

INSTRUCTIONS FOR THE USE

OF

1892

**FRISTER & ROSSMANN'S**

HIGH-ARM LOCK-STITCH

Sewing

Machines

THE  
SEWING MACHINE MANFG. CO.,

LATE

**FRISTER & ROSSMANN,**

S. LOEWE, Sole Agent

49, FORE STREET, LONDON

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89, FINE STREET,

SOLE AGENT,  
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THE SEWING MACHINE MANUFACTURING COMPANY

LATE



FRISTER & ROSSMANN,

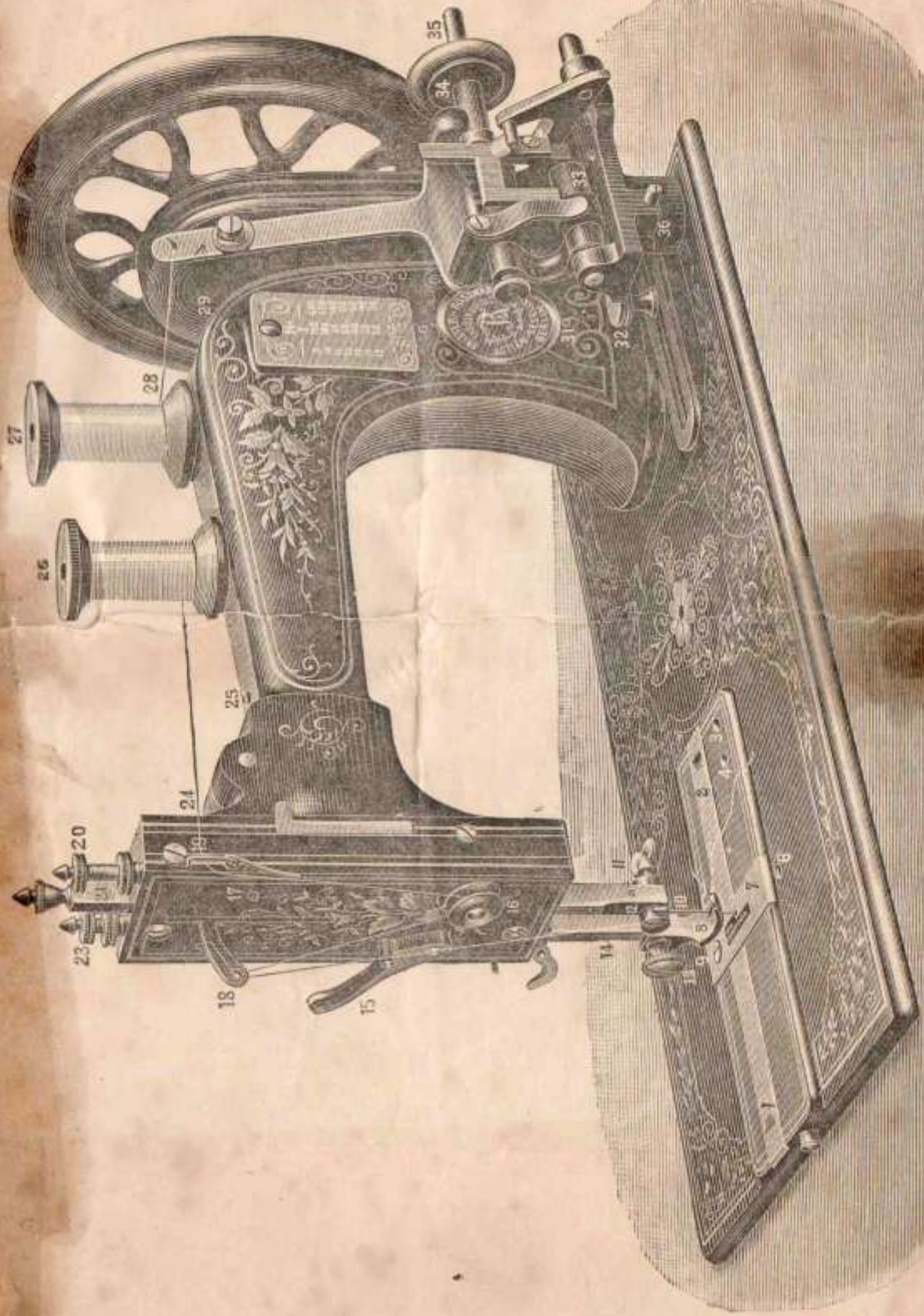
HIGH-ARM LOCK-STITCH

SEWING MACHINES.

WHOLESALE & EXPORT COMPANY.

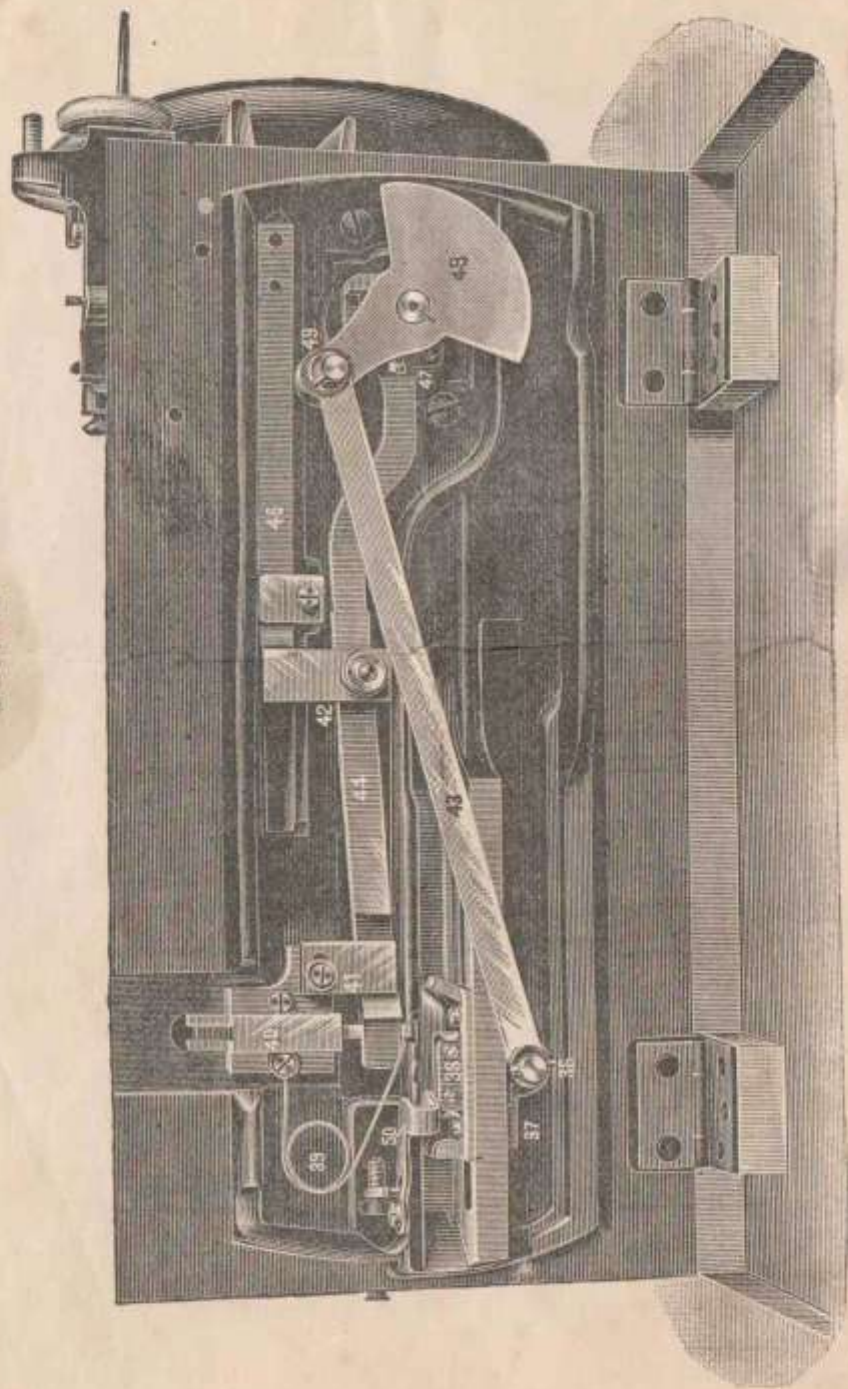
THROUGHOUT GREAT BRITAIN AND THE COLONIES.

SOLE WHOLESALE DEPÔT,



49, FORE STREET, E.C.

FIG. 2.



INSTRUCTIONS FOR USE  
OF  
FRISTER & ROSSMANN'S  
HIGH-ARM LOCK-STITCH  
SEWING MACHINES.

THE following directions have been proved by experience to be quite sufficient to enable anyone to acquire a perfect knowledge of the management of this machine without any personal instruction.

The best plan for the learner to pursue is to carry out practically on the machine, one by one, all the instructions given in each paragraph, whilst another person reads them aloud. Never be in a hurry, but master one paragraph thoroughly before proceeding to the next.

**A.—THE PATENT LOOSE-WHEEL ACTION.**

The machines are always sent out properly adjusted, with needle threaded, and quite ready for use, but to prevent accidents to the working parts, the fly-wheel is disconnected from the shaft in the arm. To connect it, pull out the knob *a* (Fig. 3) and turn it to the right, so that the pins drop into the sockets provided for them.



FIG. 3.

## B.—MOUNTING THE TREADLE.

In sending to great distances, the stand is taken to pieces, so as to lessen the cost of carriage. If the Table for the Machine is received dismounted, put it together in the following manner:—Hold the two supports of the table upright, having to the right the one with the hole for the band-wheel axle, the other to the left, and the projections at the top outward; the treadle being fixed upon its traverse-bar, place it between the supports, having from you the arm which connects the pitman with the wheel. Insert the two ends of the traverse-bar into the supports and put on the screw-nuts, turning them only two or three times round; put the cross-brace upon the traverse-bar, with the metal washers on the side towards the treadle, insert the two screw-bolts through the supports and the top extremities of the cross-brace, put on the screw-nuts, tightening them and those of the traverse-bar firmly; fasten the band-wheel in its place, connect the pitman with the wheel and treadle, screw the table upon the supports, and the machine to the table, then fix the leather band upon the wheels.

## C.—THE DRIVING BAND.

The driving-band must be placed in the groove behind the upper fly-wheel, through the two holes in the table and round the lower fly-wheel. This band which serves to drive the machine must always be stretched sufficiently tight; should it in course of time become loose, the ends must be cut a little and joined together again by means of the little hook. If, on the other hand, it be stretched too tightly the machine will not run easily.

## D.—THE TREADLE ACTION.

Before the learner begins to sew, she should thoroughly accustom herself to the treadle motion, as the machine should be driven with regularity by one or both feet. She should learn to begin without difficulty, and to tread fast or slow at pleasure. The feet should be placed flat on the treadle, with the instep in such a position as will enable toes and heels to be used with equal power in treading. The upper fly-wheel is started with the right hand *towards* the worker, *never* in the opposite direction.

When the machine is set in motion without any stuff being under the needle, the presser-lifter 14 (Fig. 1) must be raised by means of the lever 15, so that the teeth of the feed-bar do not rub against the cloth-presser 8.

Having mastered the proper treadle-motion, the learner should take a piece of material and place it under the cloth-presser, which should then be lowered by means of the lever 15. Without threading the needle, set the machine in motion in order to become accustomed to the guiding of the work, which should be first guided in straight, and then in curved lines.

## E.—THE NEEDLE.

To set the needle, turn the fly-wheel slowly towards you, until the needle shaft, No. 21, is at its highest point. Now loosen screw 11, which secures the needle, by turning it to the left.

Take the needle between the thumb and forefinger of the left hand, and push it, from below, into the slot in needle-yoke 12, until it touches the needle-stop, (which prevents the needle from being set too high), taking care that the long groove in the needle is turned towards the operator.

Screw the needle firmly in this position, care being taken that it ascends and descends exactly in the middle of the needleplate hole.

If the needle is set too low, stitches are dropped, or the needle may be broken.

It will thus be seen that an exact adjustment of the needle is of the highest importance.

Use none but Frister and Rossmann's needles, which can be always obtained from the firm from whom you bought your machine, or at the Wholesale Dépôt, 49, Fore Street, London, E.C.

When the machine is continually in use, the position and motion of the needle should be examined daily; if the point is blunt, or rough, it should be sharpened on the emery stone which must be placed on the bobbin winder. In sharpening, care must be taken that the point is not ground flat, but finely, and on all sides equally. Should the eye of the needle be sharp, so that it cuts the thread, draw a coarse thread dipped in fine emery powder and oil through it backwards and forwards, until it becomes smooth.

It is especially to be recommended that needle and thread always match one another—*i.e.*, that the latter is just thick enough to completely fill up the groove of the needle when it passes through the work. The thread in the shuttle should be the same number as, or finer than, the upper thread.

#### F.—WINDING THE BOBBIN.

When winding the bobbins, disconnect the upper fly-wheel from the machine proper by pulling out the knob *a* (Fig. 3), and turn it to the left, so that both its pins rest on the ledges intended for them. This done, the upper fly-wheel can be driven without moving the whole mechanism. The connection can be re-established by turning the knob to the right so that its pins spring into their corresponding socket *b*.

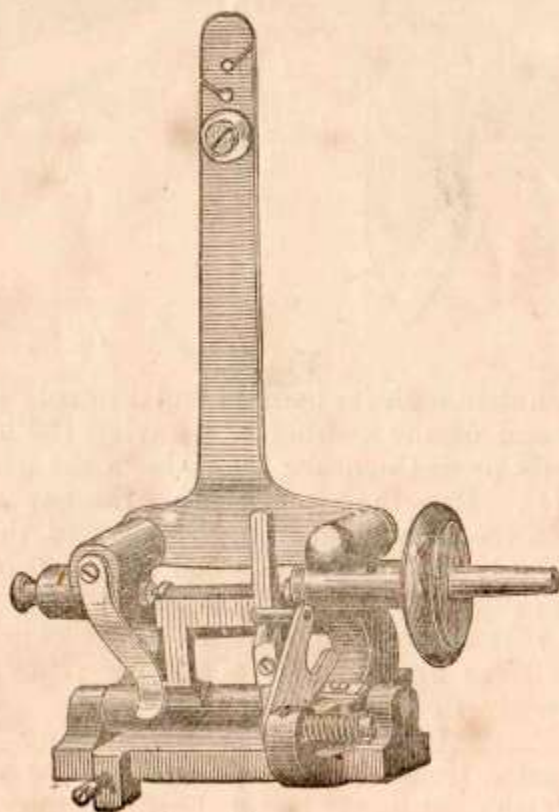


FIG. 4.

Place the reel on the spindle, No. 27 (Fig. 1), nearest the wheel; pass the cotton as it comes from the reel through the top slit of the perpendicular steel bar, between the tension discs, into the lower slit, and continue the cotton down the back of the steel bar. Now detach the steel bar by pressing it towards the fly-wheel, and pass the cotton underneath from the back; replace the steel bar, thread the cotton through the hole in the bobbin from the inside, then put the bobbin in the winder, so that the small hole on one end of the bobbin fits into the corresponding little pin on the right-hand bobbin-holder; and draw out the thumb-screw on the left-hand side sufficiently to allow the other point of the bobbin to drop into its place. Now press the spring gently against the bobbin, and press the perpendicular steel bar sufficiently towards the machine for the india-rubber ring to touch the fly-wheel, and proceed to wind the bobbin by turning the handle of the machine.

### G.—THREADING THE NEEDLE.

When unpacking the machine, the manner in which the needle is threaded should be carefully noted, so that it may afterwards be done in the same way. Proceed as follows:—The reel which contains the upper thread is put on the holder at 26; its thread is passed first over the hook No. 19, and then between the two tension discs 16 from beneath; next over the hook No. 18, then over hook 10 (the latter being in the needle-yoke); and, lastly, through the eye of the needle from the front. About an inch and a half of the thread should lie on the needle-plate.

### H.—THREADING THE SHUTTLE.

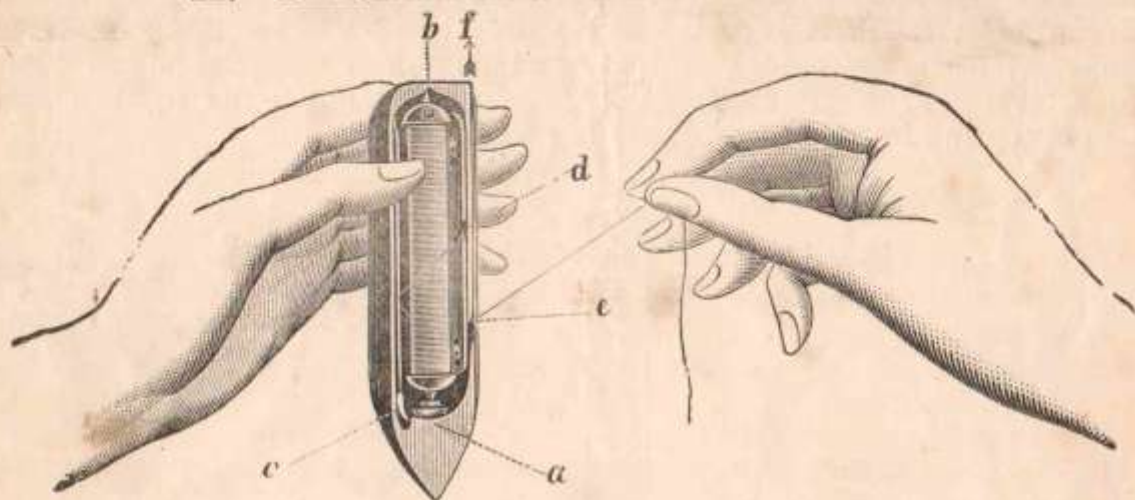


FIG. 5.

1. Hold the shuttle with its pointed end towards you (*see illustration*).
2. Place the end of the bobbin not having the hole into the spring centre (*a*), and gently press the other point down the groove into the socket at the square end (*b*). Pass the thread behind the bar (*c*) on the left, guide it into the slit (*d*) on the right, and from there round the tongue (*e*). Now pull the thread towards the corner (*f*) and it will at once fall behind the outside spring on the right side, and the shuttle then is ready for use.
3. The tension is obtained by turning the little screw *f* by means of the smallest screw-driver given with the machine; the deeper it is screwed the tighter the tension will be.

**CAUTION.**—Particularly note that by pulling the thread *exactly parallel* with the shuttle, from *e* to *f*, it will slide almost automatically behind the side spring. If the cotton be inclined either to the right or to the left it will be cut.

## I.—SEWING.

Both threads having been properly arranged, as described on previous page, observe the following directions:—Place the shuttle in its travelling guide, or carrier, so that its point is towards the needle, and so that its spring shows when the shuttle slide is open; pull the thread out about two inches, as shown in Figure 5; draw the upper thread about two inches through the needle; hold the end of the upper thread with the left hand, whilst with the right you turn the upper fly-wheel once round, so that the needle descends and ascends again to its highest position, by which means the under thread is drawn through the needle-plate in a loop, which must be drawn out; and, not forgetting to raise the presser, put both threads behind. This being done, place the work under the presser, lower the latter, then set the machine regularly in motion, guiding the work, but taking care not to pull or push it, as the needle might break. In passing over hard parts, or across seams, sew slowly, and turn the upper fly-wheel carefully with the hand, so as not to bend or break the needle.

When you wish to remove the work, let the needle be at its highest point; raise the presser so that the cotton may run freely through the eye of the needle without bending it, and draw the material away towards the back of the machine, pulling it at the same time slightly outwards to the left. Careful observance of this rule will prevent the breaking of many needles.

Should the under-thread break in removing the work, take the shuttle out and loosen the tension by *slightly* unscrewing the little screw *f* (see Fig. 5). Then draw the thread out an inch or two and proceed as before.

## J.—THE TENSION.

The tension of the upper thread demands especial attention, because on it depends the perfection of the seam. It should always be so regulated that both threads are uniformly drawn together and woven into the middle of the material. The stitch is at its best when it appears as near as possible the same on both sides of the material.

The tension discs 16 are regulated by the screw 20. If this be screwed up, the tension becomes tighter; if unscrewed, it becomes looser. The screw must only be turned slightly, as the effect on the stitch is immediate. The lower screw is only to be used for securing the tension when properly adjusted.

The shuttle-thread tension must first be adjusted, and then that of the upper thread must be regulated in accordance with it.

To test the tension of the shuttle-thread, draw it towards the blunt end of the shuttle: if it draws as tightly as it will bear, without breaking, the tension is right for thick and closely woven fabrics, but for soft and thin materials it is too tight, and must be loosened by the tension screw in the shuttle being unscrewed.

After stitching a little, examine both sides of the material. If loops appear on the under surface of the fabric, or if the lower thread lies flat upon it instead of being drawn up into it, the upper tension is too loose, and must be tightened by screwing up the tension screw 20. If, on the other hand, the work is puckered, and the upper thread breaks or lies flat on the fabric, the upper tension is too tight, and must be loosened by unscrewing the tension screw. If the lower tension is right it should not be altered in the cases just mentioned—any change required for same should be made in the upper tension.

### K.—TO ALTER THE LENGTH OF STITCH.

At every stitch the work is moved forward by the *feed*. The length of stitch may be regulated, as required, by means of the thumb-screw 32, near the bobbin-winder. If this is pushed to the right the stitch is made larger; if pushed to the left, smaller. A few trials show the result immediately. Secure the screw as soon as the stitch is adjusted to the required size.

### L.—CLEANING AND OILING.

When a machine is in *constant* use it should be oiled frequently. The little holes which may be observed on it are oil-holes, and lead to those places subject to friction. Raise the cloth-presser and set the needle at its highest; then remove carefully, with a soft rag, all old oil, dust, and dirt, and let a drop of oil trickle out of the oil-can (given with each machine) on the following places.

1. The spring-latch at the side of the head-plate.
2. The hole, No. 28, situated on the right of the arm, and No. 29 near it.
3. The hole, No. 25, to the left of the arm.
4. The hole, No. 31 on the side of the arm.
5. The holes at No. 9, and in the front of the needle-plate at No. 6.
6. The joint (49) of the pitman (43), with the crank (see Fig. 2), is oiled after turning the upper fly-wheel round until it can be clearly seen through the slot of the stitch regulator.
7. The sides of the needle-bar, No. 21 (Fig. 1), and the shuttle-carrier slide.
8. The feed-bar and bobbin-winder, on which there are three oil-holes.
9. On the shuttle, which must always be kept thoroughly clean, and on the points of its bobbins when they are filled and set in position.
10. The slide-cover on the arm, showing sizes of cottons and numbers of needles.

When, from to time, a thorough cleaning is advisable, remove the band from the driving-wheel and turn the machine on its hinges (as shown in Fig. 2), carefully remove all old oil, and then re-oil the places numbered 36, 37, 38, 40, 41, 42, 47, and 49. In the stand the following places have to be oiled:—The fly-wheel, where it turns on its axis; two ends of the wooden pitman, which moves the fly-wheel; and, lastly, each side of the treadle.

The oil specially prepared for lubricating sewing machines (which may be procured where you bought your machine) should be used exclusively. Vegetable oil must be strictly avoided.

Every part being oiled, in the manner before described, take out the shuttle, set the machine rapidly in motion for a minute or so, and wipe off the superfluous oil before commencing to sew.

*If the machine does not run easily whilst in use* it is either because you have forgotten to oil one part, or because the oil has become too thick. In the latter case, oil at every hole with paraffin (which dissolves all dirt), work the machine rather quickly both backwards and forwards, clean thoroughly, and lubricate afresh with the usual machine oil, when the difference will be immediately felt.

## M.—THE CLOTH-PRESSER.

The cloth-presser serves to press the material to be sewed down on the cloth-plate and feed. It is moved by means of the lever 15. In the enclosed space at front is a spiral spring, which presses downwards; at the lower end (14) of the cloth-presser are fastened the various attachments. When sewing thick materials it is often advisable to slightly tighten the screw 23, so as to increase the pressure on the work.

## THE IMPROVED ATTACHMENTS.

- |  |   |
|--|---|
| 1. Twelve Needles, assorted.                       | 11. One Braider.  |
| 2. Six Shuttle Bobbins.                            | 12. One Friller.  |
| 3. Tucking Gauge, with Thumb-screw.                | 13. One Adjustable Binder.                                      |
| 4. One Adjustable Hemmer.                          | 14. One Quilting Gauge.   |
| 5. One Narrow            "                         | 15. One extra Needle-plate, with large hole for thick materials |
| 6. One Medium           "                          | 16. One Screw-driver.   |
| 7. One Seam Feller.                                | 17. One Oil-can.  |
| 8. One Ordinary Presser.                           | 18. One Emery-stone.  |
| 9. One Cording         "                           | 19. One Instruction Book.                                       |
| 10. One                 "         "         No. 2. |   |

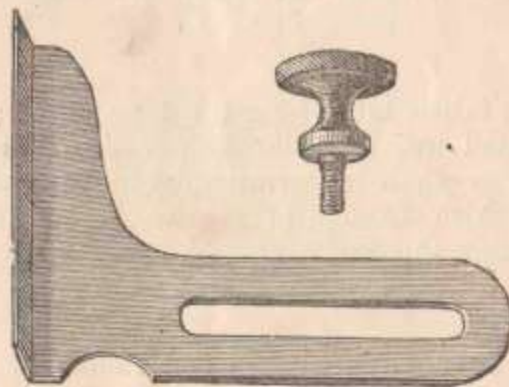


FIG. 6.

## N.—THE GAUGE AND THUMB-SCREW.

If a seam has to be made parallel to an edge, screw this apparatus into hole 4 of the cloth-plate, and adjust its straight-edge to the same distance from the needle as you wish the seam to be from the edge of the work.

This attachment is used for making tucks, and also when it is desired to sew in a straight line, or when two parallel lines of stitching are required. The troublesome drawing of lines is thereby avoided.

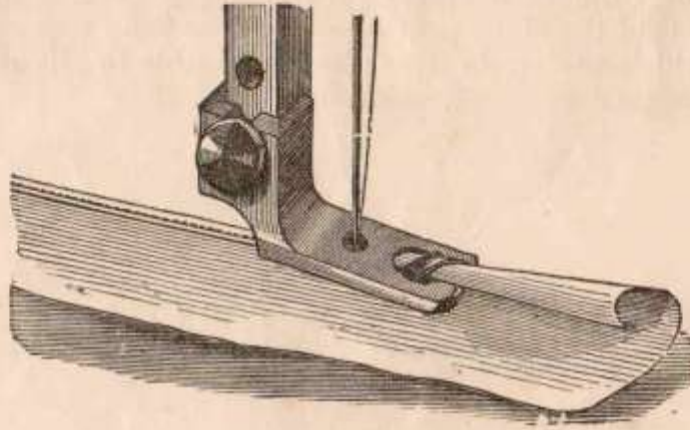


FIG. 7.

### O.—NARROW HEMMER.

This hemmer is secured, in the place of the ordinary presser, by the screw at 13, Fig. 1. The end of the fabric you wish to hem, after being turned down for about  $\frac{1}{8}$  of an inch, is placed into the twist of the hemmer, as shown in Fig. 7, and comes out with a double hem beautifully turned down, whose inner edge is guided straight under the needle. The fabric must be pulled by means of a thread, or pushed with a pin, far enough forward for the needle to catch it; then let down the presser, and begin to sew carefully.

In hemming, the fabric must be guided so that the mouth of the hemmer is completely filled up, in order to permit of the hem being turned down sufficiently. Too much material must not be allowed to enter; this defect would easily arise from the fabrics being pressed more or less inwards whilst entering the hemmer. A few trials will soon show the right manipulation.

The hemmer must always cause the stitches to be made close to the edge of the hem.

A seam may be beautifully made by this hemmer, with a degree of precision for a long time not attained by any sewing machine. To do this, lay, as is customary in hand-sewing, the two pieces of stuff to be joined one above the other, and sew them together at a sufficient distance from the edge to form later on a hem. Then cut the lower piece of stuff as close as possible to the seam, and let the upper pass through the hemmer, which can be done with such extreme accuracy as to need scarcely any guidance with the hand.

To make a wide hem, fold the stuff to the desired width (taking into account the width that will ultimately be turned down) and pass the edge through the hemmer in the manner above described.

To make a wide hem on thick stuffs, use the ordinary presser shown fixed to the machine in Fig. 1. After turning down the hem, in the way customary in hand sewing, place it under the narrow right tongue of the presser, so that the other tongue acts as a kind of gauge and enables you to sew regularly at the edge of the hem. But this class of work is better done by the adjustable hemmer (see Fig. 8.)

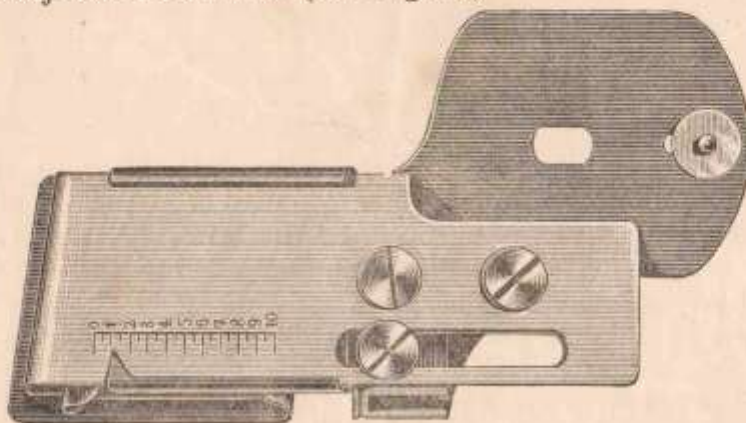


FIG. 8.

### P.—THE ADJUSTABLE HEMMER.

The adjustable hemmer is screwed to the cloth-plate in the same way as the tucking gauge. To introduce the material, turn down its edge about  $\frac{3}{8}$  of an inch, and then draw it, according to width of hem required, through the hemmer, under the needle, in doing which care must be taken always to allow sufficient material to enter for the hem to be turned down double.

To adjust this hemmer to hems of different widths, loosen the screw in the slit a little, which will release the graduated plate. The smallest hem is made when the index points to 10—the lower the number, the wider the hem. The screw must be secured again before sewing.

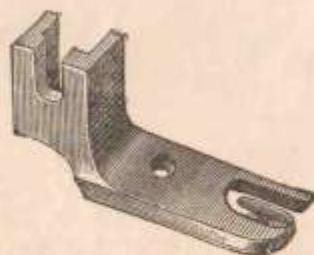


FIG. 9.

### Q.—THE SEAM-FELLER.

The seam-feller is screwed on to the machine in the same way as the narrow hemmer. In felling a seam, lay the two materials together, but let the edge of the upper piece project about  $\frac{1}{4}$  of an inch. It is this projecting edge alone which must be run through the seam-feller, and in this way the two pieces are joined.

This done, spread the stuff out, smooth the seam a little, and pass the upright edge, which is now formed, again through the feller to be stitched down.

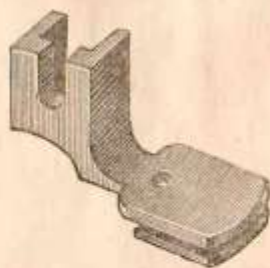


FIG. 10.

### R.—THE FRILLER.

With the aid of this simple little accessory a piece of stuff may be frilled and a band sewed on at one operation. This, like the other attachments, is fastened to the machine by the screw 13, Fig. 1. Place the material to be frilled underneath the foot, and the band above through the slit in the friller. As the feed points work only upon the under material, whilst the upper is shielded from them by the slit, the under is gathered in small pleats—the longer the stitch the fuller the pleat. The management of this apparatus requires some practice.

Frilling can also be done without this attachment, both on two-fold and on single-fold stuff, in the following way:—Set a long stitch and a loose upper tension, so that the lower thread lies straight along the fabric, then pull the end of this lower thread, push the work together from both sides, as is done in performing the same operation by hand, and the frill is ready.

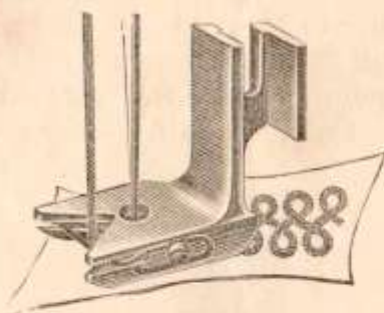


FIG. 11.

### S.—THE BRAIDER.

Wind your braid (which should be soft, as a hard braid is difficult to work upon) on an ordinary reel, keeping it as flat and as regular as possible. Then put the reel on its spindle at 27, Fig. 1, and pass the braid through the eye at 19. The braiding attachment shown above has an opening in it, in front of the needle-hole, through which the braid is drawn so as to pass right under the needle. The size of the opening may be adjusted by means of the screw at the side.

The work has now only to be guided in order to produce any required design.



FIG. 12.

### T.—THE CORDER.

The corder is used for sewing cord in collars, cuffs, &c. It has two grooves on its under surface, which guide the cord and also press the upper material round it, so that the work has a beautiful raised appearance.

Make a row of stitching along the material, then spread the material open and place the cord against the seams, close the material and make a mark down beside the cord with any sharp instrument, and stitch in the mark. See that it always runs in that groove of the corder which is next the needle, that is, which lies immediately under the needle. In sewing several rows of cord parallel to one another, the row last sewed goes in the right-hand groove, the one to be sewed in the left.



FIG. 13.

### U.—THE CORDER, No. 2.

This corder, which is fastened in the usual way to the machine, is furnished with one large groove on its under surface, its object being to sew a cord round the skirt of a dress, &c. After the dress material and the lining have been sewed together in the usual way, spread them out with the right side uppermost, then lay the cord in groove of the presser and sew it with rather large stitches exactly over the seam, that is to say, between lining and dress. When the lining is turned up the cord will be at the edge of the skirt.

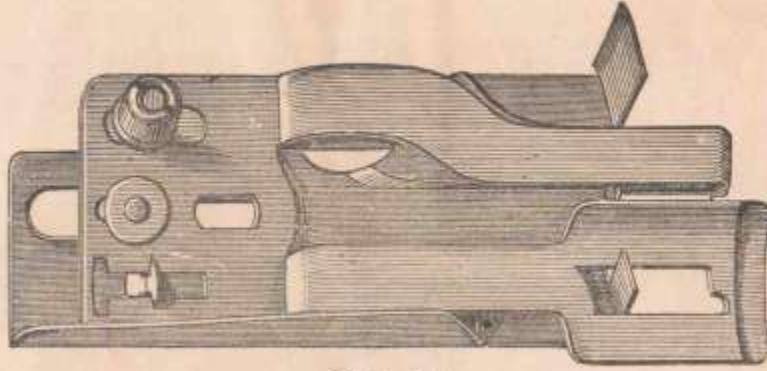


FIG. 14.

### V.—THE BINDER.

This attachment is used for binding articles of clothing, hats, &c., without it being necessary to tack on the binding first. Loosen the screw at the lower end of the apparatus, so as to be able to adjust the two plates to take the required breadth of binding; slip the latter between the two hooks, so that it just moves easily; and fix the screw again in this position, so that the binding cannot shift whilst sewing. Then fasten the apparatus in hole 4 of cloth-plate, with the thumb-screw (Fig 6), so that the hook to its left lies right against the presser-foot. Now place the material under the presser-foot and between the two hooks already mentioned, which hold the binding, and sew as usual.

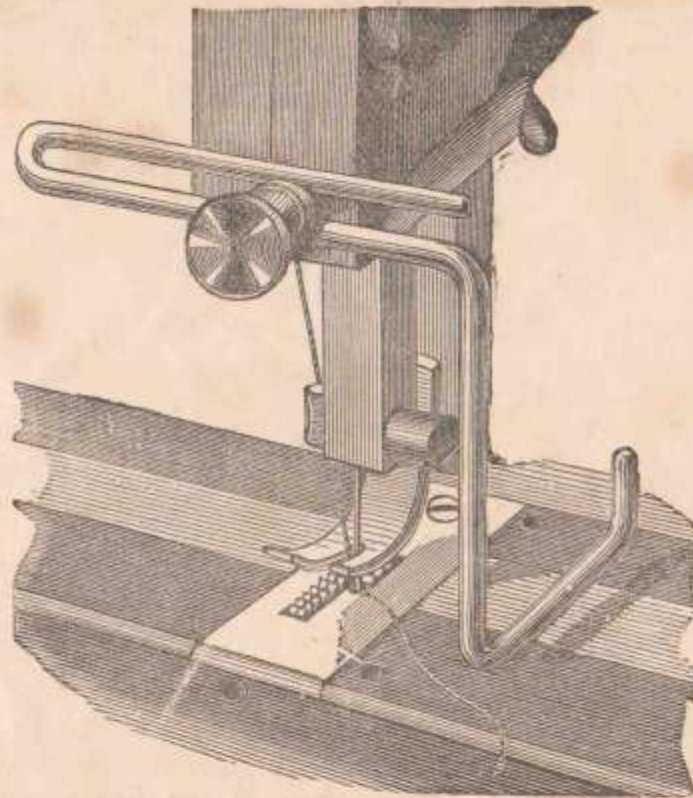


FIG. 15.

### W.—THE QUILTING GAUGE.

The quilting gauge is an exceedingly useful attachment, as by its help rows of equal breadth and symmetrical corners may be sewed without it being necessary to draw them first on the material.

The gauge must be fixed with the thumb-screw, as shown in the above Fig. 15, and may be adjusted to mark off the desired width between two rows of sewing.

When using it, make first of all an ordinary straight seam, then push your material as far to the right from the needle as you wish the width to be between two rows, and fasten the gauge so that its lower part is just on the first seam, which it should closely follow whilst you are sewing the second. The third should be sewed whilst the gauge is following the second, and so on. The same with the cross seams.

The best squares are made if the material is stitched on to the wadding itself, without lining.

### **X.—THE EXTRA LARGE-HOLED NEEDLE-PLATE.**

As before stated, an extra needle-plate with large hole is given with each machine, which must be substituted for the other when working upon thick materials with a coarse needle—tailoring for instance. It must always be used when sewing with linen thread.

In changing the needle-plate you should go carefully to work, especially taking care that, when it is screwed down, the needle moves freely up and down in its hole, and does not touch the shuttle as it descends.

### **Y.—THE THREAD CUTTER.**

One of the most recent additions is the thread cutter, which is affixed close to the presser-foot (see No. 14, Fig. 1), and is for cutting the thread when the work is withdrawn instead of using scissors.

### **Z.—THE SHUTTLE LIFTER.**

Another recent addition is the little spring that is attached to the left-hand edge of the bed-plate in connection with the shuttle, by means of which the shuttle is thrown out of the shuttle-carrier instead of, as formerly by using scissors, by which the shuttle was often damaged.



FIG. 16.

### **THE FORMATION OF THE STITCH.**

A description of the way in which the stitch is formed, by means of the shuttle, may all the better be introduced here that it will help to explain the proper treatment of the machine. The needle (whose eye is close to the point) in piercing the material, carries with it, under the needle-plate, part of the upper thread, which, as the needle rises, forms a loop into which the point of the shuttle enters, enlarging it and inter-locking the two threads, as shown in the above figure. This loop, with the under-thread drawn through it, is then carried up tight into the material by the ascending needle and by the enlarging of the loop forming the next stitch.

## INSTRUCTIONS FOR KEEPING THE MACHINE ALWAYS IN PROPER ADJUSTMENT.

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Every machine is perfectly adjusted before it is sent out. Should the learner therefore find a difficulty in working it at the outset, the fault usually lies in her inexperience. Under these circumstances it is advisable to see if the needle is properly set and the tension correctly adjusted, in accordance with the directions given in paragraphs E and J, before any alteration in the machine itself is attempted.

**Should the thread break**, it is either because:—

1. The tension is too great (see paragraph J); or
  2. The needle is too fine; or
  3. The needle is not properly set, or does not move freely in its hole (see paragraph E); or
  4. The eye of the needle is sharp, or the point blunt, which is almost sure to be the cause of the evil if the thread is found to be frayed at the place of breaking (see paragraph E); or
  5. The feed-points do not push forward the work with regularity, or are impeded in their action by dirt, ends of thread, or want of oil; or
  6. The needle-plate is not properly secured.
- 

**If stitches are dropped**, it is due to one of the following causes:—

1. The needle is set too low, or is bent (see paragraph E); or
  2. The needle is too fine; or
  3. The machine is dirty and not well oiled, so that it runs irregularly (see paragraph L); or
  4. The long groove in the needle is not immediately facing the worker (see paragraph E).
- 

If properly used, kept clean and regularly oiled, the machine will last a very long time. Should, in course of years, any part become spoilt, or break, it can be immediately replaced by application to this office. Each part is made to fit exactly in the place of the corresponding part in any of our machines, and it can be placed in position, even by a novice, without difficulty, as the construction of the mechanism is exceedingly simple. Should your machine seem to be so thoroughly out of order as to need alterations and repairs which you do not like to undertake personally, take it off the table and send it, together with its attachments, and an explanation of the fault you find with it, to the place you bought it from, or direct to us, for adjustment.

# SIZES OF NEEDLES

WITH

CORRESPONDING NOS. OF COTTONS.

## FAMILY MACHINE,

HAND OR TREADLE.

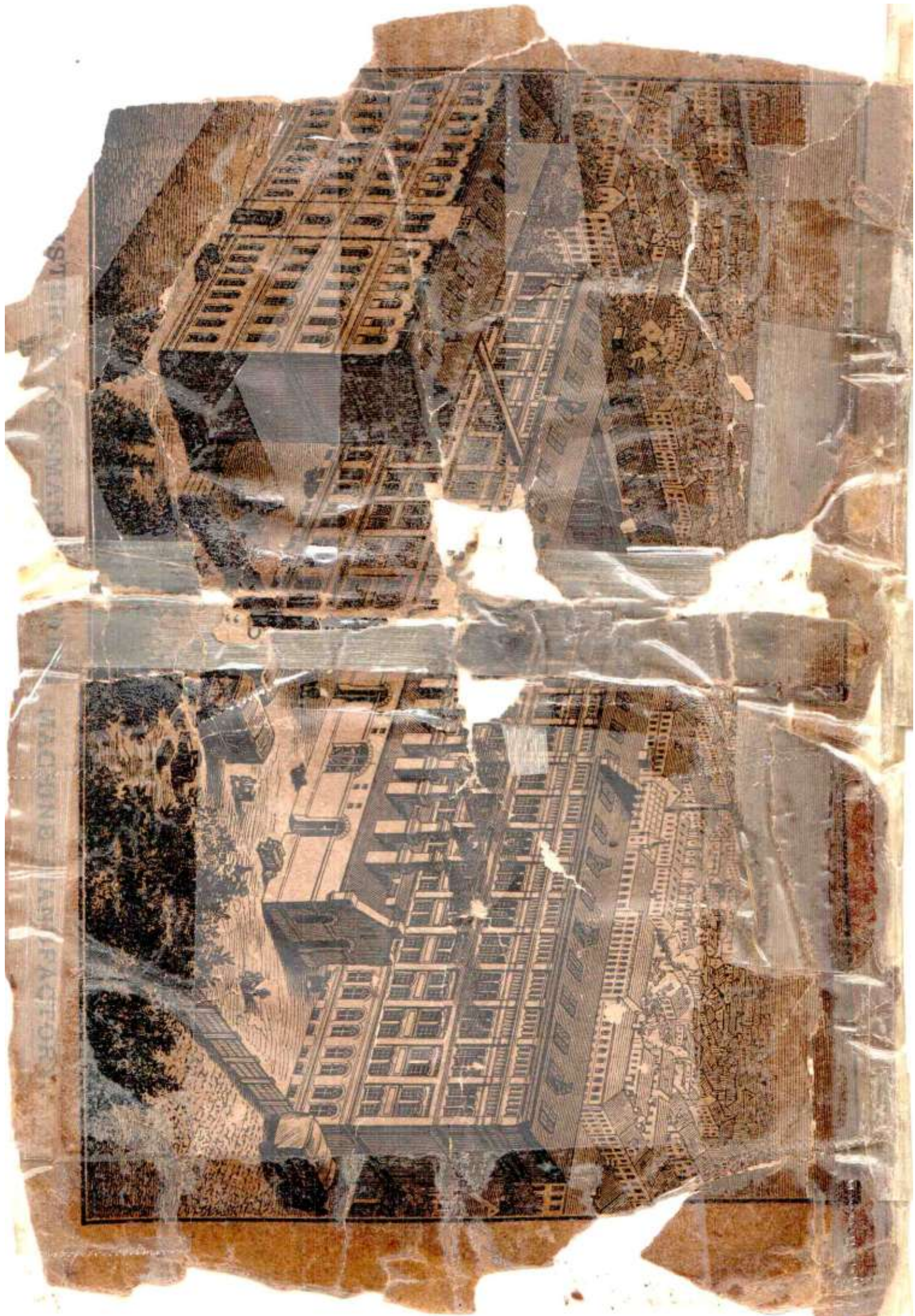
The Needles range from No. 9 to No. 15, No. 9 being the finest, and No. 15 the coarsest. Nos. 11 and 12 are those which are most suitable for general family work.

No. of Needle.	No. of Cotton.
9	150 to 200
10	100 to 150
11	60 to 100
12	40 to 60
13	30 to 40
14	20 to 30
15	15 to 20

## MEDIUM MACHINE.

These Needles range from 00 to No. 5, No. 00 being the finest, and No. 5 the coarsest. Linen thread can also be used for the Nos. 4 and 5 Needles.

No. of Needle.	No. of Cotton.
00	90 to 100
0	80 to 90
1	60 to 80
2	40 to 60
3	30 to 40
4	20 to 30
5	15 to 20



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FACTORY