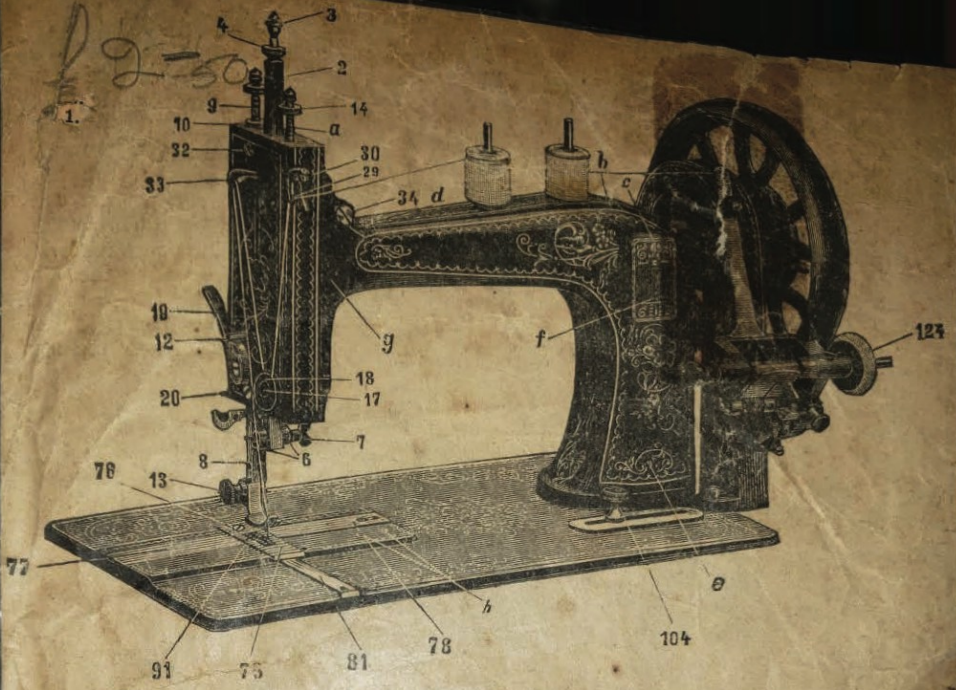


The following directions have been found sufficient to explain the working of this machine without personal instruction. It is best that the operator should perform the manipulations described whilst a second person reads the directions aloud. Nothing should be hurried, but every thing thoroughly understood and practically carried out.

The Machines are always properly set with the thread drawn through the needle before delivery ready for use. When unpacking the machine take care to observe the manner in which it is threaded up, that you may repeat it.

1. **THE BELT** is passed up from behind inside the guard of the upper wheel, and its ends are led through both holes in the table, joined together and passed under the wheel. The belt communicates motion to the machine, and should always be tight enough to drive it without slipping, but no tighter than is requisite or it makes the machine run heavy. Should the belt become slack it must be uncoupled and cut the desired length, then rejoined by the hook.

2. **THE TREADLE.** To enable the treadle to be worked, without injury to the machine, first raise the presser foot and disconnect the upper wheel from the machine and allow it to revolve loosely on the shaft.

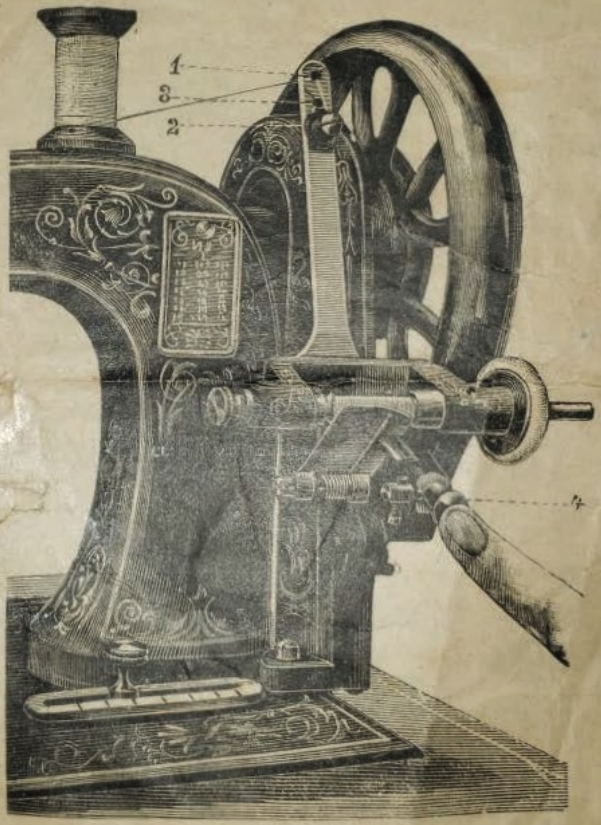
It is very essential to work the treadle steadily; therefore it will be well to practise and thoroughly accustom the feet to its motion prior to working the machine.

If the machine is worked without any fabric being used, the presser foot should always be lifted by the lever (19), as shown in illustration, to prevent injury to the teeth of the feeder (91).

After having learnt to work the treadle, take a piece of shirting, put it under the presser foot, fasten the upper wheel and work the machine, *without having threaded the needle*, so as to learn to guide the fabric. Try first to guide the fabric along straight, afterwards along curved lines.

3. **THE NEEDLE** has a long groove on one side and a short one on the other. To set the needle proceed as follows: first loosen the screw (7)

that clamps it, and raise the needlebar (2) to its highest point. Then take a white thread, pass it through the needle, which is to be held (with its long groove towards the operator) between the thumb and finger of the left hand, place the needle point down through the hole in the throat-plate (75); hold it fast while you turn the wheel gently towards you, until the needle bar (2) moves downward so that the needle is guided into the groove under the clamp (6); hold the thread with the thumb and first finger of the left hand on the throat-plate in a straight line from you, thus bringing the eye of the needle exactly level with the surface of the throat-plate (75), turn the upper-wheel gently until the gauge mark (a distinct line engraved in the front of the needle bar, near its top) rests level or fully above the top of the face-plate, then screw up tight. For linen and silk the gauge mark must stand $\frac{1}{16}$ of an inch higher. Observe that the needle passes down exactly in the middle of the throat-plate hole and that its long groove exactly



faces you. If the needle be set too high, either the shuttle cannot pass through the loop, or it will not enter the loop freely, and the thread will be cut. If the needle be set too low, the loop will be too large and twist, the shuttle will then occasionally miss it, and stitches will be dropped. It is most important to set the needle correctly.

The condition and movement of the needle should be examined daily, and if the point be blunt or rough, it should be replaced by a new one. The machine will never sew satisfactorily with a needle that is not sharp and clean.

List of Parts.

Nr.
1. Face plate.
2. Needle bar.
3. Regulating pin for thread lever.
4. Nut for same.
5. Crown of needle bar for B Machine with positive take-up.
6. Needle clamp.
7. Screw for same.
8. Presserfoot bar.
9. Presser screw.
10. Nut for same.
11. Spring for presserfoot bar.
12. Presserfoot lifter pin.
13. Presserfoot screw.
14. Tension screw.
15. Tension spring (flat).
16. Screw for same.
17. Pin for tension discs.
18 Tension disc.
19. Presserfoot lifter.
20. Pin for same.
21. Presserfoot lifter screw.
22. Washer for same.
23. Cam.
24. Cam nut.
25. Cam roller.
26. Cam roller pin.
27. Cam roller for B Machine with positive take-up.
28. Pin for same.
29. Thread guide.
30. Screw for same.
31. Gauge pin for face plate.
32. Screw for face plate.
33. Threadlever.
34. Screw for same.
35. Check spring.
36. Threadlever for B Machine with positive take-up.
37. Pin for same.
38. Disc " "
39. Screw " "
40. Roller " "
41. Roller pin " " Take up complete.
42. Threadlever for C Machine.
43. Arm.
44. Needle and Thread schedule.
45. Screw for same.
46. Pin " "
47. Long shaft.
48. Crank disc.
49. Pin for same.
50 Cam for positive take-up.
51. Pin for same.
52. Fly wheel.
53. Fly wheel catch bracket.
54. Screw for same.
55. Fly wheel catch.
56. Screw for same.
57. Fly wheel catch piston.
58. Fly wheel catch spring. Fast und loose wheel apparatus complete.
59. Upright shaft.
60. Cog wheel.
61. Screw for same.
62. Adjustable ring for upright shaft.
63. Pin for same.
64. Side cover of arm.

Nr.
65. Long screw for same.
66. Short " " "
67. Screw for Arm Nr. 43.
68. Lever for automatically disconnecting tension.
69. Pin acting upon same.
70. Reel pin.
71. Bedplate.
72. Hinges.
73. Rivet for same.
74. Screw " "
75. Needle plate.
76. Screw for same.
77. Front slide.
78. Back slide.
79 Hook of front slide.
80. Screw for same.
81. Feeder slide.
82. Shuttle lifter.
83. Pin for same.
84. Eccentric.
85. Pivot for same
86. Pointed screw for same.
87. Eccentric rod.
88. Wedge for adjusting feeder.
89. Screw for same.
90. Washer for same.
91. Feeder.
92. Feeder spring.
93. Plate for eccentric rod.
94. Screw for same.
95. Plate of stitch regulator rod
96. Screw for same.
97. Stitch regulator rod.
98. Stitch regulator bracket.
99. Screw for same.
100. Support for stitch regulator
101. Washer for same.
102. Nut " "
103. Screw for arm of machine.
104. Stitch regulating screw.
105. Shuttle race.
106. Pivot of same.
107. Washer for same.
108. Pin " "
109. Shuttle carrier.
110. Large spring for same.
111. Small " " "
112. Screw " "
113. Iron Pitman.
114. Shuttle, selfthreading.
115. " with holes.
116. Bobbin.

Winder.

117. Belt guard.
118. Small catch plate.
119. Screw for same.
120. Frame.
121. Large spindle.
122. Cup of same.
123. Pulley.
124. Indiarubber ring.
125. Left hand side spindle.
126. Spring for same.
127. Button " "
128. Washer " "
129. Knife blade.
130. Screw for same.
131. Tension screw.
132. Tension spring.
133. Tension discs.

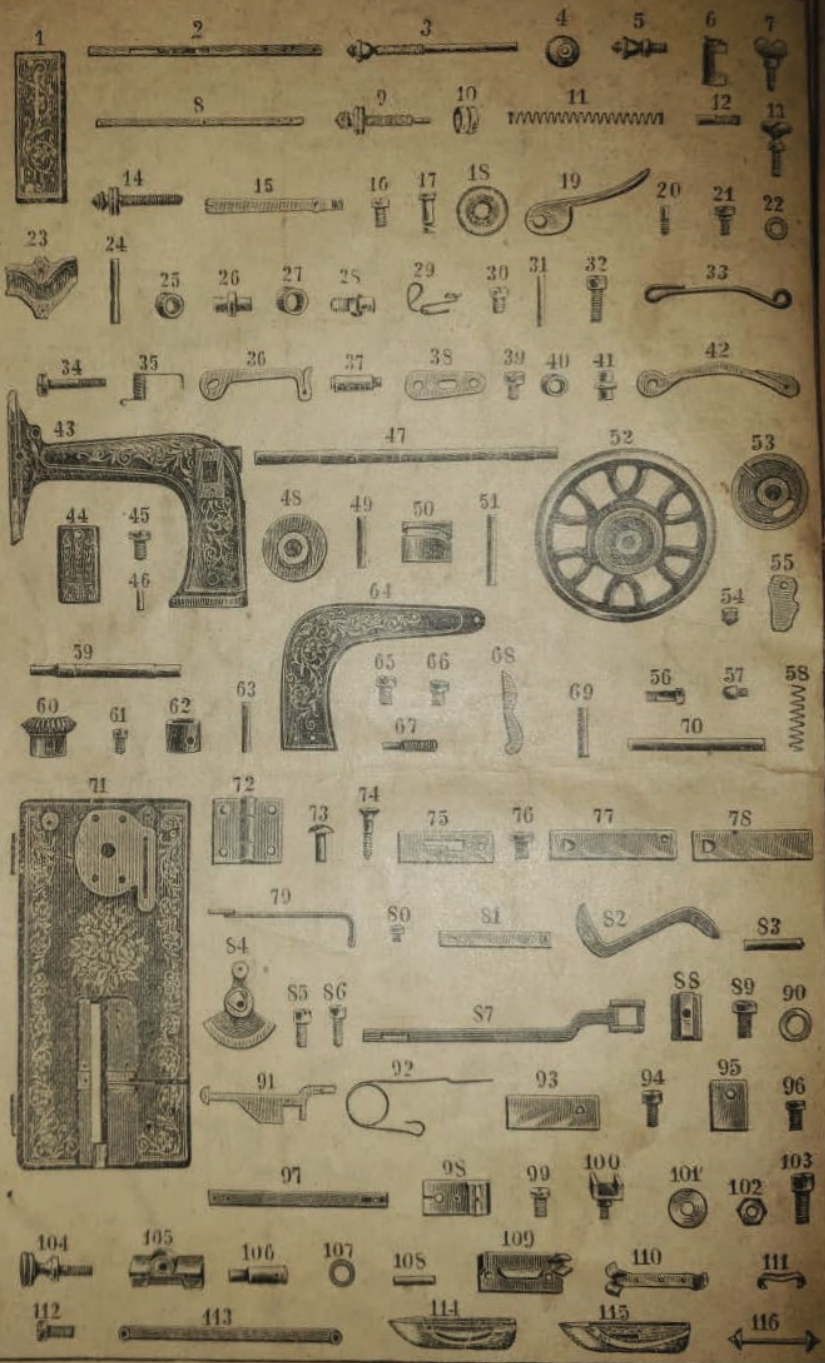
Nr.
134. Brake.
135. Pin for same.
136. Spring for Nr. 135.
137. Pin " " "
138. Screw " " 134.
139. Plate " " 135
140. Screw for catch plate.
141. Catch plate.
142. Pin for same.
143. Spring " "
144. Small pin " "
145. Catch plate regulating screw.
146. Screw for beltguard.
147. Bracket pin.
148. Catch piston.
149. Spring for same.
150. Regulating screw of Winder. Winder complete.

Handappliance.

151. Case.
152. Case ring.
153. Screw for same.
154. Large Cog wheel.
155. Pin for same.
156. Crank.
157. Handle.
158. Screw for same.
159. Conical crank pin.
160. Piston for large cog wheel.
161. Spring for same.
162. Button " "
163. Crank with small cog wheel.
164. Pin for same.
165. Nut " "
166. Flat spring.
167. Screw for same.
168. Catch.
169. Catch piston.
170. Spring for same.
171. Pin " "
172. Crank pin.
173. Bracket.
174. Screw for Handapparatus. Handappliance complete.

Accessories.

175. Wide hemmer.
176. Ordinary hemmer.
177. Fellseamer.
178 Ribbon sewer.
179. Braider.
180. Small presser foot.
181. Presser foot
182. Corder for piping.
183. Ruffler.
184. Adjustable Hemmer.
185. Straight guide.
186. Binder.
187. Oil can.
188. Small screw driver for shuttle.
189. Screw driver.
190. Quilter.
191. Screw for same.
192. Plate for screw 193.
193. Screw for fastening machine to wood base.
194–199. Fittings.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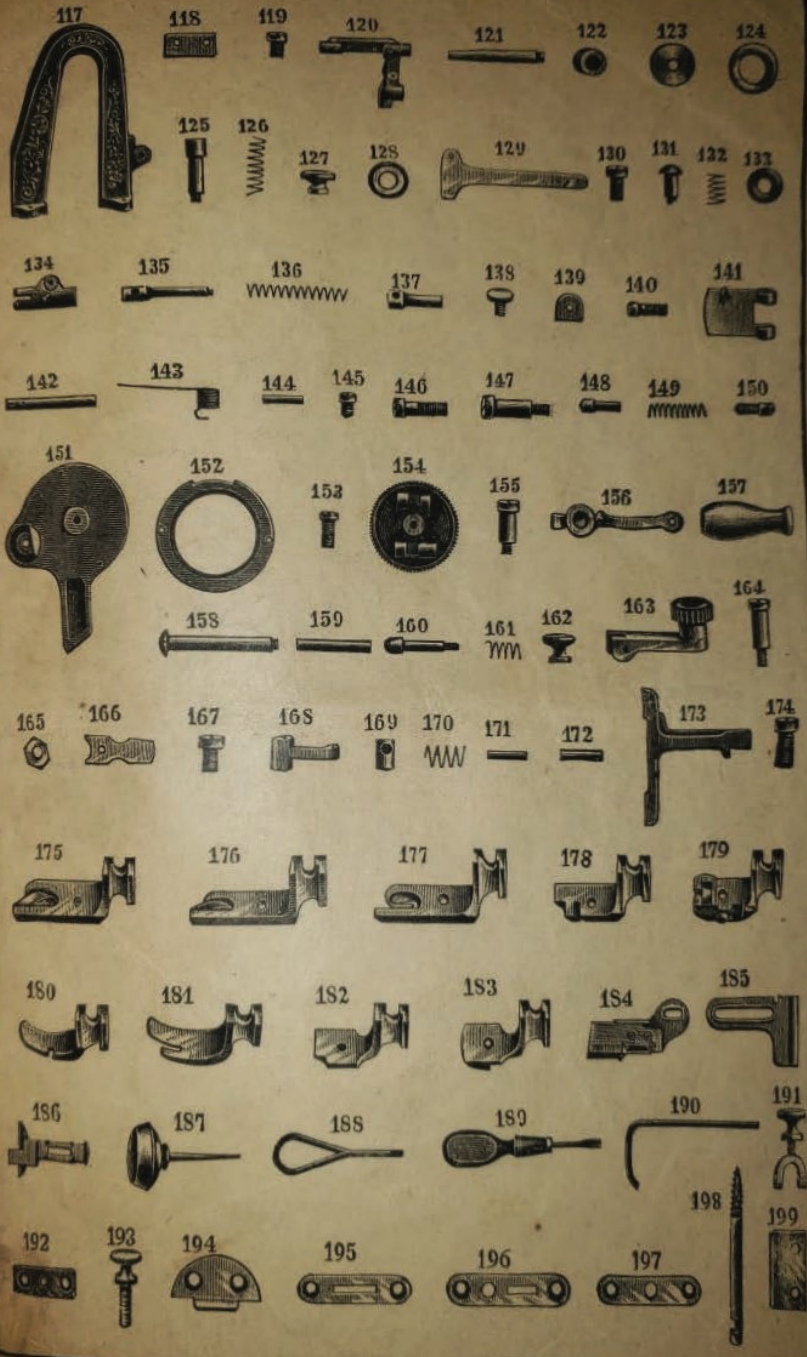
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7. **TO REMOVE THE SHUTTLE.** — Bring the Needle bar to its lowest position, pull out the sliding plate *No. 77 slowly* and the shuttle will rise out of the race.

8. **THE LENGTH OF STITCH.** After each stitch the feeder (91) draws the fabric forward the length of a stitch. At the base of the arm will be found a thumb-screw (104). To lengthen the stitch, this thumb-screw must be loosened slightly and moved to the right: the reverse movement will shorten the stitch. Having obtained the right stitch tighten the thumb-screw.

9. **REGULATION OF THE THREAD-LEVER** is seldom necessary, it is done by a screw-spindle in the top of the needle bar.

If you find that the thread breaks or makes loops, loosen the nut (4) of the regulating pin (3) and lower or raise it by turning and so vary the lift of thread, until the fault is remedied, then re-tighten the nut.

10. **THE PRESSER BAR** serves to guide the fabrics to be sewn, tightly on the needle plate and the feeder. Thick and hard fabrics require a stronger pressure of the presser bar than thin and soft material. To increase the pressure turn the large screw (9) behind the needle bar to the right, to diminish the pressure turn this screw to the left.

11. **SEWING.** After having threaded the needle and the shuttle as above described proceed as follows: Place the shuttle within its carrier, with the point to the right hand, leaving about three inches of thread projecting, then draw about four inches of the upper thread through the eye of the needle, and with the left hand hold its end loosely; turn the wheel gently towards you, until the needle moves down and up again to its highest point, this will bring the shuttle thread up through the hole in the throat-plate; then gently draw the needle thread, and the shuttle thread will appear; with a pin, draw the end of the shuttle thread through the hole in the throat-plate, lay the two threads to the left across the feed points; place the fabric beneath the needle, lower the presser-foot upon it, and commence to sew. To obtain a faultless lock-stitch, see to it that

12. **THE TENSION** is always properly regulated, which means that the tension of the upper or needle thread shall invariably be as strong as that of the shuttle thread. A perfect stitch shows the same appearance on the upper and the lower sides as below.

The tension of the upper thread is obtained by turning the thumb-screw (14) on the top of the face-plate. Take hold of the thread just above the needle and draw it downwards from the spool, and continue to turn the thumb-screw until the thread draws tightly without breaking. For thin, soft goods, the same rule applies for the *needle* as for the *shuttle-tension.*

After a few stitches are formed, stop and examine them.

Should there be loops projecting, or a straight thread upon the lower surface, as above, turn the thumb-screw, to tighten the tension of the needle thread. If the thread lies straight upon the upper surface, as below, turn the thumb-screw from you, to loosen the tension of the needle thread.

The secret of perfect sewing lies in so adjusting the tension of the needle thread, that it equals the tension of the shuttle thread. The adjustment of either may be regulated as before described.

In proceeding with the work care should be taken neither to draw nor push the work as this will break the needle.

When sewing over hard places or across seams, the upper wheel should be cautiously turned by hand or the needle will break or bend.

To remove the work, raise the needle to its highest point, raise the presser-foot by which means the tension will be disconnected automatically and draw the fabric with the left hand from the left side upwards about three inches; then cut both threads.

If in removing the work the lower thread breaks, take out the shuttle, draw out some thread and proceed again as above described.

It may be advantageous here to describe the manner in which the stitches are produced by this machine:

The needle passing through the fabric leads part of the upper thread below the needle-plate. In rising, it forms a small loop in the thread which is caught and spread by the point of the shuttle passing the needle. This loop, through which the lower thread is carried by the shuttle, is then taken up by the thread-lever, and tightened by the formation of the next stitch.

13. **TO CLEAN AND OIL THE MACHINE.** If you constantly use the machine, it should be cleaned twice a day and well oiled. Before oiling, raise the presser-foot, remove the shuttle, and having oiled, run the machine rapidly a minute, then wipe off all superfluous oil with a piece of rag. Be sure, that every part is clean, before commencing to sew.

There are nine small holes made for oiling, one in the front of the face plate near the needle-bar (2), three on the top of the arm, one at each end of the shaft and one near the spool-pin, two at the base of the arm (near the trade mark) and three near the throat-plate (75). To oil the crank which works the shuttle: turn the machine slowly until the small end of the crank appears in sight through the long slot in the base where the thumb-screw (104) for altering the stitch acts, now oil it. A little oil must be put upon the needle-bar (2), also at the back of the shuttle-carrier, and a very little on the joint of the check-lever (33). The spooler-spindle must be oiled, also the point of the bobbin when being filled. The face of the shuttle should be oiled at least once a day. The parts of the stand to be oiled are: the band-wheel hub; both ends of the pitman and each end of the treadle.

If the machine runs hard *while in use*, some place requires oiling. If it runs hard, *after standing idle for some time*, use a little petroleum or benzine in place of oil, run rapidly, wipe clean, and then *oil with the best prepared sperm oil*, which should always be used. To make sure of procuring good oil, buy it where you bought the machine.

With careful running, regular cleaning and oiling, the machine will wear but slightly, and the principal parts should last a life-time.

But it is possible that some of the small parts in the course of years will wear out. The manufacturers furnish, through their agents, interchangable parts which may be set in by the owner, the construction of the machine being very simple.

But if the owner cannot put the machine in order, he should unscrew it from the table and send it to the agents with all the fittings together with a statement of the difficulty experienced.

Advice for keeping the machine in good running order.

Every machine is sent out after having been well tried. Should one be found not to sew well, the cause will probably arise from an improper use. It is therefore recommended not to attempt any alteration to the machine, before being assured that the needle is properly set and the tension regulated.

Should the lower thread break:

1. The tension in the shuttle may be too great, or
2. There may be a sharp edge in the throat-plate, or there is
3. A rough edge on the shuttle.

Should the upper thread break, the reason may be that:

1. The tension is too tight, or
2. The needle is too fine for the thread, or
3. The long groove of the needle is not placed facing the operator or it is set too high or too low, or
4. The needle does not pass centrally through the hole in the throat-plate, so that it touches, or
5. The throat-plate is incorrectly placed. In changing the throat-plate care should be taken that after having screwed it down, it will be freely passed by the needle and that the needle in passing down does not touch the shuttle. To ascertain this, press the needle, when down, gently with the screw-driver towards the shuttle. If it then lightly touches the shuttle the position is right.

   Observe that in using a thick needle for linen or other coarse thread, the throat-plate with the large hole should be used, *and the needle be set a sixteenth of an inch lower than usual.*
6. The eye of the needle is sharp or the point blunt. The former is very probable if you find the needle unthreaded.
7. The feeder does not move the fabric regularly, its free action being hindered by dirt, pieces of thread, or want of oil.

Should there be skipped or long stitches at intervals, the reason may be that:

1. The needle is set too high or too low, or
2. The needle has become bent away from the shuttle, or
3. The long groove of the needle is not placed facing the operator, or
4. The needle is too fine, or
5. The machine has an irregular action in consequence of dirt or want of oil.

   If in spite of the above drop-stitches appear in starched goods, wash the goods or rub the surface, where it is to be sewn, with *hard white* soap. Curd soap is best.

The following table indicates the sizes of the thread and needles which should be used together.

In giving orders for needles, always specify the size required.

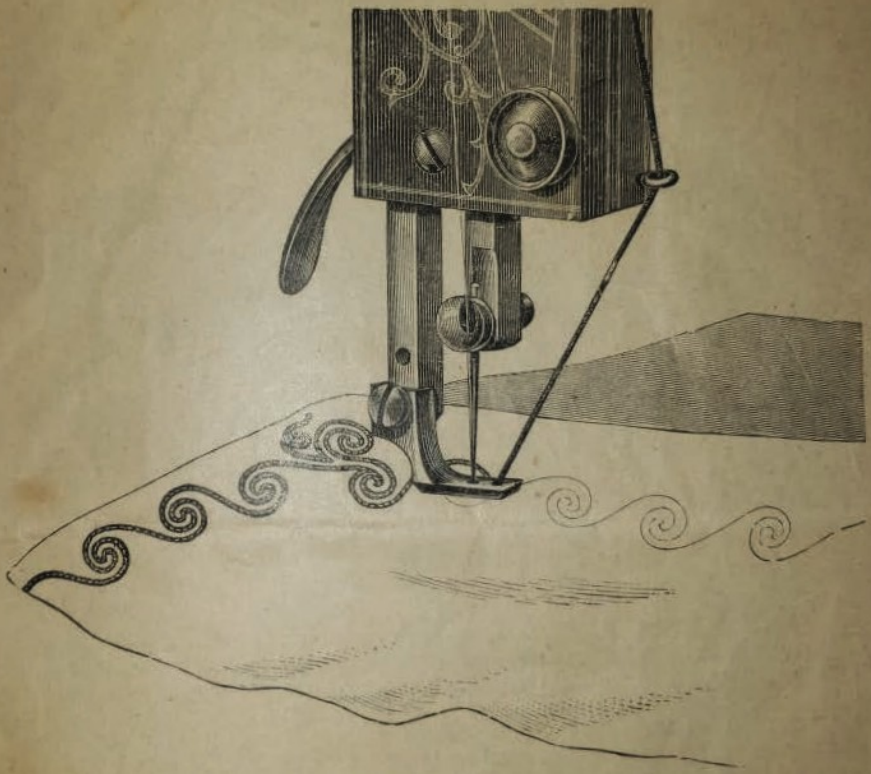
Size of Needle	Class of Work to be Sewn.	Size of Cotton, Thread or Silk.
10 (00)	Very fine Muslins, Cambrics, Linen etc., Tucking and Stitching.	150 to 300 Cotton.
11 (0)	Very fine Calicoes, Linen. Linen-Shirtings, fine Silk Goods, etc., Tucking, Hemming and Stitching.	80 to 150 Cotton. 30 to 36 Silk Twist.
11 (1)	Shirtings, Sheetings, Bleached Calicoes, Muslins, Silks and General Domestic Goods, and all classes of General Work.	60 to 80 Cotton. 24 to 30 Silk Twist.
12 (1½)	All kinds of heavy Calicoes, light Woollen Goods, heavy Silks, Seaming, Stitching etc.	40 to 60 Cotton. 20 to 30 Silk Twist.
12 (2)	Tickings, Woollen Goods, Trousers, Boys'-Clothing, Corsets, Cloaks, Mantles, etc.	24 to 40 Cotton. 16 to 24 Silk Twist.
13 (2½)	Heavy Woollen, Tickings, Bags, heavy Coats, Trousers etc. heavy Clothing generally.	10 to 24 Cotton. 60 to 80 Thread.
14 (3)	Bags, coarse Cloths, heavy Goods of any texture.	40 to 60 Thread, very coarse Cotton or Silk.
14 (3½)	Very heavy Goods where a strong Thread is wanted.	25 to 35 Thread, seldom required in family sewing.

Use only needles which bear the number on their top end and buy needles only in the shop where the machine has been purchased.

Directions for using the attachments.

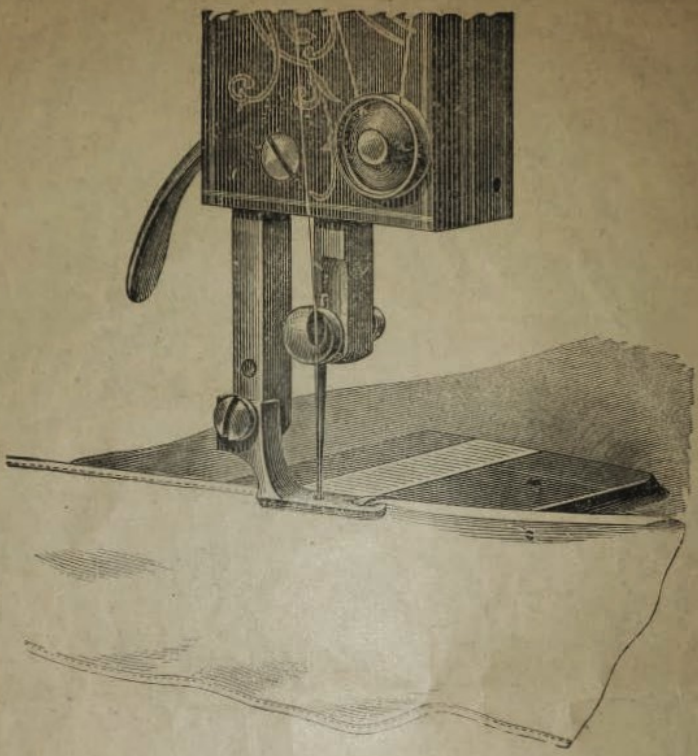
The attachments should not be used before thorough profinciency in ordinary sewing with the machine has been acquired. The various fittings for other work are so carefully described and accurately depicted in the following pages, that learners will experience no difficulty in the use of them.

THE BRAIDER.



THE BRAIDER is a presser-foot which has a slot in front of the needle hole. It is to be attached to the presser-bar. A wooden spool upon which the braid is evenly wound is placed upon one of the pins. The end of the braid is passed through the eyelet, then through the slot in the braider and drawn back, so that it lies right under the needle. It is only necessary to guide the fabric properly to sew down the braid to any previously designed pattern.

THE HEMMER.

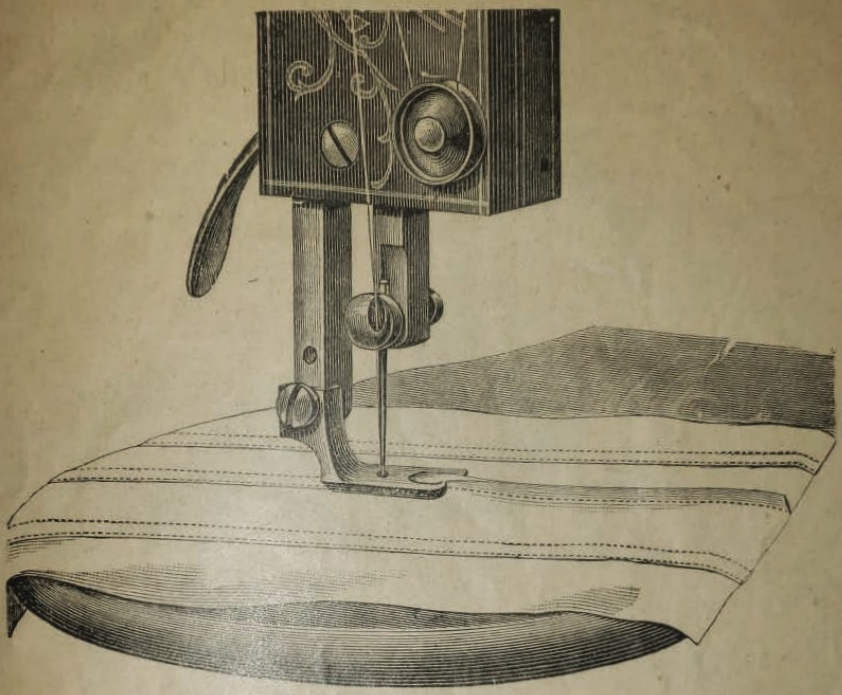


THE HEMMER. To make a narrow hem: Attach the hemmer to the presser-bar: lift the presser-foot, commence the hem by folding it at the end, attach a thread to it with a needle, draw the thread and the fabric into the hemmer (or pass the edge of the fabric into the hemmer without a thread), lower the presser-foot, and commence to sew, guide the edge of the fabric with the *right* hand taking care that the fabric entirely fills the mouth of the hemmer. *If the edge unfolds out of the hemmer, guide the fabric to the right; if it folds too much into the hemmer, guide it to the left.*

To make a broad hem: Use the wide adjustable Hemmer as shown in diagram, fold the fabric the desired breadth (including the plait) and pass it through the hemmer in the same way.

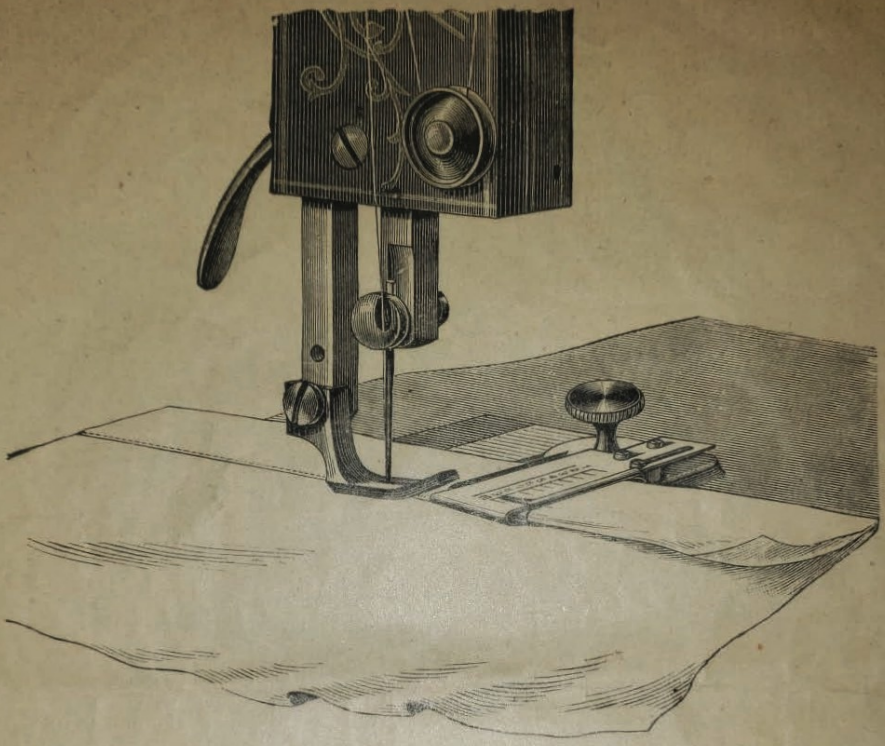
To make a broad hem with a thicker fabric, use the ordinary presser-foot, fold the fabric twice to the desired breadth bringing the inner side under the presser-foot.

THE FELLSEAMER.



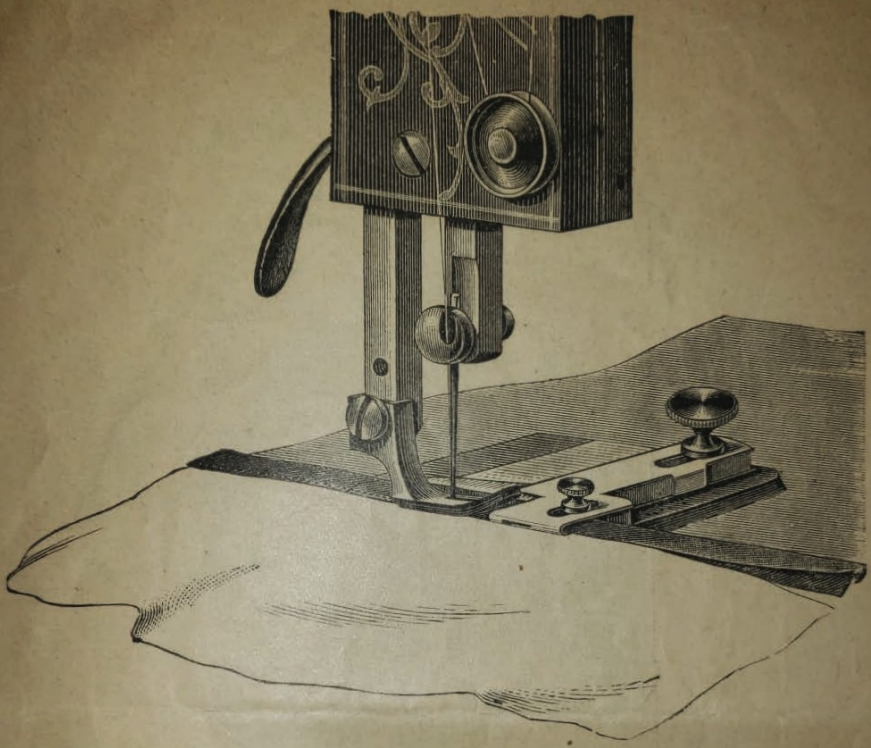
THE FELL-SEAM-FOOT is attached and used similarly to the foregoing hemmer. To make a fell-seam, join the two edges of the fabric by a seam about three eighths of an inch from the edge, then open out the seam, turn one into the hemmer to turn the fell.

THE ADJUSTABLE HEMMER.



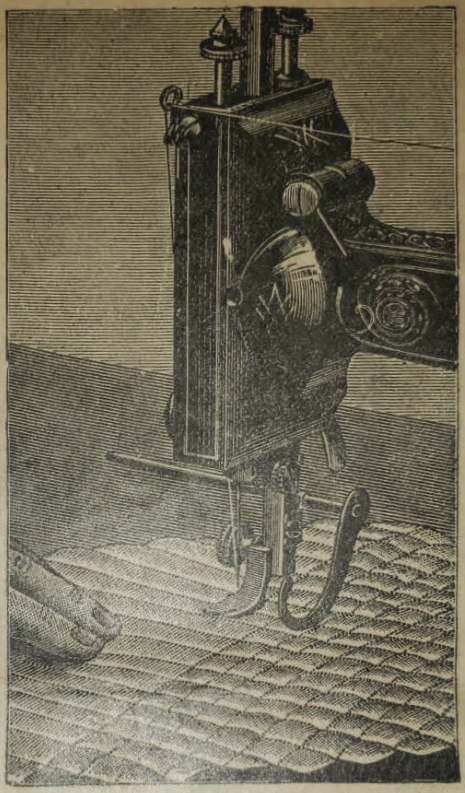
THE ADJUSTABLE HEMMER for hemming towels napkins, tablecloths and other coarse fabrics enables the operator to make hems of various widths. Adjust the hemmer to fold the desired width of hem, fix it firmly to the machine with the thumb-screw, then turn down the edge of the fabric one fold only, and pass it into the hemmer with a double fold to complete the hem. If the sewing is not on the edge of the hem, loosen the screw and move the hemmer a little to the right or left, until it is in the right position.

THE ADJUSTABLE BINDER.



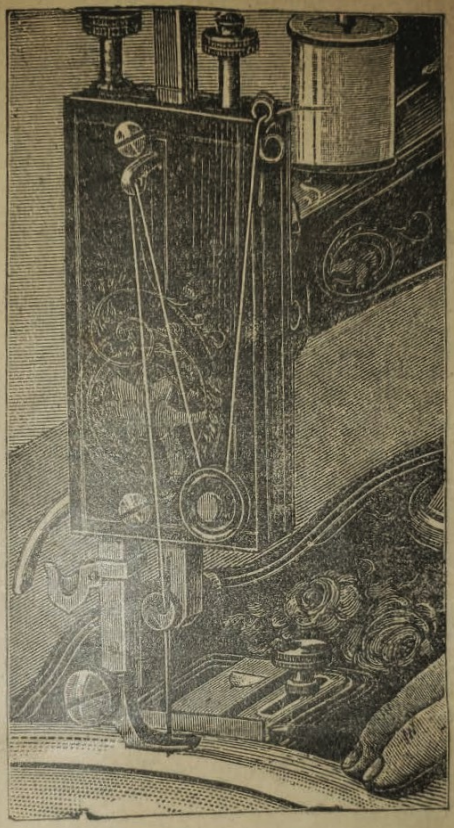
THE ADJUSTABLE BINDER serves for binding cloths, hats, shoes, mantles etc., and is used with the ordinary presser-foot. Adjust the binder to the desired width of binding, fix it firmly to the machine with the thumb-screw; place the edges of the binding under the clips and its end over the feed points; then place the fabric between the clips, and guide it against the binder. If the sewing is not on the edge of the binding, loosen the screw, and move the binder a little to the right or left, until it is in the right position; the under-clip may be adjusted to fold the binding wider on the under than on the upper side of the fabric.

THE QUILTING GUIDE.



THE QUILTING GUIDE. Attach the guide as shown by the engraving, make a straight line upon the fabric with chalk or by creasing, and stitch upon it; then adjust the gauge-arm to the required distance for the next line of stitching, and guide the fabric with the line already sewn directly under the gauge-arm. This second line serves in like manner as a guide for the third and so on.

THE STRAIGHT GUIDE.



THE STRAIGHT GUIDE is fastened to the plate by a thumb-screw if a seam is to be made parallel to an edge. The straight edge of this guide is fixed so far from the needle that the stitching is formed the desired distance from the edge of the fabric. This guide also serves to sew frills and borders, also to sew in a straight line and at an equal distance from other seams. It saves the trouble of drawing lines.

THE SMALL PRESSER-FOOT OR EDGE STITCHER. This stitcher serves for sewing rows of stitching running close along the edge. It is the same kind of apparatus as the ordinary sewing-foot, only one of the small prongs on the right hand side is left out, whereby the edge of the cloth can be seen while sewing. It can also be used with advantage for sewing very narrow rows of stitching, running along the edge, for which purpose the guide also should be used.

The following extras are supplied with each improved Family Machine:

10 Needles
6 Bobbins for shuttle
1 Fell-seamer
1 Adjustable Binder
1 Adjustable Hemmer
1 Quilter
1 Hemmer
1 Presser-foot
1 Wide Hemmer
1 Small presser-foot
1 Straight guide
1 Screw for straight guide
1 Braider
1 Screw-driver
1 Throat-plate with large hole
1 Oil-can
1 Instruction book

Accessories given with each Saxonia Machine:

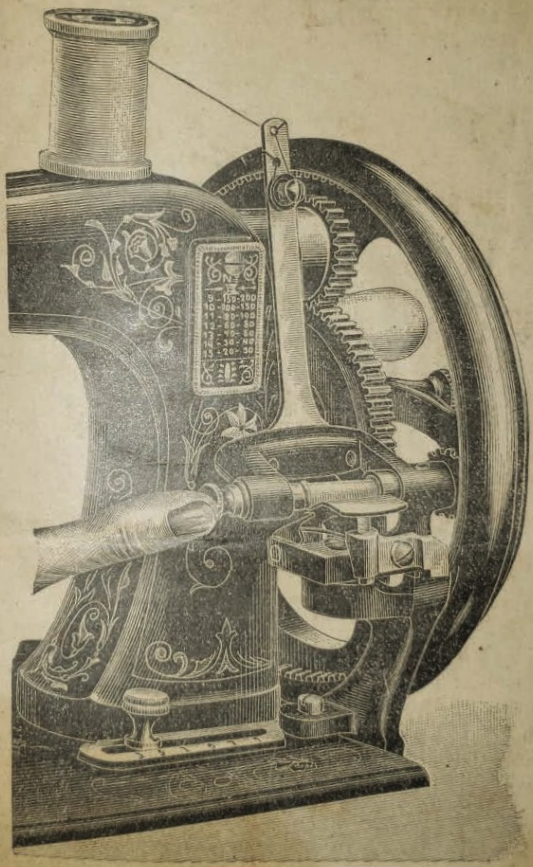
6 Needles
4 Bobbins
1 Presser-foot
1 Fell-seamer
1 Braider
1 Small presser-foot
1 Quilter
1 Straight guide with screw
1 Throat-plate with large hole
1 Screw-driver
1 Oil-can
1 Instruction book

The machine possesses the following advantages:

Wheel nickelplated.
Feet nickelplated.
Automatic bobbin-winder, reliable and regular in its working.
The most simple loose-wheel-apparatus.
Inch measure on table.
Casters on stand.
Opening tension discs.
Choice wood work.
Indestructible cog-wheels.
Extra size driving wheel.
Shuttle lever.
Improved shuttle etc. etc.

If the eye of the needle should be rough and cut the thread, draw through it, to and fro in all directions, a coarse thread saturated with oil and fine emery, until it is smooth. It is very important always to suit the thread to the needle, i. e. to choose a thread which completely fills the groove in the needle as it passes through the fabric. The lower thread should be somewhat finer than the upper thread.

4. **TO WIND A BOBBIN.** Throw the upper wheel out of gear. — Place the bobbin in the winder with the notched end to the right, inserting the pin on the spindle in the notch. The left hand spindle draws back to admit of this. — Place a reel of thread from which you purpose winding on one of the pins on the top of the machine, pass the thread through the slit



on the right in the end of the knife blade (1), under and between the tension discs (2), then through the slit on the left (3), from thence behind the knife blade down to the bobbin and from inwards to outwards through the small hole in the right hand brass flange and fasten the thread by squeezing it between the flange and the spindle; then wind up all the slack thread by turning the reel on the pin.

The catch in front of the winder now has to be raised against the bobbin and the india rubber ring must be allowed to touch the flywheel, which is done by pressing on the little knob at 4 in front of the winder.

All is now ready for winding and the machine may be set gently in motion. As soon as the bobbin is full the winder will cease to work.

Take care that the thread be always evenly and tightly wound on the bobbin, until it is full. Very much depends upon the proper winding of the bobbin thread. Do not pass knots in the thread. It is advisable to wind several bobbins together to avoid constant interruption of the work.

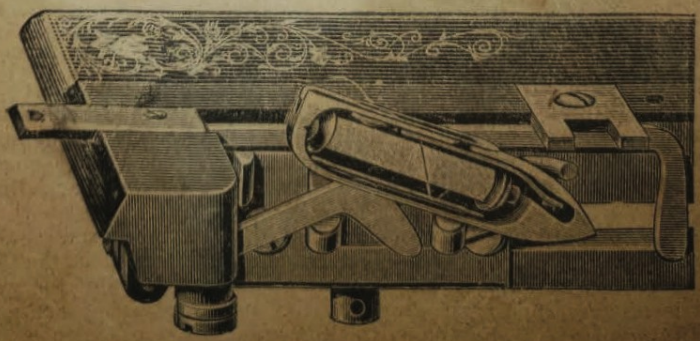
To adjust the winder: If the winder throws out of gear before the bobbin is full the little vertical screw under the catch should be screwed down slightly, and if the bobbin overfills without being thrown out of gear this screw should be screwed up, a very little is sufficient.

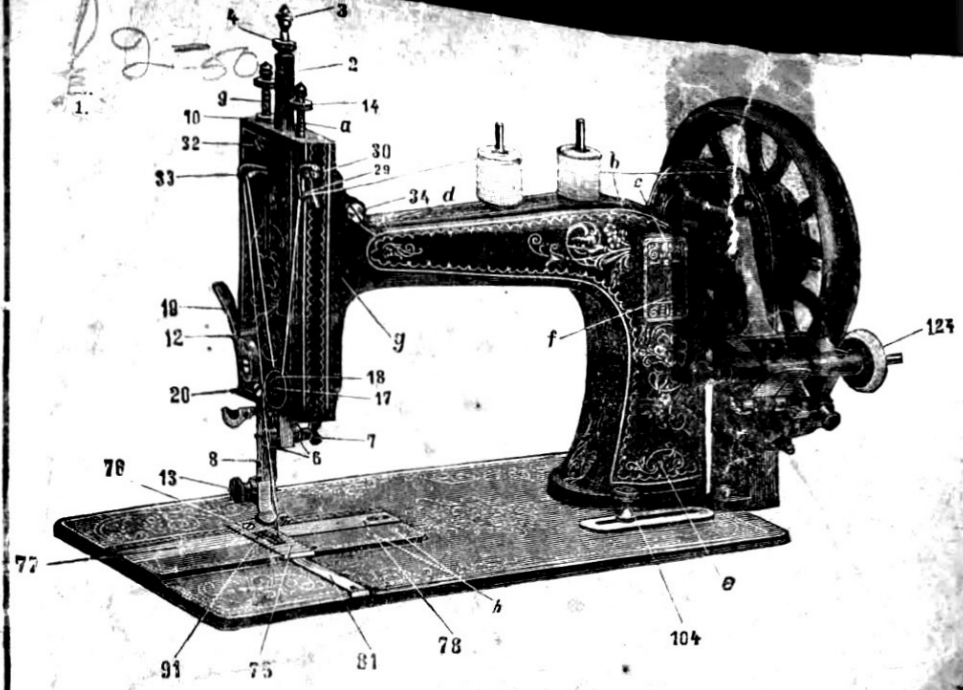
The same directions apply to the Winder of the Saxonia Machine, only instead of pressing against button 4, press firmly against the little knob at the left hand side of the winder as above illustrated, to bring the small cogwheel in connection with the toothed inside rim of the flywheel.

5. **TO THREAD THE NEEDLE.** Place the reel containing the upper thread on one of the pins. Thence pass it through the eyelet 29 at the side of the face-plate, under and between the discs (18) on the front of the face-plate, so that it runs upwards: to the eye in the check-lever (33) through it, and through the hole in the needle clamp and lastly *from you* through the eye of the needle. About four inches of thread should be drawn through the eye of the needle.

6. **NEW SELF-THREADING SHUTTLE.** Method of threading. Hold the shuttle in the left hand, point downwards and with the flat side facing you, insert a bobbin at the point end and press the other end into its place, with the thread coming off the bobbin from the back to the left: lead the thread behind the point of the spring a, and then across the flat side of the shuttle into the notch in the spring b; then draw it tight towards the shuttle point, and pass it into the notch of the spring outside. Now the shuttle will be ready for use, the thread coming off under the spring on the left side of the shuttle.

To Regulate the Tension. — This is done by turning the small screw F to the left for a *slacker* or to the right for a *tighter* tension. A special small screw-driver is provided for this purpose. When an even tension is once obtained it will seldom require alteration. After threading the shuttle, try the tension by drawing the thread towards the blunt end; if it draws tightly without breaking, it is right for goods of firm texture; thin, soft goods require a looser tension. To obtain more or less tension, tighten or slacken the screw F which acts upon the flat spring b.





The following directions have been found sufficient to explain the working of this machine without personal instruction. It is best that the operator should perform the manipulations described whilst a second person reads the directions aloud. Nothing should be hurried, but every thing thoroughly understood and practically carried out.

The Machines are always properly set with the thread drawn through the needle before delivery ready for use. When unpacking the machine take care to observe the manner in which it is threaded up, that you may repeat it.

1. **THE BELT** is passed up from behind inside the guard of the upper wheel, and its ends are led through both holes in the table, joined together and passed under the wheel. The belt communicates motion to the machine, and should always be tight enough to drive it without slipping, but no tighter than is requisite or it makes the machine run heavy. Should the belt become slack it must be uncoupled and cut the desired length, then rejoined by the hook.

2. **THE TREADLE.** To enable the treadle to be worked, without injury to the machine, first raise the presser foot and disconnect the upper wheel from the machine and allow it to revolve loosely on the shaft.

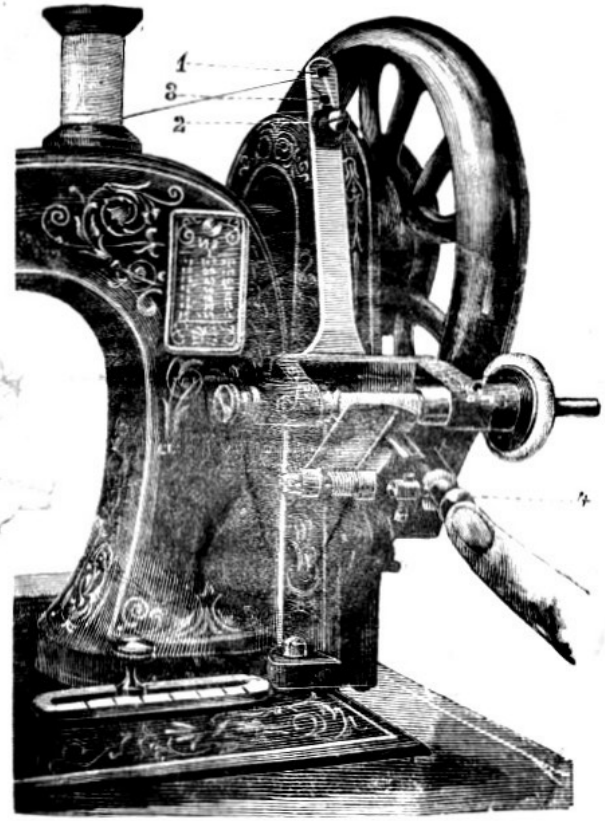
It is very essential to work the treadle steadily; therefore it will be well to practise and thoroughly accustom the feet to its motion prior to working the machine.

If the machine is worked without any fabric being used, the presser foot should always be lifted by the lever (19), as shown in illustration, to prevent injury to the teeth of the feeder (91).

After having learnt to work the treadle, take a piece of shirting, put it under the presser foot, fasten the upper wheel and work the machine, *without having threaded the needle*, so as to learn to guide the fabric. Try first to guide the fabric along straight, afterwards along curved lines.

3. **THE NEEDLE** has a long groove on one side and a short one on the other. To set the needle proceed as follows: first loosen the screw (7)

that clamps it, and raise the needlebar (2) to its highest point. Then take a white thread and pass it through the needle, which is to be held (with its long groove to the operator) between the thumb and finger of the left hand, pulling the end of the thread point down through the hole in the throat-plate (75); hold it fast with the left hand and turn the wheel gently towards you, until the needle bar (2) moves downward so that the needle is guided into the groove under the clamp. Still hold the thread with the thumb and first finger of the left hand on the throat-plate in a straight line from you, thus bringing the eye of the needle exactly level with the surface of the throat-plate (75), turn the upper pulley slowly until the gauge mark (a distinct line engraved in the front of the needle bar, near its top) rests level or fully above the top of the face plate. Then screw up tight. For linen and silk the gauge mark must stand about $\frac{1}{16}$ inch higher. Observe that the needle passes down exactly in the middle of the throat-plate hole and that its long groove exactly



faces you. If the needle be set too high, either the shuttle cannot pass through the loop, or it will not enter the loop freely, and the thread will be cut. If the needle be set too low, the loop will be too large and twist, the shuttle will then occasionally miss it, and stitches will be dropped. It is most important to set the needle correctly.

The condition and movement of the needle should be examined daily, and if the point be blunt or rough, it should be replaced by a new one. The machine will never sew satisfactorily with a needle that is not sharp and clean.

List of Parts.

Nr.
1. Face plate.
2. Needle bar.
3. Regulating pin for thread lever.
4. Nut for same.
5. Crown of needle bar for B Machine with positive take-up.
6. Needle clamp.
7. Screw for same.
8. Presserfoot bar.
9. Presser screw.
10. Nut for same.
11. Spring for presserfoot bar.
12. Presserfoot lifter pin.
13. Presserfoot screw.
14. Tension screw.
15. Tension spring (flat).
16. Screw for same.
17. Pin for tension discs.
18 Tension disc.
19. Presserfoot lifter.
20. Pin for same.
21. Presserfoot lifter screw.
22. Washer for same.
23. Cam.
24. Cam nut.
25. Cam roller.
26. Cam roller pin.
27. Cam roller for B Machine with positive take-up.
28. Pin for same.
29. Thread guide.
30. Screw for same.
31. Gauge pin for face plate.
32. Screw for face plate.
33. Threadlever.
34. Screw for same.
35. Check spring.
36. Threadlever for B Machine with positive take-up.
37. Pin for same.
38. Disc " "
39. Screw " "
40. Roller " "
41. Roller pin " "
Take up complete.
42. Threadlever for C Machine.
43. Arm.
44. Needle and Thread schedule.
45. Screw for same.
46. Pin " "
47. Long shaft.
48. Crank disc.
49. Pin for same.
50 Cam for positive take-up.
51. Pin for same.
52. Fly wheel.
53. Fly wheel catch bracket.
54. Screw for same.
55. Fly wheel catch.
56. Screw for same.
57. Fly wheel catch piston.
58. Fly wheel catch spring.
Fast und loose wheel apparatus complete.
59. Upright shaft.
60. Cog wheel.
61. Screw for same.
62. Adjustable ring for upright shaft.
63. Pin for same.
64. Side cover of arm.

Nr.
65. Long screw for same.
66. Short " " "
67. Screw for Arm Nr. 43.
68. Lever for automatically disconnecting tension.
69. Pin acting upon same.
70. Reel pin.
71. Bedplate.
72. Hinges.
73. Rivet for same.
74. Screw " "
75. Needle plate.
76. Screw for same.
77. Front slide.
78. Back slide.
79 Hook of front slide.
80. Screw for same.
81. Feeder slide.
82. Shuttle lifter.
83. Pin for same.
84. Eccentric.
85. Pivot for same
86. Pointed screw for same.
87. Eccentric rod.
88. Wedge for adjusting feeder.
89. Screw for same.
90. Washer for same.
91. Feeder.
92. Feeder spring.
93. Plate for eccentric rod.
94. Screw for same.
95. Plate of stitch regulator rod
96. Screw for same.
97. Stitch regulator rod.
98. Stitch regulator bracket.
99. Screw for same.
100. Support for stitch regulator
101. Washer for same.
102. Nut " "
103. Screw for arm of machine.
104. Stitch regulating screw.
105. Shuttle race.
106. Pivot of same.
107. Washer for same.
108. Pin " "
109. Shuttle carrier.
110. Large spring for same.
111. Small " " "
112. Screw " "
113. Iron Pitman.
114. Shuttle, selfthreading.
115. " with holes.
116. Bobbin.

Winder.

117. Belt guard.
118. Small catch plate.
119. Screw for same.
120. Frame.
121. Large spindle.
122. Cup of same.
123. Pulley.
124. Indiarubber ring.
125. Left hand side spindle.
126. Spring for same.
127. Button " "
128. Washer " "
129. Knife blade.
130. Screw for same.
131. Tension screw.
132. Tension spring.
133. Tension discs.

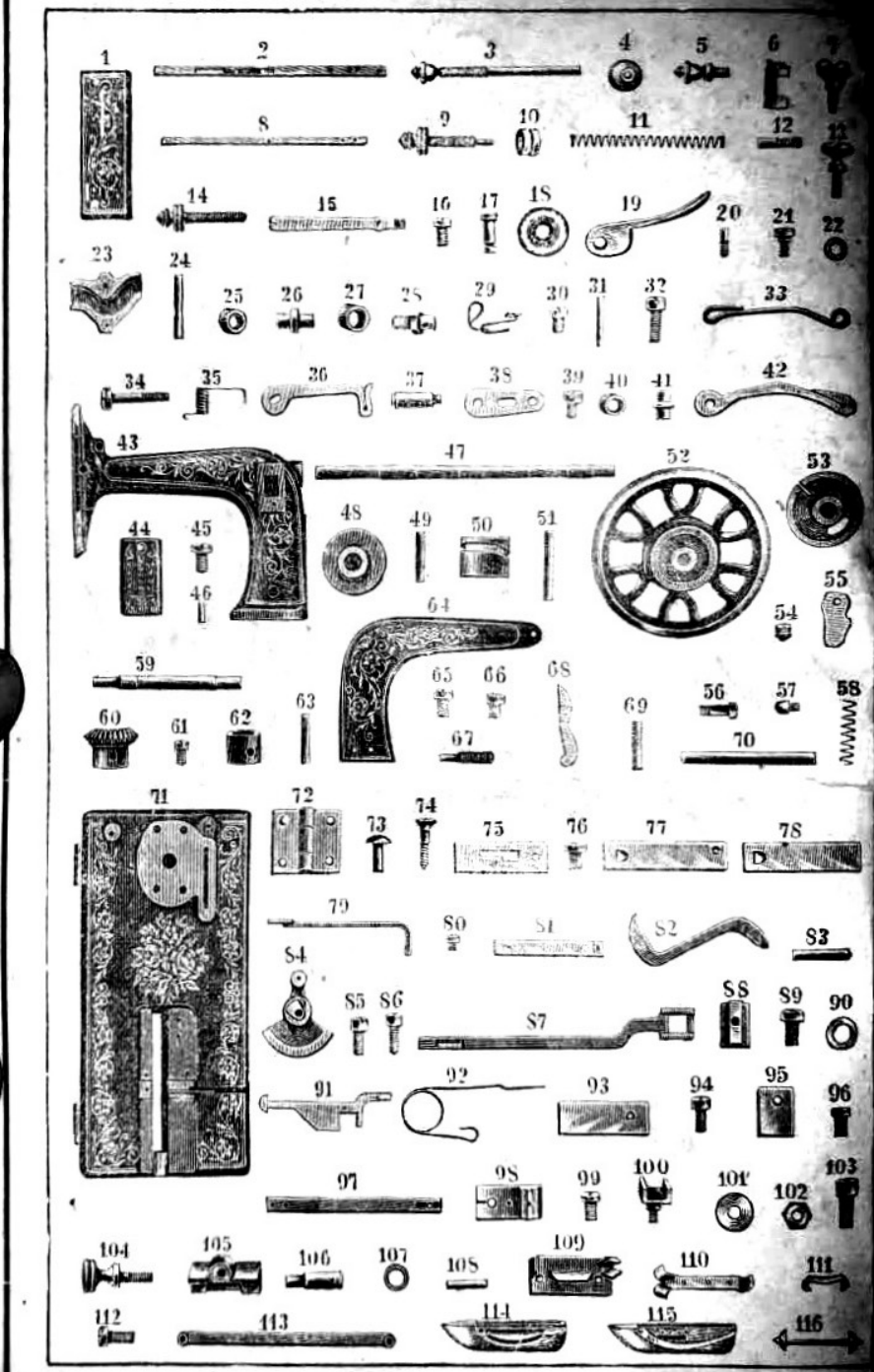
Nr.
134. Brake.
135. Pin for same.
136. Spring for Nr. 135.
137. Pin " "
138. Screw " " 134.
139. Plate " " 135
140. Screw for catch plate.
141. Catch plate.
142. Pin for same.
143. Spring " "
144. Small pin " "
145. Catch plate regulating screw.
146. Screw for beltguard.
147. Bracket pin.
148. Catch piston.
149. Spring for same.
150. Regulating screw of Winder.
Winder complete.

Handappliance.

151. Case.
152. Case ring.
153. Screw for same.
154. Large Cog wheel.
155. Pin for same.
156. Crank.
157. Handle.
158. Screw for same.
159. Conical crank pin.
160. Piston for large cog wheel.
161. Spring for same.
162. Button " "
163. Crank with small cog wheel.
164. Pin for same.
165. Nut " "
166. Flat spring.
167. Screw for same.
168. Catch.
169. Catch piston.
170. Spring for same.
171. Pin " "
172. Crank pin.
173. Bracket.
174. Screw for Handapparatus.
Handappliance complete.

Accessories.

175. Wide hemmer.
176. Ordinary hemmer.
177. Fellseamer.
178. Ribbon sewer.
179. Braider.
180. Small presser foot.
181. Presser foot
182. Corder for piping.
183. Ruffler.
184. Adjustable Hemmer.
185. Straight guide.
186. Binder.
187. Oil can.
188. Small screw driver for shuttle.
189. Screw driver.
190. Quilter.
191. Screw for same.
192. Plate for screw 193.
193. Screw for fastening machine to wood base.
194–199. Fittings.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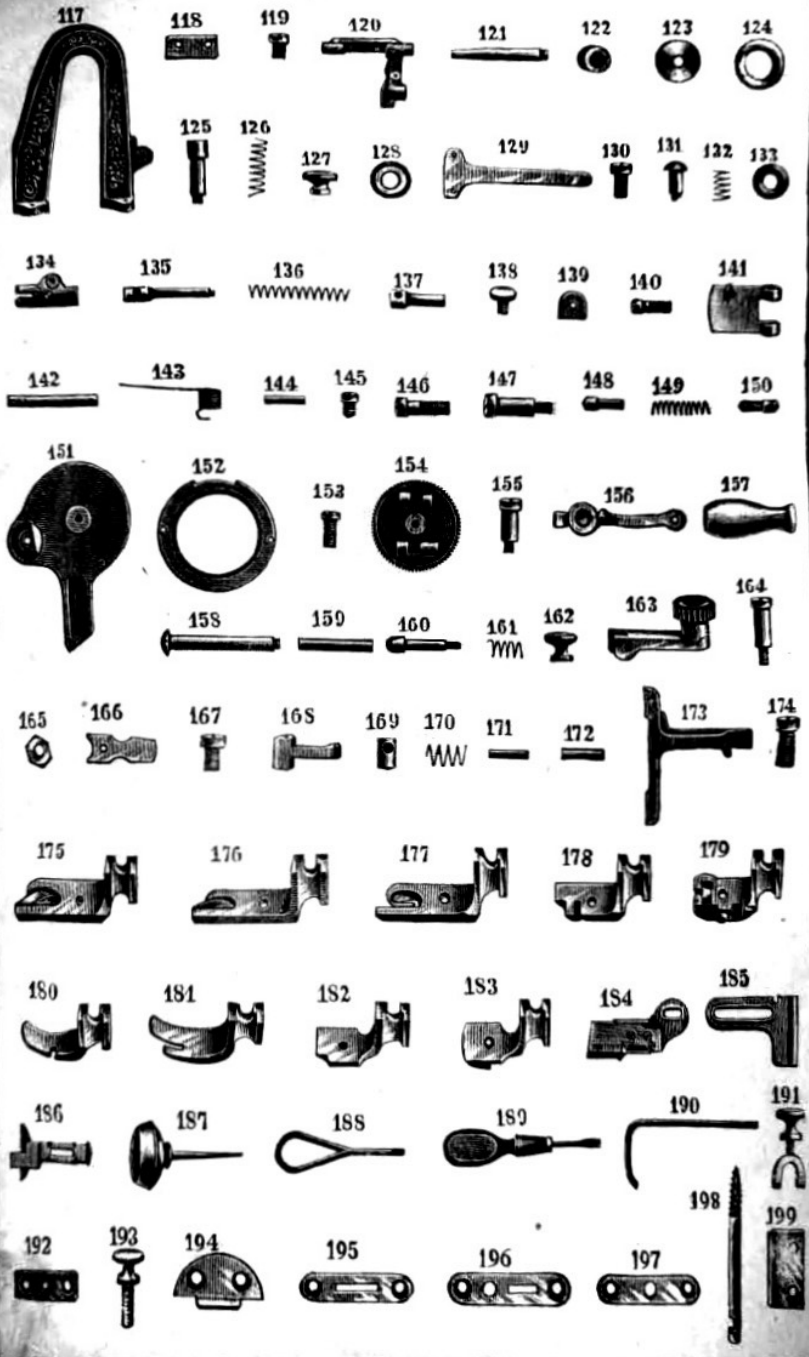
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7. **TO REMOVE THE SHUTTLE.** — Bring the Needle bar to its lowest position, pull out the sliding plate *No. 77 slowly* and the shuttle will rise out of the race.

8. **THE LENGTH OF STITCH.** After each stitch the feeder (91) draws the fabric forward the length of a stitch. At the base of the arm will be found a thumb-screw (104). To lengthen the stitch, this thumb-screw must be loosened slightly and moved to the right: the reverse movement will shorten the stitch. Having obtained the right stitch tighten the thumb-screw.

9. **REGULATION OF THE THREAD-LEVER** is seldom necessary, it is done by a screw-spindle in the top of the needle bar.

If you find that the thread breaks or makes loops, loosen the nut (4) of the regulating pin (3) and lower or raise it by turning and so vary the lift of thread, until the fault is remedied, then re-tighten the nut.

10. **THE PRESSER BAR** serves to guide the fabrics to be sewn, tightly on the needle plate and the feeder. Thick and hard fabrics require a stronger pressure of the presser bar than thin and soft material. To increase the pressure turn the large screw (9) behind the needle bar to the right, to diminish the pressure turn this screw to the left.

11. **SEWING.** After having threaded the needle and the shuttle as above described proceed as follows: Place the shuttle within its carrier, with the point to the right hand, leaving about three inches of thread projecting, then draw about four inches of the upper thread through the eye of the needle, and with the left hand hold its end loosely; turn the wheel gently towards you, until the needle moves down and up again to its highest point, this will bring the shuttle thread up through the hole in the throat-plate; then gently draw the needle thread, and the shuttle thread will appear; with a pin, draw the end of the shuttle thread through the hole in the throat-plate, lay the two threads to the left across the feed points; place the fabric beneath the needle, lower the presser-foot upon it, and commence to sew. To obtain a faultless lock-stitch, see to it that

12. **THE TENSION** is always properly regulated, which means that the tension of the upper or needle thread shall invariably be as strong as that of the shuttle thread. A perfect stitch shows the same appearance on the upper and the lower sides as below.

The tension of the upper thread is obtained by turning the thumb-screw (14) on the top of the face-plate. Take hold of the thread just above the needle and draw it downwards from the spool, and continue to turn the thumb-screw until the thread draws tightly without breaking. For thin, soft goods, the same rule applies for the *needle* as for the *shuttle-tension*.

After a few stitches are formed, stop and examine them.

Should there be loops projecting, or a straight thread upon the lower surface, as above, turn the thumb-screw, to tighten the tension of the needle thread. If the thread lies straight upon the upper surface, as below, turn the thumb-screw from you, to loosen the tension of the needle thread.

The secret of perfect sewing lies in so adjusting the tension of the needle thread, that it equals the tension of the shuttle thread. The adjustment of either may be regulated as before described.

In proceeding with the work care should be taken neither to draw nor push the work as this will break the needle.

When sewing over hard places or across seams, the upper wheel should be cautiously turned by hand or the needle will break or bend.

To remove the work, raise the needle to its highest point, raise the presser-foot by which means the tension will be disconnected automatically and draw the fabric with the left hand from the left side upwards about three inches; then cut both threads.

If in removing the work the lower thread breaks, take out the shuttle, draw out some thread and proceed again as above described.

It may be advantageous here to describe the manner in which the stitches are produced by this machine:

The needle passing through the fabric leads part of the upper thread below the needle-plate. In rising, it forms a small loop in the thread which is caught and spread by the point of the shuttle passing the needle. This loop, through which the lower thread is carried by the shuttle, is then taken up by the thread-lever, and tightened by the formation of the next stitch.

13. **TO CLEAN AND OIL THE MACHINE.** If you constantly use the machine, it should be cleaned twice a day and well oiled. Before oiling, raise the presser-foot, remove the shuttle, and having oiled, run the machine rapidly a minute, then wipe off all superfluous oil with a piece of rag. Be sure, that every part is clean, before commencing to sew.

There are nine small holes made for oiling, one in the front of the face plate near the needle-bar (2), three on the top of the arm, one at each end of the shaft and one near the spool-pin, two at the base of the arm (near the trade mark) and three near the throat-plate (75). To oil the crank which works the shuttle: turn the machine slowly until the small end of the crank appears in sight through the long slot in the base where the thumb-screw (104) for altering the stitch acts, now oil it. A little oil must be put upon the needle-bar (2), also at the back of the shuttle-carrier, and a very little on the joint of the check-lever (33). The spooler-spindle must be oiled, also the point of the bobbin when being filled. The face of the shuttle should be oiled at least once a day. The parts of the stand to be oiled are: the band-wheel hub; both ends of the pitman and each end of the treadle.

If the machine runs hard *while in use*, some place requires oiling. If it runs hard, *after standing idle for some time*, use a little petroleum or benzine in place of oil, run rapidly, wipe clean, and then *oil with the best prepared sperm oil*, which should always be used. To make sure of procuring good oil, buy it where you bought the machine.

With careful running, regular cleaning and oiling, the machine will wear but slightly, and the principal parts should last a life-time.

But it is possible that some of the small parts in the course of years will wear out. The manufacturers furnish, through their agents, interchangable parts which may be set in by the owner, the construction of the machine being very simple.

But if the owner cannot put the machine in order, he should unscrew it from the table and send it to the agents with all the fittings together with a statement of the difficulty experienced.

Advice for keeping the machine in good running order.

Every machine is sent out after having been well tried. Should one be found not to sew well, the cause will probably arise from an improper use. It is therefore recommended not to attempt any alteration to the machine, before being assured that the needle is properly set and the tension regulated.

Should the lower thread break:

1. The tension in the shuttle may be too great, or
2. There may be a sharp edge in the throat-plate, or there is
3. A rough edge on the shuttle.

Should the upper thread break, the reason may be that:

1. The tension is too tight, or
2. The needle is too fine for the thread, or
3. The long groove of the needle is not placed facing the operator or it is set too high or too low, or
4. The needle does not pass centrally through the hole in the throat-plate, so that it touches, or
5. The throat-plate is incorrectly placed. In changing the throat-plate care should be taken that after having screwed it down, it will be freely passed by the needle and that the needle in passing down does not touch the shuttle. To ascertain this, press the needle, when down, gently with the screw-driver towards the shuttle. If it then lightly touches the shuttle the position is right.

   Observe that in using a thick needle for linen or other coarse thread, the throat-plate with the large hole should be used, *and the needle be set a sixteenth of an inch lower than usual.*
6. The eye of the needle is sharp or the point blunt. The former is very probable if you find the needle unthreaded.
7. The feeder does not move the fabric regularly, its free action being hindered by dirt, pieces of thread, or want of oil.

Should there be skipped or long stitches at intervals, the reason may be that:

1. The needle is set too high or too low, or
2. The needle has become bent away from the shuttle, or
3. The long groove of the needle is not placed facing the operator, or
4. The needle is too fine, or
5. The machine has an irregular action in consequence of dirt or want of oil.

   If in spite of the above drop-stitches appear in starched goods, wash the goods or rub the surface, where it is to be sewn, with *hard white* soap. Curd soap is best.

The following table indicates the sizes of the thread and needles which should be used together.

In giving orders for needles, always specify the size required.

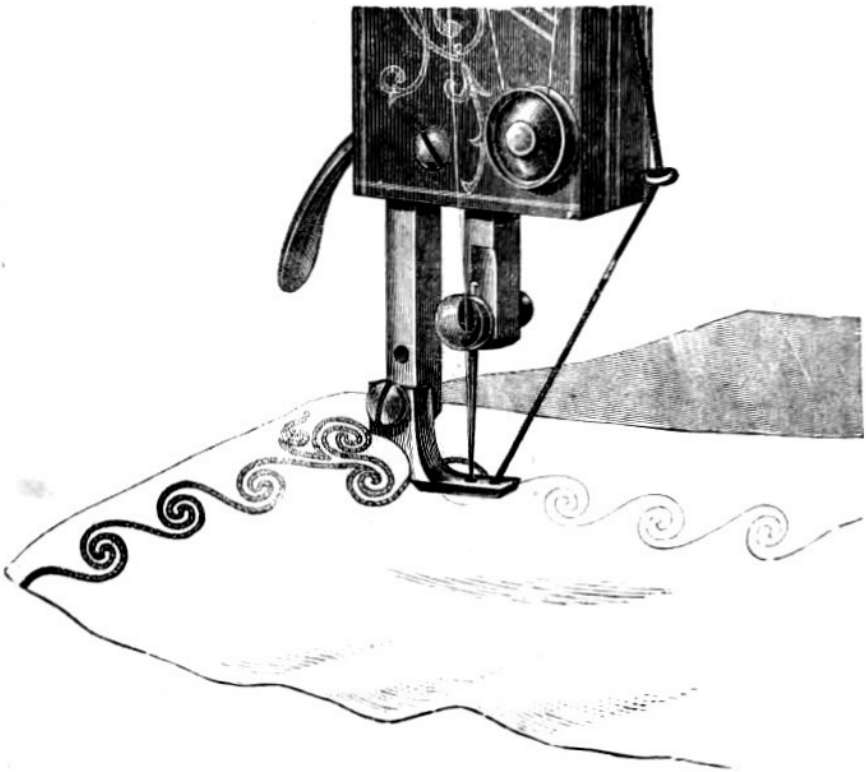
Size of Needle	Class of Work to be Sewn.	Size of Cotton, Thread or Silk.
10 (00)	Very fine Muslins, Cambrics, Linen etc., Tucking and Stitching.	150 to 300 Cotton.
11 (0)	Very fine Calicoes, Linen. Linen-Shirtings, fine Silk Goods, etc., Tucking, Hemming and Stitching.	80 to 150 Cotton. 30 to 36 Silk Twist.
11 (1)	Shirtings, Sheetings, Bleached Calicoes, Muslins, Silks and General Domestic Goods, and all classes of General Work.	60 to 80 Cotton. 24 to 30 Silk Twist.
12 (1½)	All kinds of heavy Calicoes, light Woollen Goods, heavy Silks, Seaming, Stitching etc.	40 to 60 Cotton. 20 to 30 Silk Twist.
12 (2)	Tickings, Woollen Goods, Trousers, Boys'-Clothing, Corsets, Cloaks, Mantles, etc.	24 to 40 Cotton. 16 to 24 Silk Twist.
13 (2½)	Heavy Woollen, Tickings, Bags, heavy Coats, Trousers etc. heavy Clothing generally.	10 to 24 Cotton. 60 to 80 Thread.
14 (3)	Bags, coarse Cloths, heavy Goods of any texture.	40 to 60 Thread, very coarse Cotton or Silk.
14 (3½)	Very heavy Goods where a strong Thread is wanted.	25 to 35 Thread, seldom required in family sewing.

Use only needles which bear the number on their top end and buy needles only in the shop where the machine has been purchased.

Directions for using the attachments.

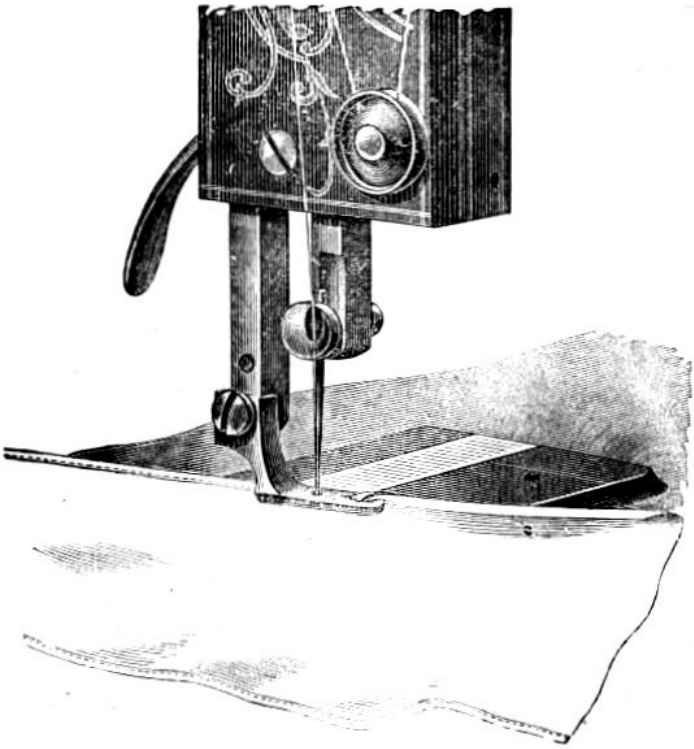
The attachments should not be used before thorough profinciency in ordinary sewing with the machine has been acquired. The various fittings for other work are so carefully described and accurately depicted in the following pages, that learners will experience no difficulty in the use of them.

THE BRAIDER.



THE BRAIDER is a presser-foot which has a slot in front of the needle hole. It is to be attached to the presser-bar. A wooden spool upon which the braid is evenly wound is placed upon one of the pins. The end of the braid is passed through the eyelet, then through the slot in the braider and drawn back, so that it lies right under the needle. It is only necessary to guide the fabric properly to sew down the braid to any previously designed pattern.

THE HEMMER.

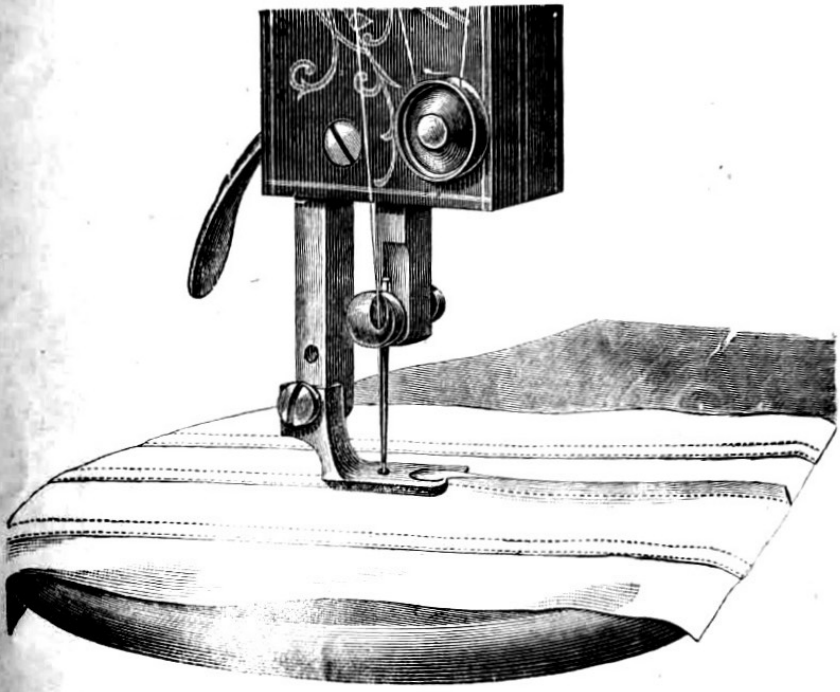


THE HEMMER. To make a narrow hem: Attach the hemmer to the presser-bar: lift the presser-foot, commence the hem by folding it at the end, attach a thread to it with a needle, draw the thread and the fabric into the hemmer (or pass the edge of the fabric into the hemmer without a thread), lower the presser-foot, and commence to sew, guide the edge of the fabric with the *right* hand taking care that the fabric entirely fills the mouth of the hemmer. *If the edge unfolds out of the hemmer, guide the fabric to the right; if it folds too much into the hemmer, guide it to the left.*

To make a broad hem: Use the wide adjustable Hemmer as shown in diagram, fold the fabric the desired breadth (including the plait) and pass it through the hemmer in the same way.

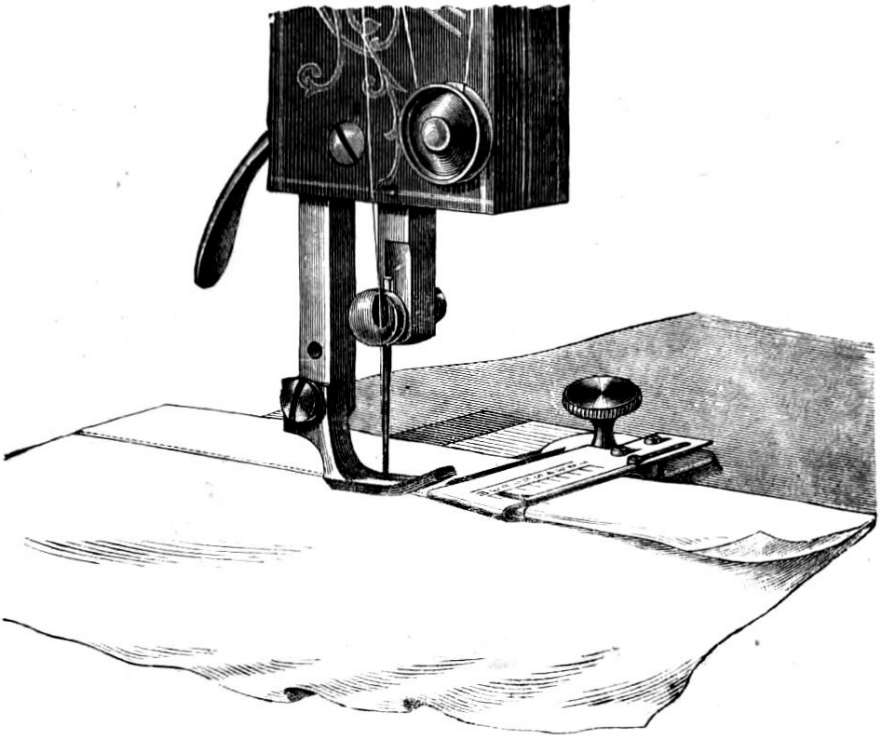
To make a broad hem with a thicker fabric, use the ordinary presser-foot, fold the fabric twice to the desired breadth bringing the inner side under the presser-foot.

THE FELLSEAMER.



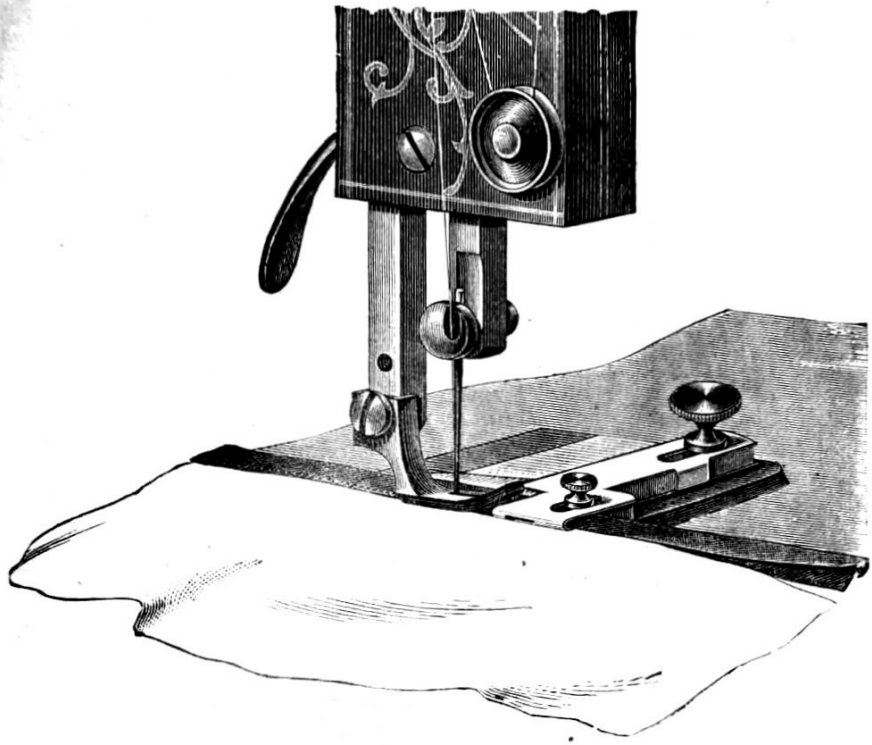
THE FELL-SEAM-FOOT is attached and used similarly to the foregoing hemmer. To make a fell-seam, join the two edges of the fabric by a seam about three eighths of an inch from the edge, then open out the seam, turn one into the hemmer to turn the fell.

THE ADJUSTABLE HEMMER.

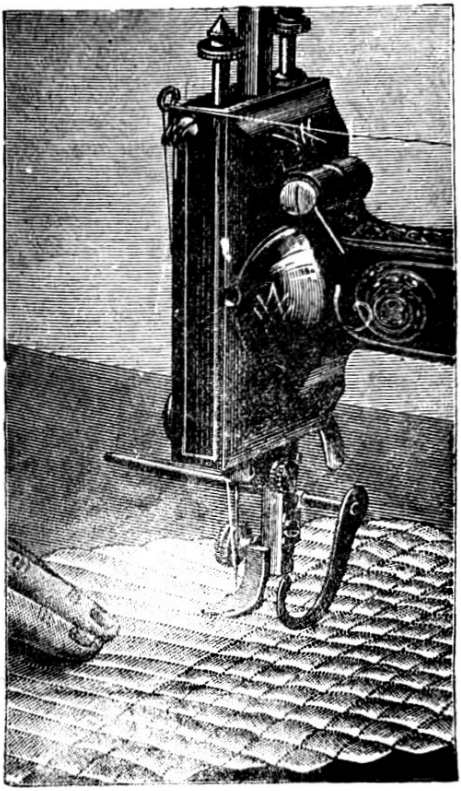


THE ADJUSTABLE HEMMER for hemming towels napkins, tablecloths and other coarse fabrics enables the operator to make hems of various widths. Adjust the hemmer to fold the desired width of hem, fix it firmly to the machine with the thumb-screw, then turn down the edge of the fabric one fold only, and pass it into the hemmer with a double fold to complete the hem. If the sewing is not on the edge of the hem, loosen the screw and move the hemmer a little to the right or left, until it is in the right position.

THE ADJUSTABLE BINDER.

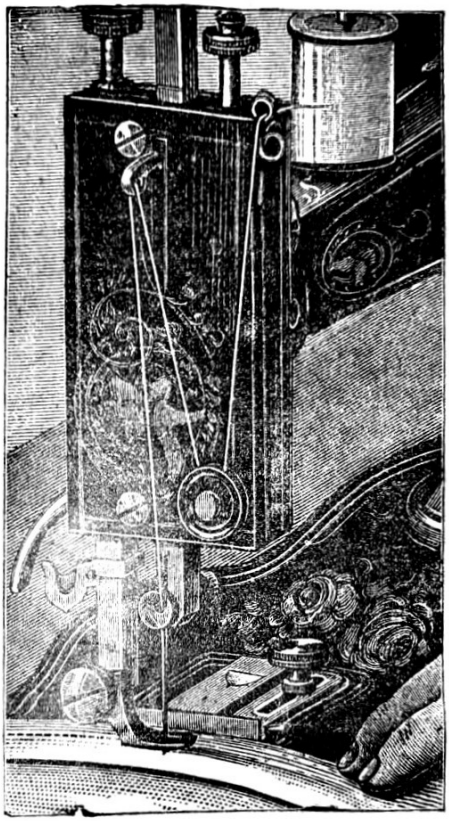


THE ADJUSTABLE BINDER serves for binding cloths, hats, shoes, mantles etc., and is used with the ordinary presser-foot. Adjust the binder to the desired width of binding, fix it firmly to the machine with the thumb-screw; place the edges of the binding under the clips and its end over the feed points; then place the fabric between the clips, and guide it against the binder. If the sewing is not on the edge of the binding, loosen the screw, and move the binder a little to the right or left, until it is in the right position; the under-clip may be adjusted to fold the binding wider on the under than on the upper side of the fabric.



THE QUILTING GUIDE. Attach the guide as shown by the engraving, make a straight line upon the fabric with chalk or by creasing, and stitch upon it; then adjust the gauge-arm to the required distance for the next line of stitching, and guide the fabric with the line already sewn directly under the gauge-arm. This second line serves in like manner as a guide for the third and so on.

THE STRAIGHT GUIDE.



THE STRAIGHT GUIDE is fastened to the plate by a thumb-screw if a seam is to be made parallel to an edge. The straight edge of this guide is fixed so far from the needle that the stitching is formed the desired distance from the edge of the fabric. This guide also serves to sew frills and borders, also to sew in a straight line and at an equal distance from other seams. It saves the trouble of drawing lines.

THE SMALL PRESSER-FOOT OR EDGE STITCHER. This stitcher serves for sewing rows of stitching running close along the edge. It is the same kind of apparatus as the ordinary sewing-foot, only one of the small prongs on the right hand side is left out, whereby the edge of the cloth can be seen while sewing. It can also be used with advantage for sewing very narrow rows of stitching, running along the edge, for which purpose the guide also should be used.

The following extras are supplied with each improved Family Machine:

10 Needles
6 Bobbins for shuttle
1 Fell-seamer
1 Adjustable Binder
1 Adjustable Hemmer
1 Quilter
1 Hemmer
1 Presser-foot
1 Wide Hemmer
1 Small presser-foot
1 Straight guide
1 Screw for straight guide
1 Braider
1 Screw-driver
1 Throat-plate with large hole
1 Oil-can
1 Instruction book

Accessories given with each Saxonia Machine:

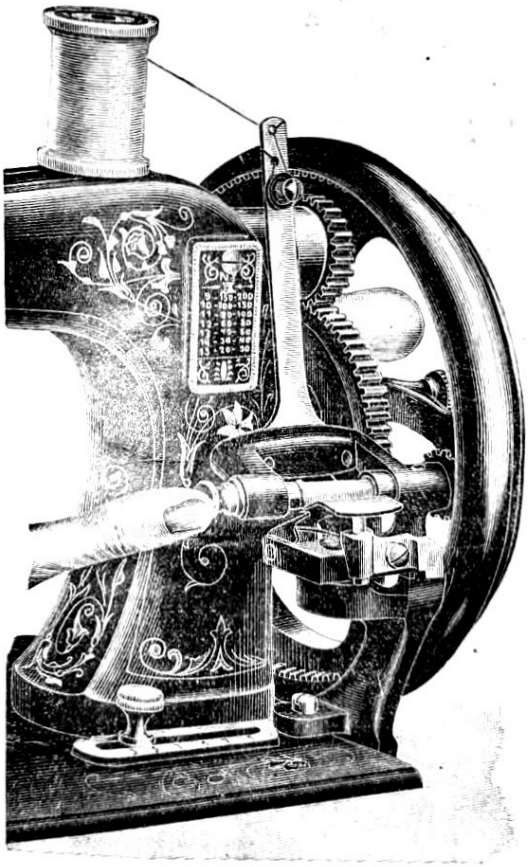
6 Needles
4 Bobbins
1 Presser-foot
1 Fell-seamer
1 Braider
1 Small presser-foot
1 Quilter
1 Straight guide with screw
1 Throat-plate with large hole
1 Screw-driver
1 Oil-can
1 Instruction book

The machine possesses the following advantages:

Wheel nickelplated.
Feet nickelplated.
Automatic bobbin-winder, reliable and regular in its working.
The most simple loose-wheel-apparatus.
Inch measure on table.
Casters on stand.
Opening tension discs.
Choice wood work.
Indestructible cog-wheels.
Extra size driving wheel.
Shuttle lever.
Improved shuttle etc. etc.

If the eye of the needle should be rough and cut the thread, draw through it, to and fro in all directions, a coarse thread saturated with oil and fine emery. until it is smooth. It is very important always to suit the thread to the needle, i. e. to choose a thread which completely fills the groove in the needle as it passes through the fabric. The lower thread should be somewhat finer than the upper thread.

4. **TO WIND A BOBBIN.** Throw the upper wheel out of gear. — Place the bobbin in the winder with the notched end to the right, inserting the pin on the spindle in the notch. The left hand spindle draws back to admit of this. — Place a reel of thread from which you purpose winding on one of the pins on the top of the machine, pass the thread through the slit



on the right in the end of the knife blade (1), under and between the tension discs (2), then through the slit on the left (3), from thence behind the knife blade down to the bobbin and from inwards to outwards through the small hole in the right hand brass flange and fasten the thread by squeezing it between the flange and the spindle; then wind up all the slack thread by turning the reel on the pin.

The catch in front of the winder now has to be raised against the bobbin and the india rubber ring must be allowed to touch the flywheel, which is done by pressing on the little knob at 4 in front of the winder.

All is now ready for winding and the machine may be set gently in motion. As soon as the bobbin is full the winder will cease to work.

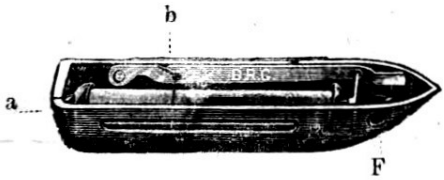
Take care that the thread be always evenly and tightly wound on the bobbin, until it is full. Very much depends upon the proper winding of the bobbin thread. Do not pass knots in the thread. It is advisable to wind several bobbins together to avoid constant interruption of the work.

To adjust the winder: If the winder throws out of gear before the bobbin is full the little vertical screw under the catch should be screwed down slightly, and if the bobbin overfills without being thrown out of gear this screw should be screwed up, a very little is sufficient.

The same directions apply to the Winder of the Saxonia Machine, only instead of pressing against button 4, press firmly against the little knob at the left hand side of the winder as above illustrated, to bring the small cogwheel in connection with the toothed inside rim of the flywheel.

5. **TO THREAD THE NEEDLE.** Place the reel containing the upper thread on one of the pins. Thence pass it through the eyelet 29 at the side of the face-plate, under and between the discs (18) on the front of the face-plate, so that it runs upwards: to the eye in the check-lever (33) through it, and through the hole in the needle clamp and lastly *from you* through the eye of the needle. About four inches of thread should be drawn through the eye of the needle.

6. **NEW SELF-THREADING SHUTTLE.** Method of threading. Hold the shuttle in the left hand, point downwards and with the flat side facing you, insert a bobbin at the point end and press the other end into its place, with the thread coming off the bobbin from the back to the left: lead the thread behind the point of the spring a, and then across the flat side of the shuttle into the notch in the spring b; then draw it tight towards the shuttle point, and pass it into the notch of the spring outside. Now the shuttle will be ready for use, the thread coming off under the spring on the left side of the shuttle.



To Regulate the Tension. — This is done by turning the small screw F to the left for a *slacker* or to the right for a *tighter* tension. A special small screw-driver is provided for this purpose. When an even tension is once obtained it will seldom require alteration. After threading the shuttle, try the tension by drawing the thread towards the blunt end; if it draws tightly without breaking, it is right for goods of firm texture; thin, soft goods require a looser tension. To obtain more or less tension, tighten or slacken the screw F which acts upon the flat spring b.