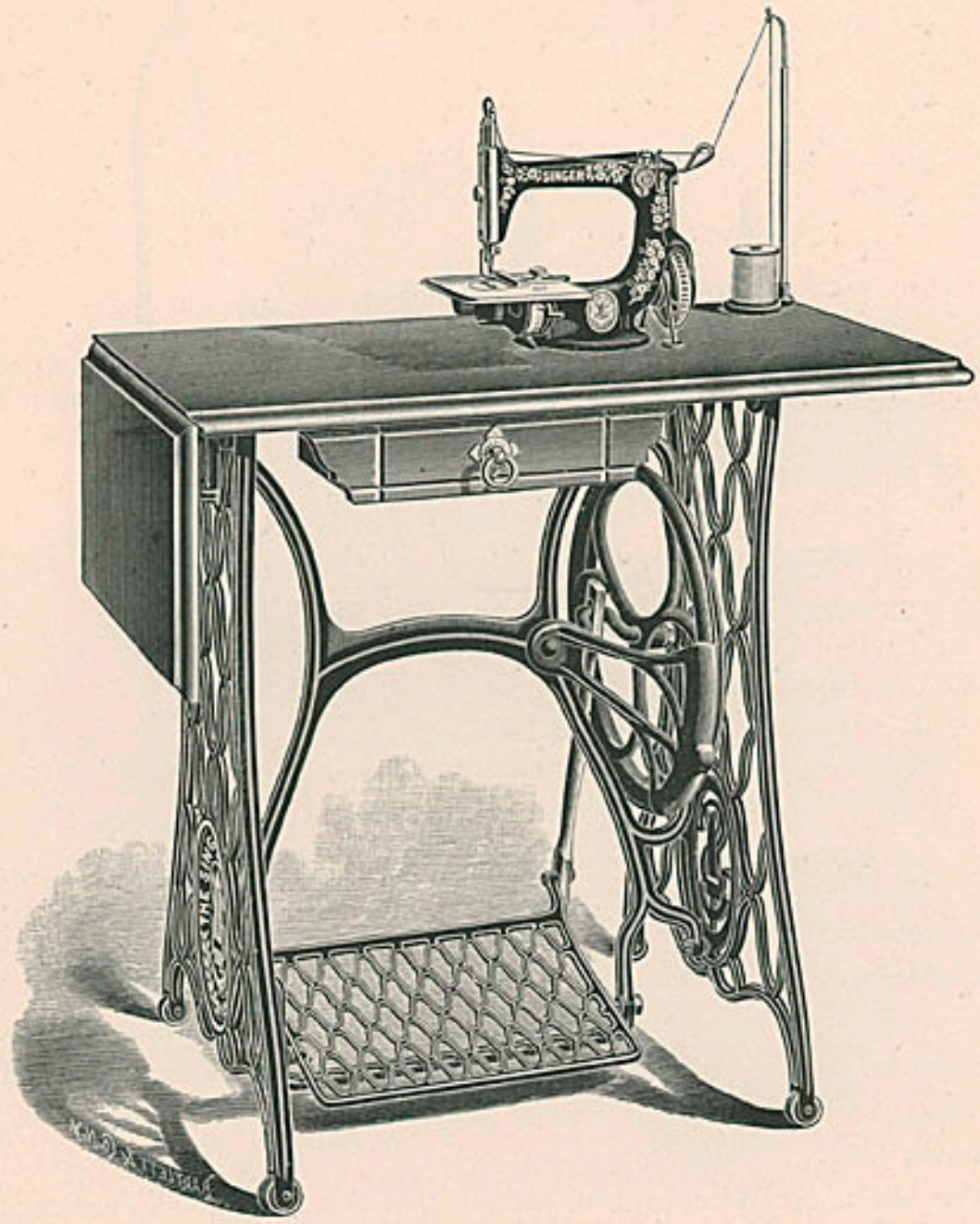
The feed mechanism has a positive motion and the length of stitch is easily adjusted without use of springs.

The Automatic tension device has exceptional excellence; it is so operated that, at each vertical reciprocation of the needle, exactly the correct length of thread is supplied and "slip-stitching" is absolutely impossible.

The stitch is formed from a single thread which is interwoven into a chain on the under surface of the goods; the thread may be drawn closely to the fabric, forming a tight and flat seam, or it may be left in an elastic chain as desired.

A beautiful ornamental stitch, resembling braid, is produced by the use of coarse silk or thread, this feature being of special value and usefulness in the manufacture of Underwear, Hosiery and Knit goods, for ornamenting skirts and draperies, etc.

Modifications of feed dogs, throat-plates and presser-feet are made to suit the various processes in manufacture, such as plaiting, hemming, felling, tucking, gathering, ruffling, binding, quilting, cording, etc., and the machines can be fitted to order with appliances devised to perform each of these operations in the most effective manner.

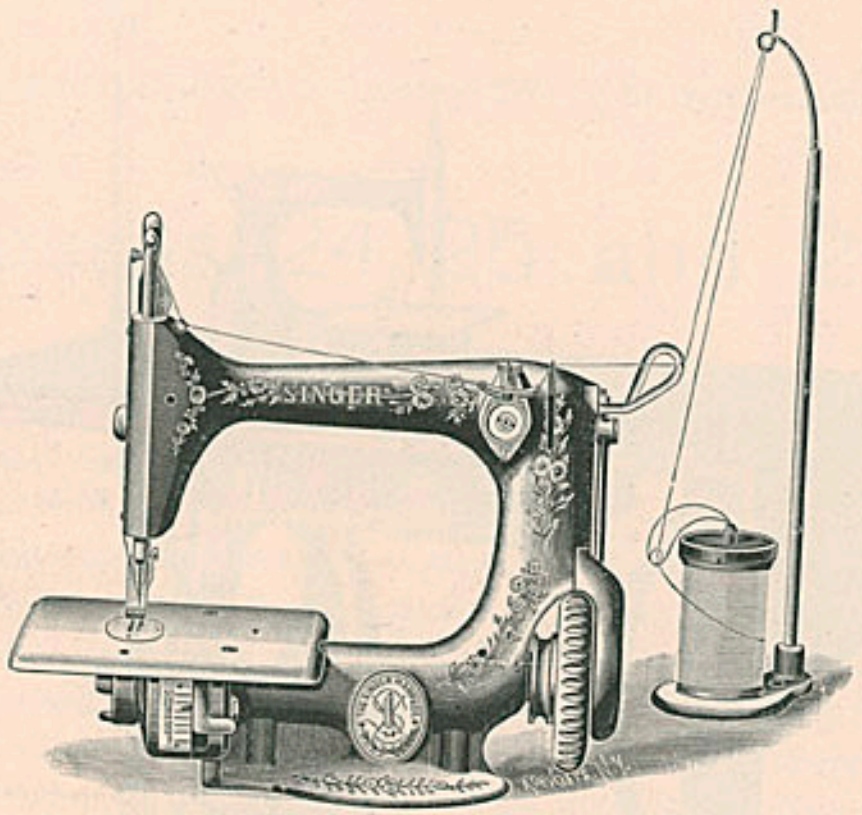


MACHINE No. 24-3.

Machine No. 24-3, illustrated above, is especially suited for general manufacturing and is fitted to make from 8 to 30 stitches to the inch; it has the Automatic tension, while Machine No. 24-5 only differs from it in having the Plain adjustable tension device.

Machine No. 24-6 has Plain tension and makes a stitch up to $\frac{3}{16}$ inch in length; Machine No. 24-7, Plain tension, makes a stitch up to $\frac{1}{4}$ inch in length and is largely used in Hat and Cap manufacture, also for stitching window shades or any work requiring a long and elastic stitch.

The form of stand, shown above, is preferred by operators over all others on account of the ease of its operation and convenience for handling the work.



HEAD OF MACHINE No. 24-3.

NECKWEAR MANUFACTURE.

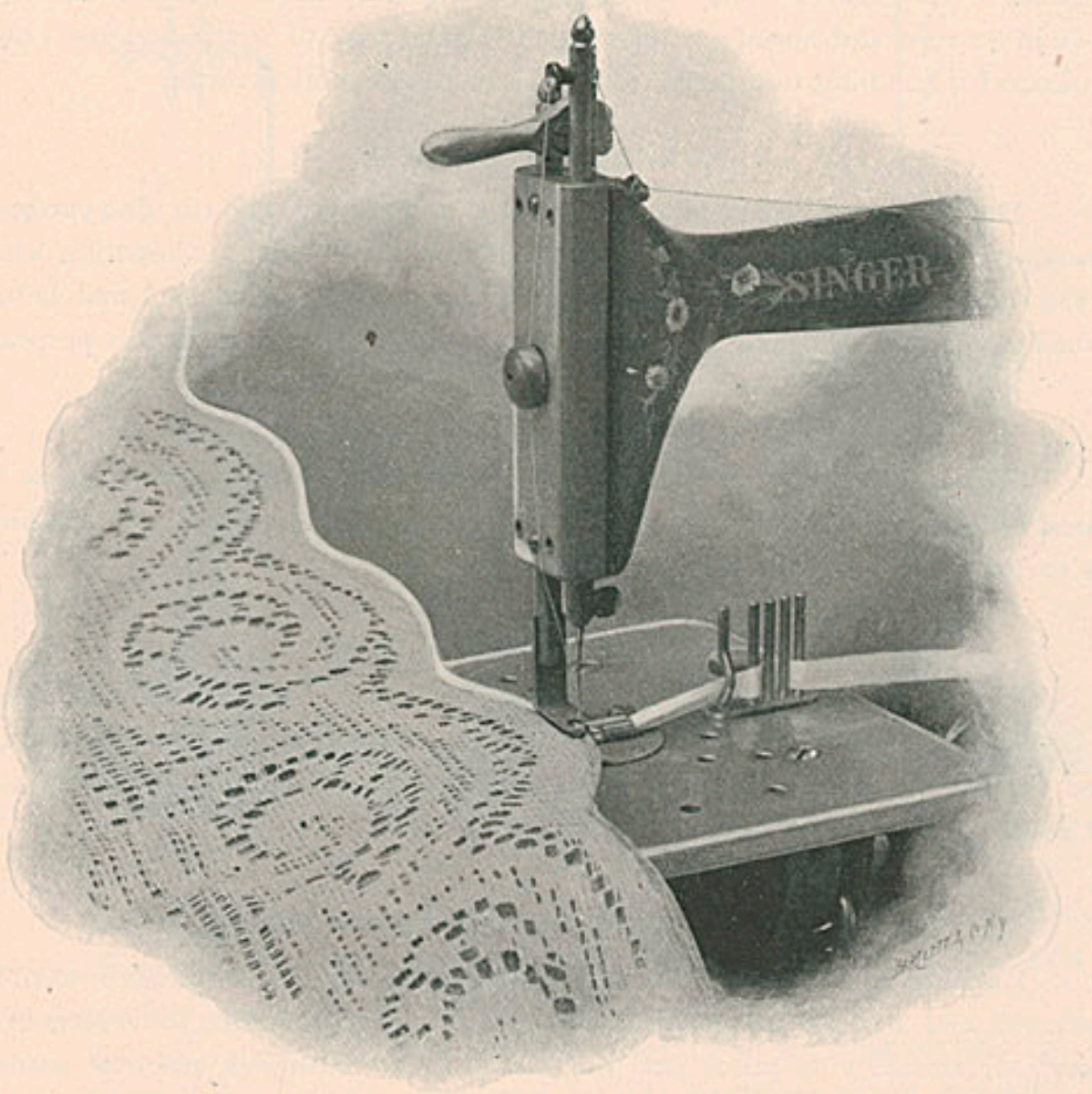
In the manufacture of Neckwear the Singer Machine No. 24-3 excels all other chain-stitch machines in the facility with which the stitch can be run closely to the edge of the band, both the lining and face material being uniformly fed. The stitch is carried evenly to the end of one piece of work while operator is preparing the next, and a continuous stitch can be carried from one piece to the other, thus gaining time.

For hemming Windsor ties, etc., a special needle-point hemmer is furnished for making a very narrow hem; the "bias" goods used for this purpose can be hemmed on this machine without stretching, thus securing a wider tie when finished than is possible on other machines.

Should breakage of thread occur, owing to lumps or other accidental causes, the positive action of the Automatic tension prevents catching of thread and drawing the goods down to the looper.

INFANTS' AND CHILDREN'S DRESSES AND BLOUSES.

The high speed, easy operation and excellent work of the Singer chain-stitch machines make them the best, not only for ordinary stitching on the above mentioned goods, but the single-needle machine, No. 24-3, is also used for tucking, hemming and ruffling and the two-needle machine, No. 24-8, for attaching braid on children's blouses, making two parallel lines of stitching at once.



BINDING LACE CURTAINS, ETC.

The above illustration represents Machine No. 24-3 fitted with the "English" binding attachment (No. 210 A. and A.) for folding and delivering tape at exactly the proper point on the work in binding lace curtains and similar material, so that the tape is entirely out of the operator's way. The shape and position of the cloth plate, in combination with the device referred to, secure the greatest convenience in stitching around short scollops or into close angles, while the form and elasticity of stitch are peculiarly adapted for the material and the uses of binding. Another form of binder (No. 215 A. and A.) is arranged to swing into or out of position for work at any instant, as required.

LACE AND RUFFLING GOODS, LADIES' NECKWEAR, RUCHING, ETC.

In the manufacture of these lines of goods the chain-stitch is preferred, because of its elasticity; the manifold advantages of the Singer Machine No. 24-3, in its ease and speed of operation, its perfection of stitch and great convenience for handling this work, cause it to be the general favorite.

INFANTS' LACE CAPS.

The single-needle machine, No. 24-3, is extensively used for fine cording, attaching lace, etc., in the manufacture of Infants' Lace Caps; for inserting wires in the rims of such caps, the two-needle machine, No. 24-8, is used and is furnished with a special presser, making it of the highest efficiency for this purpose.

ORNAMENTED FABRICS, ART EMBROIDERY, ETC.

Machine No. 24-3 is used in the final preparation of these classes of goods, the Automatic chain-stitch being both ornamental and useful for attaching the various parts, for fine trimming, etc.

KNIT GOODS MANUFACTURE.

The chain-stitch is especially desirable in the manufacture of Knit goods on account of its elasticity, the single-needle machine, No. 24-3, being largely used for plain stitching and the two-needle machines, No. 24-4 and No. 24-8, for finishing, binding and staying seams, etc.

UMBRELLA AND PARASOL MANUFACTURE.

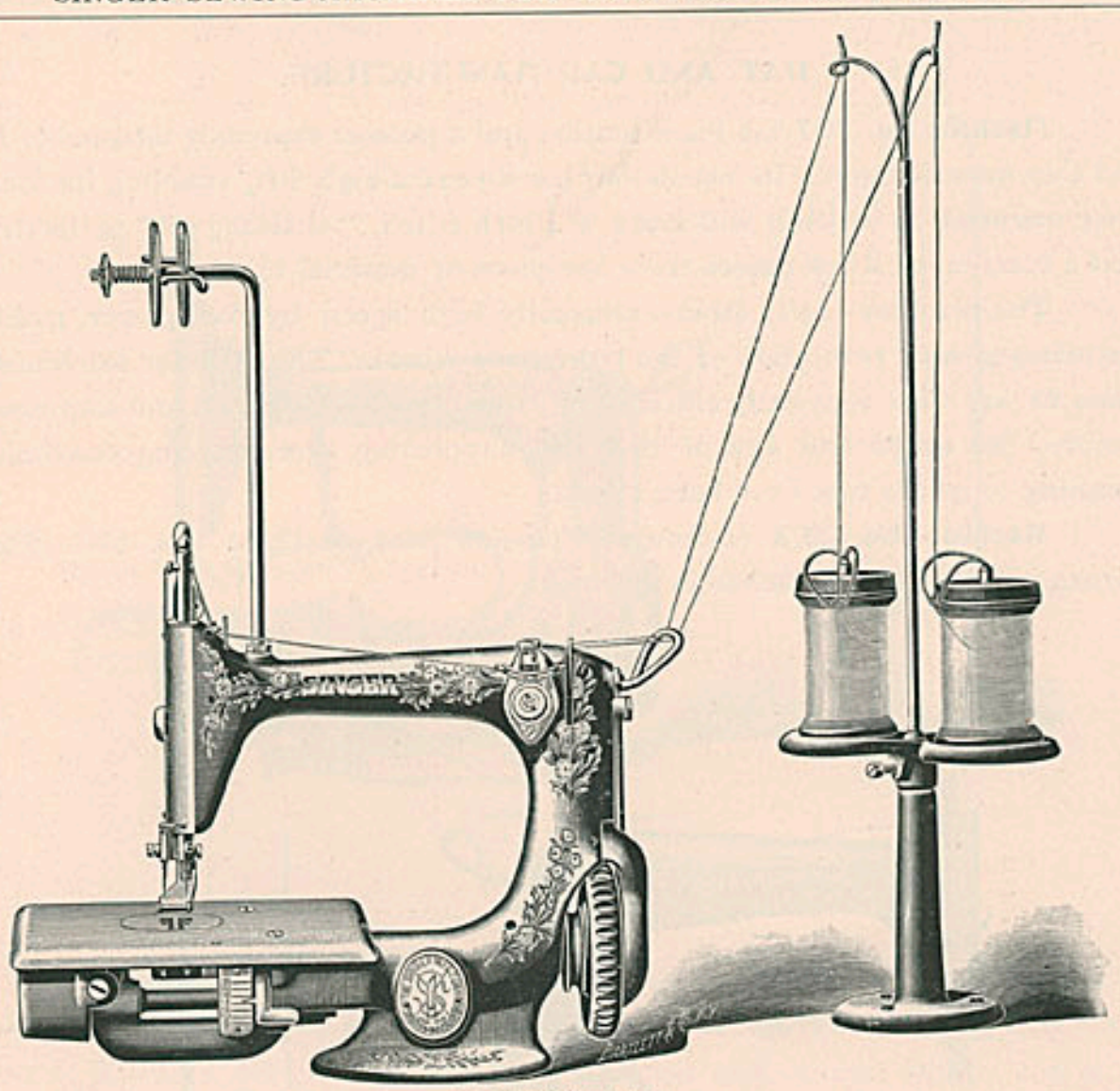
Machine No. 24-3 is used in seaming gauzes for all classes of work in Umbrella and Parasol manufacture because of its high speed, convenience of operation, elasticity of stitch and the fact that a continuous stitch is readily carried from one piece of work to the other as fast as the operator can insert it in the simple and efficient folding device. This machine is also used for hemming.

SHOE MANUFACTURE.

The single-needle machine, No. 24-3, is used for closing and linings, while the two-needle machines, No. 24-4 and No. 24-8, are used for making back stays, inside stays, etc.

SILK GLOVE AND MITT MANUFACTURE.

Machine No. 24-4, two-needle Automatic tension, is used for inserting and Machine No. 24-3 for seaming and tips. Manufacturers of silk gloves and mitts appreciate the peculiar fitness of these compact, light and fast running machines, making the elastic stitch essential in this class of work.



MACHINE No. 24-4

Machines No. 24-4 and No. 24-8 are fitted with two needles and two loopers for making two rows of stitching at once, gauged from $\frac{1}{16}$ to $\frac{5}{8}$ inch ; No. 24-4 has the Automatic tension and No. 24-8 the Plain tension.

For all stitching processes in which elasticity of stitch is of principal importance these machines are unequaled for speed, efficiency and durability and are largely used in the manufacture of Knit goods, Underwear, Umbrellas and Parasols, Silk Gloves and Mitts, etc.

CORSET MANUFACTURE.

The two-needle machines, No. 24-4 and No. 24-8, are used for double-cording, plain strip-stitching, folding and stitching strip at one operation, staying seams with two rows of stitching, etc.

SHIRTS, COLLARS, CUFFS AND MUSLIN UNDERWEAR.

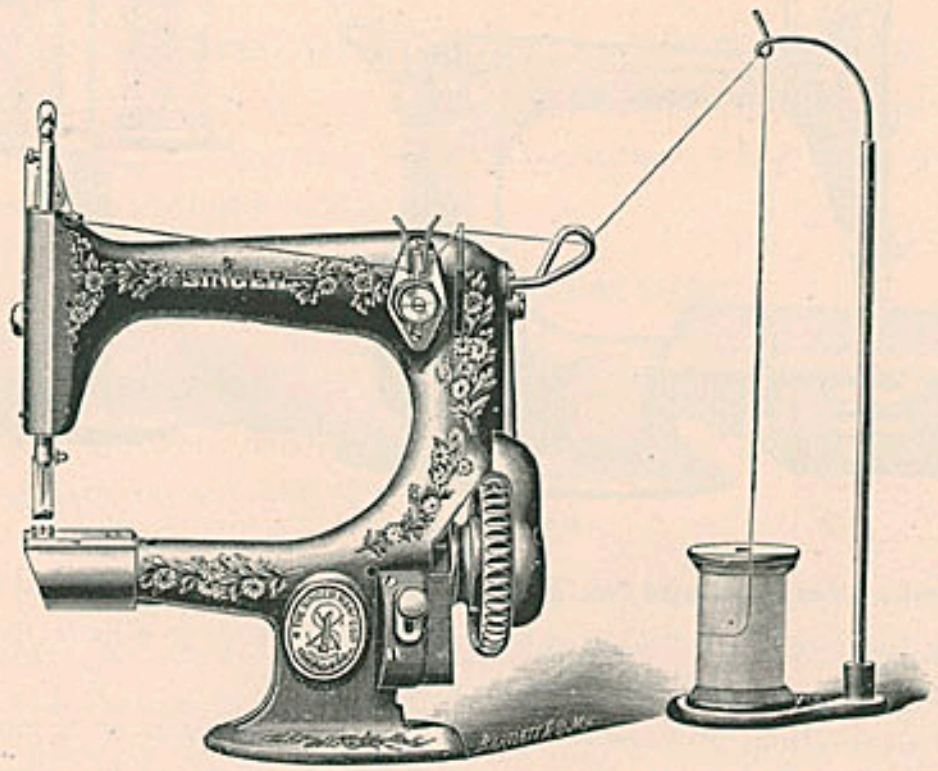
The two-needle machines, Nos. 24-4 and 24-8, are used for inserting shirt bosoms, cording shirt bosoms, re-enforcing shirt fronts, edge-stitching, staying seams, embroidered strip work, etc.

HAT AND CAP MANUFACTURE.

Machine No. 24-7 has Plain tension and a presser especially adapted to Hat and Cap manufacture. Its needle-bar has an extra high lift, enabling its use on thick material, in which it will make a ¼ inch stitch, "chaining off" perfectly so that a continuous stitch passes from one piece of material to the next.

The machine easily attains unusually high speed by foot-power, making 8 stitches to each revolution of the large band-wheel. The cylinder machines of Class 25 are also especially efficient for rapid stitching in Hat and Cap manufacture, the shape and size of the work-supporting arm enabling convenient handling of goods that have been closed.

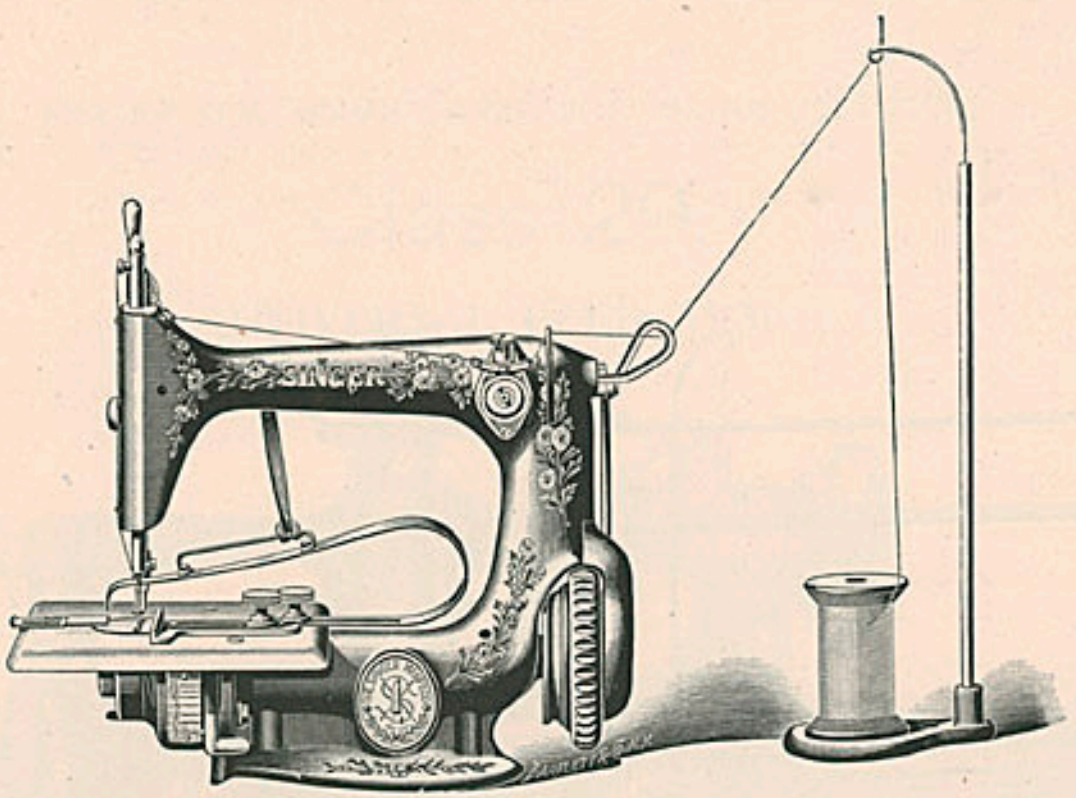
Machine No. 25-3 (Automatic tension) and Machine No. 25-4 (Plain tension) make 4 to 12 stitches to the inch.



MACHINE No. 25-1.

The rotary-hook chain-stitch machines of Class 25 have a cylindrical work-supporting arm specially adapted for hemming gloves, mitts or any other articles of similar form. The arm is of convenient size, being only 1⅛ inches in diameter and measuring 5 inches from needle to base. Machine No. 25-1 has the Automatic and Machine No. 25-2 the Plain tension; these machines make from 8 to 30 stitches to the inch.

Machines of Class 25 can be fitted with an adjustable cloth plate if so ordered; by the attachment of this plate they are practically the same as Machine No. 24-3, for all purposes where it is desirable to have a flat-bed that is interchangeable for a cylinder.



MACHINE No. 24-11.

TUCKING.

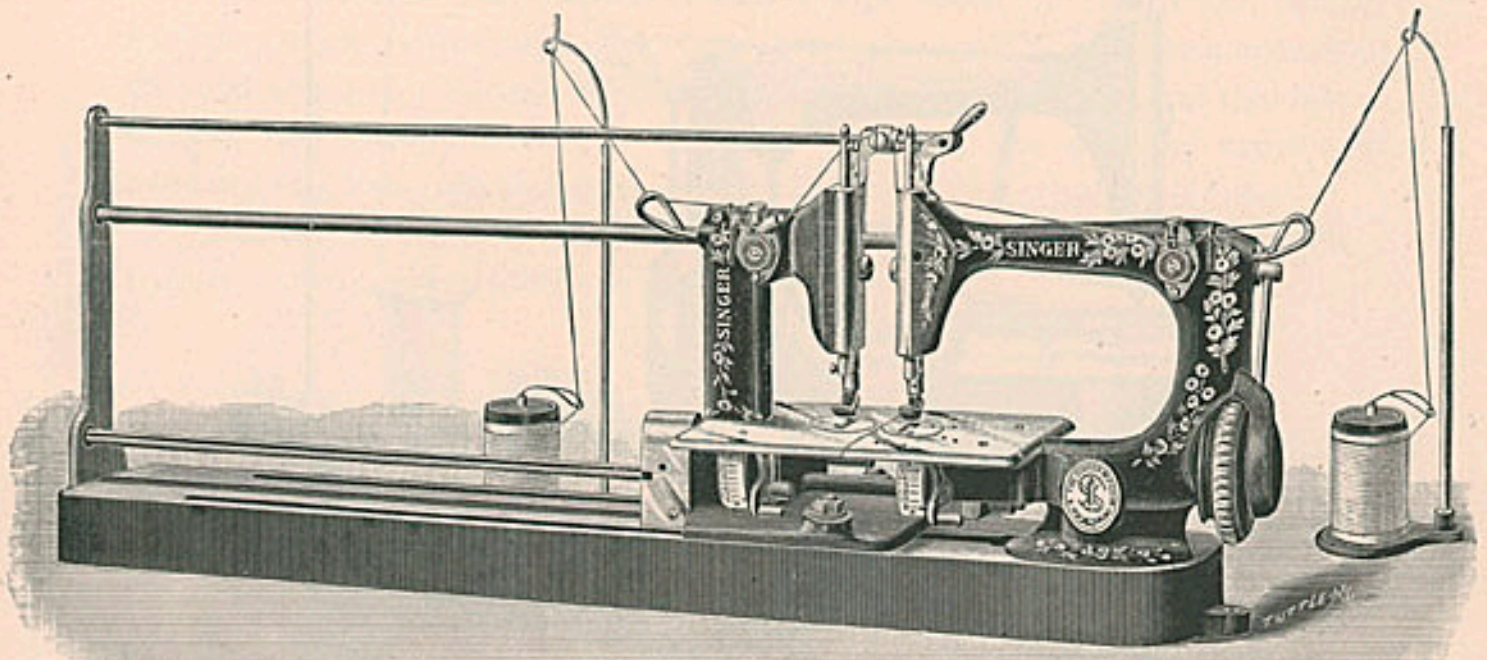
Machines Nos. 24-10 and 24-11, having, respectively, the Plain and the Automatic tension, are fitted with a special attachment for tucking, illustrated above; it marks the tuck automatically, making any desired width, and is the most efficient device used for this purpose, its motion not being communicated from the needle-bar, as with other tucking attachments.

GATHERING.

For gathering, especially on lace, Machine No 24-12 is unrivaled; it accomplishes this operation by means of a double feed of peculiar form and having a differential motion which is adjustable. A hinged presser-foot of appropriate shape is provided with a spring which applies sufficient pressure to properly present the material to the action of the feed. Gathering is perfectly done on Torchon lace or other material equally difficult to manipulate, the operation of this machine being unequaled in this class of work. Gathering and stitching to band can be perfectly accomplished at one operation by the use of a special device (machine parts Nos. 9778-9779) furnished for this purpose.

SIDE PLAITING.

Machine No. 24-9 has a special device for folding plaits in the material as it passes under the needle; it is largely used in the manufacture of Shirts, Boys' Waists, etc.



MACHINE No. 26-1..... ....TWO HEADS.

The single-thread chain-stitch machines of Class 26 make two exactly parallel seams at once. They have two heads which are coupled together directly opposite each other, both receiving motion from one shaft and working with exact uniformity.

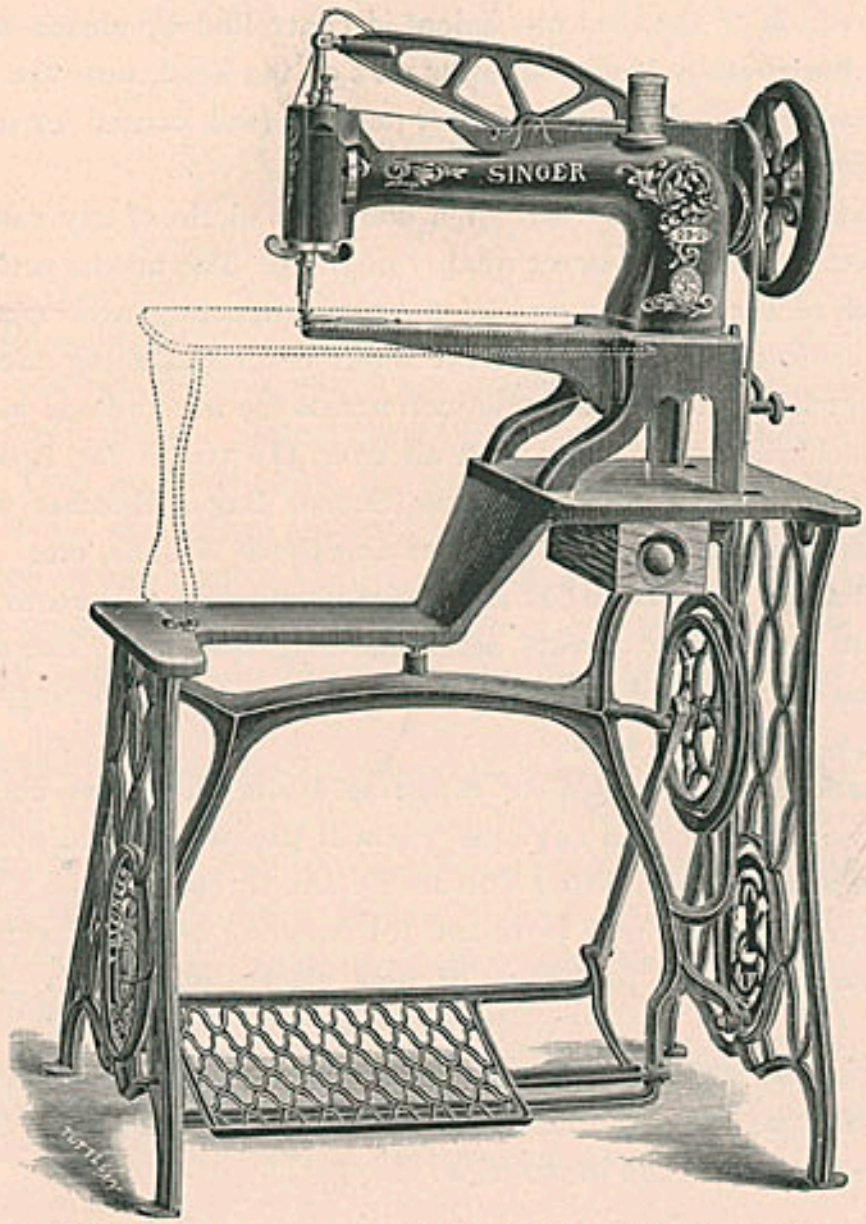
The least distance between needles, when the heads are together as illustrated, is 2½ inches.

Machine No. 26-1 has the movable head adjustable at will of operator up to a distance of 16 inches between needles, and Machine No. 26-2 is adjustable up to 24 inches.

These machines are especially efficient in stitching the seams of bags and are extensively used in the manufacture of Tobacco Bags, School Bags, etc.

Class 29.

UNIVERSAL FEED ARM.



MACHINE No. 29-2 ... .UPPER FEED MOVING IN ANY DIRECTION.

For Boot and Shoe Repairing, etc.
Lower Arm and Bed, 17 inches in length.

IN the whole range of leather stitching this is one of the handiest machines ever invented and is useful for many purposes for which no other machine can be employed.

There is no under-feed, the machine being provided with simple and effective top-feed mechanism which is arranged to carry the work in

any direction at the will of the operator. This is an advantage peculiar to this machine and one which enables the operator to utilize it in a great variety of ways, performing intricate work impossible to other machines but done on this one with the greatest ease and excellence.

A cone-shaped cam in the head acts upon a combined vibrating feed and presser-bar to give it a lateral movement when in contact with the material; the extent of this movement is adjustable and controls the length of the stitch.

The direction of the feed movement is controlled by means of two arms which project horizontally from the lower part of the head, near the needle bar. These arms can be turned by the operator and the feed caused to move in any direction desired, carrying the material with it.

The material can thus be fed in a complete circle of any radius without materially affecting the tensions or quality of stitch. The needle action is within one-eighth inch of the extreme end of a work-supporting arm measuring 12¼ inches from needle to its inner end; the outer end, containing the Oscillating Horizontal Shuttle, measures only one inch across the top and one inch deep.

This machine is extensively used all over the world for Boot and Shoe repairing, Furriers' work, Slipper-binding, School Bags, Harness work, Back-straps in shoes, inserting Elastic Gores, making Cycle Wallets, etc.

The stitching is performed at the extreme outer end of the arm, which may be inserted into the interior of very small and long apertures. The operator can easily reach the extreme end of a shoe and re-stitch gorings, foxings, front and back stays, rips, vamps and tips.

This machine is unequaled for repairing boots and shoes and will stitch closer to the toe of a boot than any other; it will use waxed and coarse thread, making a tight seam; it also uses a fine needle and thread.

It is largely used for new work and for patching and similar repairs; it is especially efficient for the insertion of new elastic gores into old Congress gaiters.

An adjustable wooden table, measuring eighteen by twelve inches, is provided and enables use of the machine as a flat bed for plain sewing. The position of this table is outlined in the illustration.

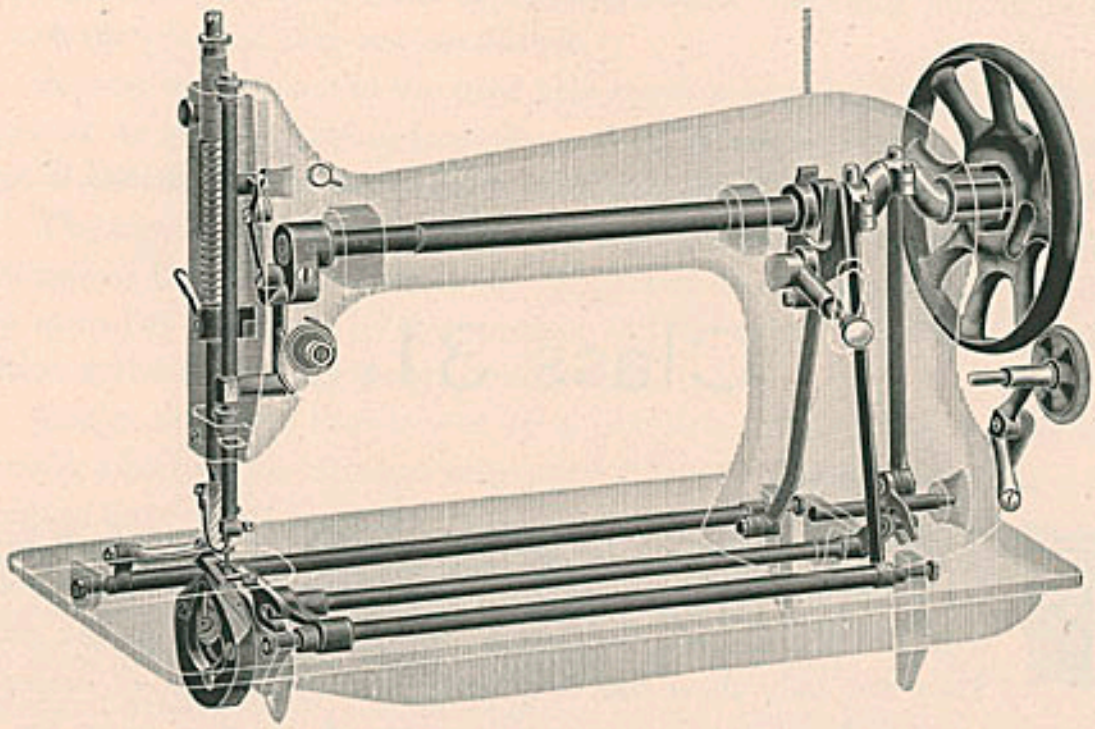
Class 31.

THE machines of Class 31, for general lock-stitching in cloth or leather, are especially designed for operation by power at high speed and they are the fastest lock-stitch sewing-machines in the market. They not only show the most judicious application of material to best resist strain and secure absolute stability but all running parts are carefully balanced so as to procure perfect equilibrium under the highest motion.

They require the least power for their operation, and the excellence of material and workmanship guarantees greater durability and least cost for repairs.

Although of recent design, these machines have obtained prompt recognition by the trade and are extensively used by manufacturers of Clothing, Cloaks, Overalls, Suits, Skirts, Waists, Costumes, Bathing Suits, Shirts, Knit goods, Mackintoshes, Cardigan Jackets, Oiled Clothing, Leggins, Over-gaiters, Hunting goods, Corsets, Gossamers, Bedding, Blankets, Upholstery, Canvas goods, Carriage Robes, Horse Clothing, etc.

The steadily increasing sales of these machines and the declared satisfaction of manufacturers who use them constitute the best evidence of their superiority both in scientific principle and mechanical detail.



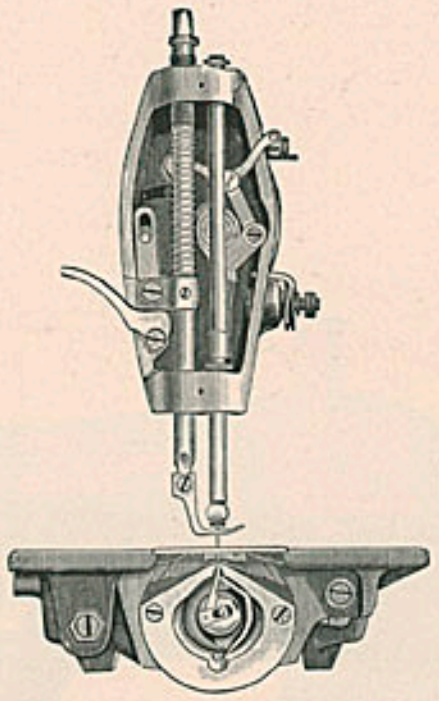
MACHINE No. 31-3.....SHOWING INTERIOR MECHANISM.

The above illustration shows the best principles of stitching mechanism, successfully combined to obtain highest efficiency, and using the smallest number of wearing parts, all capable of easy adjustment. The main driving shaft has three bearings, which entirely prevent springing.

A scientific distribution of metal is combined with accurate balancing of all running parts so as to secure utmost strength and stability under high speed, these advantages being comprised in a design of handsome appearance and great convenience.

The Oscillating Shuttle mechanism is scientifically and mechanically perfect. Through its use there is but one simple conversion of motion—from rotary to oscillating—between the driving and the stitching points. There is no variable speed nor indirect mechanism required for transforming movement. Therefore this machine requires the least power and can be effectively used, without change of adjustment, on either light or heavy fabrics.

The perfection of the stitch-forming mechanism and its accurate thread-controlling devices permit the use of lighter, weaker, and consequently cheaper thread than any other high-speed machine.



MACHINE No. 31-3 ....END SECTION, FACE-PLATE REMOVED.

The link thread take-up used on machines of Class 31 is the most efficient device ever constructed for this purpose; it consists of a light and strong lever and link, working silently, without use of cam or spring. It is capable of highest speed without vibration of machine and with least friction and wear of parts.

The shuttle is made of one solid piece of steel, hardened and polished; its simple and regular motion about the central bobbin requires the least power of any and is the most efficient.

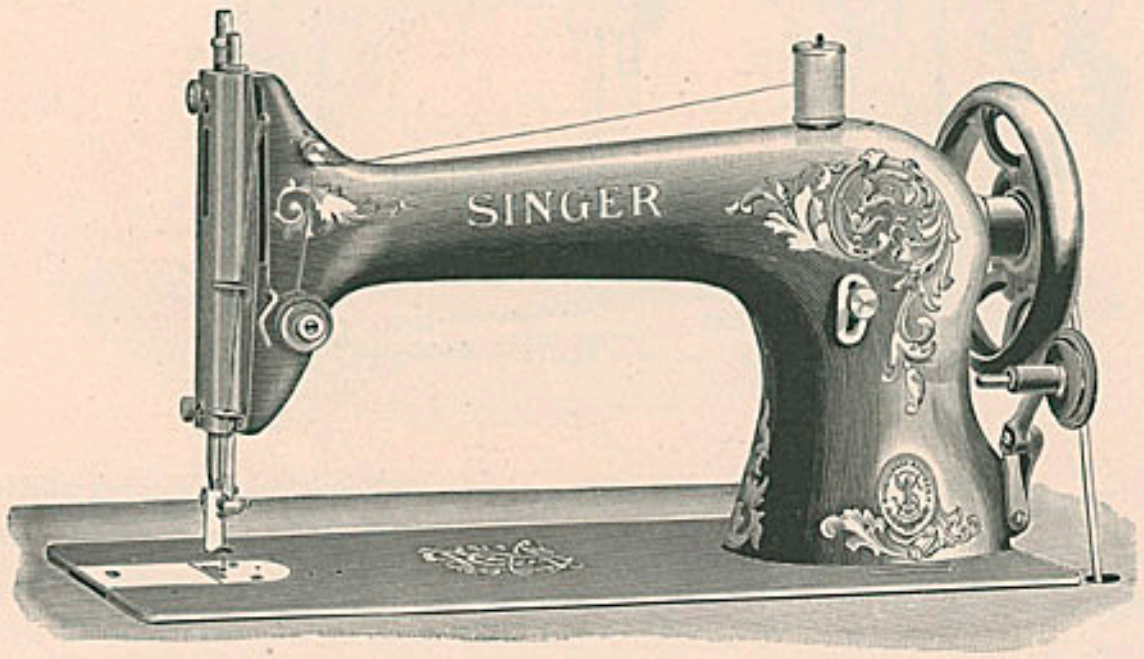
The bobbin has capacity for 100 yards of No. 60 cotton, and secures central and straight delivery of thread to material under all conditions.

The four-motioned drop-feed causes direct, positive and exact movement of the material in a perfectly straight line. The tension adjustment is very conveniently located on the front of the arm.

The knee-lift enables instant raising of the presser-foot, by means of knee-pressure against a lever hanging beneath the table, thus leaving the operator's hands free and greatly promoting facility and convenience in handling the work.

The Automatic Tension-Release acts in conjunction with the lever for raising the presser-foot. When this lever is lifted the tension discs are automatically opened and allow free passage of the upper thread, so that it can easily be drawn down by the operator, as desired.

All danger of withdrawing thread from the needle is thus obviated, the correct tension being instantly restored when the presser-foot is lowered. The saving of time and consequent increase of product through the use of this device are obvious advantages.

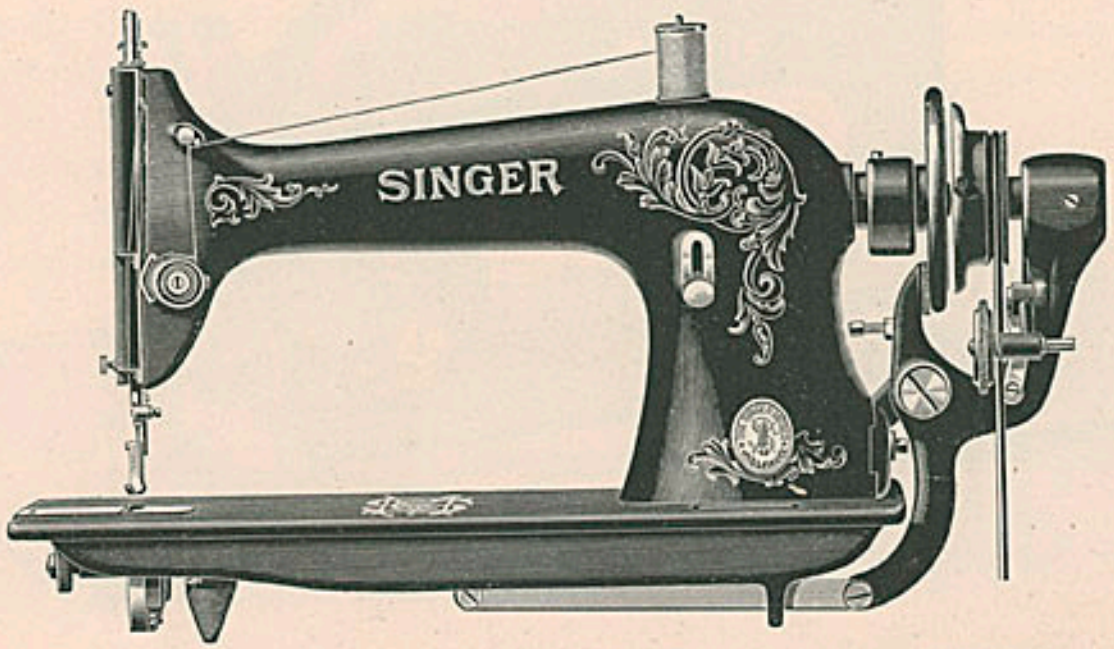


MACHINE No. 31-3.....FOR GENERAL STITCHING BY MANUFACTURERS.

All wearing parts of the machines in Class 31 are thoroughly hardened and highly finished, securing perfect ease of motion and great durability.

Machine No. 31-3 is for general stitching on cloth and has drop-feed and stationary presser. Machine No. 31-8, also for cloth, has its feed mechanism arranged so that its motion can be instantly reversed without stopping the machine, thus enabling doubling or staying the seam at any point.

For leather work there are two varieties of machines in this class; machine No. 31-6 has drop-feed and machine No. 31-7 has wheel-feed, both being provided with roller presser.



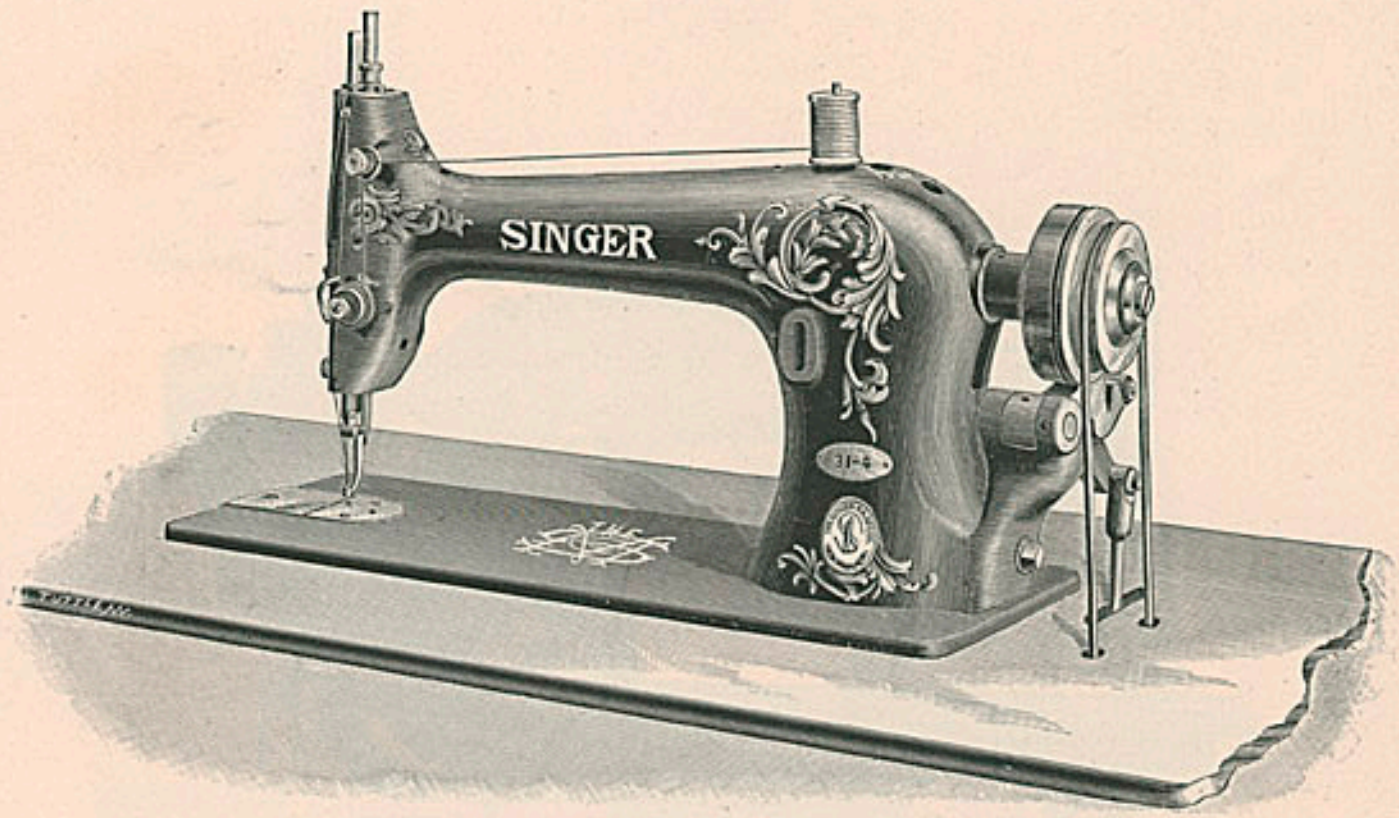
MACHINE No. 31-3.....WITH SINGER DRIVING ATTACHMENT.

The above illustration represents a machine of Class 31 fitted with the latest form of Singer Driving Attachment, the most efficient appliance yet devised for the quick application or release of motion in the most effective manner.

The machine can be started or stopped instantly by very light movement and pressure of foot-treadle connected to the attachment.

The whole attachment, excepting the treadle, is on the machine, which may be turned back for oiling or cleaning without removal of belt.

The self-feeding oiling device is the most reliable and economical in use, being especially distinguished for its absolute cleanliness, an essential feature in most uses of the sewing-machine, especially on white goods.



MACHINE No. 31-4..... ...FOR FANNING AND OTHER FANCY STITCHING.

It is a well established fact that those goods which are finished in a manner best calculated to please the artistic sense of their users, easily become the most popular.

No form of ornamentation on textile material appeals more forcibly to this sense than handsome needlework neatly accomplished in appropriate designs and colors.

Such designs may be easily and effectively produced by Machine No. 31-4 and shrewd manufacturers will readily see the various uses to which it may profitably be applied in the manufacture of Corsets, Suspenders, Draperies, Curtains, Portieres, Tapestries, Lambrequins, Piano Covers, Carriage Cloths, Uniforms, Badges, Regalia, Handkerchiefs, Infants' Clothing, Table Covers, Mats, etc.

This machine has no feed, but the fabric is moved by the operator in any direction and to any distance required for the formation of a stitch in any desired length, the needle descending to make it at the will of the operator when the fabric is adjusted by the hand to receive the needle-action at the proper point.

The needle passes through a cylindrical presser that automatically rises and falls with the needle, holding the fabric to the bed just long enough for the stitch to be made and rising to allow free movement of the fabric to the point at which it is desired to make the next stitch. The round point of the presser is only one-eighth of an inch in diameter so that the work is not concealed and the stitch can be accurately located on the fabric.

A rocking treadle on the floor is connected to positive mechanism that instantly clamps and unclamps the driving pulley so that the needle action is completely controlled by the operator by means of "heel and toe" pressure on this treadle.

Ordinarily the machine stops at the completion of each stitch, the pressure on the treadle for starting the machine being made alternately by the heel and toe pressing the treadle down as far as it will go in each direction.

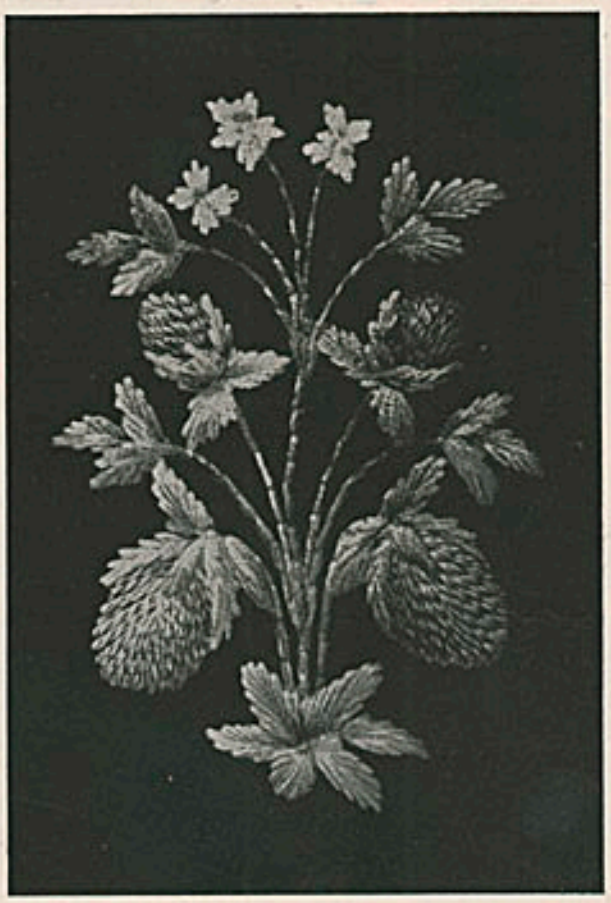
If the treadle is held by the feet in a horizontal position the machine will not stop, but will continue to form stitches until the treadle is pushed down in one direction or the other.

The following illustrations are from photographs of factory work with this machine.

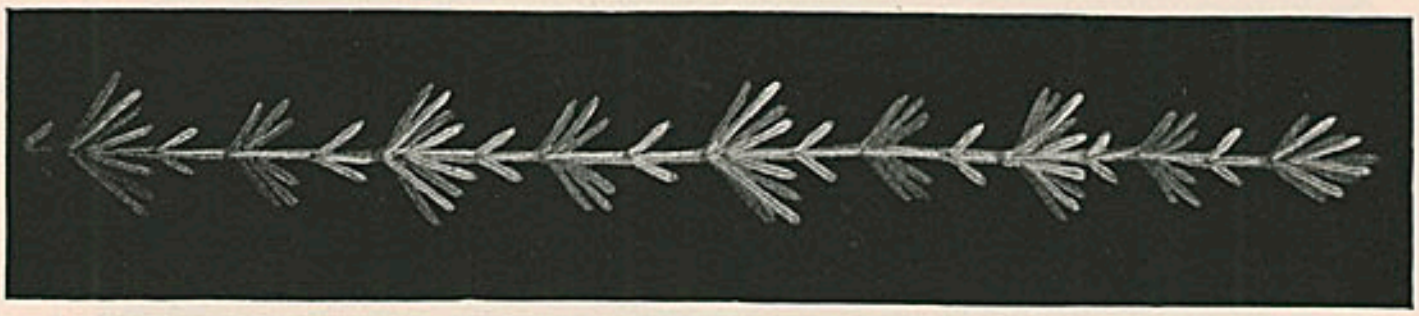
The stitches are usually made with silks of contrasting and harmonious colors.

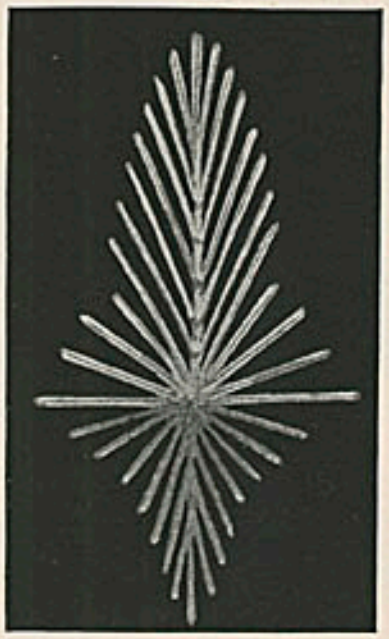
PHOTOGRAPHIC EXAMPLES OF STITCHING PERFORMED ON MACHINE No. 31-4.

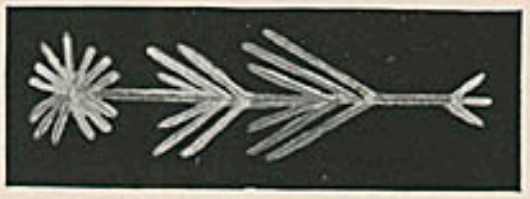
PHOTOGRAPHIC EXAMPLES OF STITCHING PERFORMED ON MACHINE No. 31-4.

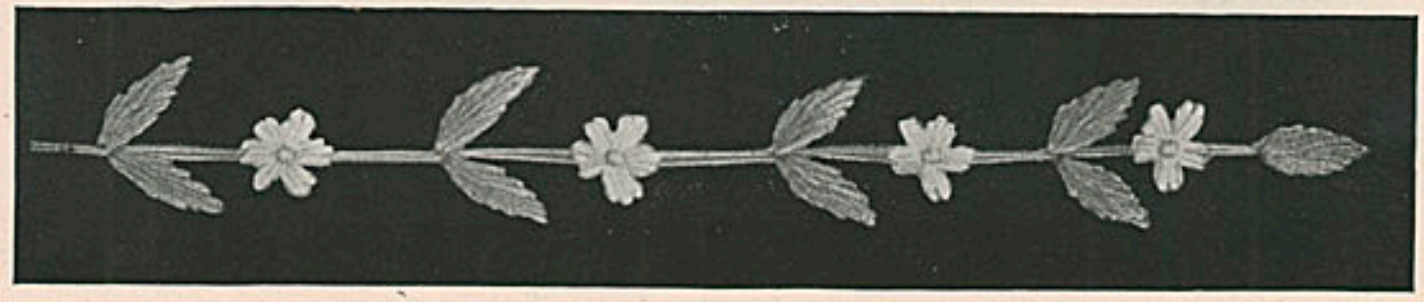


PHOTOGRAPHIC EXAMPLES OF STITCHING PERFORMED ON MACHINE No. 31-4.





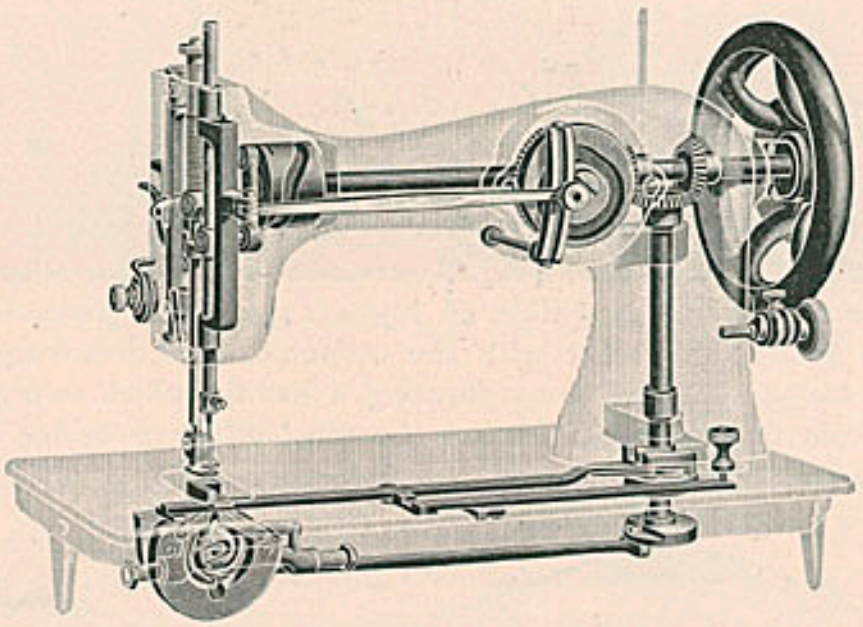




Class 32.

For Overseaming and Zigzag Stitching.

BED 15¼ INCHES IN LENGTH; 7⅝ INCHES FROM NEEDLE TO BASE OF ARM.

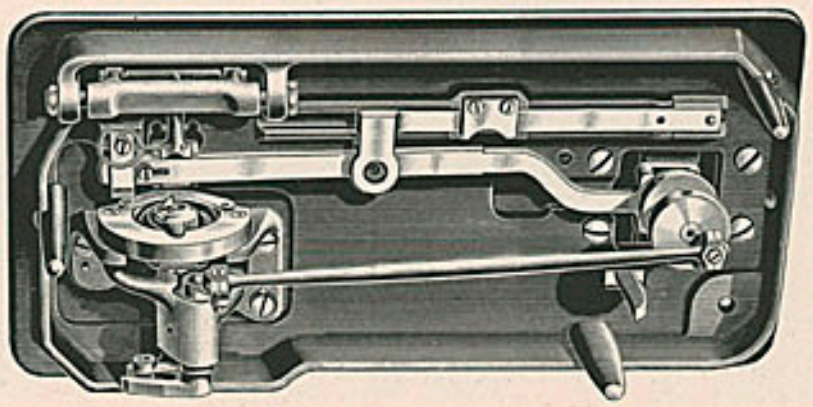


SHOWING INTERIOR MECHANISM.

THE mechanism illustrated above is unrivaled in its efficient performance of all work requiring a zigzag stitch or overedge stitching or seaming.

The variety of uses to which it can successfully be applied is very great; there is hardly any line of manufacture, producing either cloth or light leather goods, in which this machine cannot be used to advantage on some part of the work. It is extensively employed in the manufacture of Trousers, Coats, Hats, Gloves, Cloaks, Suspenders, Hosiery and Knit goods, Underwear, Shirts, Collars, sewing stars on Flags and general Tailoring.

The needle-bar is carried in a pivoted frame connected with mechanism for producing a reciprocating motion from side to side, and is adjustable by means of the connecting-rod or pitman in front of the arm. When the adjusting thumb-screw at the end of this rod is set at the lower extremity of the slot in which it moves, the needle has no vibratory motion; when set at the top the full extent of vibration is effected.



SHOWING MECHANISM UNDER MACHINE BED.

The illustration of mechanism beneath the bed of machine shows clearly the simple and effective means for obtaining oscillation of shuttle about the central bobbin, the curved pivoted lever for producing positive feed movement and the adjustable stitch regulator.

The oscillating shuttle in its race (Fig. 1), the bobbin case and bobbin (Fig. 2) and the bobbin alone (Fig. 3) are shown full size in the illustrations below. The shuttle is susceptible of highest speed and possesses great durability; these qualities, together with the convenience of removing or replacing the bobbin case by a hinged lever forming a handle which swings outwardly, make this form of shuttle mechanism the most effective device known. The bobbin has capacity for 100 yards of No. 60 cotton.

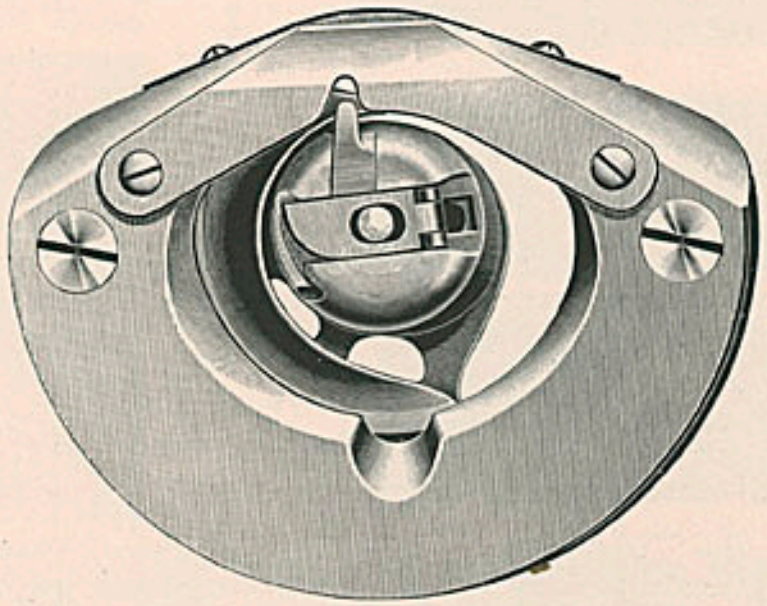


Fig. 1.

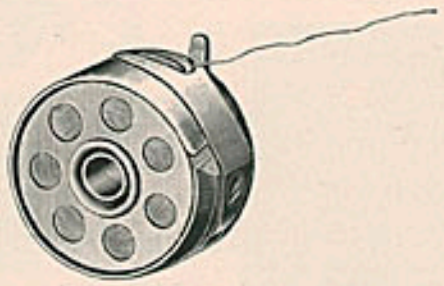


Fig. 2.

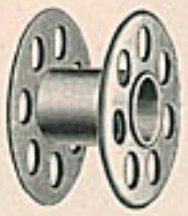
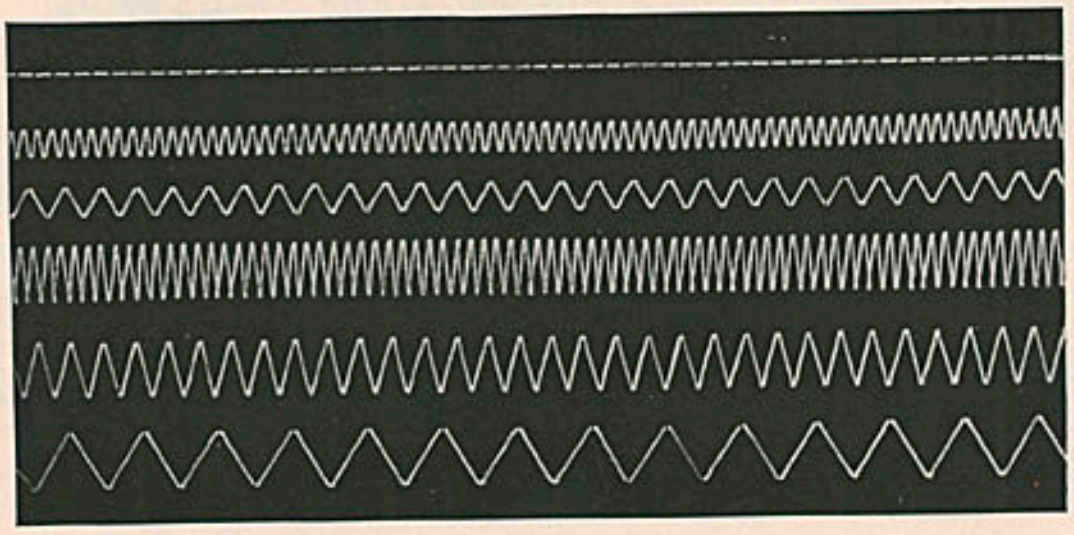


Fig. 3.

The same careful attention to every detail is found in the construction of this machine that characterizes all of our work. Every piece is made to gauge and is carefully inspected as being an essential part of a well-balanced, carefully designed machine in which every movement must be harmonious and effective.

Every machine is run and practically tested to meet these requirements before leaving the factory.

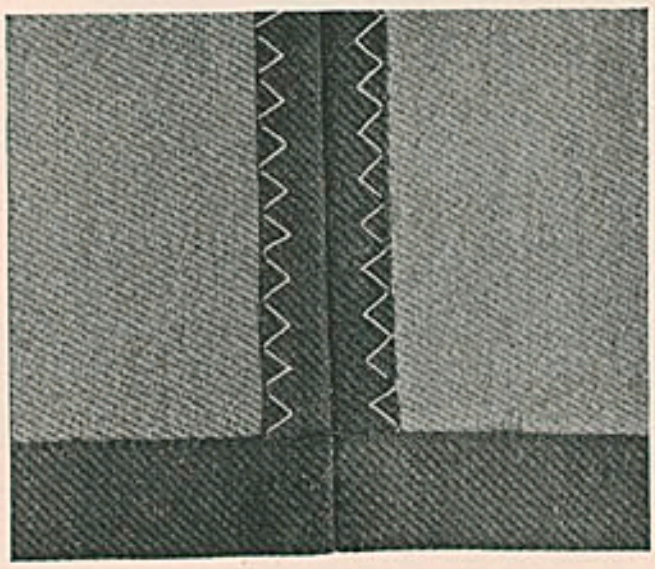
There are several varieties of overseaming machines in Class 32 that are specially adapted for certain classes of work. The points of difference in the various machines are described as follows, together with illustrations of some of their work.



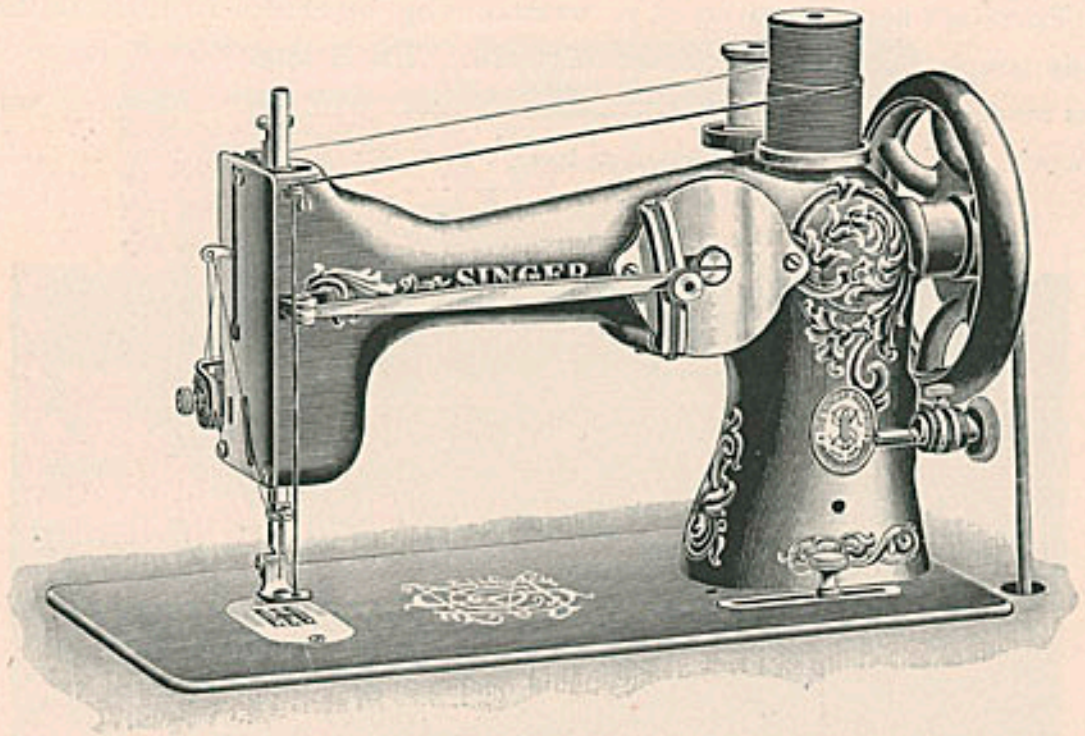
EXAMPLES OF STITCHING BY MACHINE No. 32-1.

Machine No. 32-1, for general manufacturing, has needle throw of $\frac{1}{4}$ of an inch, extending $\frac{1}{8}$ of an inch each side of the centre line.

The photographic reproductions above represent some of the varieties of stitch made on Machine No. 32-1, ranging from a straight line to the zigzag throw of $\frac{1}{4}$ inch. Many variations may be made within this range and the above illustration does not embrace all of them. These variations are obtained by changing the movement of the feed, the vibration of the needle, or both.



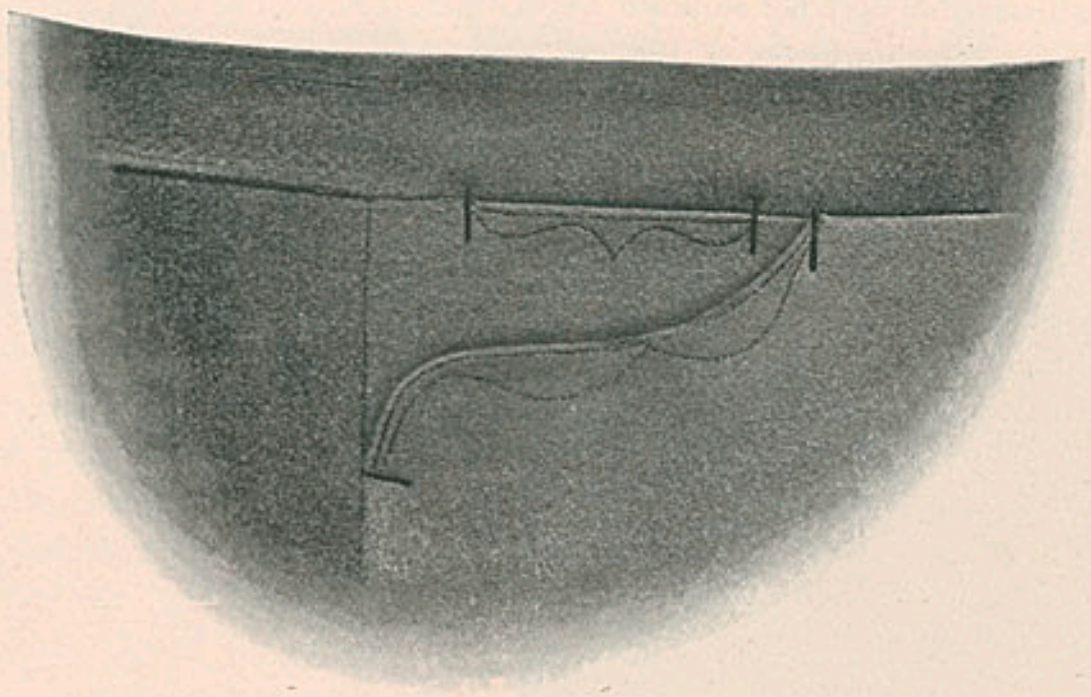
Overedge Stitching and Serging.—In overedge stitching the needle passes alternately through the fabric and over the edge. Two selvage edges can be united in this manner and then opened out, leaving a flat seam without ridge, or two pieces of fabric may be laid flat and their edges firmly joined by the alternate stitches as the needle passes from one piece to the other.

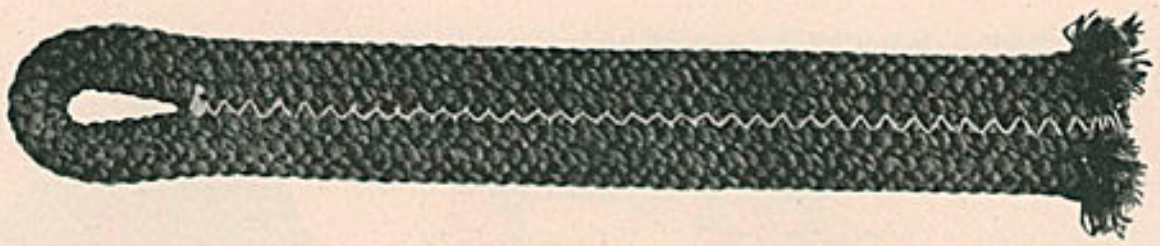


MACHINE No. 32-38.... .....FOR CLOTHING MANUFACTURE.

The machine illustrated above is of the highest efficiency in Clothing manufacture for serging and tacking; it is also used for overcasting the raw edges left in "seaming up" trousers, coats, cloaks, and in tailors' and dressmakers' work generally.

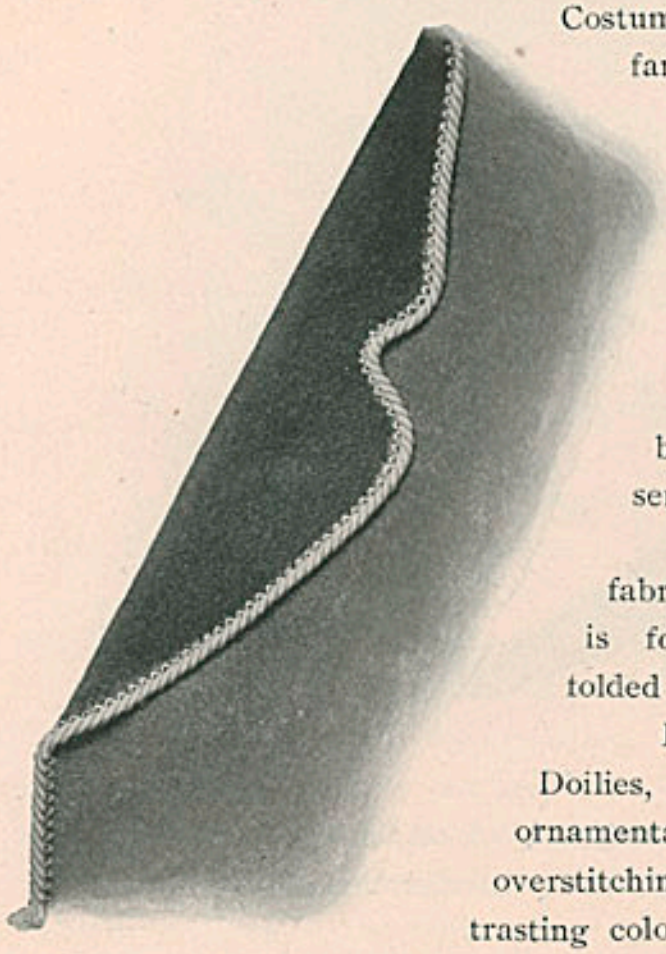
A cord-guiding foot is provided for tacking; the following illustration is from a photograph of such work performed on this machine, and shows the tacking of pockets in trousers.





Suspender Manufacture.—Machine No. 32-26 has a needle throw of but $\frac{1}{8}$ of an inch, extending $\frac{1}{16}$ of an inch each side of the centre line. The opening in throat-plate is correspondingly smaller than in Machine No. 32-1, and the feed-dogs are closer together. For the manufacture of Suspender Ends from narrow braid, as illustrated above, this machine is fitted with a special presser-foot and special guide. It is also used for sewing stars on Flags and for similar work.

Cording.—In the manufacture of Uniforms, Smoking Jackets, Cloaks, Costumes or similar work requiring the use of fancy cord for ornamentation, Machine No. 32-26 is highly efficient for strongly attaching the cord by a blind-stitch, either to the face or the edge of the fabric. A special form of presser-foot is used, which brings the cord into such a position as to receive the stitch and produce a blind-stitch that is very strong and serviceable.



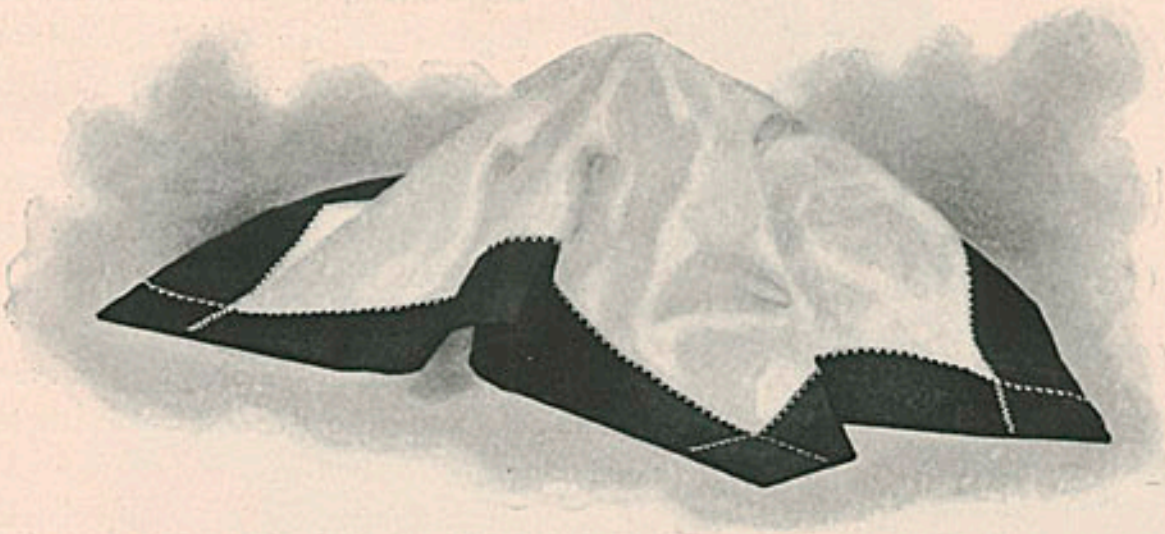
To attach cord to the face of the fabric by a blind-stitch, the material is folded and the cord sewn to the folded edge.

In the manufacture of Table Covers, Doilies, Draperies, Bureau Scarfs, etc., an ornamental effect may be produced by overstitching a cord with thread of contrasting color.

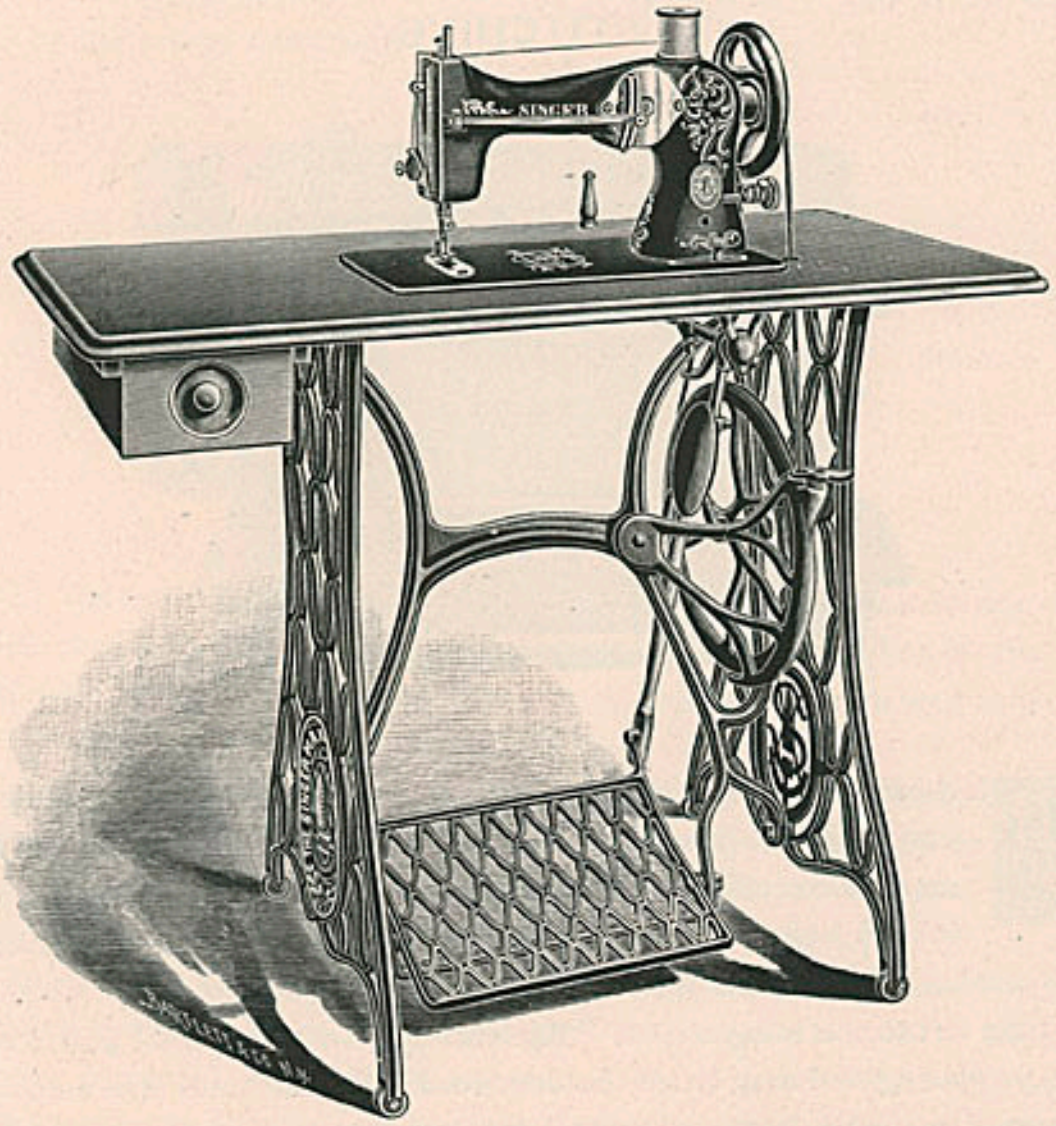
Binding.—Machine No. 32-24 has a needle throw of $\frac{1}{8}$ of an inch to the right of the centre line and Machine No. 32-25 has the same throw to the left.

The narrow overedge zigzag stitch formed by these machines is especially adapted for binding, and the quality of its work in attaching binding to clothing, corsets, cloaks, hats, etc., is equal to the most expert hand labor, which it greatly exceeds in quantity. Special binding attachments are furnished for the different classes of work and for the various widths and qualities of binding material.

The stitch is shown in the illustration by using white thread on a black binding; in actual practice the stitch is practically invisible if the thread used be of the same color as the binding.



Hemming.—The narrow zigzag stitch is of attractive appearance and great utility, and can be used for hemming handkerchiefs, table and bed linen.



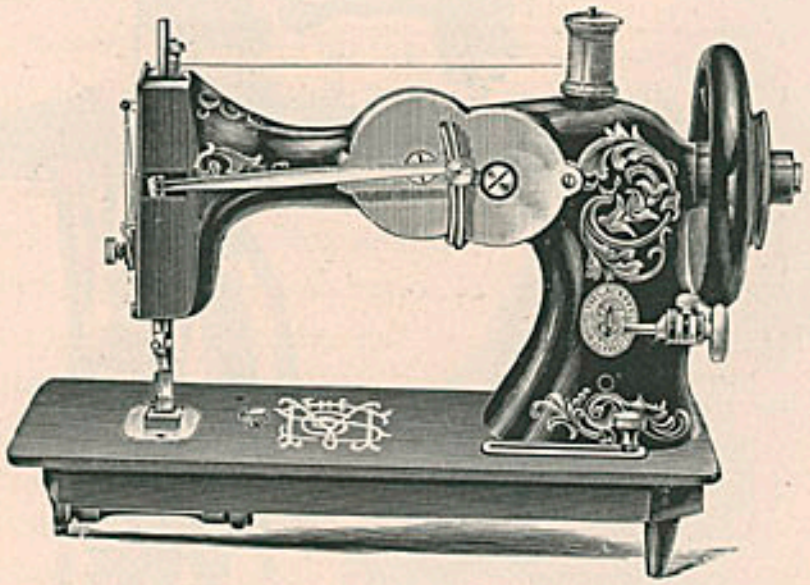
MACHINE ON STAND WITH BLACK WALNUT TABLE.

The machines of Class 32 can be run by foot or mechanical power and are sold either with or without stand.

The above illustration represents Machine No. 32-1 on stand with plain black walnut table, 42 inches long by 18 inches wide (No. 5232).

We can also supply plain ash table (No. 5233), 42 inches long by 24 inches wide, or oak table (No. 5234) having an end and back leaf, the latter being arranged to pull out to the same distance as the end leaf when raised, thus making a table 48 inches long by 24 inches wide. This is a popular form for the use of tailors and other manufacturers, as it affords ample room for easy and convenient handling of the work.

MACHINES OF CLASS 32 FOR ORNAMENTAL STITCHING.



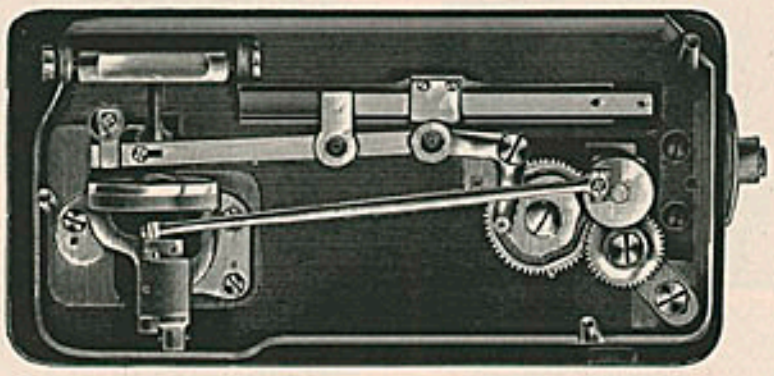
THE photographic reproductions on pages immediately following, of various forms of ornamental stitching performed by Singer sewing-machines of Class 32, will suggest to the practical mind many ways in which these machines may profitably be used in many branches of manufacturing; the elegant finish and beautiful contrasts of color possible are necessarily left to the imagination. The variety of uses in actual practice is constantly increasing and may hardly be described; the machines are employed on all kinds of material, both textile and leather, in the manufacture of Corsets, Infants' Wear, Underwear, Night-robes, Shirts, Clothing, Gloves, Boots and Shoes, Leather Goods, Fancy Articles, etc. All manufacturers of such goods require some varieties of these machines; some manufacturers require all of them.

No specially expert operator is required, the mechanism being automatic. Some of these machines perform straight stitching as well as the ornamental pattern for which they are specially fitted; many variations of the latter may be obtained by changing the movement of the feed, the vibration of the needle, or both in their relation to each other.

The movement of the feed is readily adjusted by means of the thumb-screw directly in front of the base of the arm; to increase the length of its movement the thumb-screw is moved to the right, or to the left to decrease it.

The needle-bar is carried in a pivoted frame connected with mechanism for producing a reciprocating motion from side to side. The vibration of the needle is adjustable, up to one-quarter of an inch, by means of the connecting-

rod or pitman in front of the arm. When the adjusting thumb-screw on this rod is set at the lower extremity of the slot in which it moves, the needle has no vibratory motion, when it is at the top the full extent of vibration is effected. It is evident that a number of variations in the form of the stitch may be obtained by the means described.



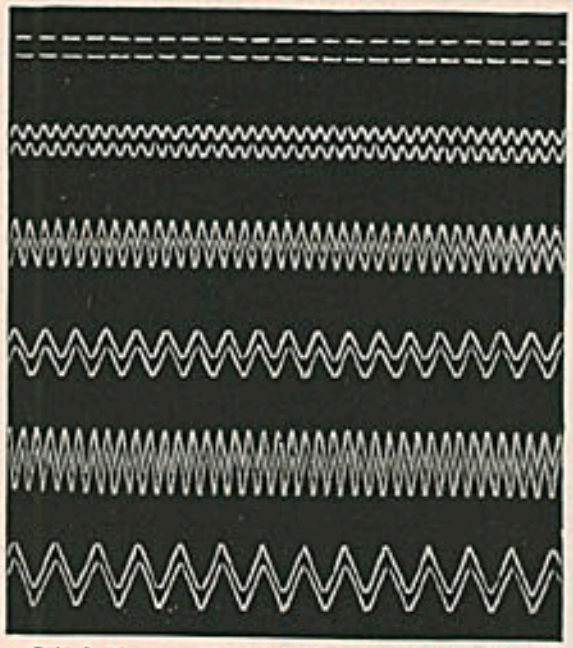
The illustration of mechanism beneath the bed of machine shows clearly the simple and effective means for obtaining oscillation of shuttle about the central bobbin, the curved pivoted arm for producing positive feed movement and the adjustable pivot-bar governing this movement.

Some of the machines in this class are fitted with two needles, as noted in list, and a guide may be used by means of which cord or braid can be combined with the stitching. By the use of different colors and varying the pattern of stitch, many beautiful effects may be produced.

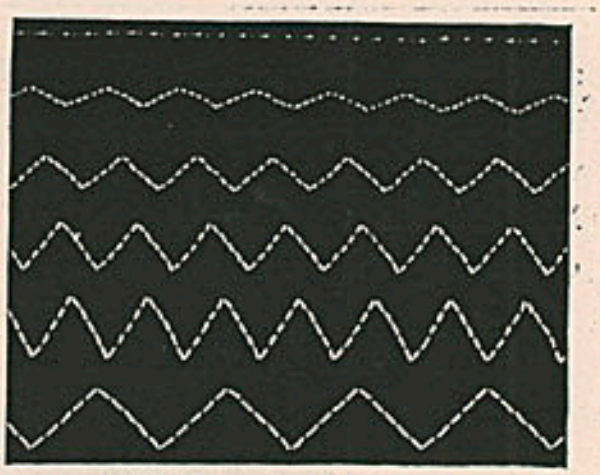
The same careful attention to every detail is found in the construction of this machine as characterizes all of our work. Every piece is made to gauge and is carefully inspected as being an essential part of a well-balanced, carefully designed machine in which every movement must be harmonious and effective.

Every machine is run and practically tested to meet these requirements before leaving the factory.

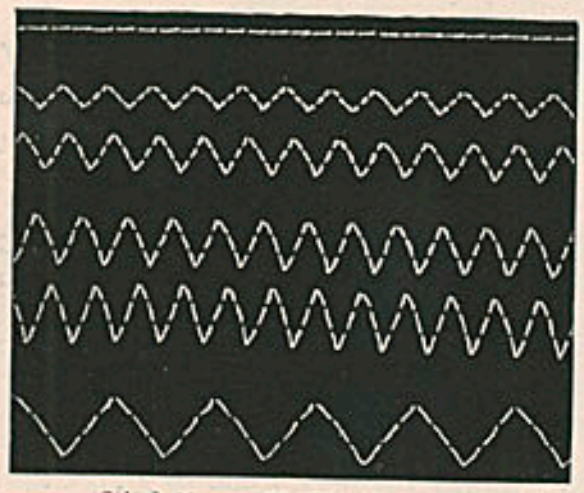
PHOTOGRAPHIC EXAMPLES OF ORNAMENTAL STITCHING PERFORMED ON SINGER SEWING-MACHINES OF CLASS 32.



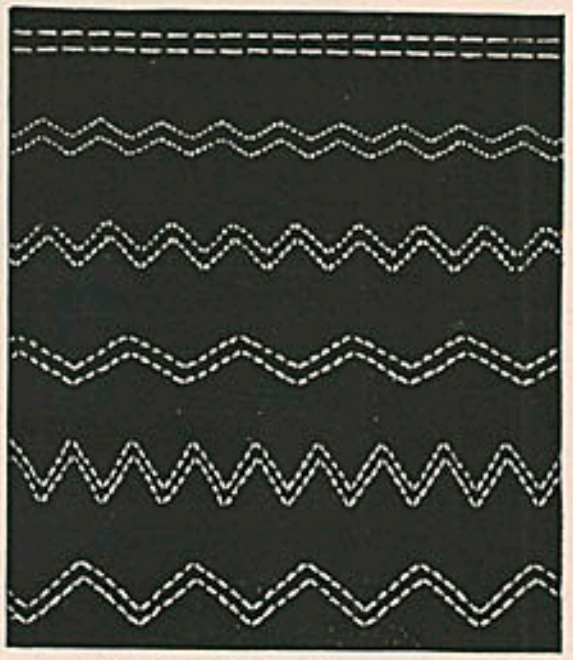
Stitch No. 2—Machine No. 32-2 (2-needle).



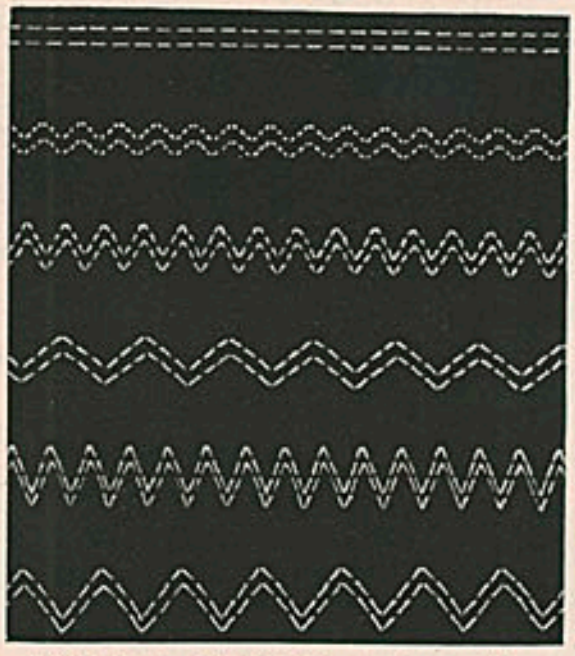
Stitch No. 5—Machine No. 32-5.



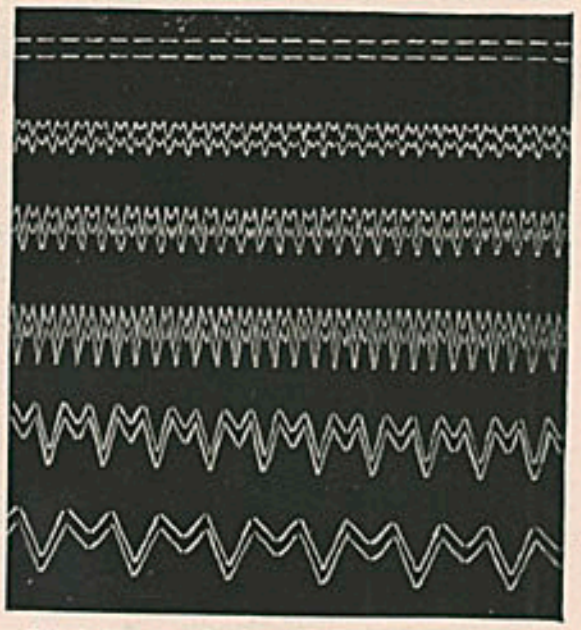
Stitch No. 3—Machine No. 32-3.



Stitch No. 6—Machine No. 32-6 (2-needle).

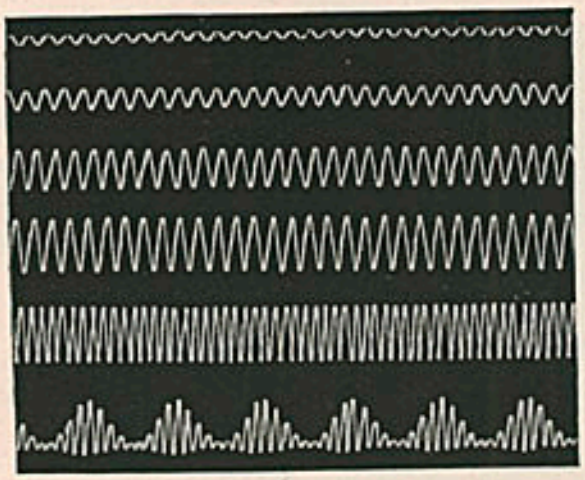


Stitch No. 4—Machine No. 32-4 (2-needle).

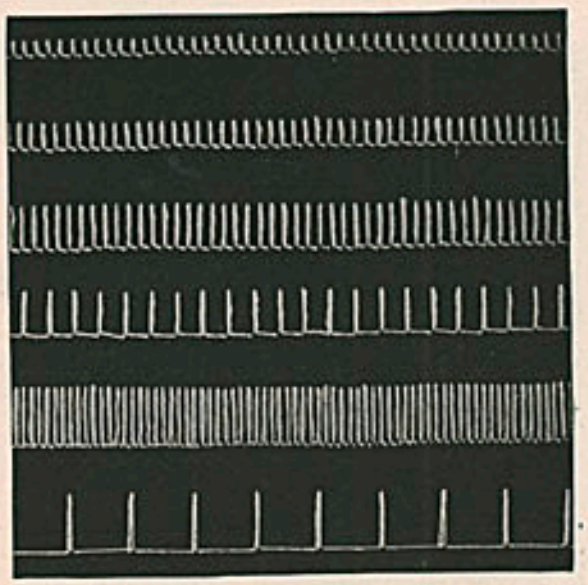


Stitch No 7—Machine No. 32-7 (2-needle).

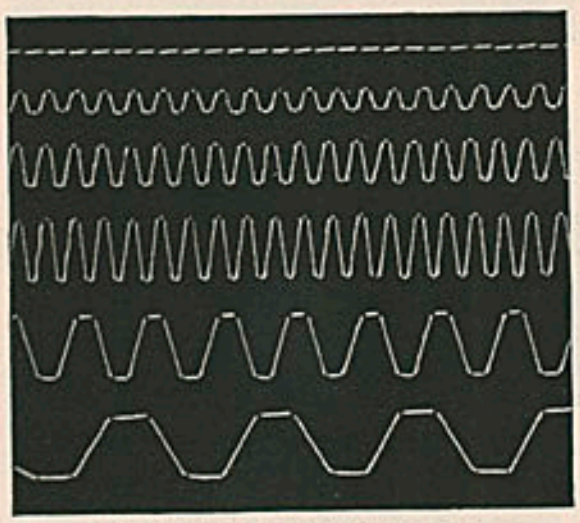
PHOTOGRAPHIC EXAMPLES OF ORNAMENTAL STITCHING PERFORMED ON SINGER SEWING-MACHINES OF CLASS 32.



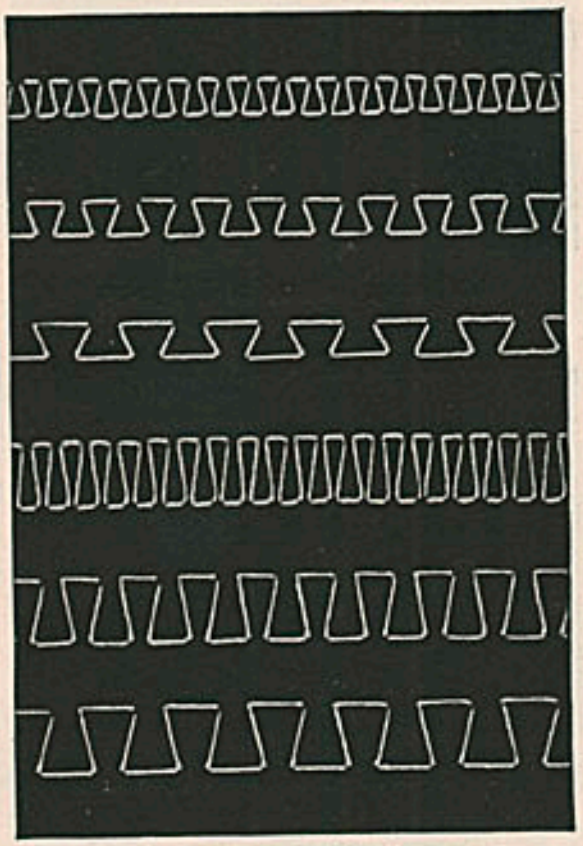
Stitch No. 8—Machine No. 32-8.



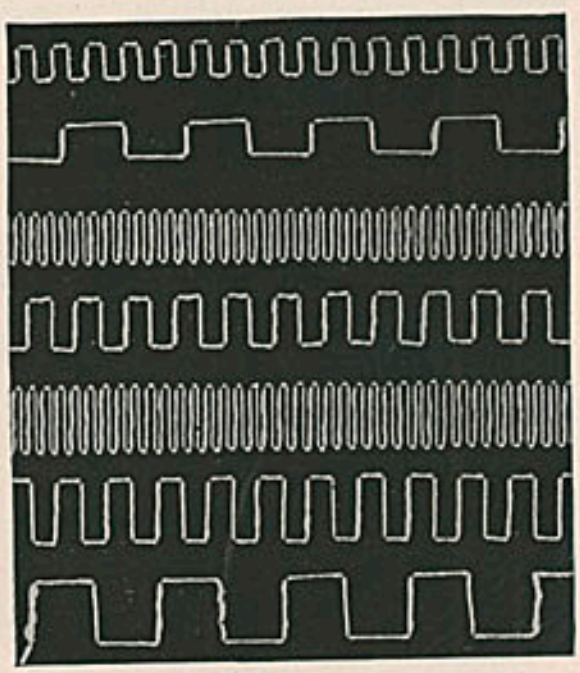
Stitch No. 11—Machine No. 32-11.



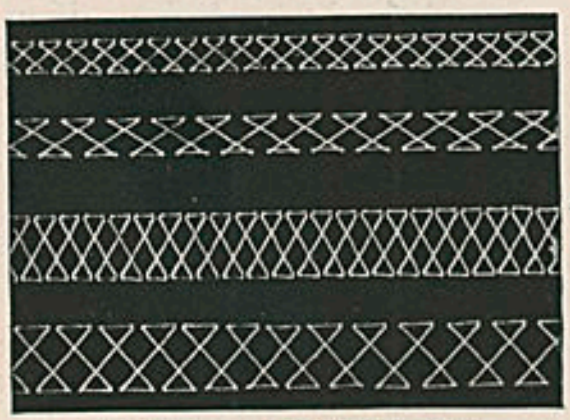
Stitch No. 9—Machine No. 32-9.



Stitch No. 12—Machine No. 32-12.

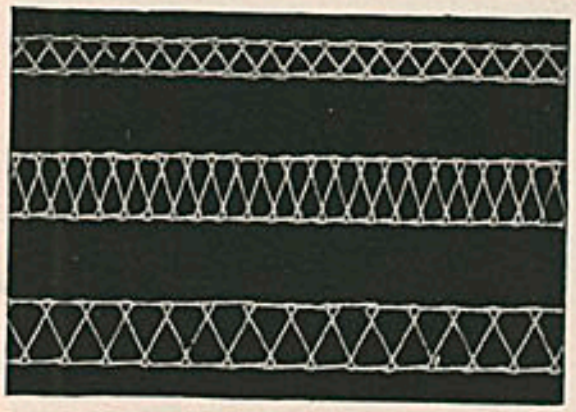


Stitch No. 10—Machine No. 32-10.

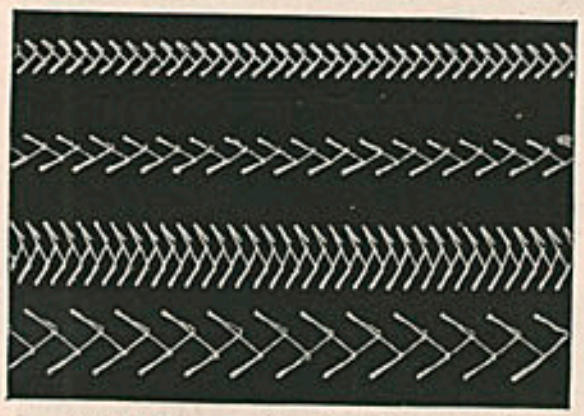


Stitch No. 13—Machine No. 32-13.

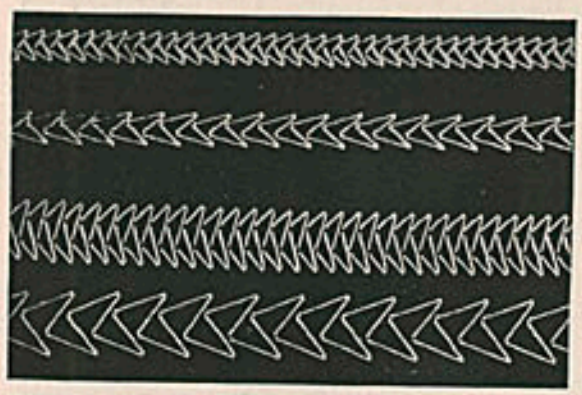
PHOTOGRAPHIC EXAMPLES OF ORNAMENTAL STITCHING PERFORMED ON SINGER SEWING-MACHINES OF CLASS 32.



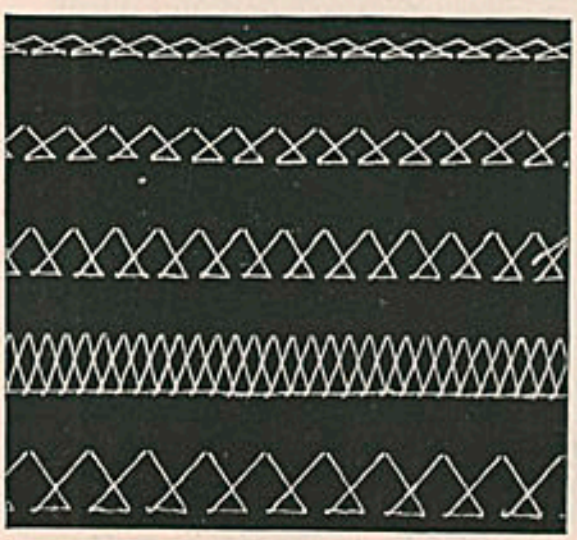
Stitch No. 14—Machine No. 32-14.



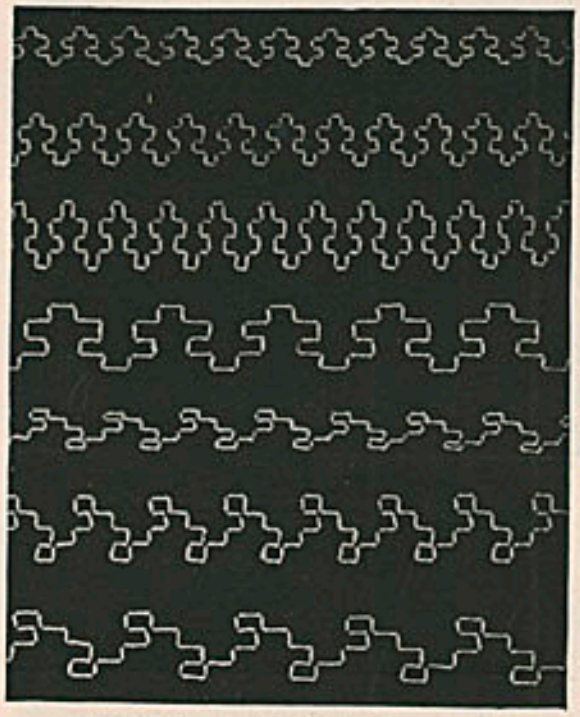
Stitch No. 15—Machine No. 32-15.



Stitch No. 16—Machine No. 32-16.

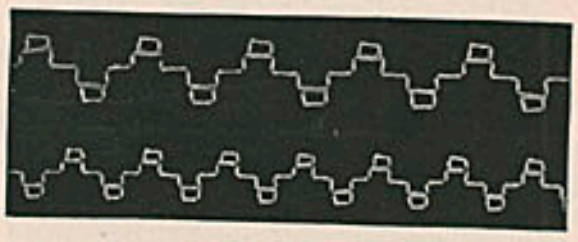


Stitch No. 17—Machine No. 32-17.

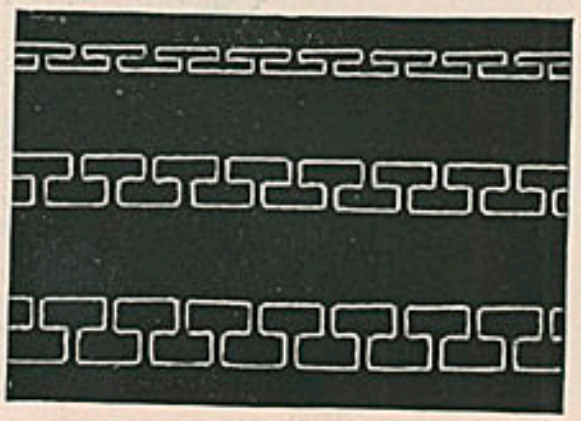


Stitch No. 18—Machine No. 32-18.

Stitch No. 18 (Continued).

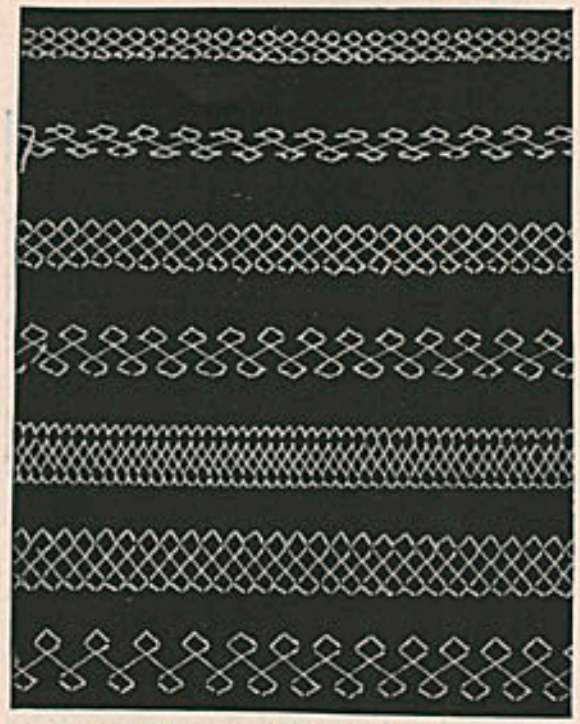


Stitch No. 18 (Continued).

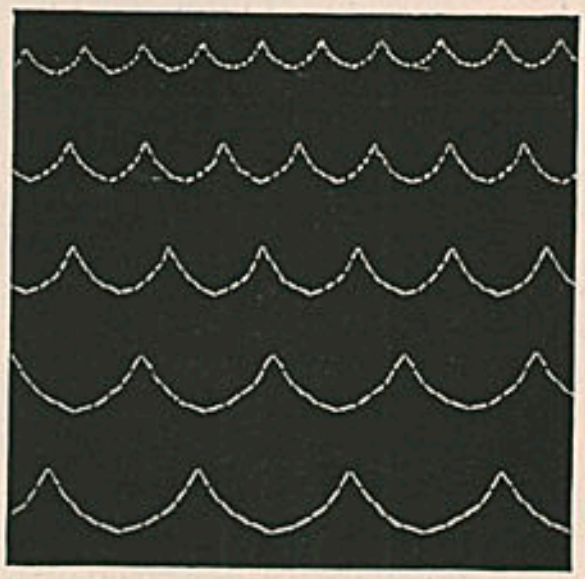


Stitch No. 19—Machine No. 32-19.

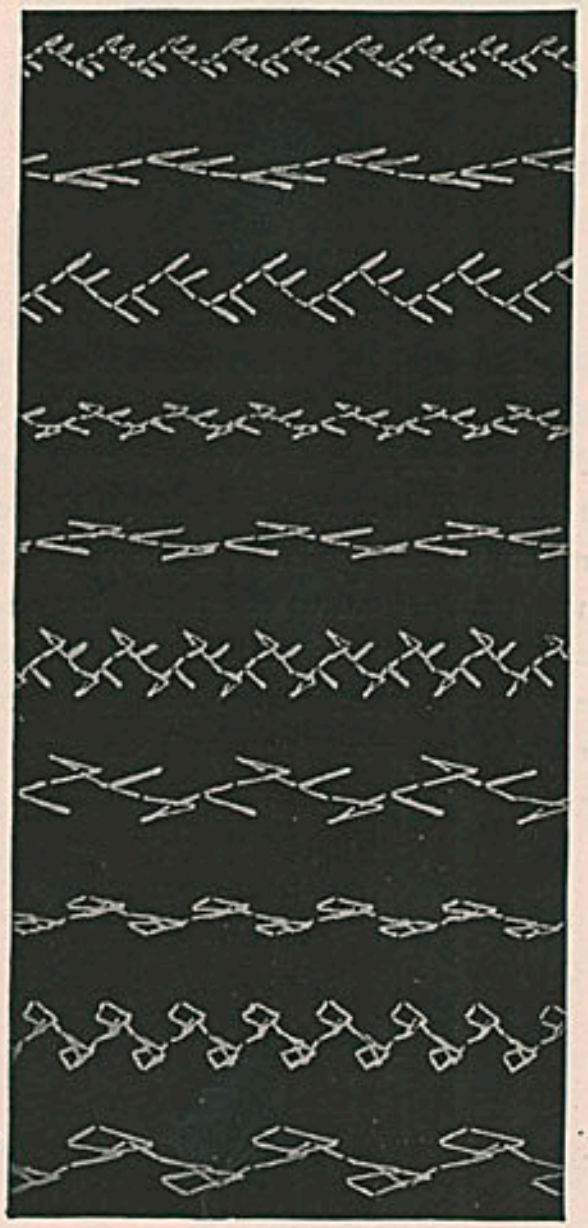
PHOTOGRAPHIC EXAMPLES OF ORNAMENTAL STITCHING PERFORMED ON SINGER SEWING-MACHINES OF CLASS 32.



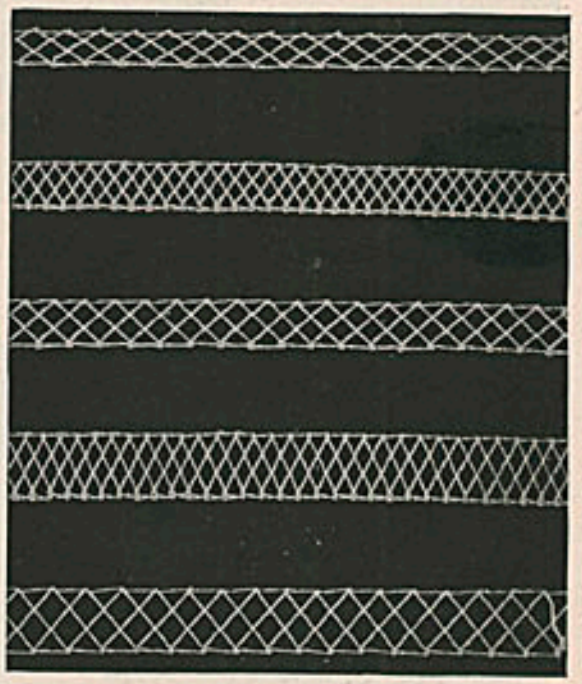
Stitch No. 20—Machine No. 32-20.



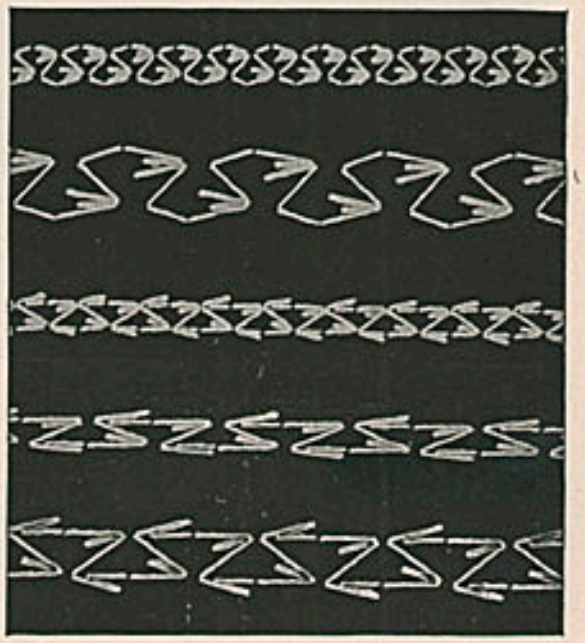
Stitch No 22—Machine No. 32-22.



Stitch No. 21—Machine No. 32-21.

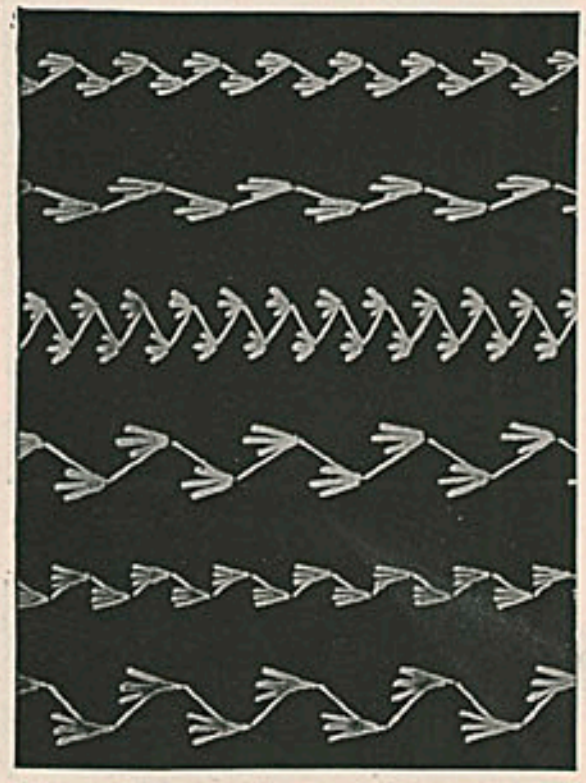


Stitch No. 23—Machine No. 32-23.

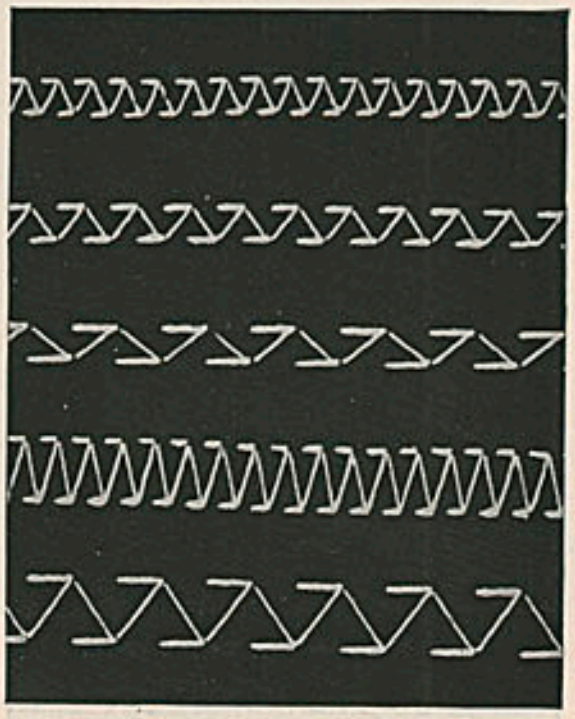


Stitch No. 24—Machine No. 32-30.

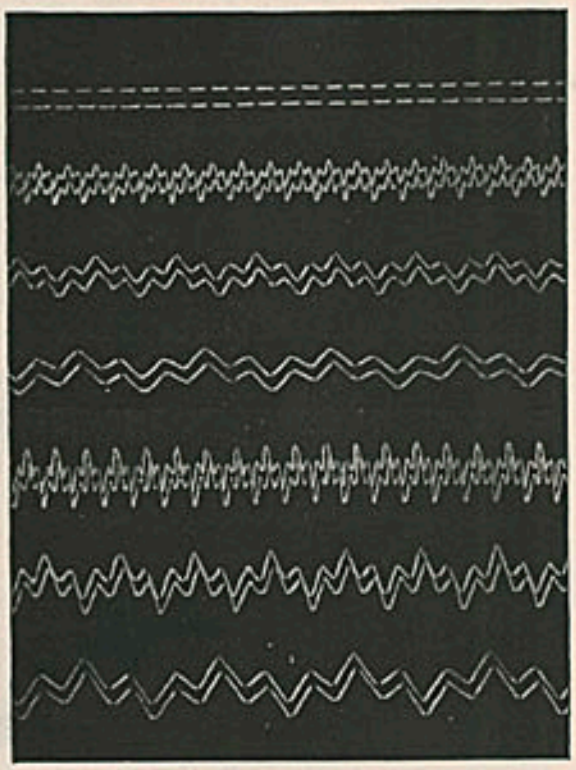
PHOTOGRAPHIC EXAMPLES OF ORNAMENTAL STITCHING PERFORMED ON SINGER SEWING-MACHINES OF CLASS 32.



Stitch No. 24 (Continued)—
Machine No. 32-30.



Stitch No. 26 – Machine No. 32-34.



Stitch No. 25—Machine No. 32-31 (2-needle).

The foregoing examples of ornamental stitching were performed on Singer Sewing Machines of Class No. 32, carrying the variety number noted against each example. These examples simply indicate the range of work and do not represent all the designs which are or can be made on the respective machines. The straight stitch is shown for those machines capable of making it effectively.

MACHINES OF CLASS 32 FOR EYELETS.

FOR the manufacture of Eyelets in textiles or leather, these machines are found, in practical factory use, to excel all others in handsome and durable finish of product and speed of operation. They are distinguished for simplicity of mechanism, automatic action and ease of adjustment.

The International Jury at the World's Columbian Exposition awarded a medal to **Machine No. 32-29** for the following specific points of excellence:

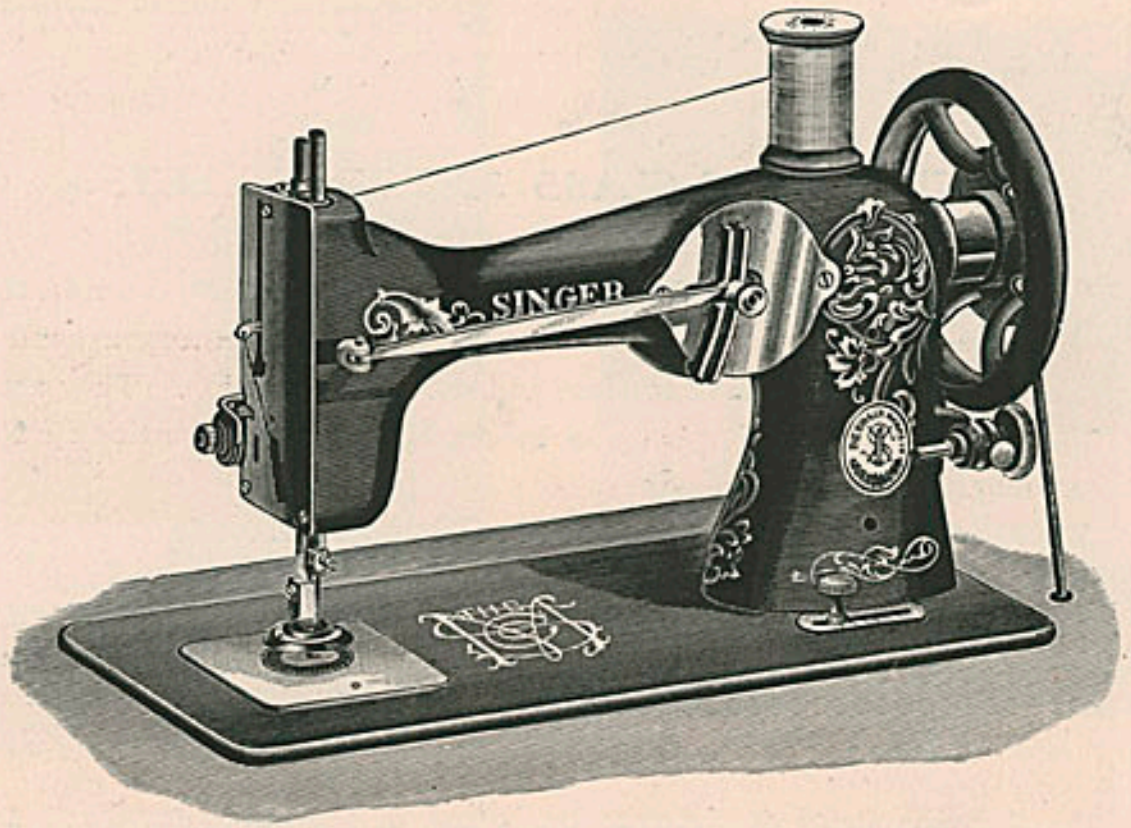
AWARD.

1. Simplicity of construction, speed of operation, automatic action and positive rotating feed.
2. Readiness of adjustment for all sizes of Eyelets and a variety of ornamental patterns.
3. Slotted spur acting as a fulcrum on which the fabric turns, which insures accuracy in the work.
4. Knee lift, adding to capacity by leaving operator's hands free.

These points of excellence obviate the necessity for expert operators.

A circular, rotating feed-dog carries the work around the spur acting as a fulcrum for the fabric and receiving the central thrust of the needle, thus securing perfect accuracy in the work.

When making $\frac{1}{16}$ inch eyelets in textiles, it is only necessary to place the fabric over the spur, drop the presser-foot and let the spur perforate the eyelet-hole. In firm goods or in making larger eyelets, the eyelet-hole should first be punched for the entrance of the spur.



MACHINE No. 32-29.....FOR EYELETS IN LEATHER OR CLOTH.

Bed 15¼ inches long, 7⅞ inches from Needle to Base of Arm.

Rotating Feed and Presser-Foot.

There are nine sizes of spurs which are furnished, as ordered, with the machine illustrated above, for eyelets having perforations of the following diameters, in fractions of an inch: $\frac{1}{16}$, $\frac{5}{64}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{9}{32}$, $\frac{1}{4}$ inch.

The fabric is firmly held to the rotating action of the feed on this machine by means of a circular, concave presser-foot, corresponding to the feed-dog in its diameter, and rotating with it.

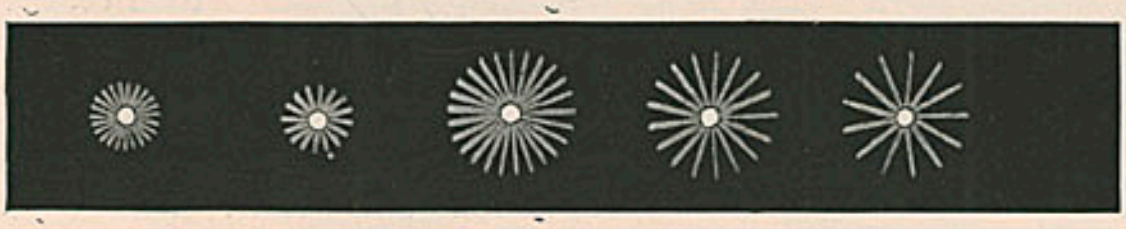
Various modifications of the presser-foot, also of throat-plate, are furnished for different sizes of spurs; it is desirable that samples be furnished of the work to be performed, and the machine will be fitted therefor.

The bight of the stitch can be adjusted to any depth, not exceeding one-quarter inch from centre of perforation, by means of a thumb-screw in the end of the pitman at front of the arm. Thus the smallest eyelet-hole can have a stitch surrounding it of one-quarter inch in depth or less, as desired, this depth being decreased as the size of the perforation is increased, the extreme outside diameter of any eyelet being one-half inch.

The feed movement governs the distance between stitches and is adjusted by means of a thumb-screw on the bed, directly in front of the base of the arm.

Through the various means of adjustment described, the form of the stitch may be varied to enable the production of tasteful and ornamental forms.

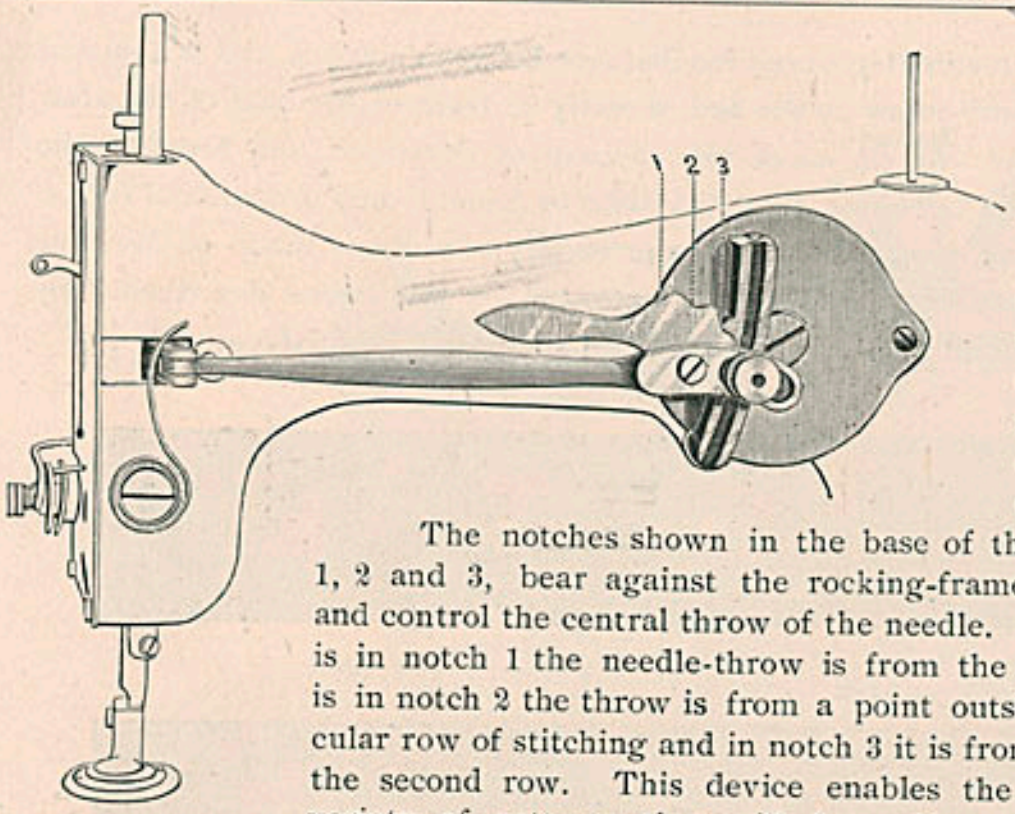
The following examples indicate the variety of stitches made on Machine No. 32-29; this variety can be greatly extended by the means described. By using silks of different colors, many beautiful effects can be produced.



Machine No. 32-41 is specially fitted for making small eyelets, not exceeding ¼ inch in outside diameter, in linen and cotton fabrics. It is used in the manufacture of Shirts and similar work requiring the rapid production of small eyelets neatly finished in "purl" stitch. The bight of the stitch is adjustable up to ⅛ inch. This machine is fitted with a special form of concave rotating feed carrying the goods under yielding presser having a small convex foot that does not rotate with the fabric.

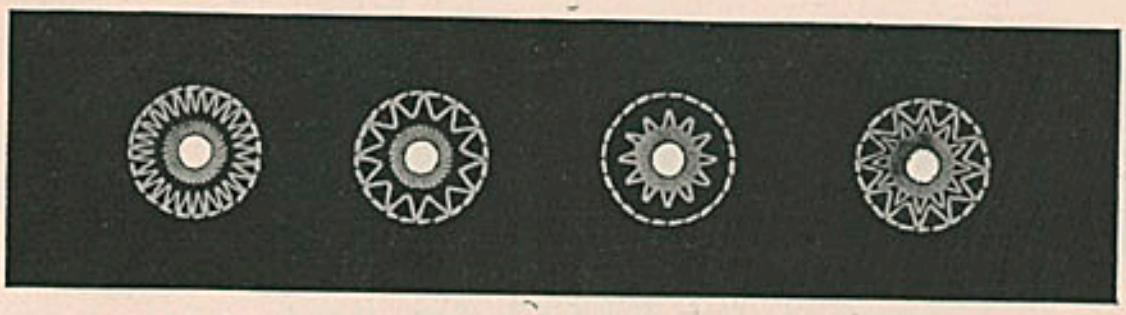
Machine No. 32-42 has feed and presser similar to those on Machine No. 32-41, but is especially adapted for covering metal eyelets on the uppers of lace boots having a tongue already attached, or for similar work on leather.

Machine No. 32-43 is fitted so that the throw of the needle can be started from two points other than the centre. Thus, from one to three distinct circles of stitching can be made around each eyelet, as desired, and, in addition, an outside circle of straight stitching for "fastening" or "barring" can be made as illustrated below. The changes are instantly effected by moving a lever attached to the pitman-connection to needle-bar.



When the lever is in the position illustrated, the needle has no vibration and performs plain stitching around the eyelet, at any desired distance from centre, not exceeding one-quarter inch.

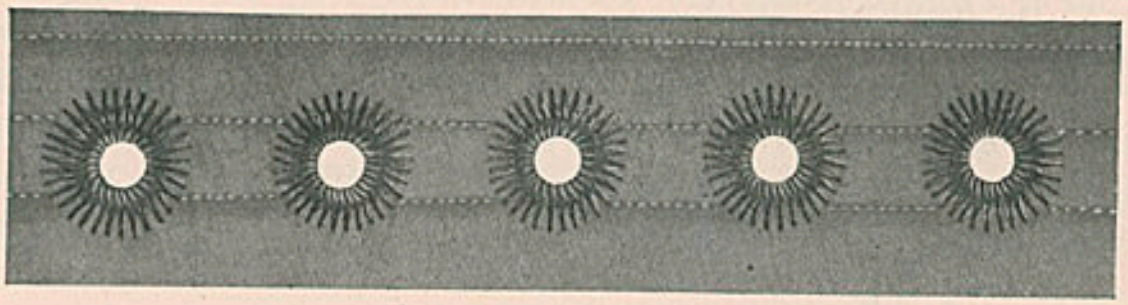
The notches shown in the base of the lever, marked 1, 2 and 3, bear against the rocking-frame regulator stud and control the central throw of the needle. When this stud is in notch 1 the needle-throw is from the centre; when it is in notch 2 the throw is from a point outside the first circular row of stitching and in notch 3 it is from a point outside the second row. This device enables the formation of a variety of patterns that will be uniform in making any number of eyelets. Some of these patterns are shown in the following illustrations.



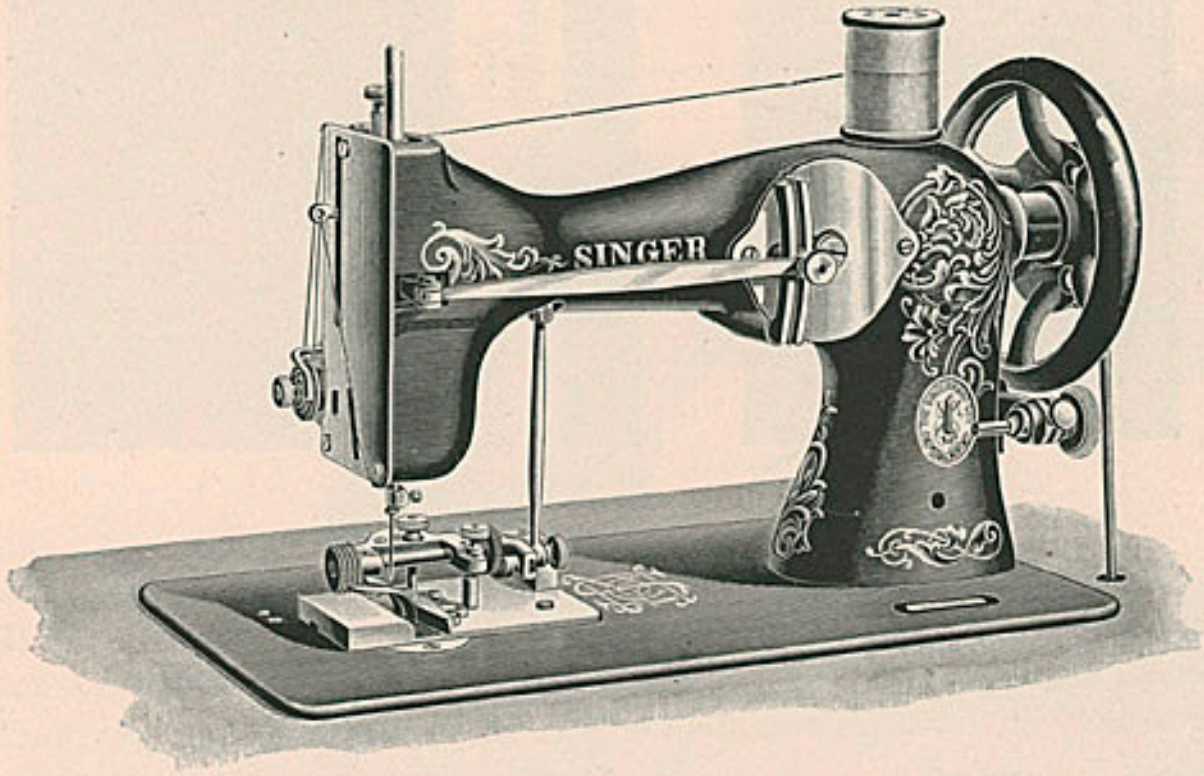
The device described for regulating the needle-throw on Machine No. 32-43 can be applied to other single-needle machines of this class at a small additional cost.

Machine No. 32-44 is for covering metallic eyelet rings with a "purl" stitch which is encircled by a fancy stitch that can be varied as desired, both stitches being made at one operation.

The machine is fitted with one shuttle and two needles, one of which forms the stitch for covering the ring and the other makes the outer row of stitching. The following illustration is from a photograph of work done on Corsets by this machine.



MACHINE No. 32-32.
FOR BLIND-STITCH CARPET SERGING.



THIS machine, having the Singer Oscillating Shuttle, Central Bobbin, Top Wheel-feed and Pile Depresser, is our latest and most effective device for rapidly serging the raw edges of **Pile Carpets,** without affecting their external appearance, and makes an absolutely blind-stitch selvage that cannot be raveled.

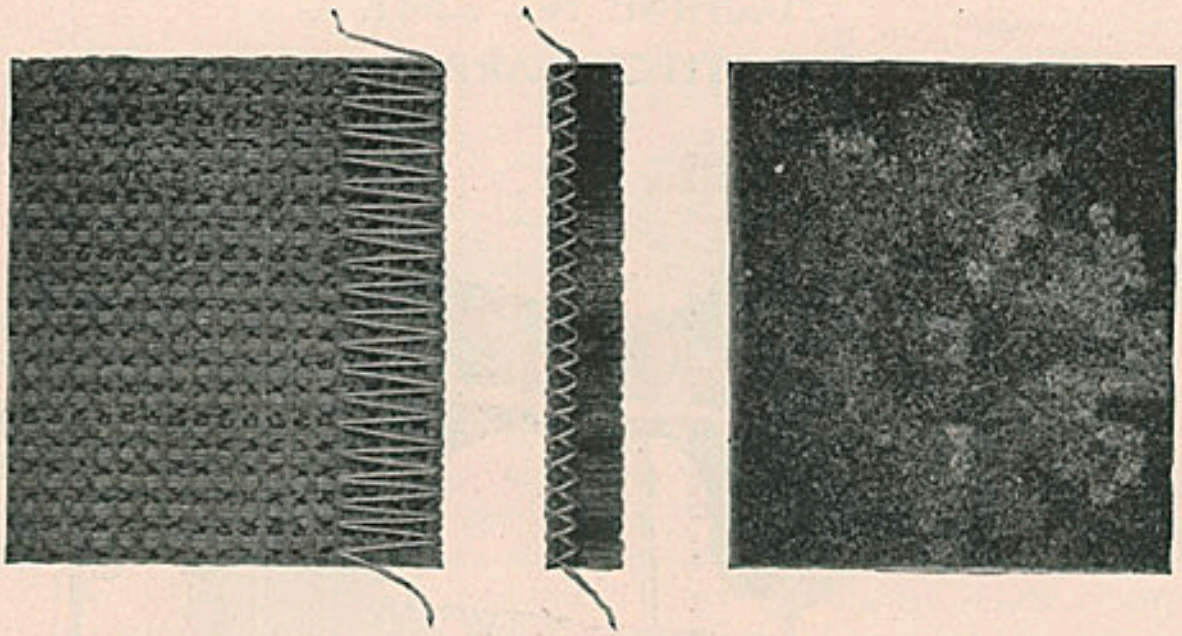
Its operation is equally efficient on the heaviest or the lightest fabric, all work being done easily and perfectly. It is of simple and durable construction and does not require an expert operator.

This machine uses the oscillating shuttle in an upright position and can be run at a very high rate of speed with least effort. The shuttle is made from one solid piece of steel hardened and polished; its axis supports a central bobbin that has unusually great capacity for thread.

The top-feed mechanism obtains its motion from the main shaft in the arm of the machine and the serrated feed-wheel is operated upon the back of the carpet, which is worked face downward.

The guide is ingeniously devised to turn the pile away from the edge of the fabric, the back of which is presented to the needle-action so that the extreme depth of bight appears on the back of the carpet, the edge being firmly secured and handsomely finished while the pile is left entirely intact.

The following photographic reproduction of work performed by this machine on a Wilton carpet indicates its quality, the quantity being equal to the best efforts of ten hand sewers.



The needle-bar is carried on a pivoted frame which is connected with a cam for producing a reciprocating motion from side to side. The extent of this motion is governed by end position of a connecting-rod, adjusted by a thumb-screw in the slotted segment at front of machine; the depth of bight may thus be regulated as desired.

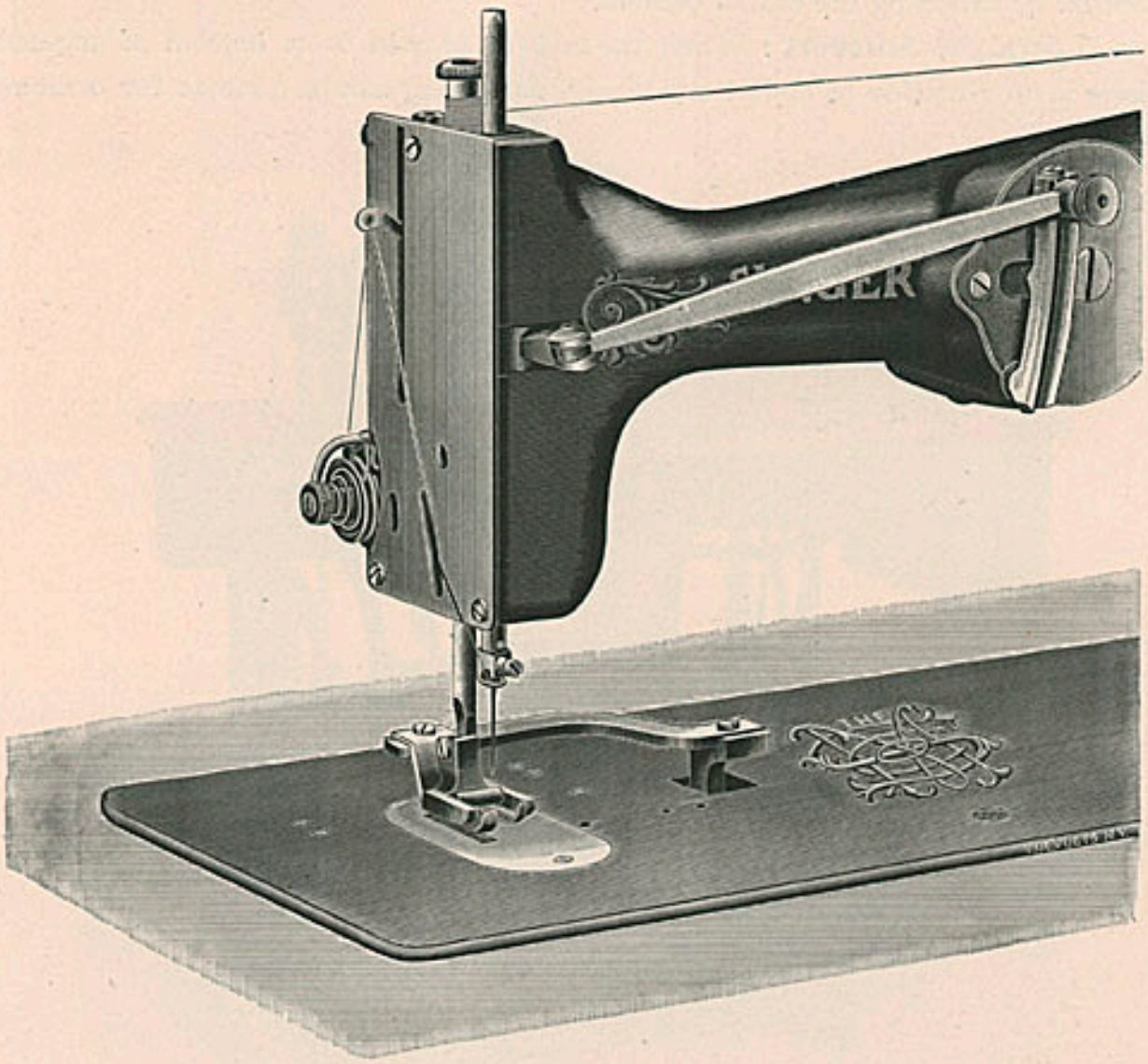
The length of stitch is governed by the feed-movement, this being adjusted by means of a thumb-screw at the lower end of the vertical connecting-rod under the arm; the movement may be diminished so that the covering stitches on the back of the material will be close together or it may be increased so that the stitches will measure one-quarter inch from one point to the other of the entrance of the needle into the material.

Through the action of the guide, as described, the exit of the needle is always at the edge of the fabric, whatever the depth of bight or length of stitch may be, so that the pile is not reduced, the pattern diminished nor the color effect disturbed, but an absolutely blind stitch is obtained and a perfect selvage produced.

In serging the edge of Moquette, Bigelow-Axminister or similar carpet having its body loosely woven, the pile may be removed for a suitable distance, the edge of the body turned back and the folded edge serged, or a wide tape may be serged to the single edge without removing the pile, as preferred, both operations being readily and effectively performed by the machine.

The actual saving effected by the use of this machine in the serging of a comparatively small quantity of carpet will pay for its cost; the superior excellence of its work will largely increase the wearing value of the goods, while its capacity enables much prompter delivery of sales than would otherwise be possible.

MACHINE No. 32-39—FOR WINDOW SHADES.



THIS machine is our latest device for hemming Window Shades, and is provided with special top and bottom feed-mechanism that is positive in action and prevents all puckering of the fold, so that both thicknesses are perfectly even at the end of the seam. Its operation is equally effective on the heaviest or the lightest shade material, all work being performed quickly, easily and neatly. It is of simple and durable construction and does not require an expert operator.

The top-feed mechanism obtains motion from the same shaft that operates the bottom feed, so that uniform action is invariably secured on both plies of the fabric.

The needle-bar is carried on a pivoted frame having a reciprocating motion from side to side. The extent of this motion is governed by a pitman, the end of which can be adjusted by a thumb-screw in the slotted segment at front of arm; the depth of the stitch can be regulated as desired by moving the end of the pitman up or down.

The length of the stitch, governed by the feed-movement, is adjusted by means of a thumb-screw on the bed of the machine; the movement may be diminished so that the stitches will be close together, or it can be increased so that they will measure one-quarter inch from point to point.

Side Hemming: When the pitman is in the position shown, at top of segment, the throw of needle is one-quarter inch; this throw can be reduced as desired by dropping the end of pitman.

Straight Stitching: When the end of pitman is at bottom of segment there is no vibration of needle and straight stitching can be done as for ordinary sewing.

MACHINE No. 32-39 .....ON STAND WITH OAK TABLE. END AND BACK LEAF.

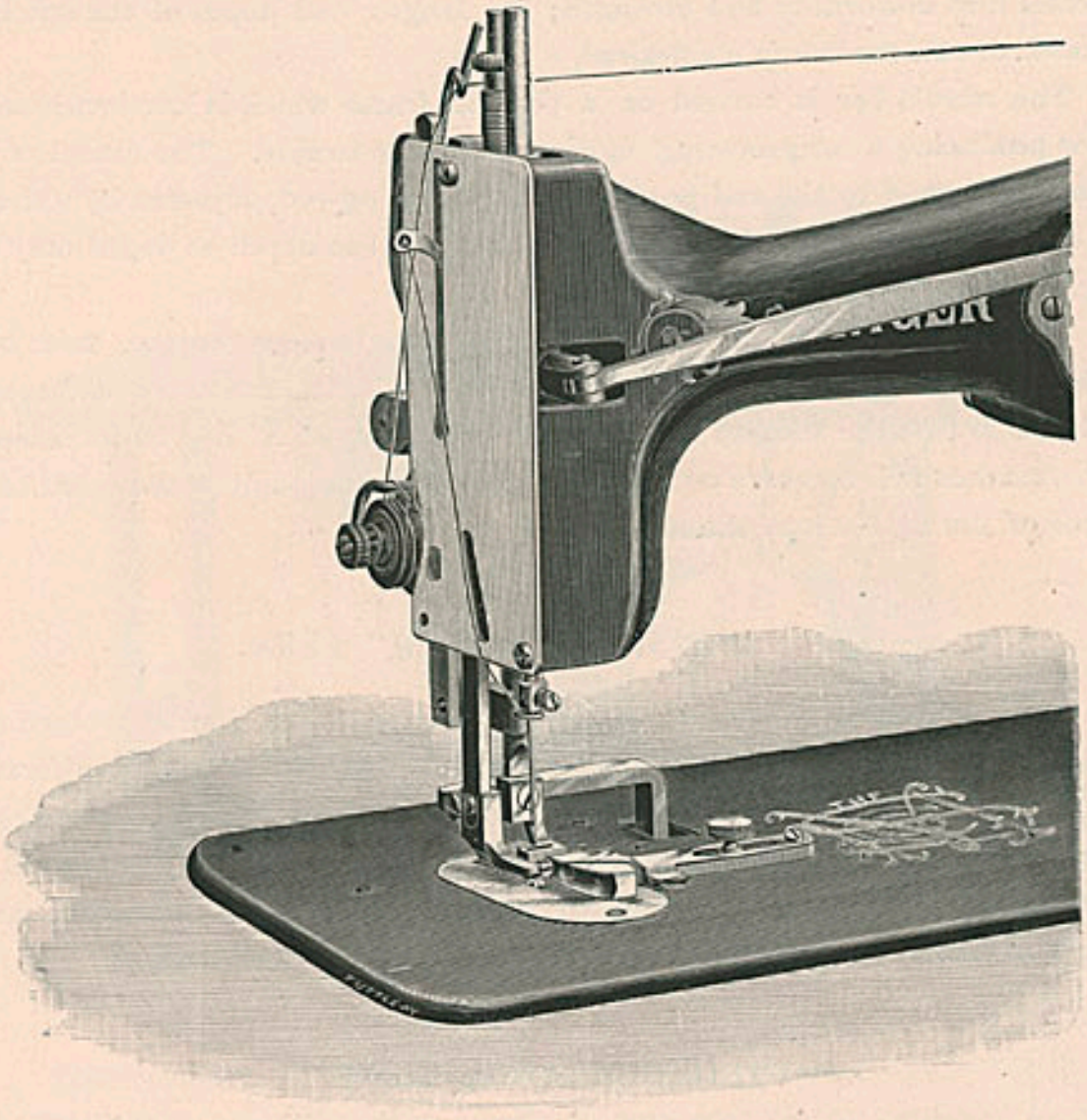
The table shown above is of very suitable size for the convenient handling of shade material.

With leaves down, this table is 38 inches long by 19 inches wide.

With leaves up, it is 48 inches long by 25 inches wide, thus affording ample room for handling the largest shades.

MACHINE No. 32-45.

FOR SEWING AND SERGING INGRAIN CARPET.



THIS machine, recently perfected, **for the use of dealers in Ingrain Carpets,** is the outcome of long and intelligent study of the requirements of this trade, and it is in every respect thoroughly efficient. The seam it produces is superior to hand work in strength, elasticity and appearance.

The machine is equally capable as a serger, covering the raw edges at the ends, or of a split breadth, with a durable and handsome overseamed edge that adds very materially to the finish and durability of the carpet.

The saving in the cost of work by this machine is very great, as by it an operator can do many times as much work as a hand sewer. The advantage also gained by this fact in the prompt delivery of goods is a material one that dealers will thoroughly appreciate.

Carpets sewed on this machine lie flat, wear as long at the seams as elsewhere, and can readily be turned, their seams being finished alike on both sides.

THE OVERSEAMING LOCK-STITCH.

The overseaming stitch peculiar to this machine is formed like hand work but excels it in uniformity and strength; the length and depth of the stitch are adjustable to suit the fabric, as desired.

The needle-bar is carried on a pivoted frame which is connected with a cam for producing a reciprocating motion from side to side. The extent of this motion is governed by the end position of a connecting-rod, adjusted by a thumb-screw in the slotted segment at front of machine; the depth of bight may thus be regulated as desired.

The length of stitch is governed by the feed-movement, this being adjusted by means of a thumb-screw at the base of arm; the movement may be diminished so that the stitches will be close together, or it may be increased so that the stitches will measure one-quarter inch from one point to the other of the entrance of the needle into the material.

THE "UPPER AND LOWER" FEED.

Through the effective use of the upper and lower feed combined with alternating pressers, two breadths of carpet may be fed with absolute uniformity, or one breadth can be fed in advance of the other, each breadth being subject to the action of the feed independent of the other; one breadth can be "fulled in" while the other is held back at the will of the operator, thus the carpet can be perfectly matched without difficulty or without being basted or tacked.

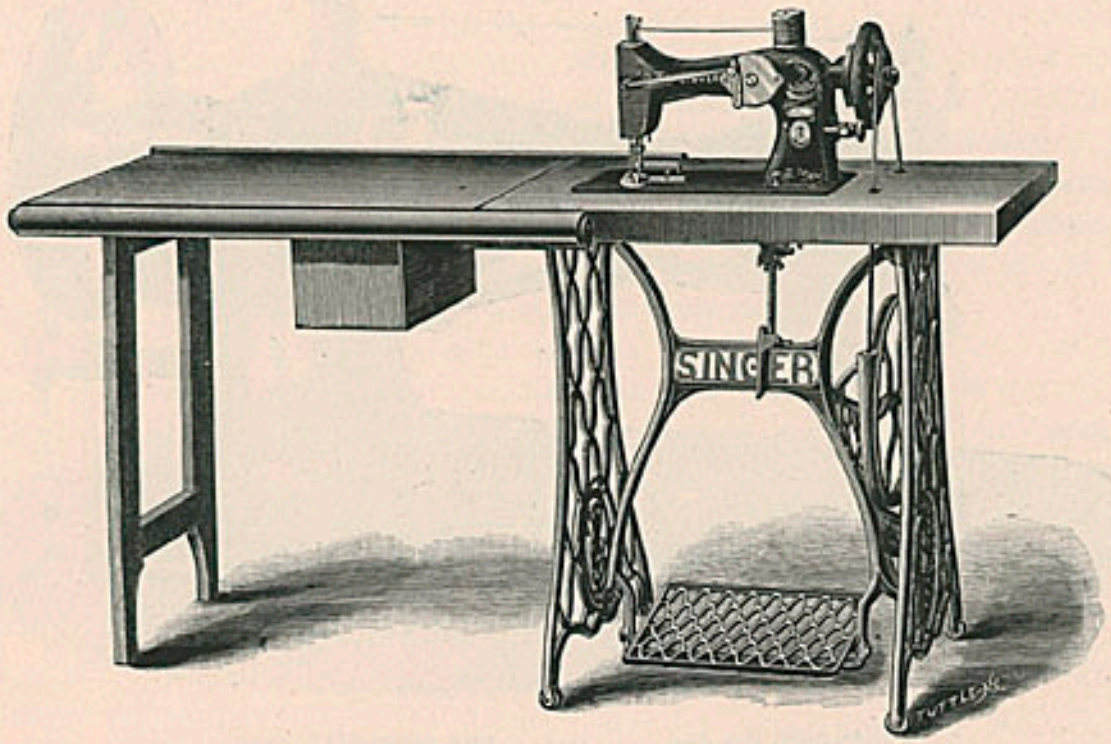
"THE COMBINATION GUIDE."

For Serging (Cut Edges).

The guide is fitted for carrying a cord or strands of the carpet, which pass through a flexible tension and into a slot through which they are delivered to the face of the guide, and are there held in position while the action of the needle overseams them fast to the edge of the carpet, thus producing a durable and handsome finish and sufficiently strong to be seamed to a loom selvage.

For Seaming.

The face of the guide, against which the carpet is held by the operator, is devised to compress any uneven edges and hold them in proper position while the action of the needle overseams them, by taking one stitch in the body of the carpet and one over the edge alternately.



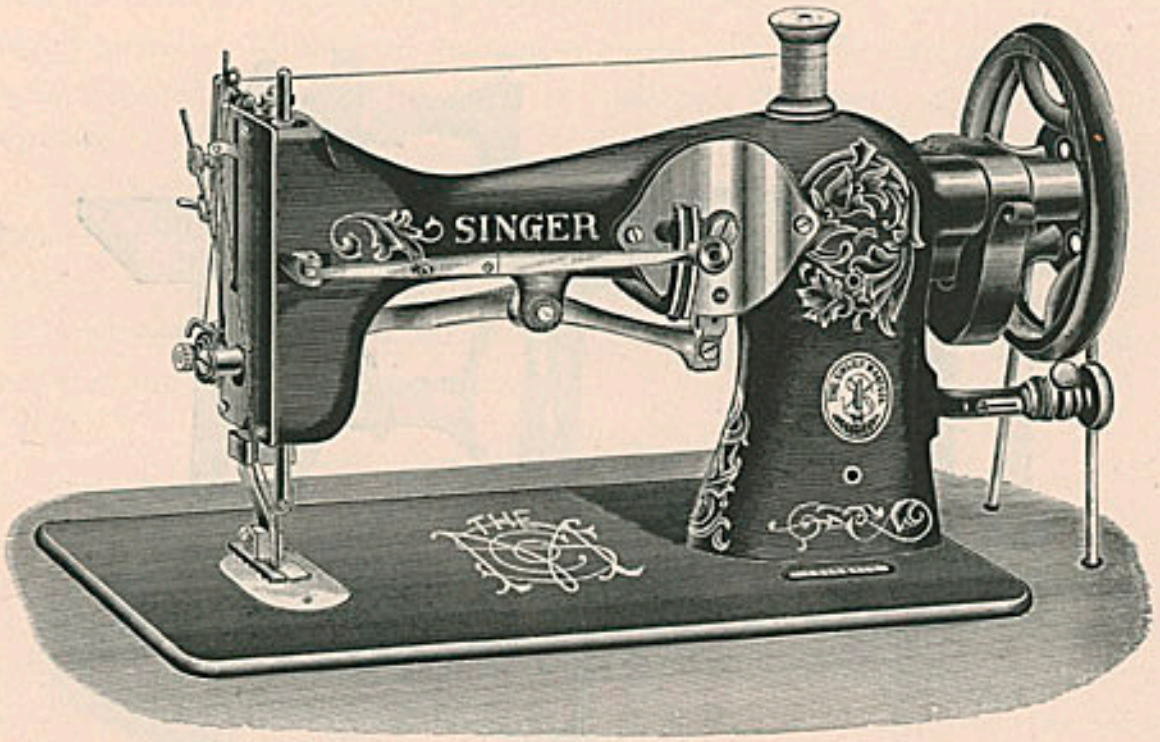
MACHINE No. 32-45..... ON STAND WITH SPECIAL TABLE.

The convenient form of table shown above has a clear space over the rolls, measuring thirty-six inches from needle to outer end of the extension leaf.

Although perfectly firm and stable when attached to the top or stand, the extension leaf can be readily detached and folded for convenient storage when not in use.

Through its use the carpet is easily and quickly handled and the operator's work is greatly lessened.

Class 33.



MACHINE No. 33-1 ....FOR HEM-STITCHING.

Bed 15¼ inches in length, 7½ inches from Needle to Base of Arm.

Oscillating Mechanism, Central Bobbin, Vertical Shuttle.

THIS is our latest production for its special purpose and is the result of practical experience and careful experiment with a view to overcoming all mechanical obstacles heretofore met in performing this difficult class of work on a sewing-machine.

This device, in actual factory operation, has demonstrated the efficiency of its simple mechanism to be the highest both in the quantity and quality of its product, the facility of operation and its durability. It perfectly performs both "SHIRE" and "IMITATION HEM-STITCHING," the respective processes being explained as follows:

Those threads that run longitudinally from end to end of the fabric are called the warp, and those threads that cross and intersect the warp are called the weft.

In "Shire" or Thread-drawn Hem-stitching if, for instance, an inch hem is desired on a handkerchief, from three to six or eight of the warp or weft threads are drawn from the fabric two and one-quarter inches from its edge, the number of threads drawn depending upon the quality of the material and the width of "shire" desired; then turn over about one-quarter of an inch on the edge of the goods and bring the edge thus folded up to the edge of the drawn

threads, press down the fold thus made and proceed to sew; the action of the needle gathers as many threads of the drawn space together as the stitch regulator is set for, and fastens them at each stitch.

In "Imitation" Hem-stitching the material is folded as in "Shire" Hem-stitching, but without drawing either warp or weft threads, the folded material is placed beneath the presser-foot, and stitching is performed as in "Shire" work.

The action of the needle is the same, both warp and weft threads being gathered together and fastened with the stitch the same as in "Shire" work.

This machine received the only Medal and Diploma awarded at the World's Columbian Exposition in this class of machines, the International Jury specifying the superior excellence of its top-feed having peculiar intermittent and reverse action that co-operates with a horizontally reciprocating needle-bar and needle to most effectively form hem-stitching having every appearance of the finest hand work. There being no under-feed, the opening in the throat-plate is quite small, just sufficient for the play of the needle.

The ingenious feed-mechanism carries the goods straight and true; the sectional presser is adjustable so that uniform pressure is applied at the folds on one side the stitch and the single web on the other, thus obviating puckering and carrying a seam that is always even at the end. The feed-movement, lateral throw of the needle-bar and the timing of the shuttle are capable of the finest adjustment so that absolutely perfect work is obtained with less trouble than on any other machine.

ATTACHING BEAD TRIMMING.

The upper-feed mechanism peculiar to this machine, in combination with the overseaming stitch, make it especially effective for attaching strung Bead Trimming in the ornamentation of Cloaks, etc. It can be specially fitted for this work, the strung beads being taken from a bobbin or reel and guided through a tube so that they are delivered on the fabric close to the needle, and can be securely stitched in an intricate pattern having short curves, circles or angles, as desired.

Class 34.

Vertical Post Sewing-Machines.

MACHINE No. 34-2.....ROLLER-PRESSER AND DROP-FEED.
Post 7 inches high, 10½ inches from Needle to Base of Arm.

THE machines of this class are admirably adapted for reaching into and making lock-stitch seams on hollow articles or convex surfaces at points difficult to reach with a machine having a horizontal bed.

The feed is at the left of the needle and close to the outer edge of the small bed formed by the top of the vertical post. The top of this post measures 1½ inches in diameter, at right angles with the feed, and 1¼ inches in line with the feed, thus presenting a very small surface and readily reaching points on the inside of hollow objects having small area.

These are the only machines in successful practical use for stitching elastic gores into the uppers of new Congress Gaiters after the seams are closed, making a continuous seam from beginning of one gore to the end of the other.

Machine No. 34-1 has a post 11 inches high, but is like Machine No. 34-2 in all other particulars. It is used in Boot and Shoe manufacture for making back seams and stays, attaching inside loops and stitching vamps on long boots.

Machine No. 34-3 has post 11 inches high and is provided with special top feed for sewing ends into leather cylinders for music rolls, etc.

The machines of Class 34 are suitable for either foot or mechanical power.

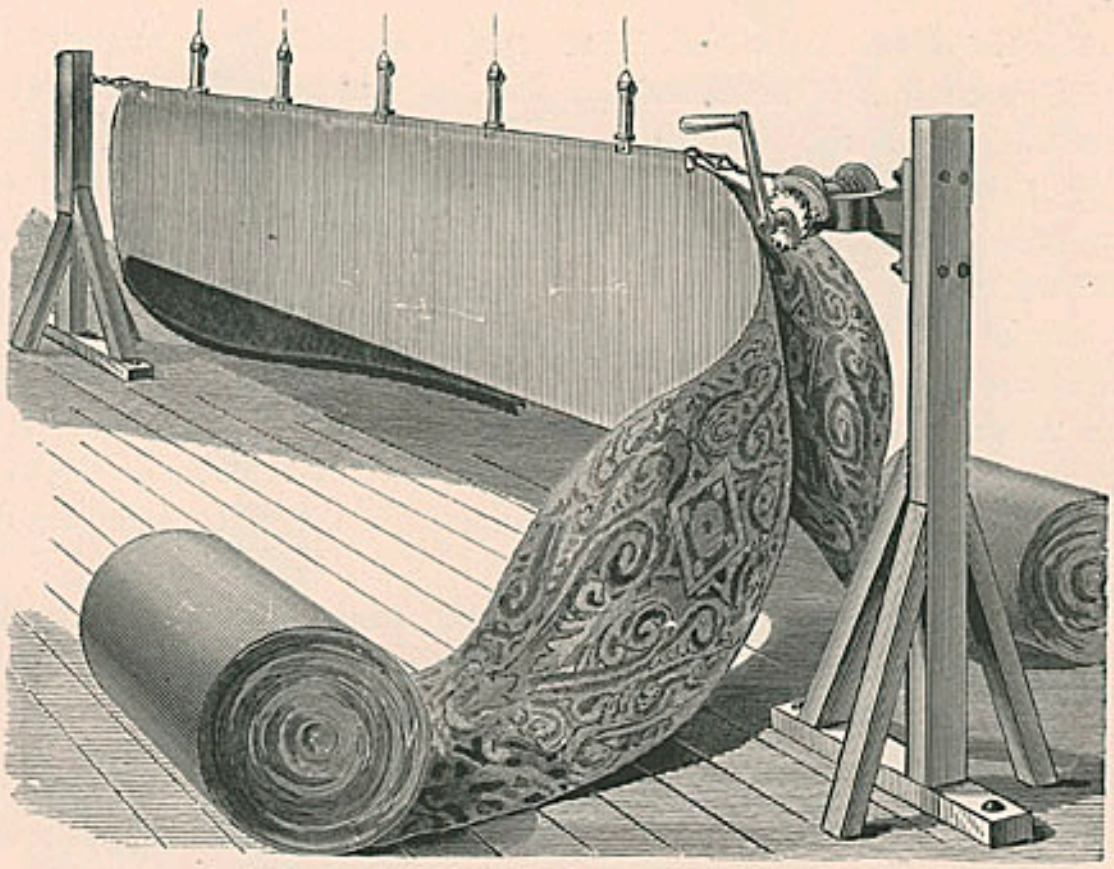
For foot power the height of the stand is adapted to the height of post; three different forms of table are furnished, as ordered. Table No. 5244 is made of Oak and has end and back leaves; with leaves up, this table is 48 inches long by 25 inches wide; with leaves down, it is 38x19 inches. A plain Black Walnut table (No. 5427) is 42x18 inches and a plain Ash table (No. 5243) is 42 inches long by 24 inches wide.

For general boot and shoe repairing, also for new work, the machines of this Class are among the handiest labor-saving devices ever invented and money-makers in every shop where stitching is done on hollow or cylindrical articles. Their mechanism enables a superior quality of fine lock-stitching on this kind of work, while their shape permits free movement of the material in any direction.

They are highly efficient for fine work requiring sharp turns in the line of stitch and are extensively used in the manufacture of leather Hand-bags, Pocket-books, Portfolios, etc.

Class 35.

The Singer Hand Carpet Sewing-Machine.



STRETCHING AND SUSPENDING DEVICE.

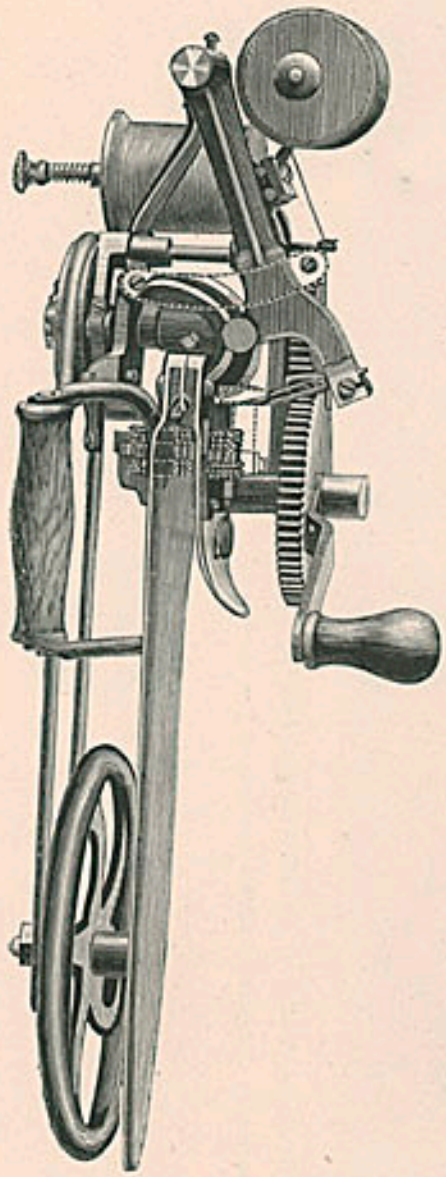
Top of Post, 4 feet 6 inches; Top of Windlass, 4 feet 2 inches; Greatest Distance between Clamps, 45 feet.

THIS machine, so well and favorably known, is in extensive use. It makes a double elastic seam, taking thread from two spools, as illustrated on the opposite page.

It is distinguished for speed of operation and simplicity of mechanism, elasticity, strength and durability of stitch.

It is light, compact and easily managed, sewing any grade or weight of carpet.

Tapestries, Brussels, Velvets, Moquettes, Wiltons and Axminsters can be sewed with facility and at a large saving in expense over hand sewing, the quality of the stitch being better. The carpet is suspended, as illustrated above, between two end clamps, one of which is stationary and the other is attached



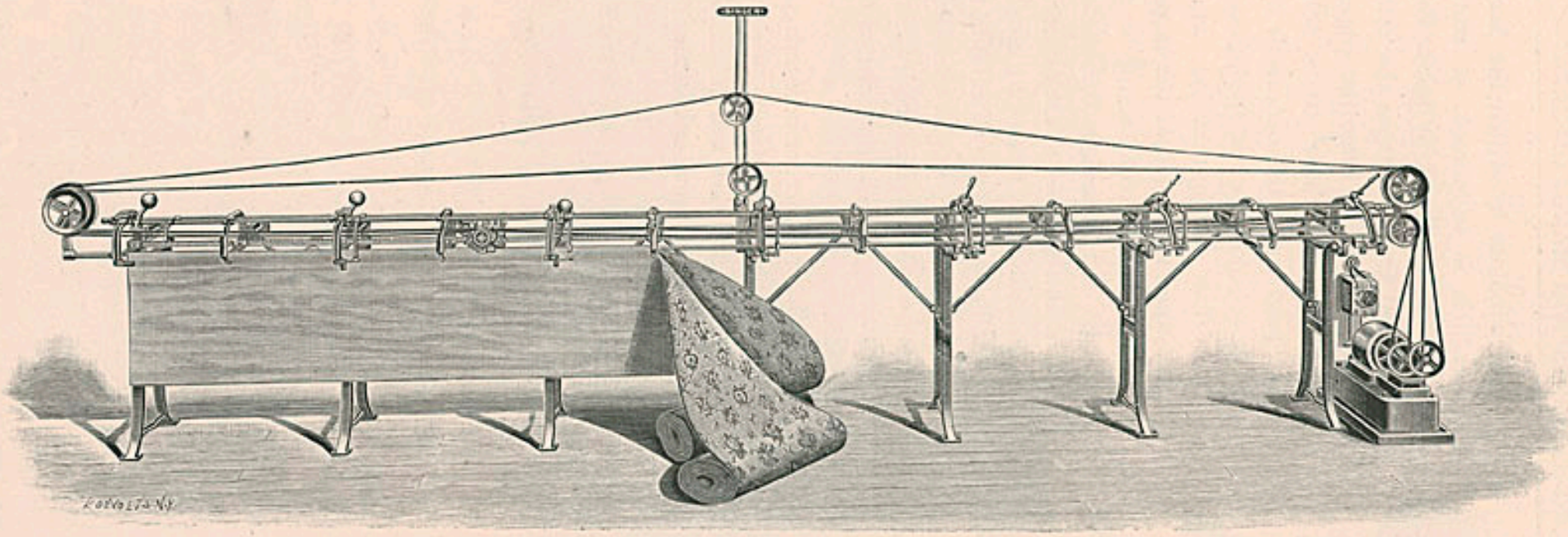
to a windlass by which the breadths are drawn taut. It is supported, at convenient intervals between the clamps, by hooks depending from an overhead frame or from the ceiling; these hooks grasp the carpet near the edges to be stitched, the height of these edges being so they will just pass under the operator's arm. The figures are matched as the suspending clamps are adjusted.

The sewing-machine, when in operation, rests upon the edges of the carpet that are being sewed, the feed rolls acting upon both sides and moving the machine one-quarter of an inch toward the operator at each stitch, each revolution of the hand crank producing a stitch.

There are two varieties of this machine having, respectively, spool and disc tensions. The tension on thread delivery from spools is regulated by a spring pressing against a cone on the spool bracket.

Our regular form of disc tension is provided for both looper and needle-thread if desired.

The machine and its accessories complete, consist of the sewing-machine, hanging clamp, stretching clamp and spring, matching awl and hook, needle gauge and wrench, looper threader and a windlass.



MACHINE No. 36-1.....POWER CARPET SEWER.

(Six Sections: Complete Machine consists of Ten Sections.)

Class 36.

The Singer Automatic Power Carpet Sewing-Machine.

THE illustration on the opposite page represents the latest and most efficient automatic mechanism yet devised for practical work in the Carpet Room. This device, unique and ingenious in its construction, is compact and self-contained, uses any form of mechanical power and surpasses anything heretofore known in the category of sewing mechanism. It will sew each minute from four to five yards of seam, corresponding to eight to ten lineal yards of any kind of carpet.

This machine is a model of compactness and economy in the use of floor space. The uprights are placed forty-three inches from centres and are arranged to carry two independent stitching outfits if desired, thus doubling the capacity previously stated without increasing the space occupied, other than that required by the attendants for handling the carpet.

It is truly automatic and, at exactly the proper time, does every part of its work except matching and clamping the carpet, while for this it offers superior and exclusive facilities which not only enable the operator to do this work with ease and great rapidity, but to secure perfect matching of difficult patterns.

Although it is an entirely new device, it has been practically tested and is now in operation in some of the largest carpet-fitting rooms in the country, greatly decreasing expense of carpet-sewing and increasing the capacity for prompt delivery of goods.

The machine will sew any kind of carpet, without change of tension, requiring only a change in the guides, which can be removed and replaced instantly. It makes a perfect flat seam on all grades of carpet, and presses the pile down below the line of stitching.

The spreader can be adjusted to enable the sewing of carpets having extremely bad selvage.

The fabric is united by a very strong and elastic stitch which is formed in a way peculiar to this machine; the depth of bight may be adjusted as desired to meet the varying requirements of all varieties and grades of carpet.

The seams made by this machine are of unusual strength and do not require pressing; the carpet is ready to be laid as soon as sewn and will wear as long at the seams as elsewhere.

The Automatic Stretching and Clamping device is simpler, swifter and in every way more effective than any other method of handling a carpet. The sewing-machine is carried over the work by means of an overhung cable and travels entirely independent of the carpet; as the operator matches the carpet in sections and pulls down a lever each section is simultaneously clamped and stretched, the sewing-machine is automatically released and follows the operator, sewing each succeeding section as fast as it is clamped, thus saving a great deal of time.

In case the operator does not have a section matched when the preceding section is sewed the sewing-machine stops and starts again at the instant the clamping lever is pulled down on the next section to be sewn.

When a length of carpet has been sewed and the threads cut, the raising of the last clamping lever releases the entire length and the sewing-machine may be instantly gripped to the reverse cable and carried back to the point of beginning, ready to sew the succeeding length; it may also be reversed in the same manner at any point and carried back any distance desired.

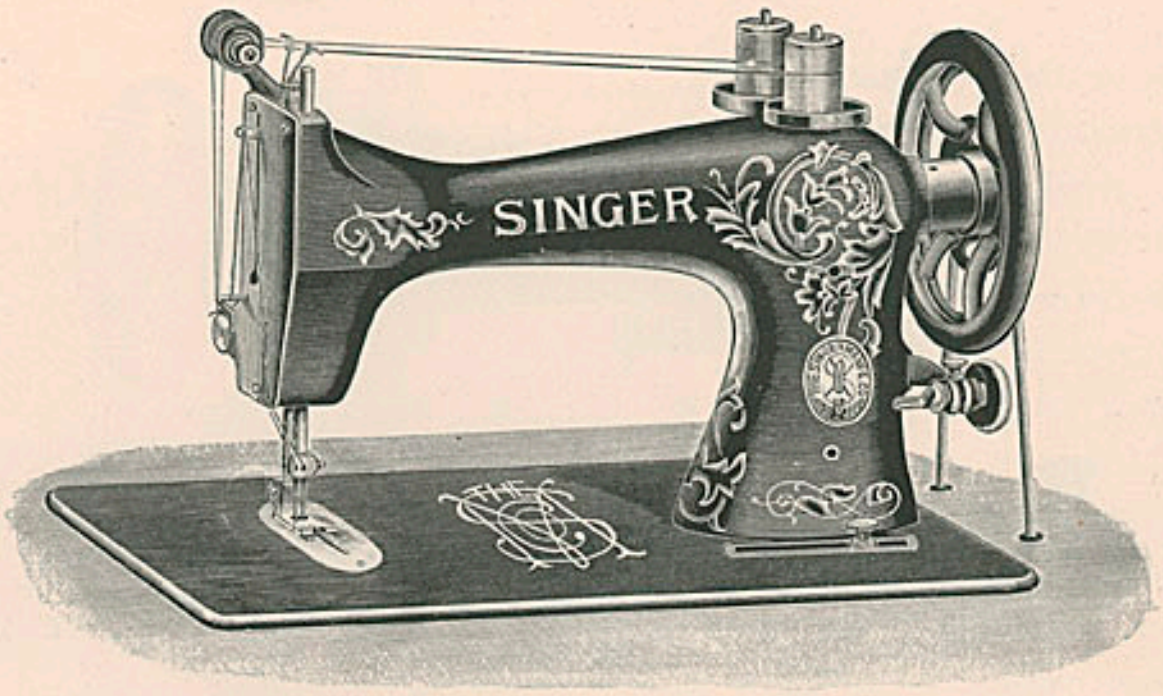
Two hundred and twenty-eight yards (double breadth) of Wilton carpet have been sewn on one machine in one hour. It is indeed a triumph of mechanical efficiency although perfectly simple and easily operated.

The complete machine consists of ten sections, each forty-three inches in length; these are furnished, as desired, with single or with double track for steam, electrical or other power.

The illustration only shows six sections of the machine in order to better present its proportions within the limits of the page.

The machine is sold outright, no royalty being charged for its use, and may be seen in operation at any time at our Manufacturers' Show Rooms, 561 and 563 Broadway, New York.

Class 37.



MACHINE No. 37-2..... .....FOR STAY STITCHING.
Bed 15¼ inches in length, 7½ inches from Needle to Base of Arm.

THE machine illustrated above is of the highest efficiency for staying seams in Shoes, Clothing, etc., without the use of tape or any reinforcement other than the strong flat stay-stitch made across the under side of the seam.

The advantages of this process have been demonstrated by practical use; it secures a stronger, more elastic and more durable seam than any other method of staying and accomplishes it at less cost.

This machine has drop-feed and the needle-bar carries two needles which make two parallel rows of stitching, one on each side of the seam; the loops from both rows are drawn across the seam on the under side of the fabric and are strongly united by the action of a vertical oscillating shuttle carrying a Central Bobbin with capacity for one hundred yards of No. 60 cotton.

The distance between needles can be gauged as ordered, up to an extreme width of three-sixteenths of an inch.

The presser-foot shown in the above illustration has a tongue corresponding to a groove in the throat-plate, for receiving the edges of the fabric.

This machine can also be furnished with a presser-foot having a groove corresponding to a tongue in the throat-plate, for raising the face of the material so as to present the appearance of cording, for use on Shoes, the backs of Gloves, etc.; it can also be fitted with a cord-guide in the throat-plate so as to insert a cord on the under side of the material, where it is held in position by the cross-stitch from the shuttle thread.

MACHINE No. 37-3... .....FOR HAT SWEATS.

This variety of Class 37 is fitted especially for stitching, at one operation, a reed into the glaze for Hat Sweats, and attaching both reed and glaze to the edge of the leather without marring the material by feed marks; it has proved, in practical operation, to be of the highest efficiency for its special purpose.

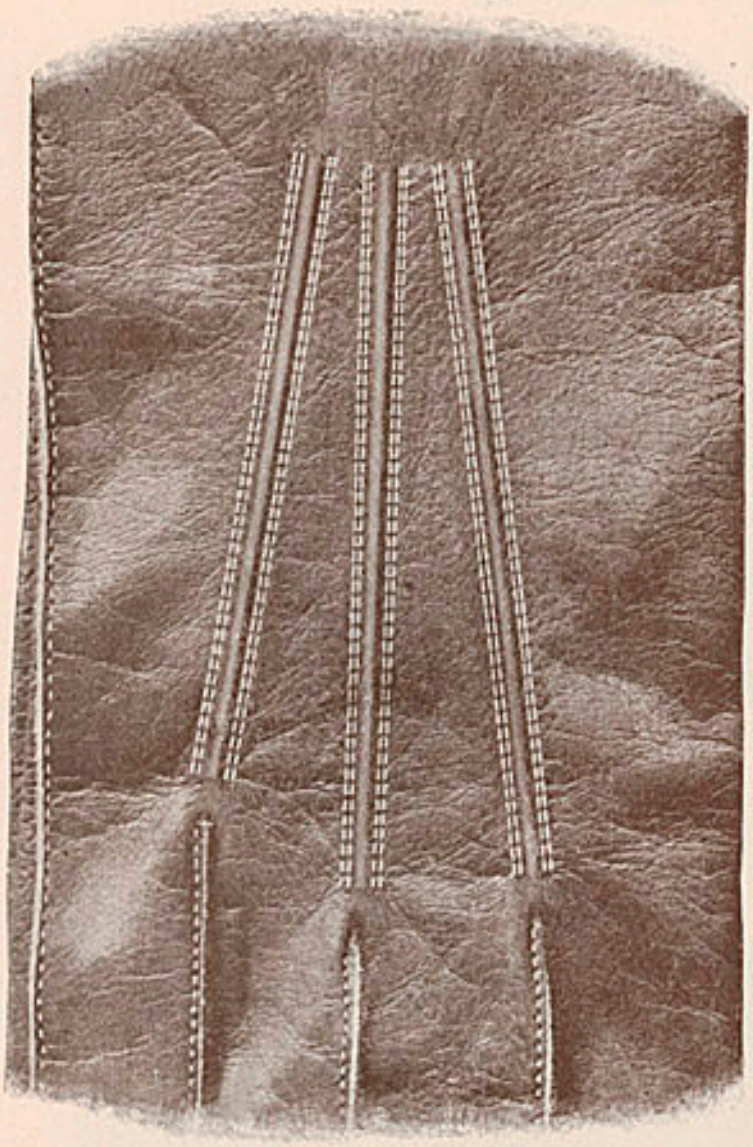
There is no under-feed, the movement of the material being obtained through the action of the vibrating top-feed mechanism specially adapted for the work.

The sweat is fed with its face down; the glaze is attached to the back of the sweat and is automatically folded over the reed as both are drawn through an attachment on the bed of the machine directly in front of the needles.

The needles are placed diagonally, the vertical oscillating shuttle operates at a corresponding angle, so that the angular stitch on the face of the sweat has the appearance of hand-sewing, with the advantages of greatly increased production, uniformity and strength of stitch.

MACHINE No. 37-4.

FOR STITCHING GLOVE-BACKS.

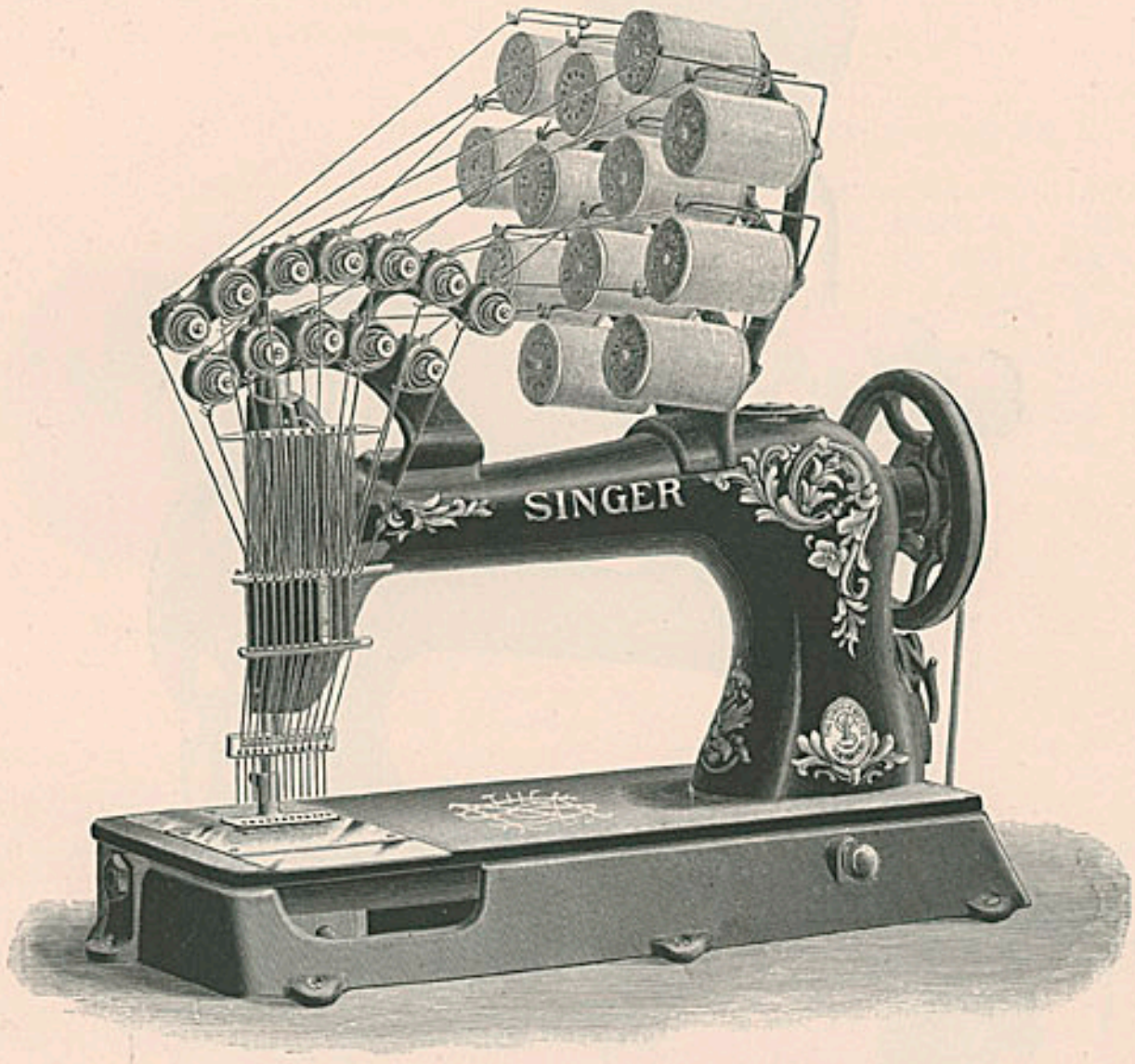


The four-needle machine of Class 37, for ornamenting the backs of gloves, has proved, in practical operation, to be of the highest efficiency in point of economy of operation and the finished appearance of its work. The marginal illustration is a photographic reproduction of the work of this machine on a kid glove. **Four parallel seams are sewed simultaneously** with the use of but one under thread, the work being of a superior character, and effecting a decided saving in cost of silk and labor.

For Cording Shoe Tips, the machine can be used for inserting and stitching either one, two or three rows of cord, in one operation, as desired.

Folding and Cording Muslin Strips.—In the manufacture of corded strips for trimming Underwear, Infants' Clothing, Lace Caps, etc., this machine is fitted with special folding and cording attachment for folding the strip and inserting four rows of cord in one operation.

Class 41.

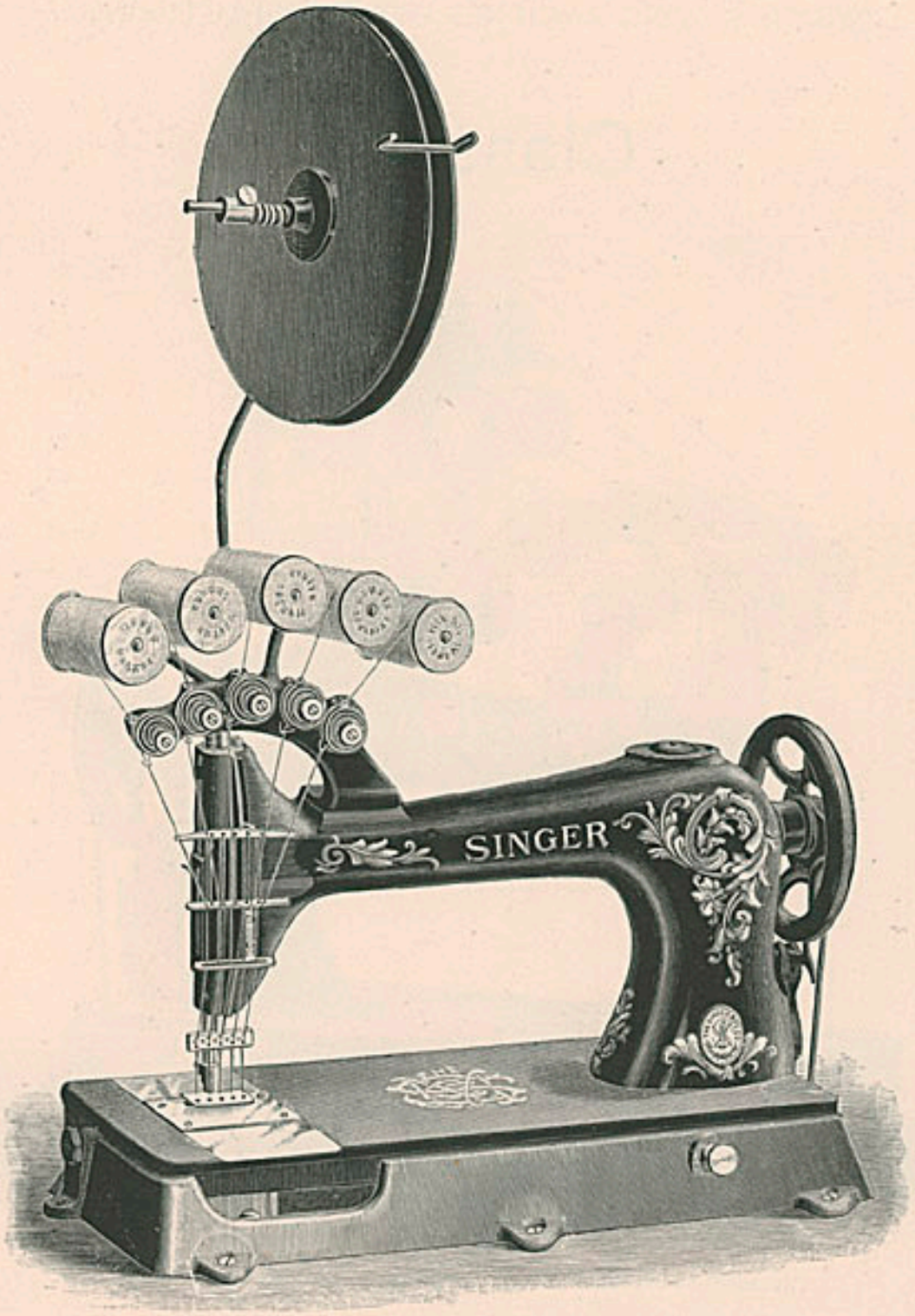


MACHINE No. 41-12.....12 SHUTTLES AND 12 NEEDLES.

THE machines of Class 41 are especially useful for any process requiring two or more parallel rows of fine lock-stitching; they are extensively employed in the manufacture of Corsets, Dress Stays, Boots and Shoes, etc., attaining an economy of labor which marks a great advance in sewing mechanism and far excels any other for its purpose.

These machines are capable of a number of variations in distance between

the rows of stitching without other adjustment than a simple change of needles.



MACHINE No. 41-5.....5 SHUTTLES AND 5 NEEDLES.

In Corset Manufacture the machines of Class 41 are used for strip stitching, bone cording, stitching bone strips, etc.

STRIP-STITCHING.—Two presser-feet are furnished with each machine of Class 41, without extra charge; both of these feet may be for guiding or folding strips of the same or different widths, or one may be for strip guiding or folding, the other for plain stitching.

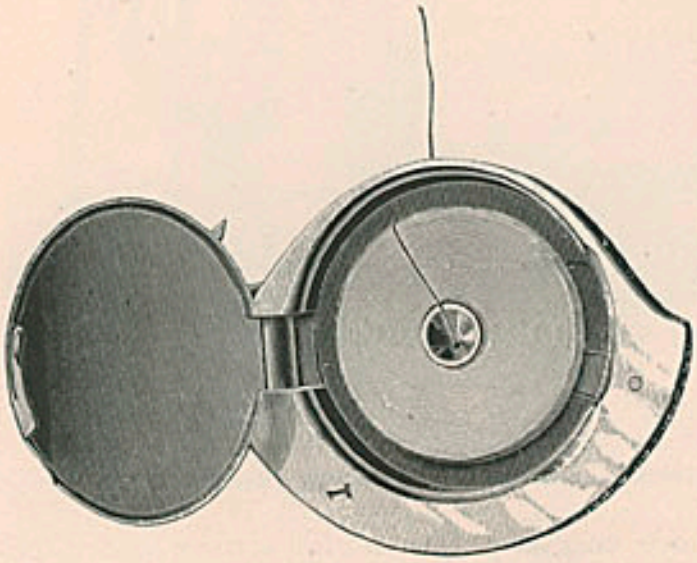
The varieties of this class are fitted with from three to twelve needles and shuttles, the distance between which is made as ordered.

The number of shuttles in a machine corresponds to its catalogue variety number, thus Machine No. 41-3 has three shuttles, No. 41-5 has five shuttles, and 41-12 has twelve shuttles. The base and bed of the machine are in two sections; these sections are hinged so that the head can be readily tipped back, without removing the belt, enabling quick access to the shuttles.

The shuttles oscillate in races contained in a chamber of but two pieces which are hinged so that the chamber can be readily opened and any shuttle quickly removed and replaced.

The least distance between the points of two shuttles, as fitted in the regular course, is $\frac{3}{16}$ inch. Narrower gauges can be obtained for alternate pairs of shuttles by fitting them with right and left points.

The extreme distance between outside shuttles is $2\frac{13}{32}$ inches.



SHUTTLE THREAD.

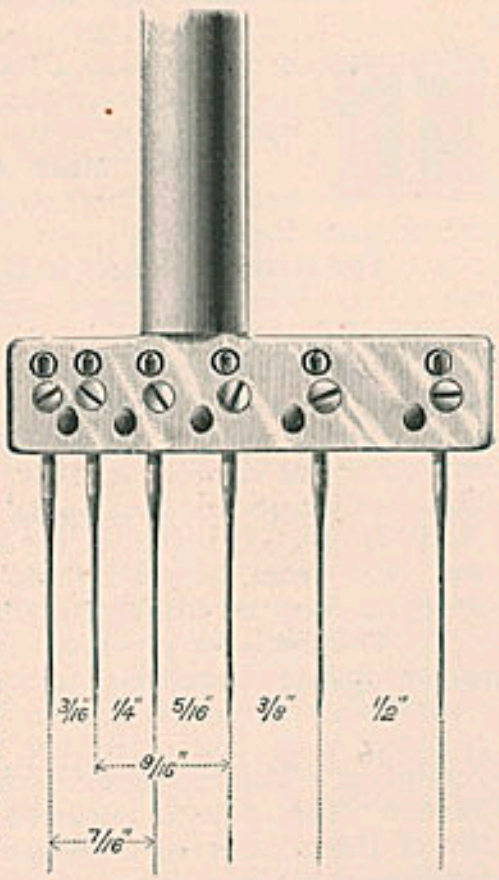
No bobbin is required for the shuttle thread, which is carried in ready-wound cops that fit tightly into the shuttle. These cops unwind from their outer edge and deliver thread through centre of shuttle, as shown in the illustration, thus securing the central delivery of thread until the cop is entirely unwound and used.

For stitching upper and lower strip at the same time a special throat-plate is provided for guiding the lower strip; the upper strips are guided by the various forms of presser-foot previously referred to.

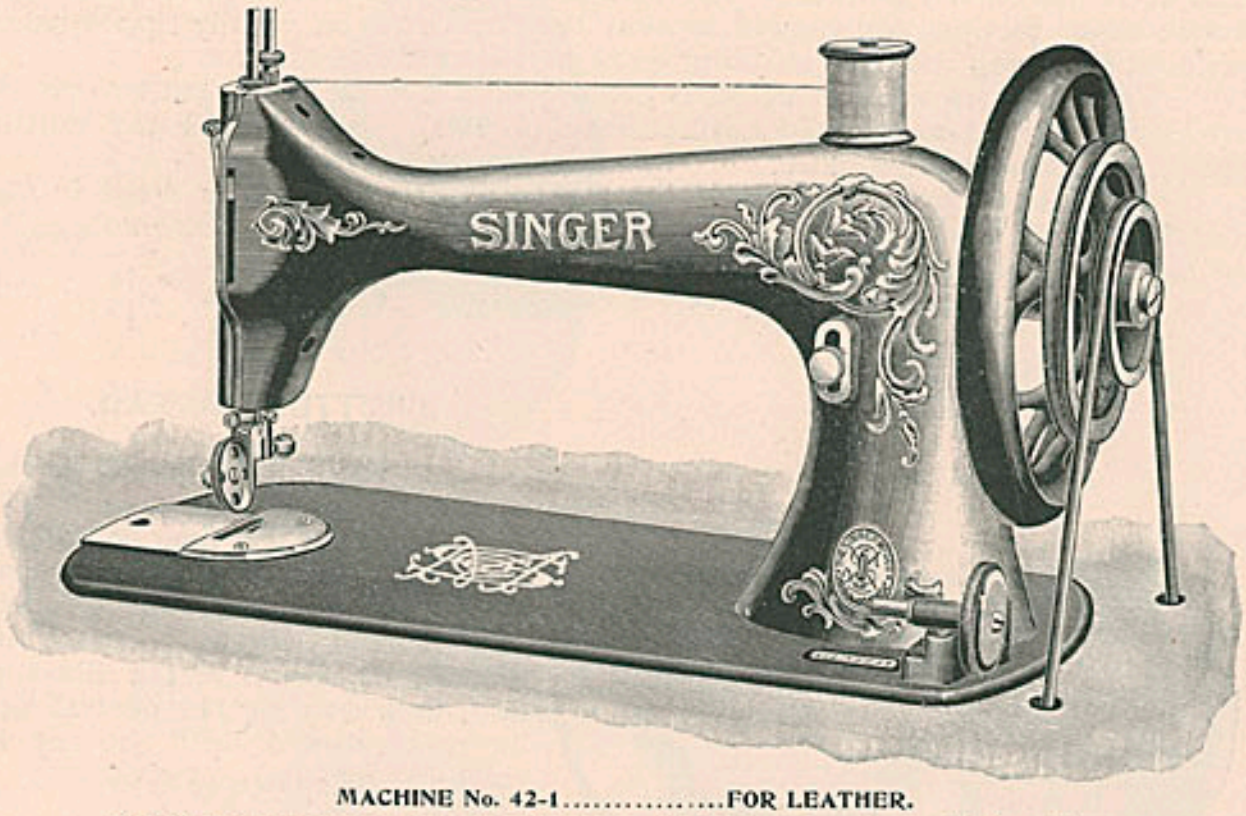
BONE CORDING.—The spaces for the bones can be obtained by the use of a strip-guiding presser-foot specially designed for the purpose and grooved, as ordered, for special widths between the bones.

STITCHING BONE STRIPS AND INSERTING AT ONE OPERATION.—A steel arm is provided which is firmly screwed to the bed of machine and has holes at the end through which the bamboo or bone is guided into the spaces between the needles as the strip is being stitched; it can be made for various gauges as desired.

For Stitching on Shoe Tips, various gauges can be obtained by change of needles as shown in the marginal illustration of the needle-bar from Machine No. 41-6, arranged for this class of work. A special presser-foot, having a finger guard, is furnished for each gauge.



Class 42.



MACHINE No. 42-1.....FOR LEATHER.

Outside Measurement of Bed, 19x8½ inches; 10½ inches from Needle to Base of Arm.

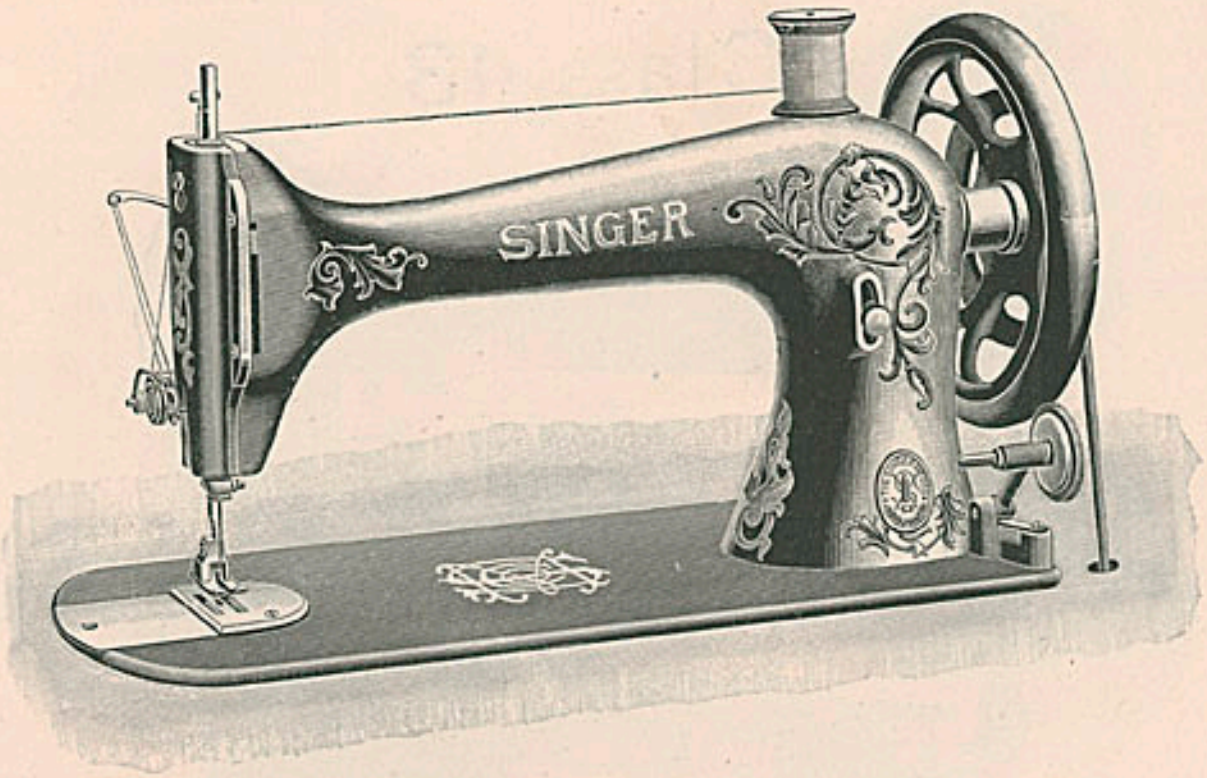
THE machines of Class 42 are specially adapted for strong lock-stitching of heavy material by foot-power, but are equally suitable for operation by steam, electricity or other power.

The Main Driving-Shaft is provided with three bearings avoiding vibration; the shape and size of arm are such as to secure the utmost strength and stability.

The Balance Wheel is 8½ inches in diameter and arranged for two rates of speed; its increased weight and momentum greatly promote ease of operation and steadiness of motion.

The Needle-Bar of machine No. 42-1 is provided with a cam, especially adapting the machine for HEAVY LEATHER STITCHING, it is used in the manufacture of Harness, Carriage Tops, Trunks, Traveling Bags, Dog Collars, Sword and other waist Belts, and all leather work of a similar nature. It is provided with a roller-presser that holds the material constantly and firmly to the action of the drop-feed located at the left of the needle; the presser can be thrown up and away from the needle and does not mar the most highly finished surface, thus enabling the stitching of Patent Leather, etc.

The Shuttle is unusually large; it oscillates about a Central Bobbin of correspondingly increased size, having great thread capacity. This form of shuttle and its motion secure the highest efficiency in this part of the stitching process; it is unequaled for ease and speed of operation, convenience and durability. The range of stitch is up to one-half inch in length, the motion of Thread Take-up is so regulated as to uniformly obtain a perfect stitch; a larger size of thread may be used to a given size of needle than in other machines and the thread entirely fills the needle-hole. The machine uses a short needle which has a lift of one-half inch above the bed. The powerful drop-feed carries the material with a direct, positive and exact movement.



MACHINE No. 42-2 .. ..FOR HEAVY TEXTILES.

The machine illustrated above corresponds in all general features to the preceding description, but is fitted especially **for Sewing Textiles** and will stitch the heaviest Blanketing, Awning, Carpeting, Rug or Cocoa Matting, or attach rubber binding, doing its work easily and perfectly. The machine has a link connection from needle-bar to the cam on the main driving-shaft; the drop-feed is on both sides the needle, it works in conjunction with a yielding presser and is arranged to carry the heaviest material uniformly and steadily. This machine is especially adapted to the stitching of Matting, Rugs, Awnings and Sails, Tarpaulins, Trunk Covers, Tents, Wagon Covers and similar work on heavy textiles.

Machine No. 42-3 is provided with the Vibrating Presser which secures a uniform feed of two or more thicknesses or plies of fabric, it is also of great usefulness in sewing soft goods liable to pucker and in stitching around curved edges.

This machine is especially adapted for stitching Carpet Mitres, Coal and Ballast Bags, Feed and Flour Bags, for binding heavy textiles, etc.

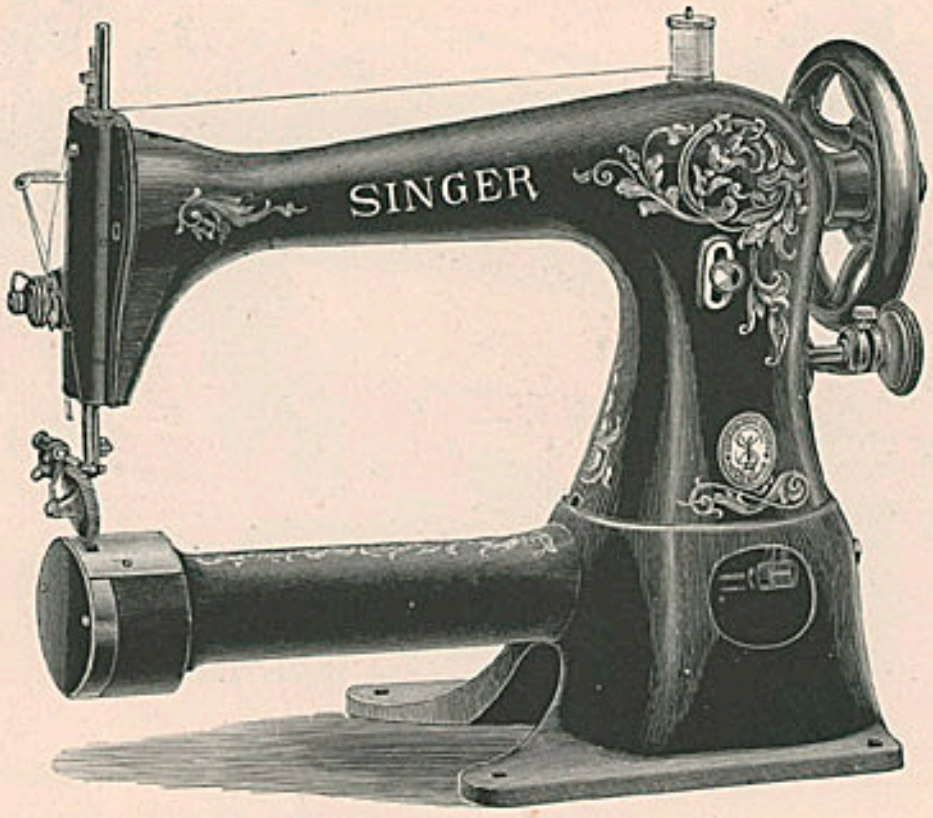
The excellence of workmanship and accurate adjustment of the various parts in each of the machines in Class 42 secure easiest operation, longest wear and least expense of repairs, while their capacity enables the stitching of either thin or thick material with the greatest facility.

Machine No. 42-4 corresponds to the preceding description, excepting that it has link needle-bar connection and is provided with long-beak cylinder shuttle, specially adapting it for Boot and Shoe manufacture.

All the machines in this class have knee-lifter by which the presser-foot can be instantly raised without using the hand.

SINGER SEWING-MACHINES FOR MANUFACTURING.

Class 43.



MACHINE No. 43-1.
Cylinder Bed, (right hand): 10½ inches from Needle to Base of Arm.
Extra large shuttle for coarse thread and heavy work.

THE machine illustrated above has Oscillating Shuttle, Central Bobbin Roller Presser and Drop-Feed at left of needle; it is intended for stitching leather and for operation by foot-power, but is equally suitable for steam, electricity or other power.

The form and proportions of this machine are such as to secure utmost compactness and lightness consistent with the greatest strength and stability.

The Balance Wheel is 8½ inches in diameter and is arranged for two rates of speed; its increased weight and momentum greatly promote ease of operation and steadiness of motion, so that either thin or thick material can be stitched with the greatest facility.

The Cylinder-Bed or work-supporting arm is $3\frac{3}{16}$ inches in diameter and has 10½ inches clear space from needle to base of arm; it possesses great strength and stability and its shape is especially suited for the easy and convenient handling of heavy fabrics, such as Leather, Canvas, Carpeting, Gunny Bagging, etc., in tubular or concave forms.

The Shuttle is very large and its Bobbin has unusually great capacity for thread. The shuttle and needle-action are located one-quarter inch from outer end of the cylinder-bed, thus making it convenient for stitching the edges of concave or convex forms and sewing closely up to buckles or any part of the work which may project or hang downward. The roller-presser is hinged so that it can be thrown up and away from the needle.

The Oscillating Shuttle in the burnished shuttle-race (Fig. 1), the Central Bobbin in its case (Fig 2), and the Bobbin alone (Fig. 3), are shown at full size in the following illustrations.

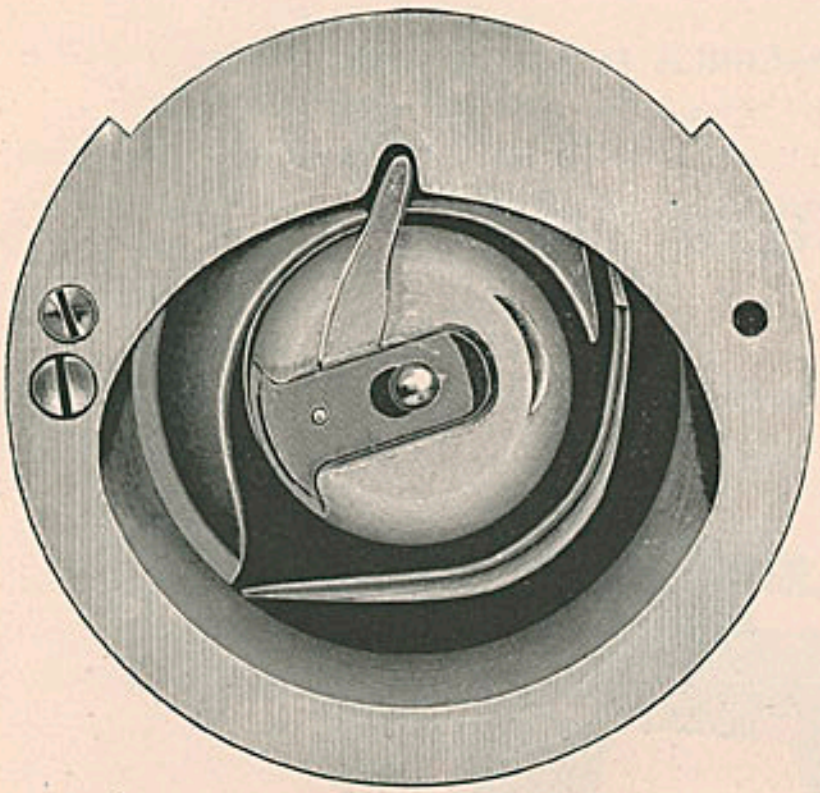


Fig. 1.

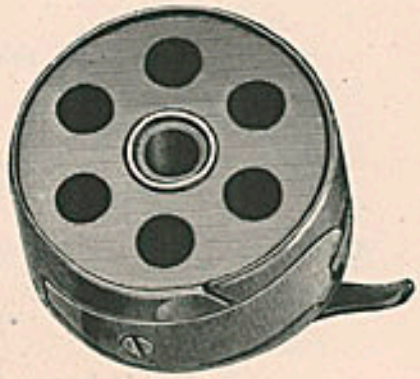


Fig. 2.

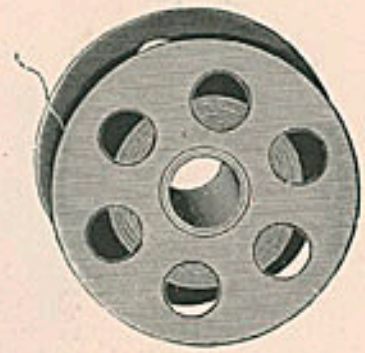


Fig. 3.

The range of stitch is up to one-half inch in length; the needle-bar is provided with a cam and is driven by a roller attached to a cam wheel on the main driving shaft; the motion of Thread Take-up is so regulated as to obtain the best possible results in leather and similar material. A larger size of thread may be used to a given size of needle so that it is possible to use thread that will fill the needle-hole, thus increasing the strength of the stitch. A shorter needle is used than on any other lock-stitch machine of this class.

Machine No. 43-1 is especially adapted to the manufacture of Harness work, Feed Bags for animals, Heavy Boots and Brogans, Dog Collars and similar heavy leather work in a form that cannot be conveniently stitched on a machine having a flat bed.

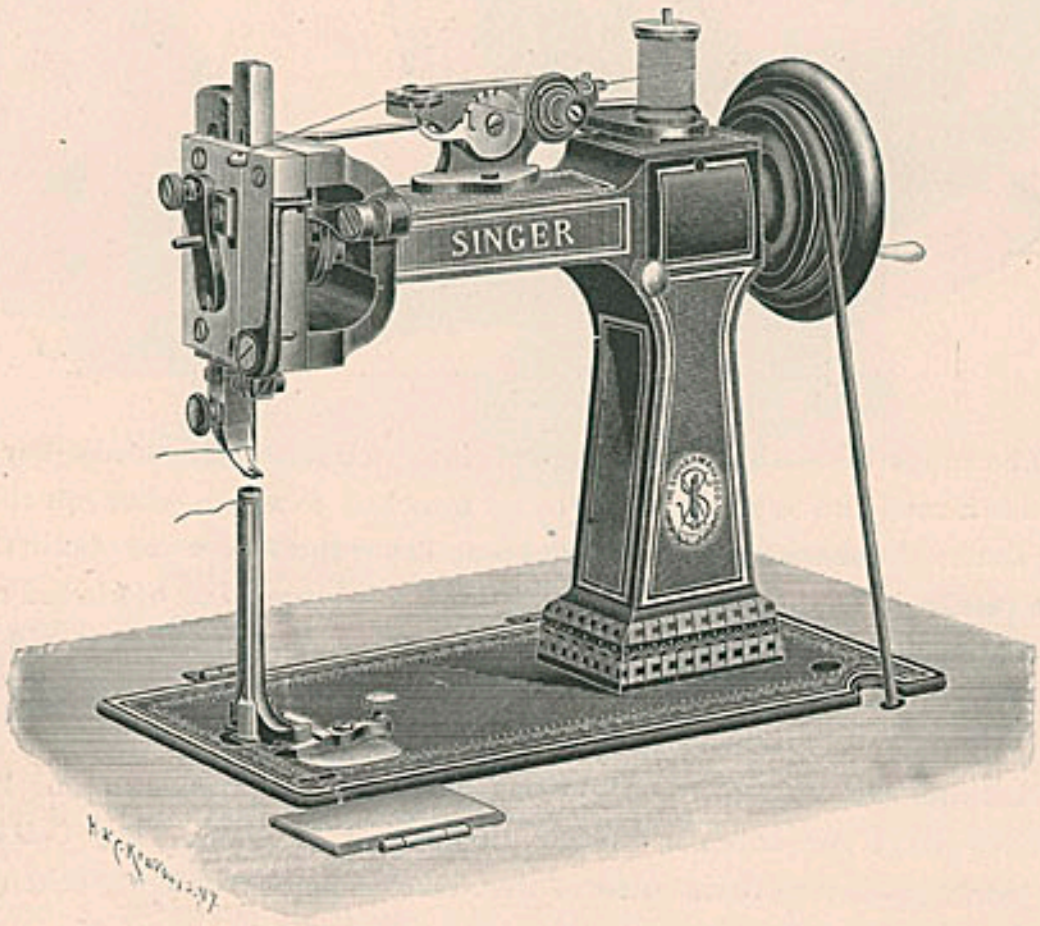
Machine No. 43-2 is intended for stitching textile fabrics and differs from the preceding description in the following particulars: it has a link connection from needle-bar to cam on main driving shaft; the drop-feed is on both sides the needle, and the yielding presser-bar has a hinged presser-foot, thus adapting the machine for stitching of heavy textiles in tubular or similar forms inconvenient to handle on machines having a flat bed. It is used in the manufacture of Canvas Bags, etc.

Machine No. 43-4 is for leather stitching and is provided with a link needle-bar connection and a long-beak cylinder shuttle.

All the machines in this class have knee-lifter by which the presser-foot can be instantly removed without using the hand.

Class 46 K.

Vertical-Post Sewing-Machine—Double Chain-Stitch.



MACHINE No 46 K-1..... .....TOP FEED, LOOPER MECHANISM.

MANUFACTURERS of **Piqué Gloves** will readily appreciate the advantages of the machine illustrated above. It is in extensive and successful use by European manufacturers and is preferred because of its convenience, simplicity, ease of operation and uniformly fine quality of work. It is provided with looper mechanism for making an elastic double chain-stitch, the under thread being carried on a spool conveniently located beneath the table. The stitch regulator, shown at end of overhanging arm, is adjustable as desired.

The pivoted guide can be thrown up against the arm so that it is out of the way when not in use, and it appears in this position in the illustration.

The combined top-feed and vibrating presser mechanism is positive in its action and is ingeniously arranged so that it is adjustable to suit various thicknesses and conditions of the material to be stitched.

The clear space from needle to arm is 6½ inches, the bed of machine is 11½ inches in length.

The shape and small size of the tapered vertical post peculiarly adapt it for stitching the finger-ends of gloves, the top of the post on Machine No. 46K-1 being but ¼ inch in diameter and its height 3⅝ inches.

The post is made in two sections, that next to operator being hinged and arranged to spring open. This readily enables free access to the looper, by swinging a pivoted clamp shown at the base of the post.

Machine No. 46K-2 has a still smaller post that is specially adapted for the manufacture of Children's Gloves.

Class 51.

For Barring and Tacking, Sewing on Buckles, etc.

Operated by Mechanical Power.—Automatic Stop.

THE Machines of Class 51, for operation at high speed by mechanical power, are our latest devices for barring and tacking on leather or cloth.

For barring buttonholes, tacking shoes, clothing, etc., these machines excel all others, both in quantity and quality of work. They are sold outright, no royalty being charged for their use.

The machines have an iron base, as illustrated on the opposite page, thus raising the face of the bed 4 inches above the table, upon which the machine stands with its end towards the operator.

These machines have been tested by practical factory operation in the manufacture of Clothing, Button Laps, Oxfords and Lace Shoes, upon which their work is pre-eminently satisfactory.

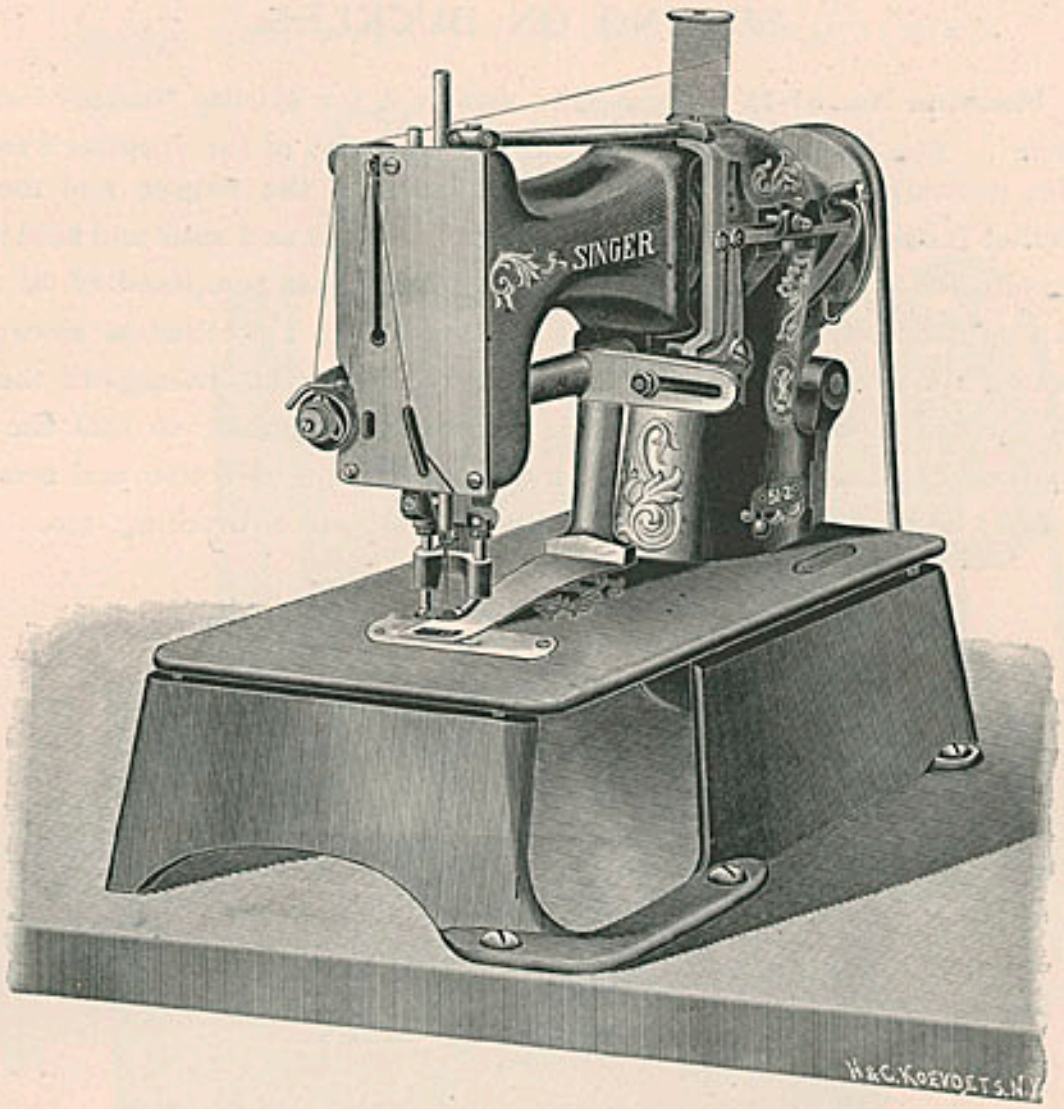
The bar or tack is composed of a fixed number of long stitches, the length of which is adjustable, and is covered by a fixed number of short cross-stitches. As the length of the long stitch is diminished, the short stitches are brought more closely together.

The fabric is clamped and the machine is started simultaneously by foot pressure on a treadle; it stops automatically at the completion of each tack, and the clamp is immediately released.

The varieties of this class differ in the following particulars:

Machine No. 51-1, adapted for work on either leather or cloth, is for barring only, and especially for barring buttonholes. It makes six long lock-stitches, the length of which can be adjusted as desired up to one-quarter inch. These long stitches are covered by 10 cross-stitches.

The ends of the buttonhole are automatically pinched and fastened together so that the bar not only strengthens and binds, but forms a handsome finish that excels hand work in tenacity and durability.



MACHINE No. 51-2.... ... ...FOR BARRING AND TACKING.

Machine No. 51-2 is for both barring and tacking. The six long stitches can be made of any length, up to three-eighths of an inch, and are covered by 12 cross-stitches.

Machine No. 51-3 makes a tack of any length, not exceeding seven-sixteenths of an inch, which is composed of 10 long stitches and 24 cross-stitches.

Machine No. 51-4, for leather, makes a tack of any length, not exceeding three-eighths of an inch, which is composed of 8 long stitches and 8 cross-stitches **in centre** of tack.

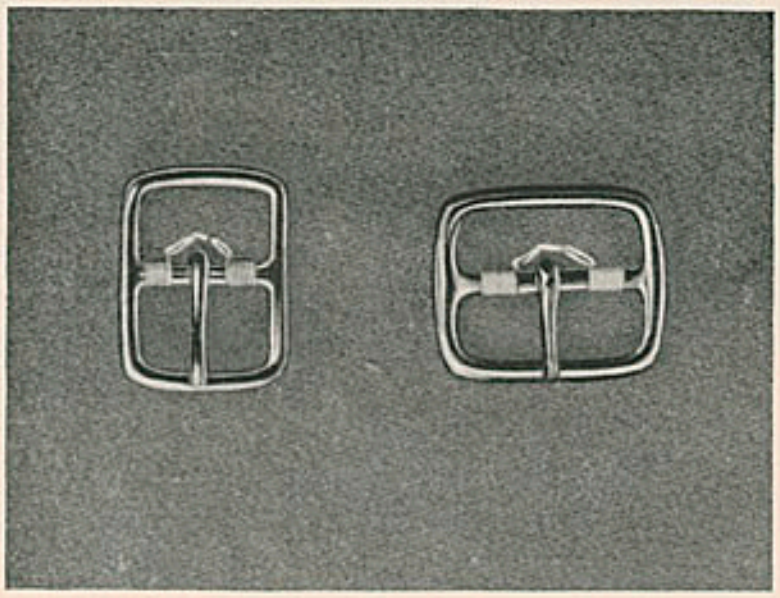
Machine No. 51-5 makes a tack up to five-eighths of an inch in length, which is composed of 10 long stitches and 24 cross-stitches. It is used for general tacking in Clothing, etc., in stitching the ends of tapes on underwear, etc.

Machine No. 51-6, for barring Buttonholes, makes six stitches the length of which is adjustable from one-eighth to one-quarter of an inch; these long stitches are covered with twelve narrow cross-stitches, the whole comprising a beautiful and substantial bar.

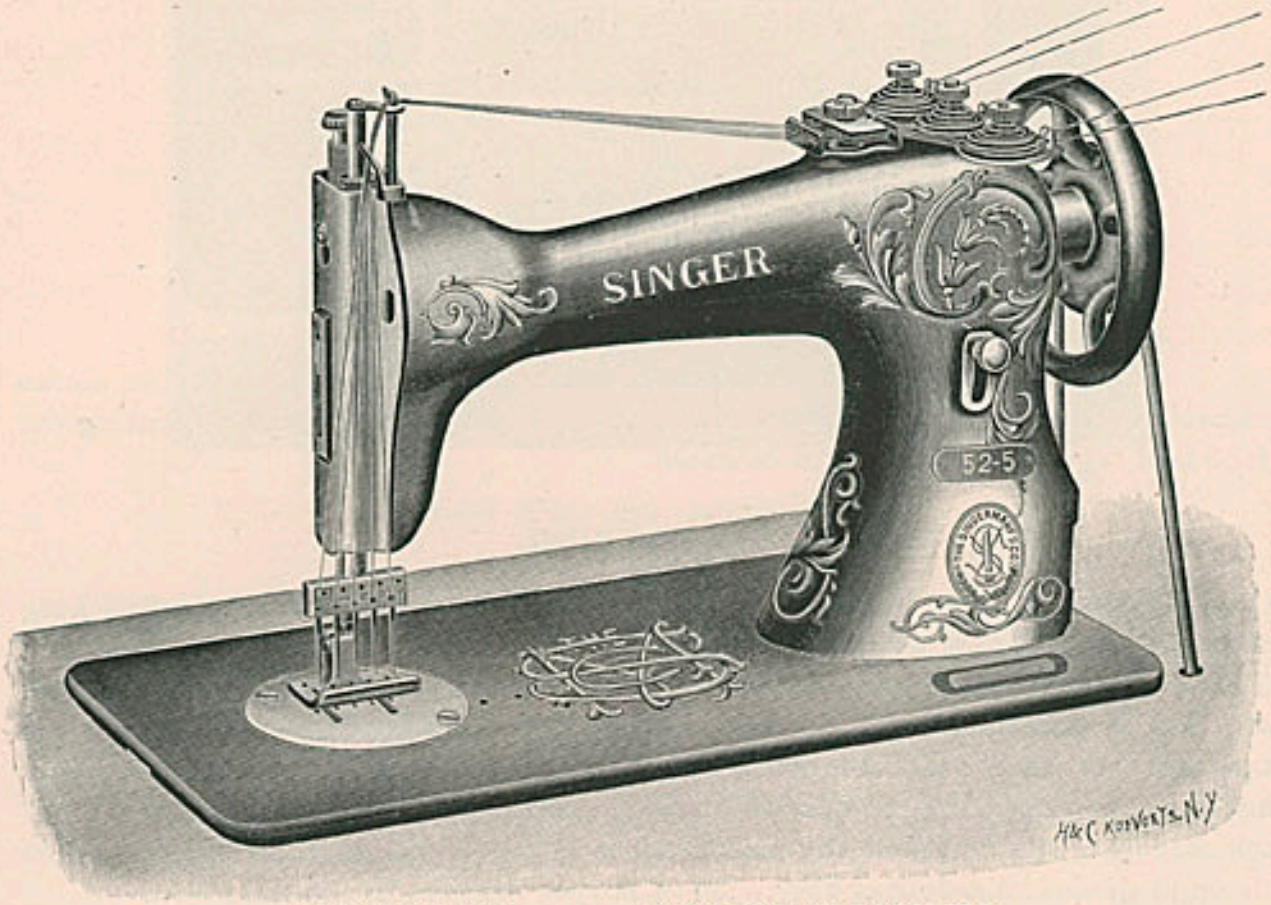
Machine No. 51-10 is for tacking in Clothing manufacture; the length of tack is adjustable from three-eighths to five-eighths of an inch; it consists of 11 long stitches, which are covered with 34 cross-stitches.

SEWING ON BUCKLES.

Machine No. 51-15 is especially designed for sewing buckles onto cloth or leather. The presser-foot lifts and drops by action of the operator's foot on a treadle; it clamps the buckle around the shank of the tongue and the cross-bar so that it can be used on buckles of various shapes and sizes and hold them in proper position while being stitched. The fastening is composed of 35 stitches which are carried from one end of the cross-bar to the other as shown in the following photographic illustration of the work; in the passage of the stitch around the shank of the tongue it is carried in the goods, so that the tongue swings freely. This is, by far, the most convenient, effective and economical method yet devised for attaching buckles to Overgaiters, Clothing, etc.



Class 52.



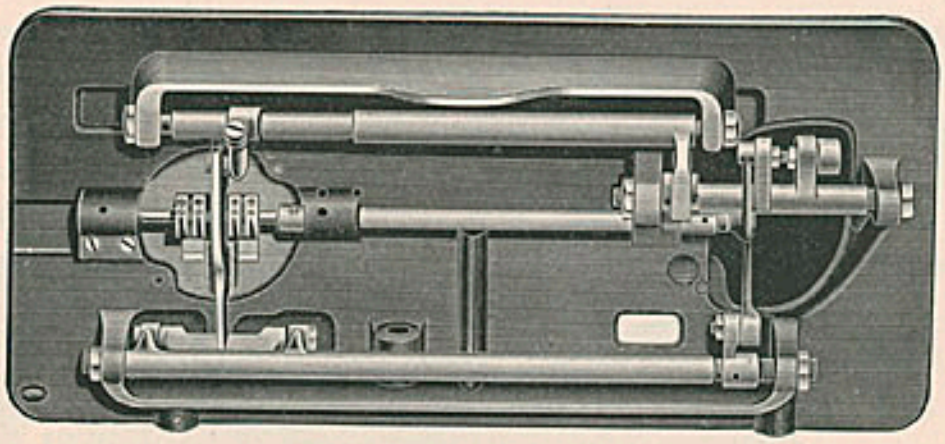
MACHINE No. 52-5.....5 NEEDLES AND 5 LOOPERS.

THE multiple-needle, single-thread, elastic chain-stitch machines of Class 52 are especially devised to meet the demand for sewing mechanism capable of operation at the highest speed in order to perfectly perform the greatest quantity of stitching in the least time. These results are successfully attained in a simple, strong and compact machine having ample room under the arm, the greatest stability and freedom from vibration, containing the smallest number of wearing parts, operating in the most effective way and running easily and quietly.

These machines are now in successful operation for Cording Skirts, Tucking Muslin Underwear, Strip-stitching Corsets, etc.

The machines carry from three to twelve needles and a corresponding number of small oscillating loopers for making, at one operation, two or more parallel rows of fine, single-thread chain-stitching. The distance from the centre of needle-bar to the base of the arm is 6½ inches. The distance between the needles is gauged as ordered. The greatest distance between the two outside needles is 2⅛ inches; this space can be divided so that 12 needles can be used, making 11 spaces in this distance, or the space can be divided as desired for less needles, but the distance between every two needles cannot be less than one-eighth of an inch. Within these limits the needles can be

gauged as ordered and a number of additional changes of width between the rows of stitching can be made by a removal of needles.

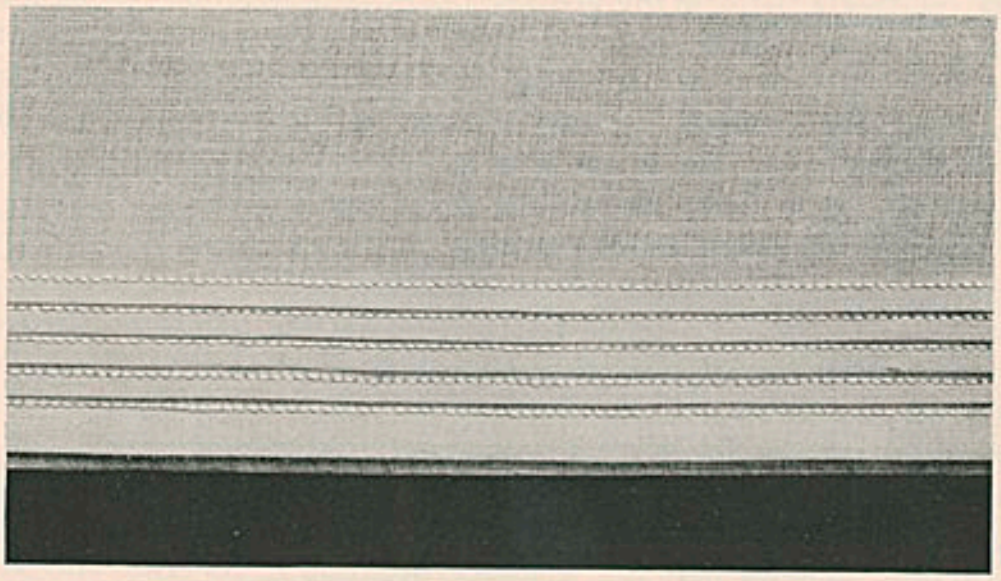


The illustration of mechanism beneath the bed of the machine shows clearly the simple and effective means for oscillating the loopers, operating the feed and regulating the length of stitch.

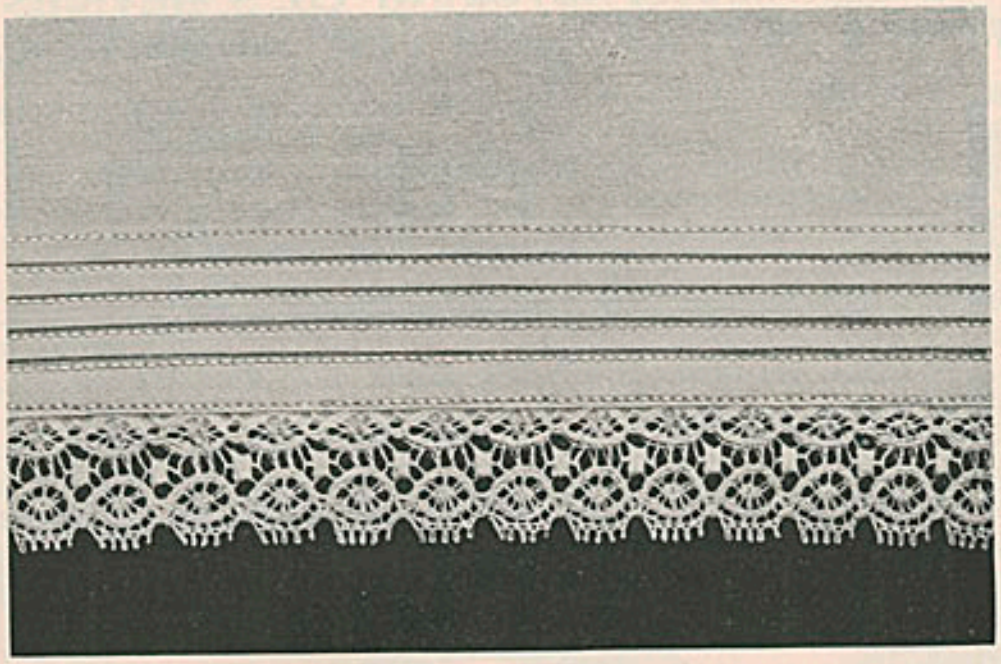
FOR TUCKING.

The machines of Class 52 are fitted with a special attachment for tucking that is entirely new in design and of the highest efficiency in its operation. Through its use a multiple number of tucks can be automatically formed and stitched at one operation, the device being arranged so conveniently that the operator can easily guide the work by a single mark or crease. In order to begin stitching, the operator has only to insert the fabric and lower the "crimper-foot" which forms the tucks in the fabric as it passes beneath this foot and then through guides that deliver the tucks in proper position to the needles.

This device can be arranged so that it will make from two to four narrow tucks and one wide, or trimming tuck, for the insertion of lace, ruffles, etc., as shown in the following illustration of this class of work, done on the 5 needle machine.



READY FOR INSERTION OF LACE, ETC.



FOUR TUCKS AND LACE TRIMMING.

By removing the wide folder the device, as arranged for the 5 needle machine, can also be used for making four narrow tucks, either in clustered or solid tucking.

The wide folder can be replaced by a narrow one so that five narrow tucks can be made at one operation.

A continuous strip of any length can be tucked in the manner described or the work can be equally well done on short pieces, as the bottom of drawer legs, night-robe sleeves, yoke strips, etc., one piece following the other through the machine.

It will readily be seen that the machines of this class are applicable to a great variety of work in all grades of goods used for women's and children's underwear, etc.

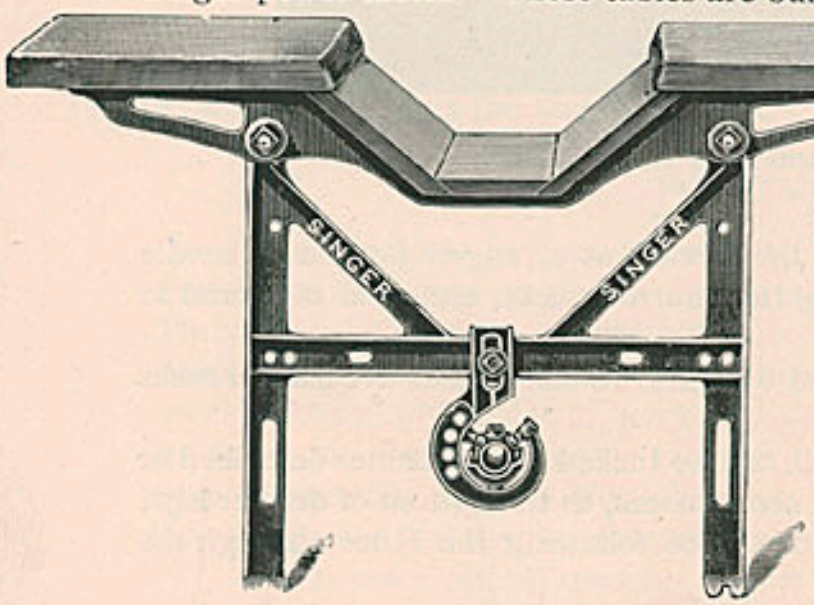
The tucking is uniformly good in every fabric suitable for tucking and the tucks lay perfectly flat as they come from the machine, so that they are ready for market without pressing or ironing.

THE SINGER MANUFACTURING CO.'S DEVICES FOR POWER OPERATION OF SEWING-MACHINES.

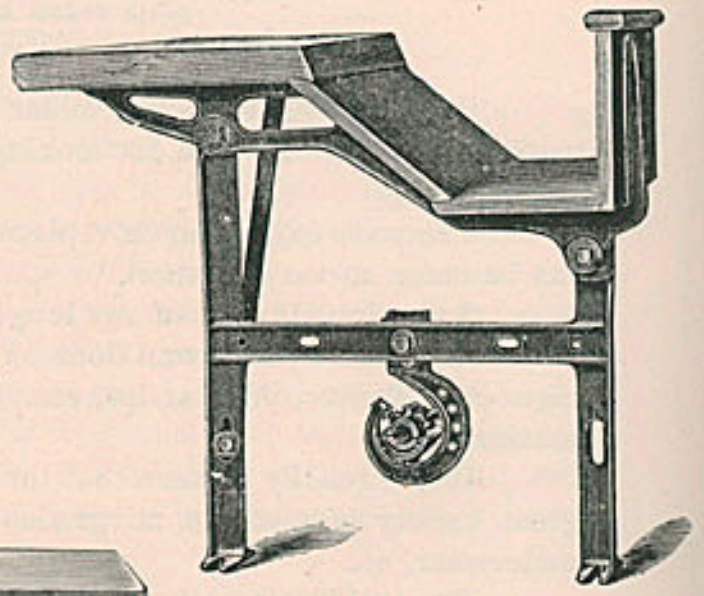
EQUIPPED with a staff of expert mechanicians, whose range of experience covers the entire world, we invite attention to our latest devices for the power operation of sewing-machines. In practical operation these devices have been universally commended as the best for factory use in the Stitching Department.

We furnish Electric Motors, Shafting, Pulleys, Belting, Singer Driving Attachments and Under-Drivers for Sewing-Machines, in fact everything required for a complete, up-to-date stitching plant for any class of industry, arranged in exact accordance with the latest and most approved practical methods.

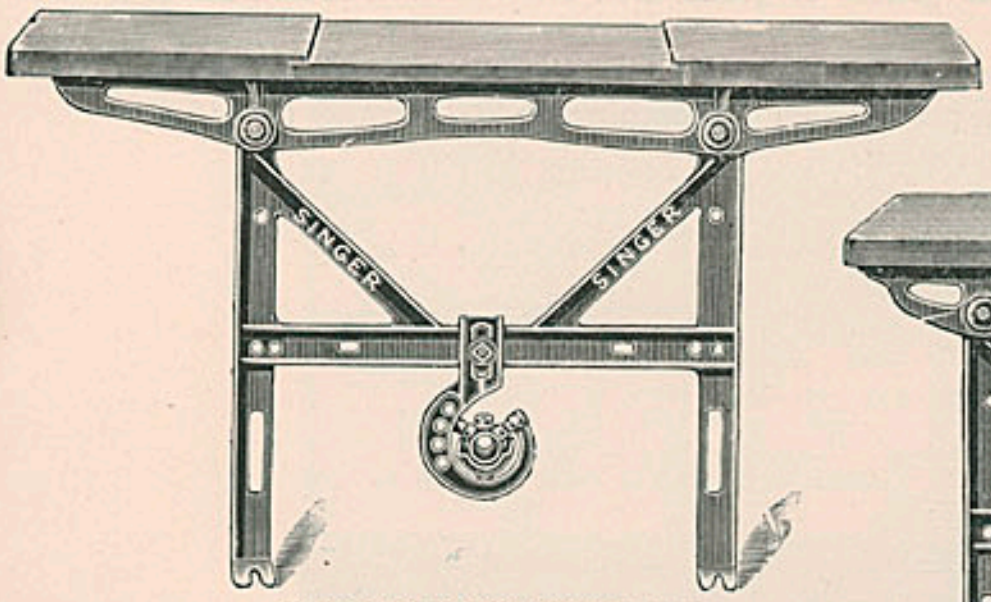
The Singer Under-Driver for sewing-machine propulsion is illustrated on page 151 and the **Singer Direct Driving Attachment** on page 175. The following illustrations on this page show the framing and general arrangement of Singer power tables. These tables are built to order of any required length.



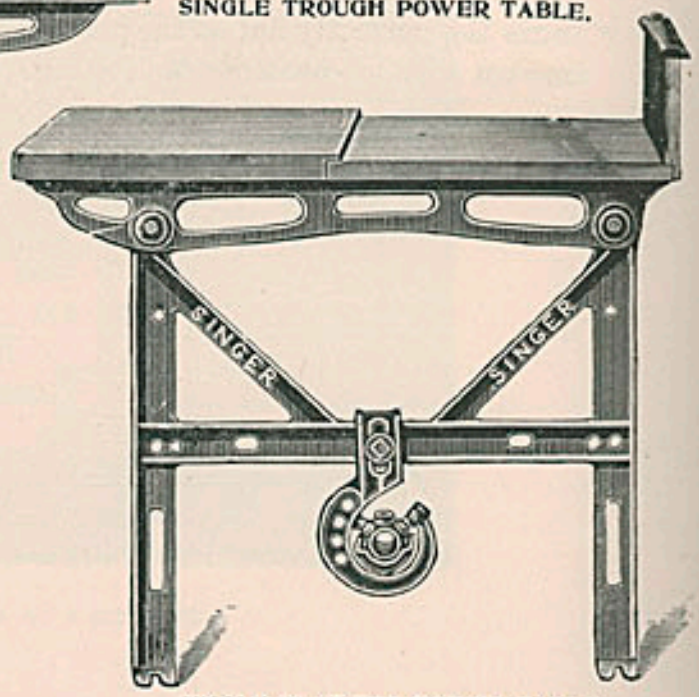
DOUBLE TROUGH POWER TABLE.



SINGLE TROUGH POWER TABLE.

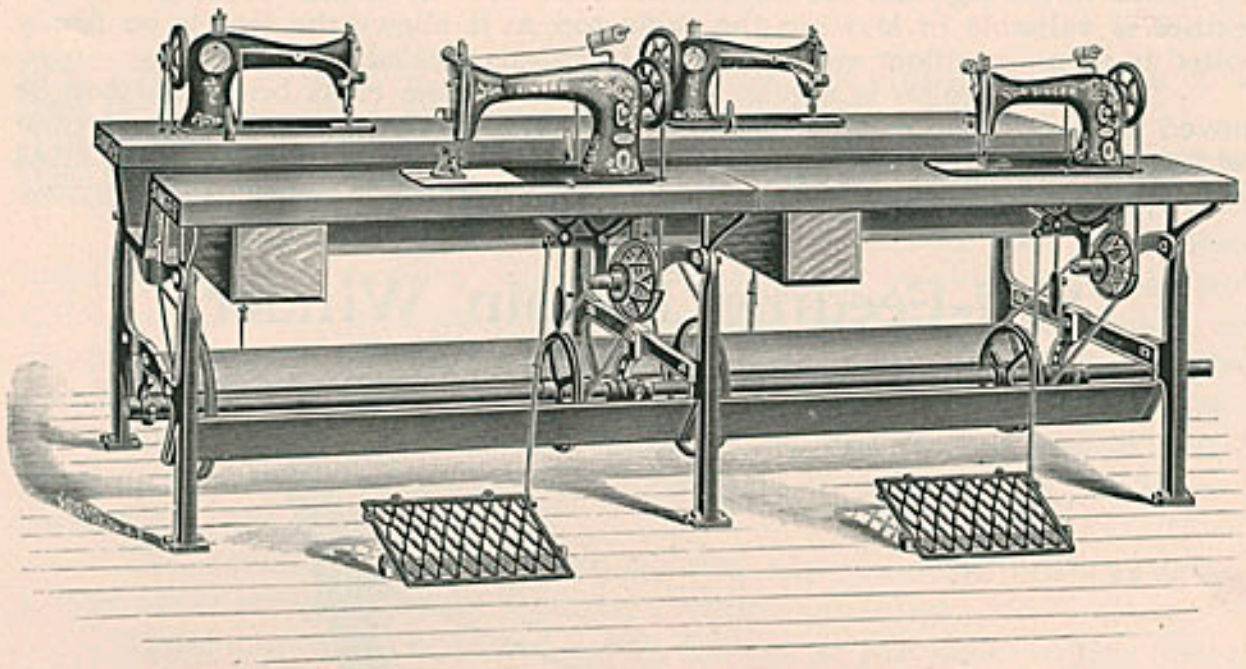


DOUBLE FLAT-TOP POWER TABLE.

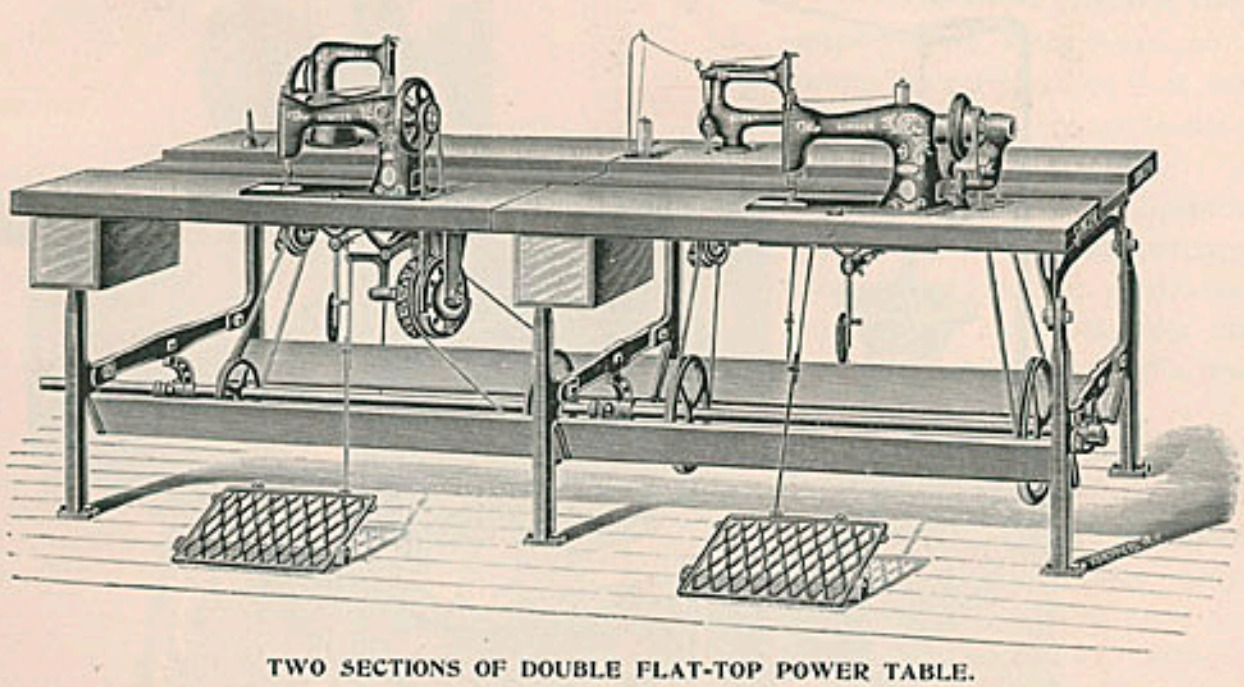


SINGLE FLAT-TOP POWER TABLE.

The Singer Sectional Power Tables.



TWO SECTIONS OF DOUBLE TROUGH POWER TABLE.



TWO SECTIONS OF DOUBLE FLAT-TOP POWER TABLE.

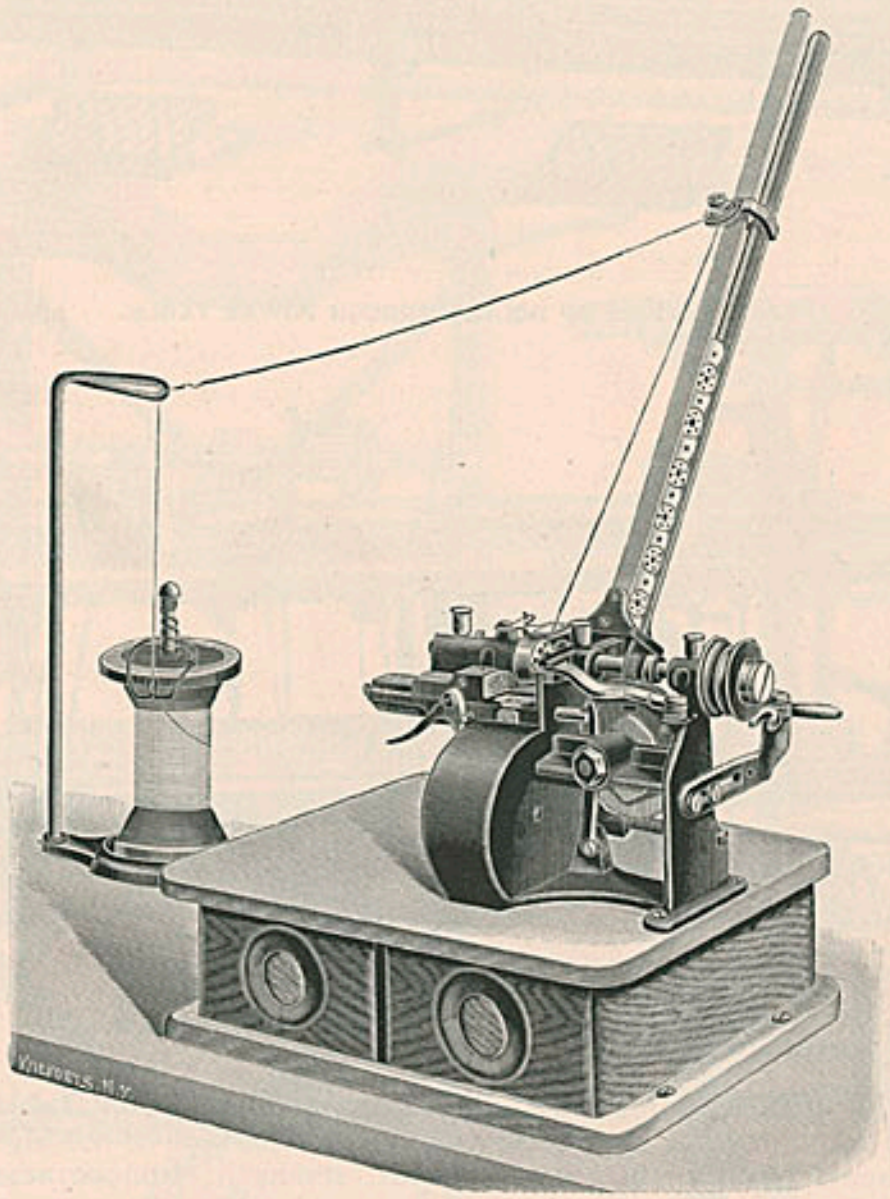
The above illustrations show our latest forms of **Power Tables made in sections** and kept in stock for Factory use; they combine in the highest degree all the elements of economy, convenience, strength, compactness and neat appearance.

These tables are made in sections 4 feet long and 4 feet wide over the top, each section providing for two machines. The sections are ingeniously devised for fastening together so as to obtain any continuous length of table required, the whole arrangement being exceedingly simple, strong and rigid, sustaining rapid running of machines without vibration. By the use of these tables, manufacturers are assured of the most economical use of floor space, the greatest utility, convenience and cleanliness of operation. The tops of the tables are made of thoroughly seasoned wood, two inches thick, the iron legs and

braces being well japanned and the whole durably finished. The legs have a broad bearing that can easily be firmly fastened to the floor. The iron top rails are bolted to the legs and are adjustable from 26 to 28 inches in height. This feature is valuable in leveling the table top, as it allows the legs to be firmly bolted to an uneven floor and the table afterwards leveled.

The shaft hanger is adjustably connected to the cross brace and can be moved in any direction to "line up" the shaft, which may be hung above or below the cross brace. At slight additional cost the line shafting can be fitted with Graphite bearings which require no oiling.

Self-Feeding Bobbin Winder.



This machine is thoroughly automatic in its action and requires no attention except to keep the hopper filled with bobbins. Bobbins of various sizes can be placed together in the long hopper, the machine feeding and filling them indiscriminately. The machine winds the bobbin, cuts the thread, releases the filled bobbin which drops into a drawer beneath the machine, and feeds in an empty one, this process being repeated as long as the bobbins and thread are supplied. By the use of this machine, a supply of filled bobbins can constantly be kept in readiness for a large number of operatives, and a great saving of time is thereby effected.

Diehl Electric Motors.

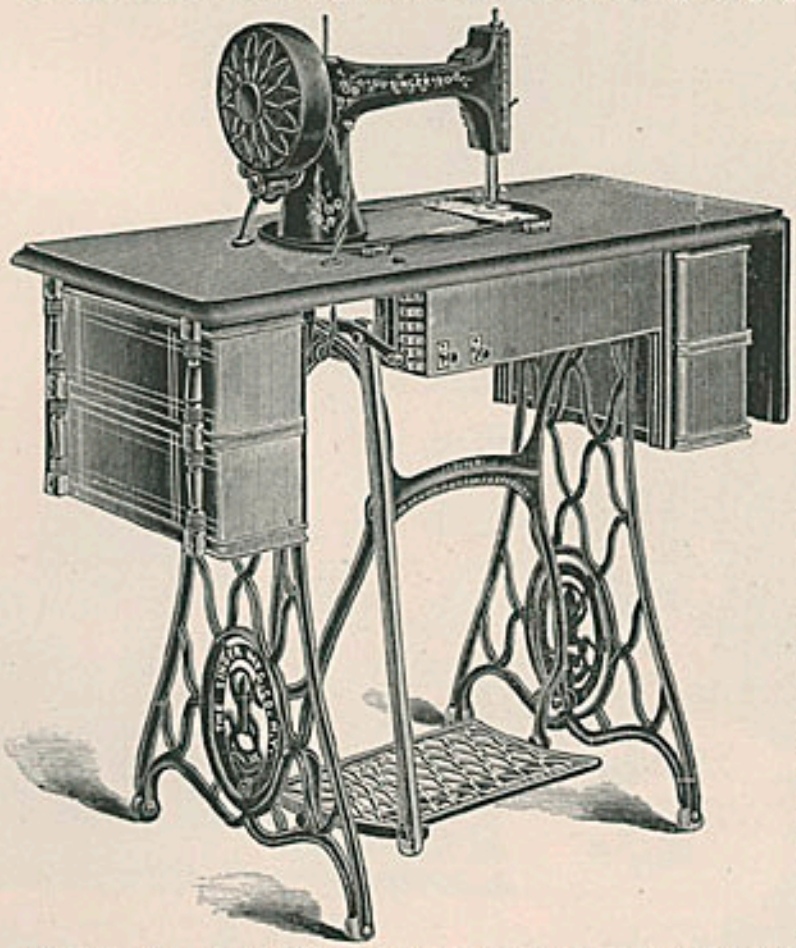
THIS is the ideal motor for sewing-machine propulsion because of its economy, convenience, cleanliness and effectiveness.

It can be applied in various ways, either belted to main shafting or fastened directly to the driving shaft of the machine.

The principle on which the Diehl Motor is constructed, that of the armature encircling and revolving around the field magnets, gives the highest possible efficiency combined with the slowest speed, insuring greatest durability, and dispensing with the necessity of countershafting, and the waste of power incident thereto. This slower speed, being due to the large diameter of the armature, is obtained without increase of weight and gives a starting torque proportionately great, at the same time increasing the efficiency by a diminution of friction of the bearings and the brushes.

The motors are fitted with self-aligning and self-oiling bearings and approved brush holders, thereby requiring minimum attention.

These motors can be placed on the floor or on the table, belting directly to the main shafting as illustrated on the next page.

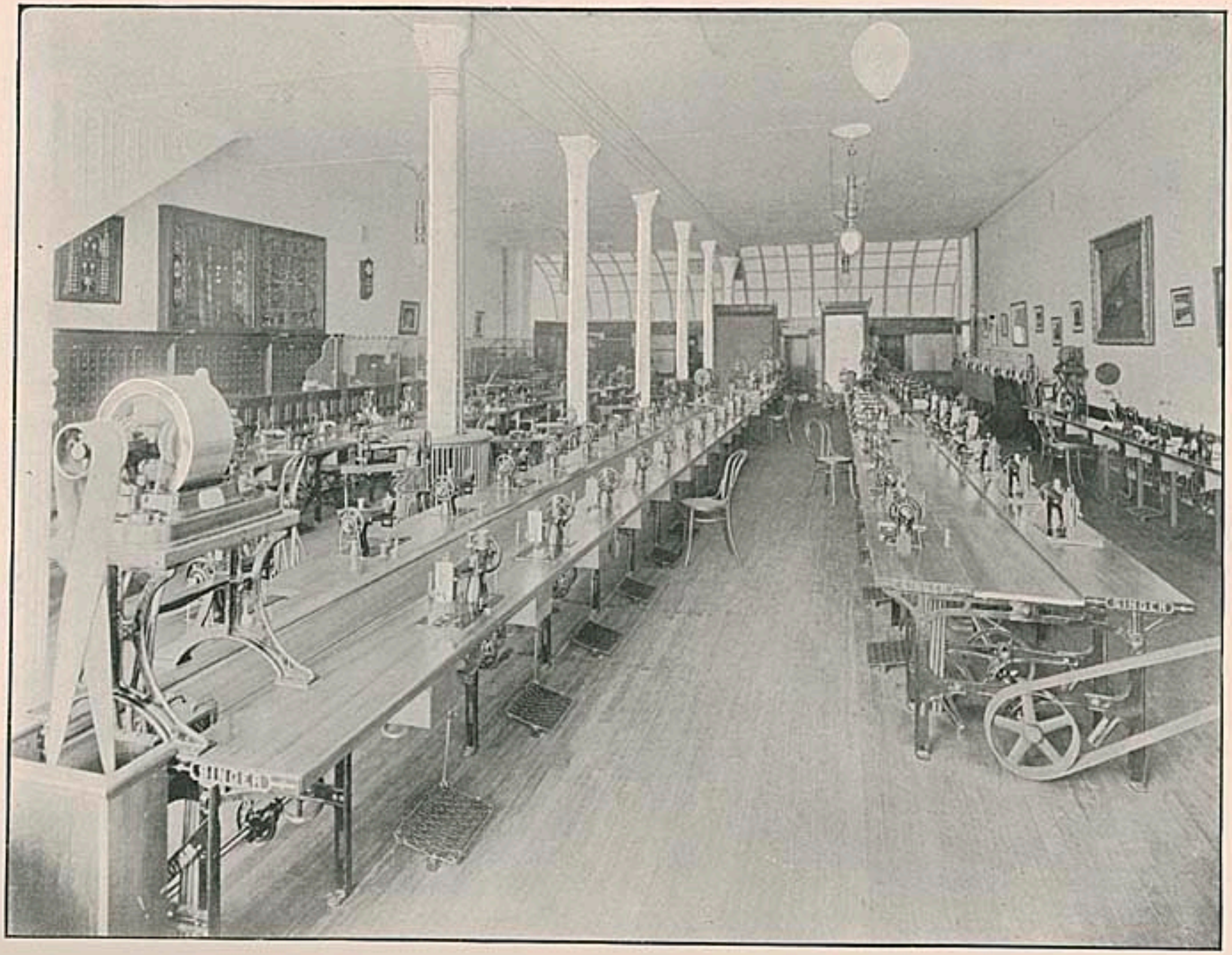


The Diehl Electric Balance-Wheel Motor is unique in being the only motor that can be applied directly to the driving shaft of the machine.

A glance at the illustration will show its main features. The motor is entirely self-contained; the field magnets are fastened to the arm of the machine.

The armature carrier acts as a balance-wheel; it is secured to the shaft by means of the regular clamp stop-motion, and can be used for winding bobbins without operating machine. The combination takes up very little more space than the ordinary balance-wheel.

The rheostat is attached beneath the table and is connected by a pitman to the treadle, so that the machine can be started and stopped, or the speed exactly regulated as desired, simply by foot-pressure on the treadle. In this manner the highest economy is attained, because all objects intervening between the source and the subject of power are dispensed with, and the electric current is only used when the machine is running.



ILLUSTRATING SINGER SEWING-MACHINES AND POWER DEVICES IN PRACTICAL OPERATION.

BRANCH OFFICES.

Singer sewing-machines and parts and supplies therefor are sold by the Company's own employees, thus enabling direct communication between the producer and the consumer and securing prompt and reliable service.

We have offices and are directly represented in every city in the civilized world, so that parts and supplies for our machines are always easily obtained. Our prices are uniform to all and are fixed at the lowest point at which the superior quality of our product can be maintained. The prices of machines for manufacturing purposes are invariably **net cash** and are not subject to deviation from these terms. In this matter our agents are allowed no discretionary power.

The following list comprises cities in the United States having a population of 25,000 and over, and gives the location therein of our offices. The Manufacturers' Show Rooms in New York, Chicago, Philadelphia, Boston, etc., are supplied with power; our machines for manufacturing purposes are shown in practical operation at these points.

All correspondence should be addressed to **The Singer Manufacturing Co.** at any of the addresses best suiting the correspondents' convenience.

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