

**Model 640-2, Bernina-Favorit**

Automatic Zigzag Sewing Machine  
with automatic buttonhole

**Model 642-2**

Zigzag Sewing Machine  
with automatic buttonhole

**INSTRUCTION-BOOK**

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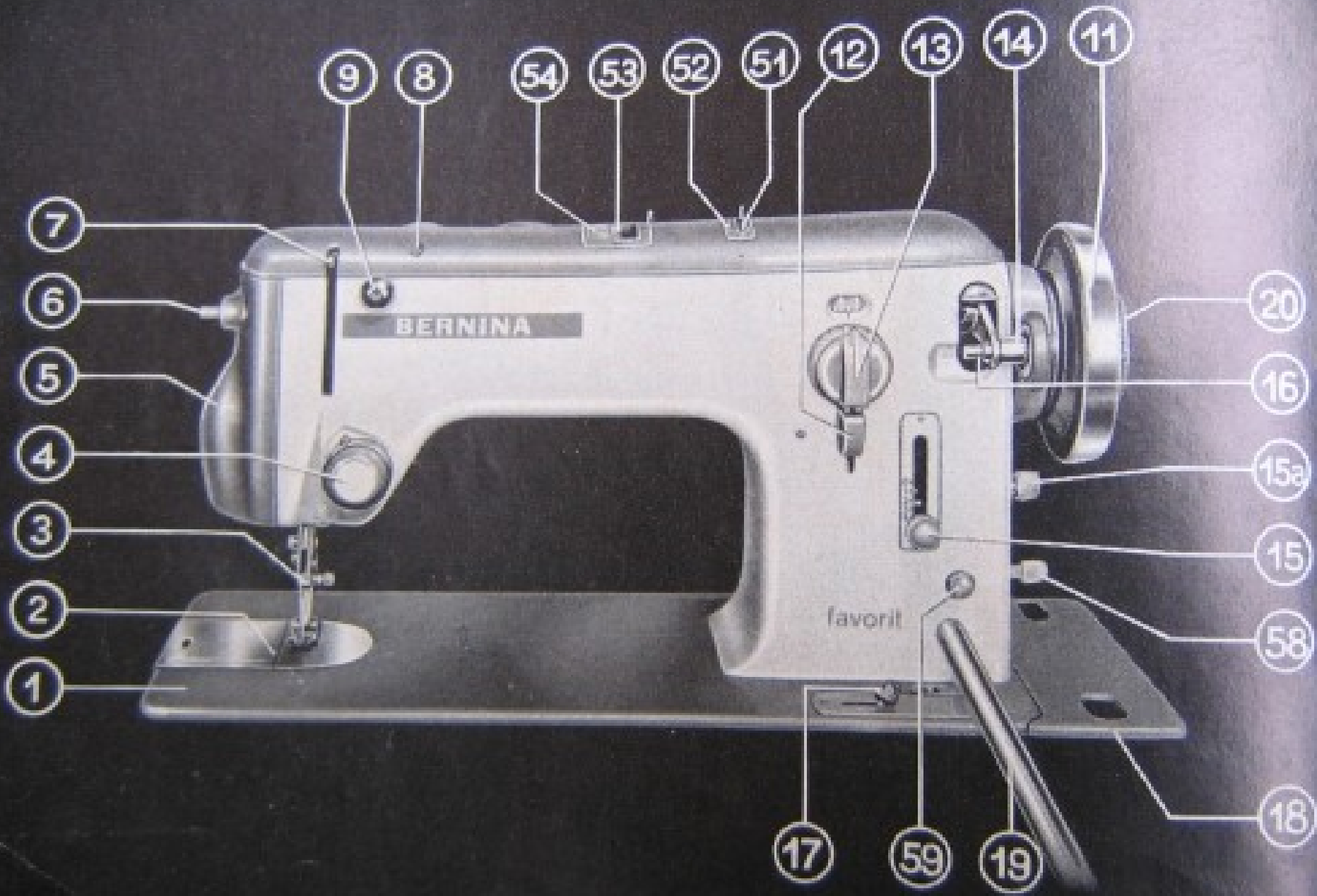


Fig. 1 on the preceding page shows a Bernina Class 640-2 with horizontal motor, the controls referred to in the Operating Instructions being marked and identified.

- |                                       |   |   |
|---------------------------------------|---|---|
| <b>1</b> Baseplate                    | <b>12</b> Zigzag, Plain stitch and Buttonhole sewing Control knob | <b>19</b> Knee control lever                            |
| <b>2</b> Throat plate                 | <b>13</b> Needle displacement lever                               | <b>20</b> Balance wheel release                         |
| <b>3</b> Needle holder                | <b>14</b> Winder  | <b>51</b> Lever for zigzag or ornamental stitches       |
| <b>4</b> Thread tension               | <b>15</b> Stitch length lever with Control knob for buttonhole    | <b>52</b> Plate for zigzag or ornamental stitches       |
| <b>5</b> Face plate                   | <b>15a</b> Stitch length regulator                                | <b>53</b> Ornamental stitch selecting lever             |
| <b>6</b> Light switch                 | <b>16</b> Bobbin winder shaft                                     | <b>54</b> Plate bearing the ornamental stitches symbols |
| <b>7</b> Take-up lever                | <b>17</b> Drop feed knob  | <b>58</b> } The straight-sided                          |
| <b>8</b> Thread guide                 | <b>18</b> Extension plate   | <b>59</b> } satin stitch stop                           |
| <b>9</b> Supplementary thread tension |   |   |
| <b>11</b> Balance wheel               |   |   |

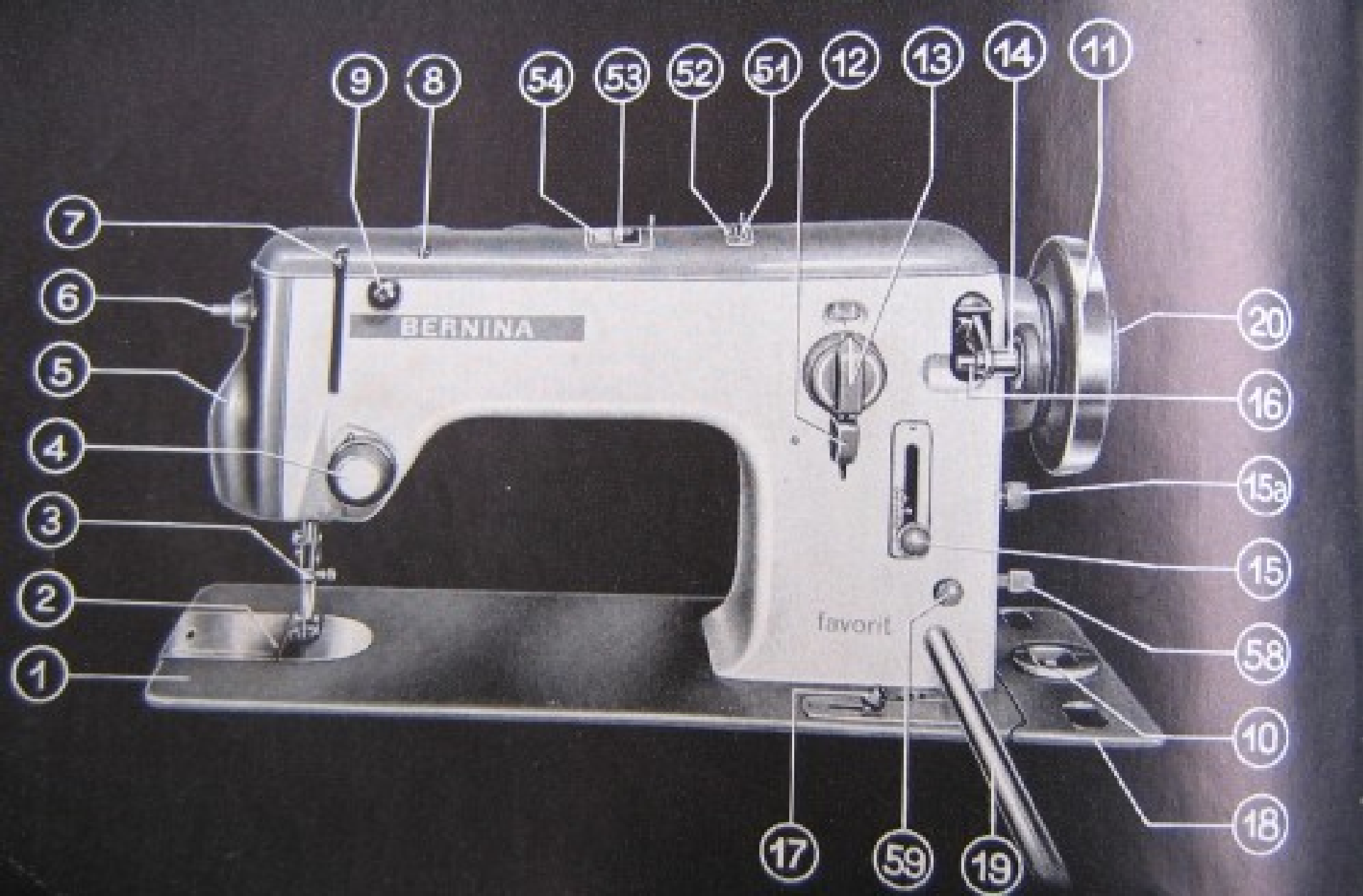


Fig. 2 on the preceding page shows Bernina Class 640-2 with foot pedal, the controls referred to in the Operating Instructions being marked and identified.

- |                                       |   |   |
|---------------------------------------|---|---|
| <b>1</b> Baseplate                    | <b>11</b> Balance wheel   | <b>19</b> Knee control lever                            |
| <b>2</b> Throat plate                 | <b>12</b> Zigzag, Plain stitch and Buttonhole sewing Control knob | <b>20</b> Balance wheel release                         |
| <b>3</b> Needle holder                | <b>13</b> Needle displacement lever                               | <b>51</b> Lever for zigzag or ornamental stitches       |
| <b>4</b> Thread tension               | <b>14</b> Winder  | <b>52</b> Plate for zigzag or ornamental stitches       |
| <b>5</b> Face plate                   | <b>15</b> Stitch length lever with Control knob for buttonhole    | <b>53</b> Ornamental stitch selecting lever             |
| <b>6</b> Light switch                 | <b>15a</b> Stitch length regulator                                | <b>54</b> Plate bearing the ornamental stitches symbols |
| <b>7</b> Take-up lever                | <b>16</b> Bobbin winder shaft                                     | <b>58</b> The straight-sided                            |
| <b>8</b> Thread guide                 | <b>17</b> Drop feed knob  | <b>59</b> satin stitch stop                             |
| <b>9</b> Supplementary thread tension | <b>18</b> Extension plate   |   |
| <b>10</b> Socket for light            |   |   |



Fig. 3 on the preceding page shows Bernina Class 642, the controls referred to in the Operating Instructions being marked and identified.

|                         |   |  |
|-------------------------|---|--|
| <b>1</b> Baseplate      | <b>9</b> Supplementary thread tension                             | <b>15a</b> Stitch length regulator               |
| <b>2</b> Throat plate   | <b>10</b> Socket for light  | <b>16</b> Bobbin winder shaft                    |
| <b>3</b> Needle holder  | <b>11</b> Balance wheel   | <b>17</b> Drop feed knob                         |
| <b>4</b> Thread tension | <b>12</b> Zigzag, Plain stitch and Buttonhole sewing Control knob | <b>18</b> Extension plate                        |
| <b>5</b> Face plate     | <b>13</b> Needle displacement lever                               | <b>19</b> Knee control lever                     |
| <b>6</b> Light switch   | <b>14</b> Winder  | <b>20</b> Balance wheel release                  |
| <b>7</b> Take-up lever  | <b>15</b> Stitch length lever with Control knob for buttonhole    | <b>58</b> ) The straight-sided satin stitch stop |
| <b>8</b> Thread guide   |   | <b>59</b>  |



*All chapters of this instruction booklet are valid for Class 640-2 as well as for Class 642-2, with the exception of the chapter "Automatic fancy stitches" on page 80.*

Fig. 4

## **Bobbin Case and Bobbin**

### **Removal of Bobbin Case**

Place take-up lever approximately in its extreme raised position. With the index finger of your left hand, open the hinged latch A (Fig. 4) and, holding it with thumb and index finger, withdraw case complete with bobbin. By releasing latch, bobbin is freed and will drop out of the case.



### **Winding Bottom Thread**

The quality of the stitch is improved if the bottom thread is somewhat thinner than the top one. The thread spool from which thread is to be taken is placed on one of the two pins 22 (Fig. 5).

In order that the entire machine will not unnecessarily operate during winding, turn the balance wheel releasing knob 20 (Fig. 1) as far towards you as it will go with your right hand, holding the balance wheel 11 (Fig. 1) with your left hand.

The thread from the thread roll on one of pins 22 is passed through eyelets 8 (Fig. 5) between the discs of the additional tension device 9 and between the winding pre-tension discs 21 on the baseplate. Hence bring the thread to the metal bobbin 24. This bobbin is placed on the winding shaft so that the driving pin of the shaft engages the slot in the bobbin. Slight pressure on the winder engaging lever 23 connects the bobbin winder. The winder is automatically disengaged when the bobbin is full. The driving rubber of the winding wheel is now raised from the rim of the balance wheel and remains in that position. The bobbin can now be easily removed.



Fig. 5

### Inserting Bobbin in Case and Threading Bobbin Thread

When replacing bobbin in case, make sure that bobbin turns in the direction of the arrow when the thread is pulled. After insertion of bobbin, pass thread through slot 1, below tension spring 2 and allow it to come out at the end of tension spring 3. Screw 5 holds the thread tension spring. Screw 4 serves to adjust tension.



Fig. 6

### Replacing Bobbin Case with Bobbin in Hock

Insertion of the bobbin case is possible only when the take-up lever is approximately in its extreme raised position.

As with removal (see page 10), hold bobbin case with index finger and thumb of the left hand by the opened latch A so that the opening of the case faces up. Then slide case on shuttle pin as far as it will go. Now release latch and make sure that case is fast and cannot fall out.

## Needle and Thread

### Setting the Needle

Use only System 130 grooved needles. Needles with blunted points or bent needles should not be used. Turn the balance wheel towards you until the needle bar is at its highest position. Hold needle between thumb and index finger of the left hand so that the long groove faces you. The flattened face of the needle shank must, therefore, be at the rear. Now loosen the needle holder screw by turning it in anticlockwise direction and insert needle as far as it will go. Then tighten needle holder screw by turning it in the opposite direction. It is important that the needle should be pushed right up to the needle stop and firmly clamped by the needle holder screw.

## Needle and Thread Selection

System 130 grooved needles are used exclusively on Bernina Class 640-2 and 642-2. In order to obtain satisfactory results, use only first-quality needles and high-grade thread.

First select the thread suitable for the work; then the needle to accommodate the thread, using the table overleaf as guide.

The relation between needle and thread is correct if the thread, when placed in the long needle groove, fills the latter well and can be freely moved up and down.

For sewing, the usual needle sizes are 80, 90 and 100; for crosswise darning, use needle sizes 70 and 80.

**Needle and Thread Table**

| <i>Needle System 130</i> | <i>Sewing Thread</i> |                       | <i>Darning Thread</i> |
|--------------------------|----------------------|-----------------------|-----------------------|
|                          | Size                 | six-ply<br>(unglazed) | three-ply<br>(glazed) |
| 60                       | -                    | 170-200               | 80-100                |
| 70                       | 70-100               | 70-140                | 50-80                 |
| 80                       | 50-60                | 50-70                 | 30-40                 |
| 90                       | 40-50                | 30-40                 | -                     |
| 100                      | 20-30                | -                     | -                     |

### Thread suitable for Sewing and Darning

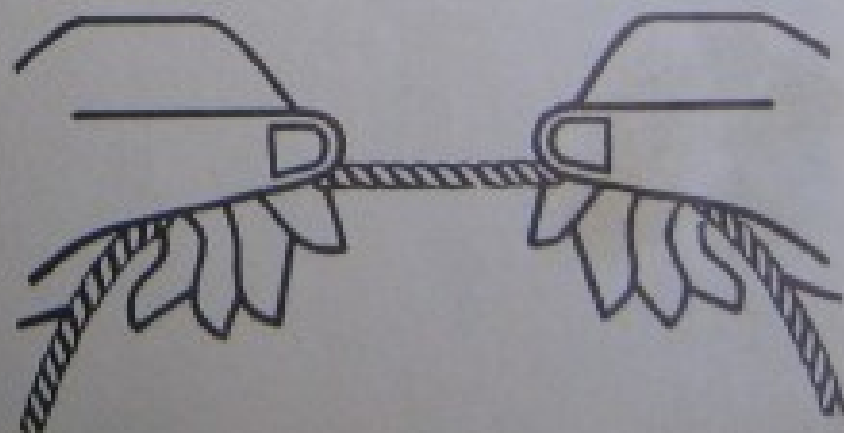
- For plain sewing: Nos. 60-90, three- and six-ply, unglazed
- For darning: Nos. 50-80, two-ply or three-ply
- For zigzag sewing: Nos. 60-90, three-ply only
- For ornament. stitches: Nos. 30 a. 40, two-ply or three-ply

It is best to buy sewing and darning threads at the Bernina Dealer's. He will only sell you products that are suitable for the machine.

### Left-hand and right-hand Twist Thread

For darning, use *left-hand twist thread* as top thread exclusively. The bottom thread may be right or left-hand twist. The twist is determined as shown in Fig. 7. Hold a thread end in your two hands, roll thread towards you with the thumb. Left-hand twist thread will tighten, right-hand thread will loosen.

Fig. 7





- 4 Thread tension
- 7 Take-up lever
- 8 Thread eyelet
- 22 Thread pins
- 31 Disc in the box
- 32 Thread guide pin
- 33 Needle thread guide

Fig. 8

## Threading the Top Thread

Fig. 8

The thread spool is placed on one of the two pins 22 placed at the rear of the top arm. From there pass thread through the rear eyelet 8, through front eyelet 8 down to thread tension 4 between the tension discs in the box 31, up to the eyelet of take-up lever 7 and down again between the thread guide pin 32 and through the needle holder eyelet 33, and finally through the needle eye from front to rear. Make sure that take-up lever 7 and needle are in the raised position when threading the machine. Thread tension 4 is formed as a double tension. When only one thread is inserted, it is immaterial whether it is passed between the front or rear tension disc.

## Bringing up the Bobbin Thread

The end of the top thread projecting from the needle eye is loosely held between thumb and index finger of the left hand, while the fly-wheel 11 is turned towards the operator by one revolution, until the take-up lever is approximately in its extreme raised position. The upper thread end is now slightly pulled, which causes the bobbin thread to come up. Top and bottom threads are slightly tautened and placed towards the rear under the presser foot.

## Thread Tension Box

Fig. 9

The thread tension is designed to operate without special adjustment for all normal sewing and mending work.



A sight hole is provided in the upper portion of the thread tension box 31, which is equipped with a reference line 34 on either side. Below this reference line is situated a white ring 35 on the adjustment nut 36, marking the normal adjustment of the thread tension.

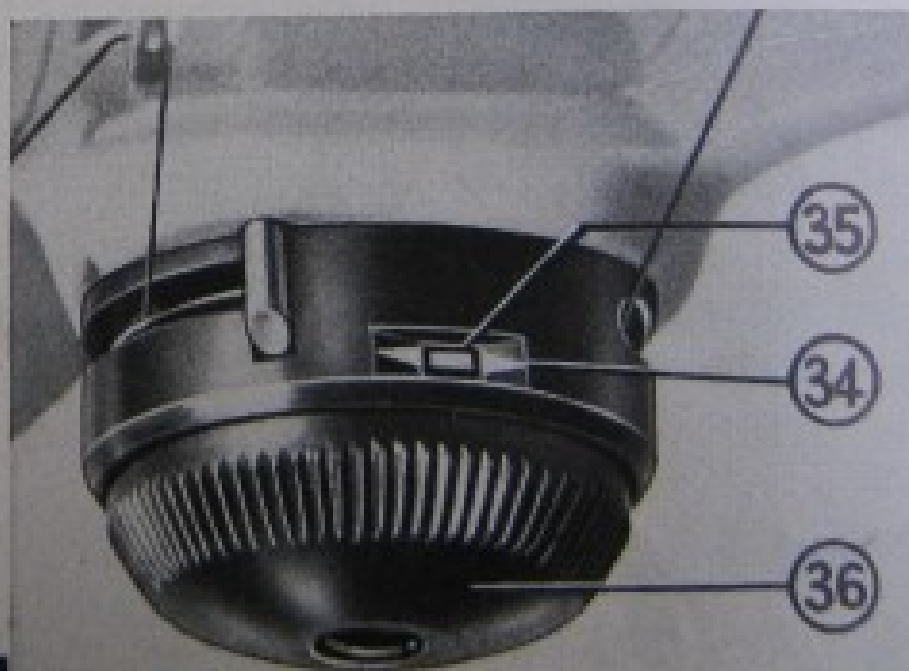


Fig. 9

# Cleaning and Oiling

## Cleaning the Machine

Lint collects during sewing particularly around the hock and also between the throat plate and the feed dog. Such lint may detrimentally affect the proper function of any machine and it is absolutely necessary to remove it frequently. From time to time, unscrew throat plate 2 (Fig. 1) so that the lint forming under it can be removed.

Fig. 11a Oiling points model 640-2

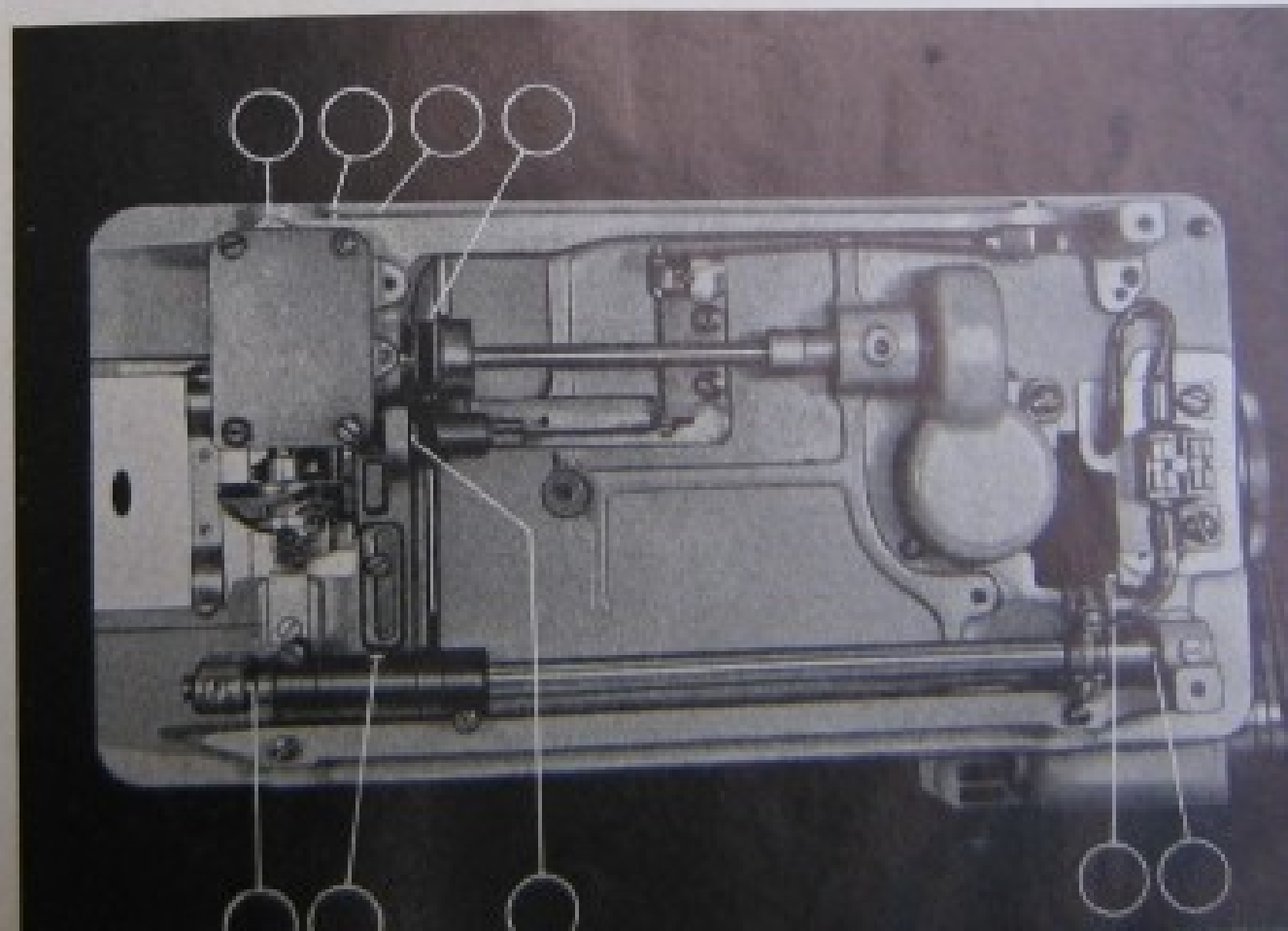
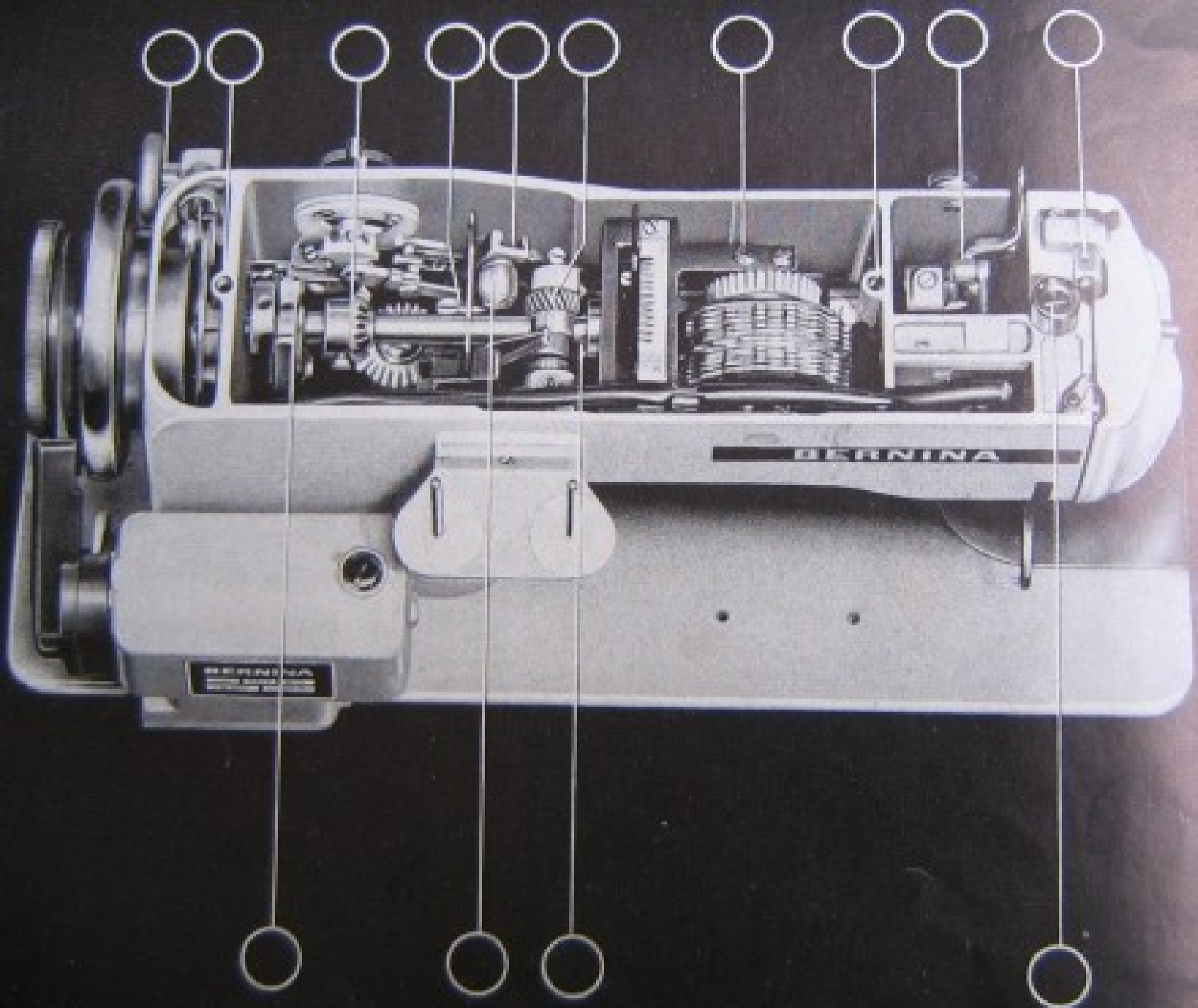


Fig. 10



## Oiling

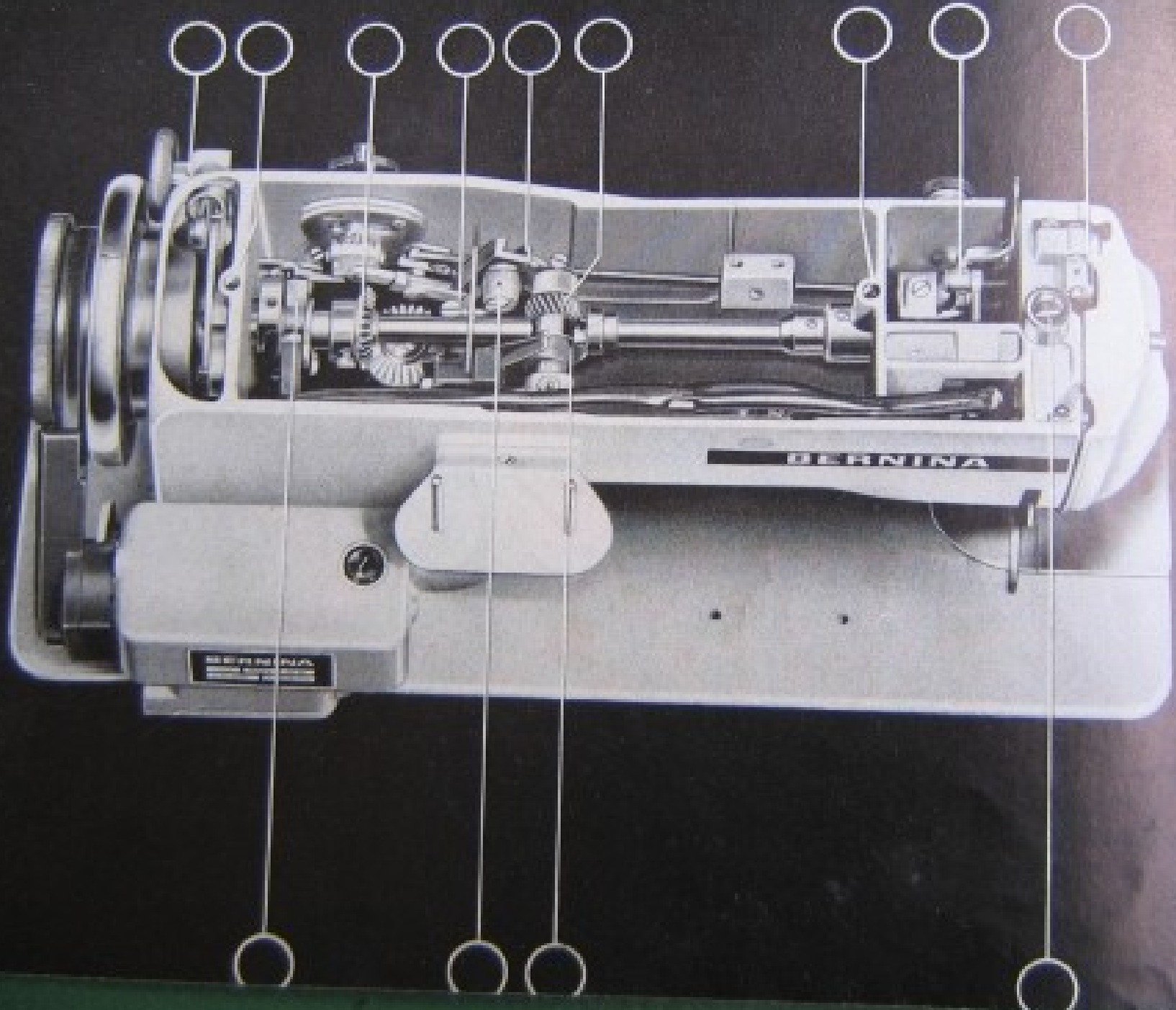
The sewing machine should be oiled frequently, but not too liberally. A few drops suffice to keep the machine running freely. Excess oil will drain off unused and soil the fabric. Always oil the machine *before* sewing, not afterwards. Use clear oil free from resin and acid, such as is supplied by the Ber-nina Dealers. Use of inferior oils may cause the machine to jam when the oil dries.

Fig. 12

Figs. 10 and 11 show the oiling points indicated by the white lines. Opening the slide on the baseplate gives access to the hock of which the race should be oiled lightly from time to time at the point indicated by the arrow.

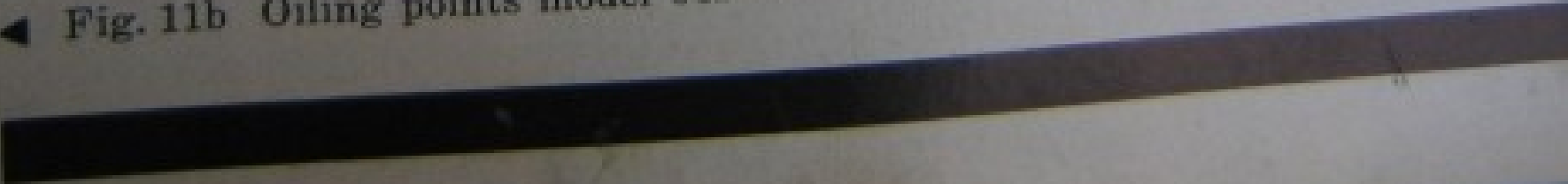


*Adequate oiling ensures quiet operation of the machine and lengthens its life. The oiling points not visible in Figs. 10, 11a and 11b are marked in red on the machine.*



When the machine has been kept in a very cold room, it should be opened and placed in a warm room about one hour before use so that it can assume room temperature and allow the oil in the bearings to become liquid again.

◀ Fig. 11b Oiling points model 642-2



# Plain Stitch

## Plain Stitching with Standard and Special Presser Foot



### Exchanging Presser Foot

Different sewing work requires more or less frequent exchange of the presser foot. This is why the BERNINA Class 640-2 and 642-2 has been equipped with a presser foot holding device which does not require the aid of a screwdriver but still ensures firm attachment of the presser foot.

Fig. 13

*a) Removal of Presser Foot*

Fig. 13

The cloth presser bar with presser foot is lifted by the lifting lever placed on the rear of the head. Now raise clamping lever 41, which engages below the clamping boss 42 of the presser foot 43, far enough for the hook 44 of the clamping lever to release the clamping boss 42 completely. The presser foot will drop automatically (or with a little help) from the cloth presser bar cone and can easily be removed.

*b) When replacing the Presser Foot* proceed in the opposite order: After raising the cloth presser bar by means of the lifting lever, hold the shank of the presser foot between thumb and index finger of your left hand, and place the presser foot below the cone of the cloth presser bar while the needle is raised. Now lift the clamping lever 41 with your left hand and slide the presser foot into the cloth presser bar cone making sure that the screw 45 engages the guide of the presser foot. Then depress clamping lever so that it will engage below the clamping boss of the presser foot. Slight pressure exerted on the lever will suffice to secure the presser foot firmly on the cloth presser bar cone.

**Lowering the Feed Dog**

Fig. 14

The right-hand bottom portion of the machine carries a control knob 17 designed to lower or raise the feed dog into inoperative or operative position. According to whether the knob is moved to the right or the left, i. e. in one of the directions of the arrows towards the symbols for sewing or darning indicated on the scale plate, the feed dog is in operative position, i. e. in the position for sewing, or in inoperative position, i. e. in the position required for darning.



## Plain Stitch

For plain stitching, adjust the machine as follows:

1. Raise take-up lever approximately to its highest point.
2. Insert plain stitch presser foot (for ordinary plain stitch work, the zigzag presser foot may be used as well). Thread needle from front to back. Pass top and bottom threads together to the rear under the presser foot.
3. Move feed dog control knob to the right.
4. Adjust stitch regulator 15 with knurled stop nut 14 so that the zero mark of the stitch length dial is below the line mark on the right-hand side. This is possible only if the nut 15a (Fig. 14) is not quite screwed in.
5. Set zigzag knob to zero. In this position, the machine will do plain sewing. As soon as the knob is turned to the right, a zigzag stitch will result.

Make sure that the balance wheel is always turned towards the operator.

## Forward and Backward Sewing and Adjustment of Stitch Lengths

According to the position of the stitch regulator 15 the machine will sew forwards or backwards making long or short stitches. If the stitch regulator lever 15 is depressed so that the zero line of the stitch length dial 47 is below the line mark on the side, the machine will sew forward. When the regulator lever is raised so that the zero line is above the line mark, the machine will sew backward. Forward and backward sewing serves to strengthen certain sewing areas and to secure the ends of the threads.

The more the stitch regulator lever is displaced upward or downward, the longer the forward or backward stitch will become. In order to ensure that the forward and backward stitches are of the same length, the knurled nut 15, which limits the upward and downward movement of the stitch regulator lever 15, is turned in or out more or less. If the nut is turned outward, the displacement of the lever is increased; inward movement of the nut will reduce the displacement.

Fig. 14



### **Removal of Work from the Machine**

Raise the take-up lever into its highest position and lift the presser foot by means of the lifting lever. This releases the top thread tension so that the work can easily be removed.

In particular, make sure that the work is always pulled from under the presser foot towards the rear to prevent the needle from becoming bent and causing thread breakage and faulty stitches.

When setting the machine for darning and mending, proceed as follows:

1. Insert darning plate.
2. Raise take-up lever.
3. Remove presser foot and replace by hopper foot.
4. Lower feed dog by moving knob 17, Fig. 14, to the left in direction shown by darning symbol arrow.
5. Set stitch regulator lever to zero so that the lowered feed dog is not unnecessarily operated.
6. Set zigzag knob to zero.

### Cross-wise Darning of Linen, etc.

Cross-wise darning is simple with the Bernina, because of the patented hopper darning foot.

Start by sewing stitch rows from left to right and vice-versa (Fig. 15 a). These rows should be parallel and as close to one another as possible. Do not extend the rows beyond the edge of the damaged area farther than absolutely necessary to secure the stitches. It is advantageous to make rows of different lengths in order to prevent the material from tearing at the edge of the area darned.

Then cover the parallel rows with new parallel rows at right angles running front to back and vice-versa.

The first covering rows are sewn somewhat beyond the outermost first rows (Fig. 15 b) in order to obtain a regular and strong darned area. The covering rows should also be parallel and as close to one another as possible.



Fig. 15

a

b



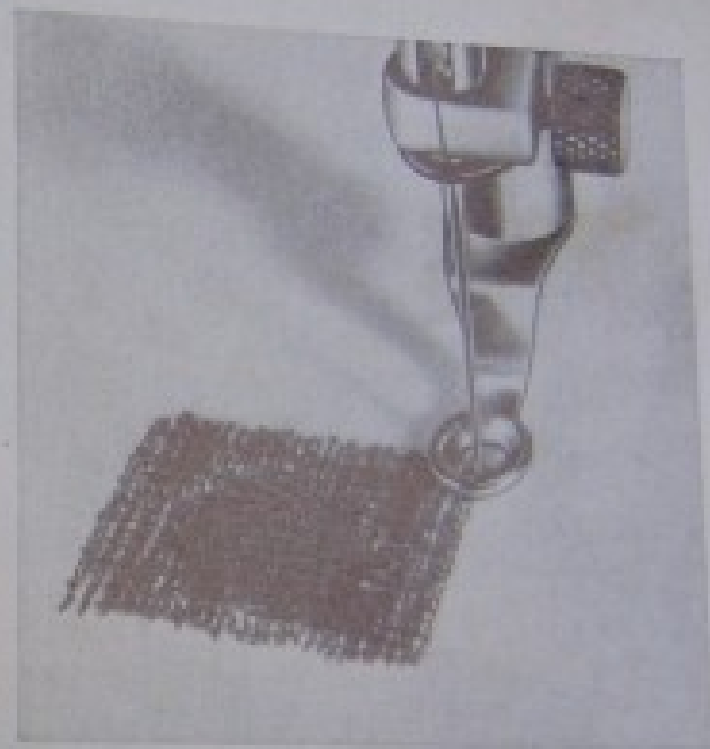
Finally fill the small gaps in the darning area by a number of additional covering rows limited to the exact area originally damaged (Fig. 15 c).

### Darning Stockings

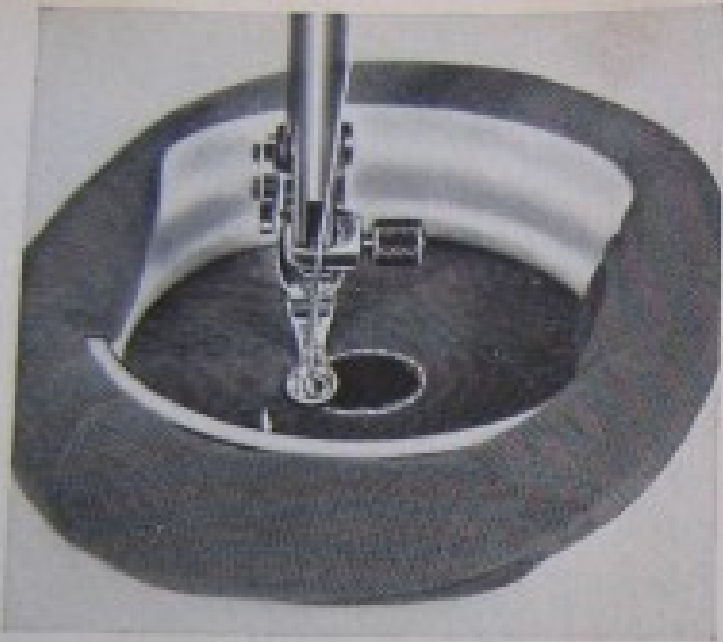
*The stocking darning is available as an extra*

To darn stockings, use the darning attachment which the stocking is rolled in such a manner that the damaged area is centred in the attachment.

Now place the stretched stocking beneath the darning foot and sew plain stitches around the area. This will prevent laddering (Fig. 16 a). Then sew stitch rows front to back across the direction of the loops (Fig. 16 b). The darning stitch rows should extend about  $\frac{1}{4}$  inch beyond the damaged area, and should be of unequal length. Then turn the darning attachment by  $90^\circ$  in the direction of the arrow (Fig. 16 b) and start sewing the covering stitch rows. In order



c



a



c

Fig. 16



b



d

to render them less visible, orient them in the direction of the loops beginning somewhat outside the edge of the first stitch layer (Fig. 16 c). The covering rows, also of unequal lengths, should be parallel.

Now fill the small gaps in the darning area by a number of additional covering rows limited to the exact area originally damaged (Fig. 16 d).

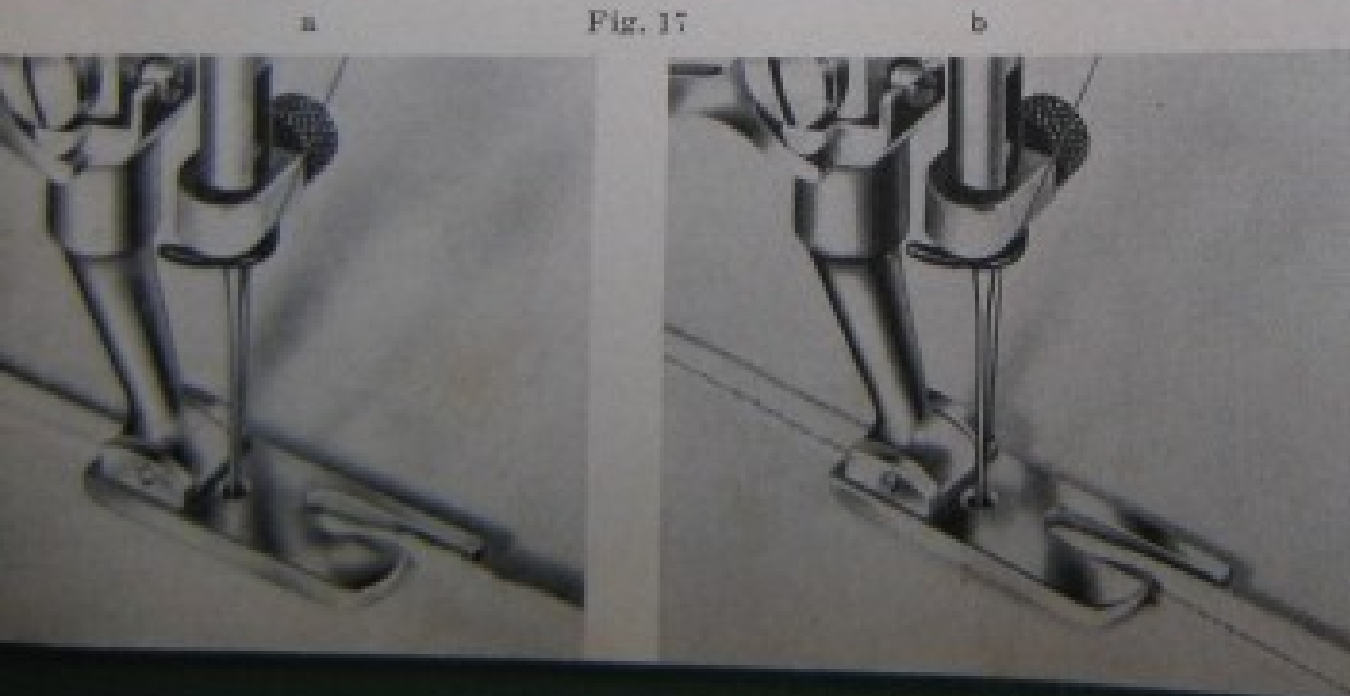


# Lap Hemmer

*Attach the lap hemmer in place of the ordinary presser foot (Available as an extra)*

Lap hems are used to produce very firm seams. They are obtained in two operations, viz. :

*1st Operation (Fig. 17 a):* Arrange the fabric sections to be joined on top of each other in such a manner that the bottom section slightly projects from the top one and pass both under the lap hemmer as when hemming so that they are folded over. Make sure that the same width of material always enters the lap hemmer.



*2nd Operation (Fig. 17 b):* The two sections are now unfolded and laid flat so that the seam formed stands up like a pleat. This pleat is again passed into the lap hemmer in the same direction so that it is folded over and sewn down.



Fig. 18

## Hemmer

*(Hem with approx.  $\frac{3}{32}$ " )*

*Available as an extra*

Attach the hemmer in place of the ordinary presser foot, raising the presser foot bar for the purpose.

Fold the edge of the material over to the desired hem width and pass the fabric into the spiral-type guide tongue of the raised hemmer as far as the needle, then lower the hemmer. When sewing, lightly guide the prefolded edge (Fig. 18). If too much fabric enters the hemmer, the seam will become bulgy and uneven; if too little the hem will not be folded in sufficiently.

## Edger

As shown by the illustration, the stitch hole is placed adjacent to the right presser foot edge. This renders the foot particularly suitable for hems along the fabric edge without the aid of the lateral quilter guide.

When the adjustable edge guide is attached to the edger, the latter can be used for quilting work as shown in Fig. 19 below.

The guide is first fixed at the desired distance from the edger. Then make a seam and

shift the material to the right so that the seam just made is in line with the guide. Then sew a new seam following the direction of the first seam with the leg of the guide, and so on. Afterwards, the same operations are effected in the transverse direction.

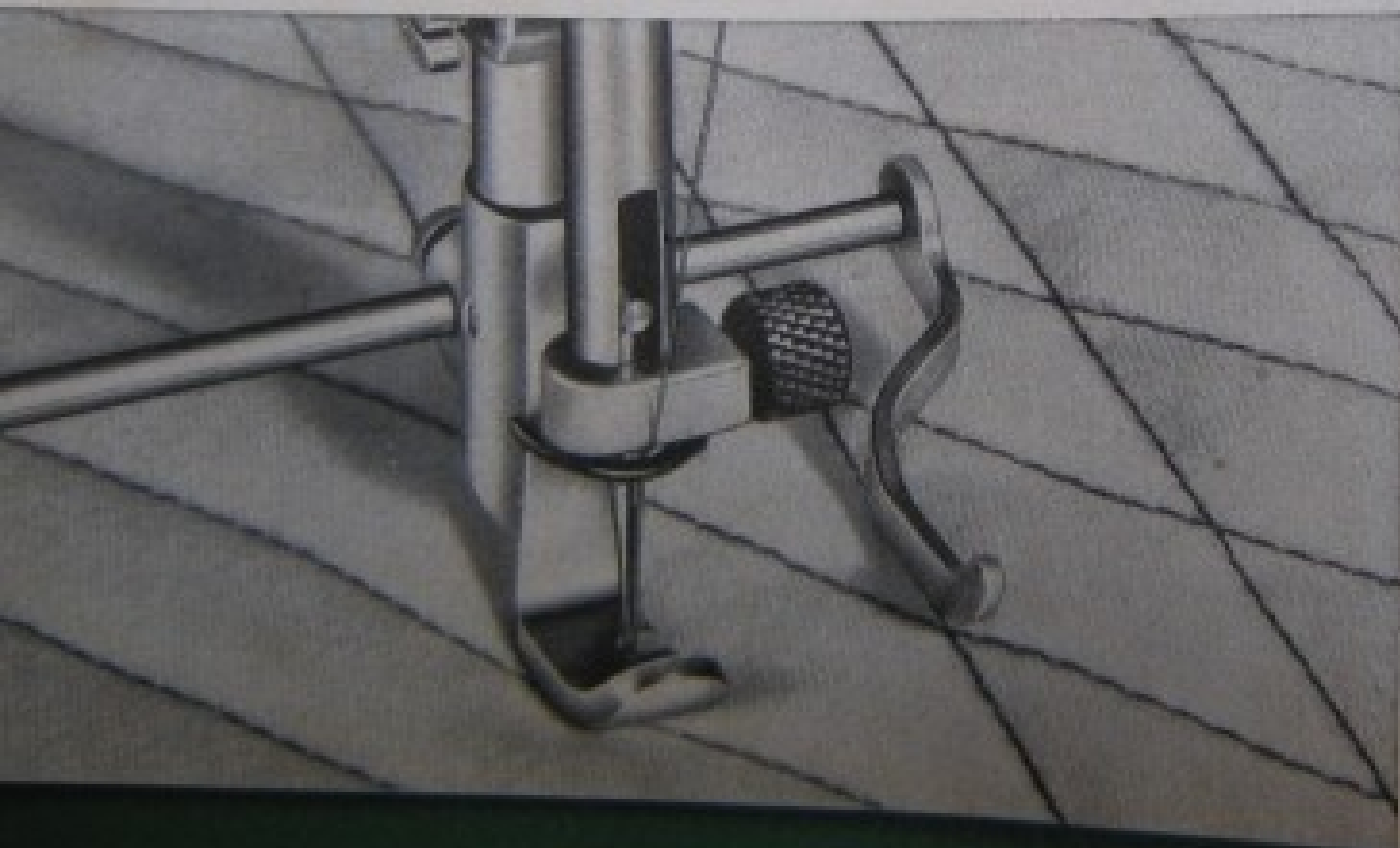


Fig. 19

## Gathering foot

Fig. 20



Put the material to be gathered under the gathering foot, that is to say not in the transverse slot. Lower the gathering foot by means of the presser foot, lever and insert the piece of material, which must remain quite flat, in the transverse slot as far as it will go. To increase the amount of gathering or gauging on the bottom material hold the top material back – the more it is held back the greater the amount of gathering.

If only one layer of material has to be gathered place the material beneath the gathering foot and lower it. The material is gathered more or less as the length of stitch is made greater or smaller.

# Zigzag

## Adjustment of Stitch Width

At the right-hand top of the body of the machine is placed the Control Knob 12 (Fig. 1) which serves to adjust the stitch width. Above the knob is a sight hole in which the width of the seam is indicated in figures. For plain sewing, the knob is turned to show the numeral 0, i. e. that a straight stitch can be produced. When turning the knob to the right, the numerals 1-4 will appear. The higher the numeral, the wider the zigzag stitch will be. When sewing zigzag, this knob may be operated as desired. When the machine is not running, do not turn the knob unless the needle is raised from the material in its extreme position.

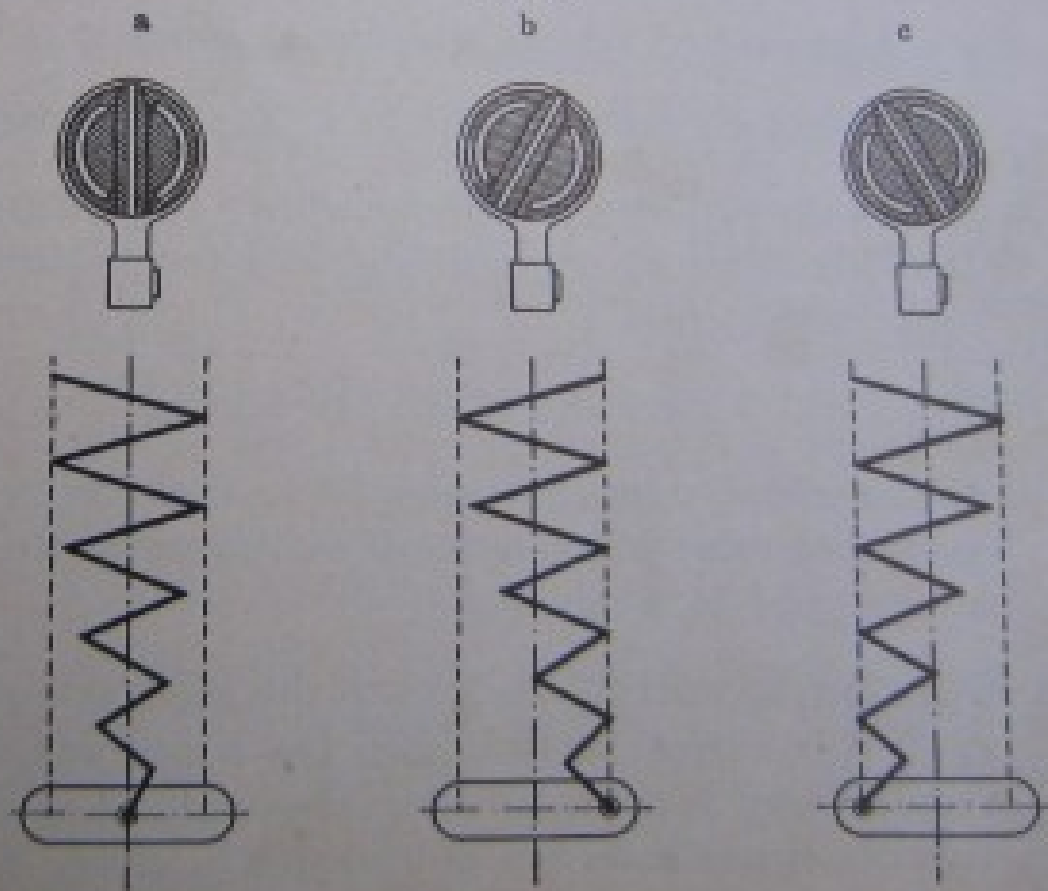
### Left - centre - right Adjustment

On top the width control knob 12 (Fig. 1) is arranged a further lever 13 (Fig. 1) marked with an arrow. If the arrow points straight up, the needle will be deflected evenly to the left and the right (Fig. 21a). Movement of the lever to the right to point the arrow obliquely to the right will cause the needle to be deflected from the right to the left (Fig. 21b). Movement of lever to point the arrow obliquely to the left will cause the needle to be deflected from the left to the right (Fig. 21c).

This control, too, can be turned to centre, left or right whilst machine is sewing, but it should again not be moved when the machine is not running unless the needle is in its raised position above the material.

The majority of zigzag work is performed with centre stitch, while left-hand stitch is employed for button-holes, sewing on buttons, ornamental stitches.

Fig. 21



The right-hand stitch is employed for other ornamental stitches, and a combination of the left and right hand stitches is very often used as well.

### **Zigzag Sewing**

(Use 2- or 3-ply threads, never 6-ply)

For zigzag sewing, set the machine as follows:

1. Raise tape-up lever 7 (Fig. 1) to approximately its extreme position.
2. Insert zigzag foot, which should not be confused with embroidering foot (Fig. 47). It is identified by one red line. Top and bottom threads should be pulled backwards under zigzag foot.
3. Move feed dog control lever 17 to the right.
4. Adjust stitch regulator lever 15 so that the zero mark of the stitch length scale is somewhat below the line mark on the right. This is possible only if the screw 15a is not screwed in completely.
5. Turn zigzag control knob 12 to the right according to the desired width (0-4). The more it is turned to the right, the wider will the zigzag seam be. The zigzag knob should never be operated when the needle is in the material while the machine is idle. But the zigzag knob can be operated in either direction when the machine is running.

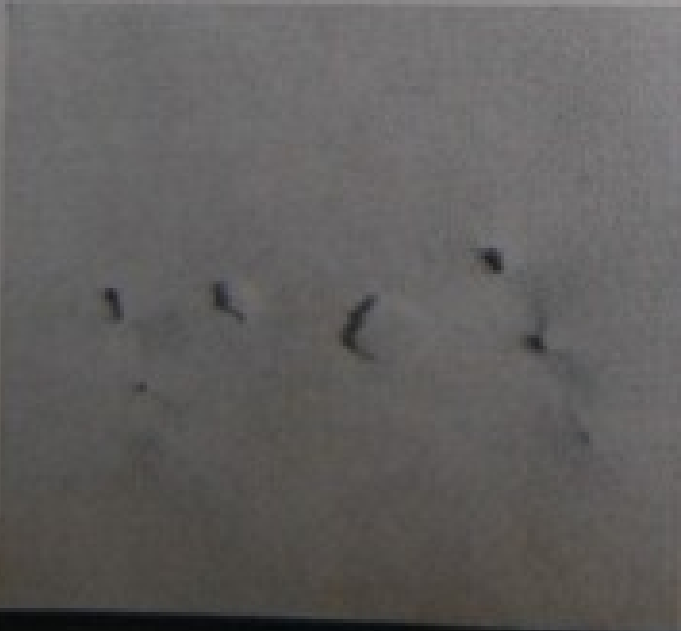
# Elastic Sewing of Knitted Goods

Knitted goods can be mended in a variety of ways of which the two most usual are described below:

*Alternative 1:* The mending patch is cut to the desired shape and size and then placed on top of the damaged part of the fabric in line with the direction of the knitting. The under side of both sections must face up. The pieces are fixed by provisional stitches. Then sew over the cut edge of the patch with zigzag stitches (stitch length 1 and width 3 or 4). A second zigzag seam is sewn inside this seam, at a distance of approx.  $\frac{1}{4}$ " and the damaged area then cut out along the inner seam and the provisional stitches removed.

*Alternative 2:* The mending patch is placed *under* the damaged portion with the knitting in line (Fig. 21a), the under side of both sections facing up, and the patch sewn on (Fig. 22 b).

Fig. 22 a





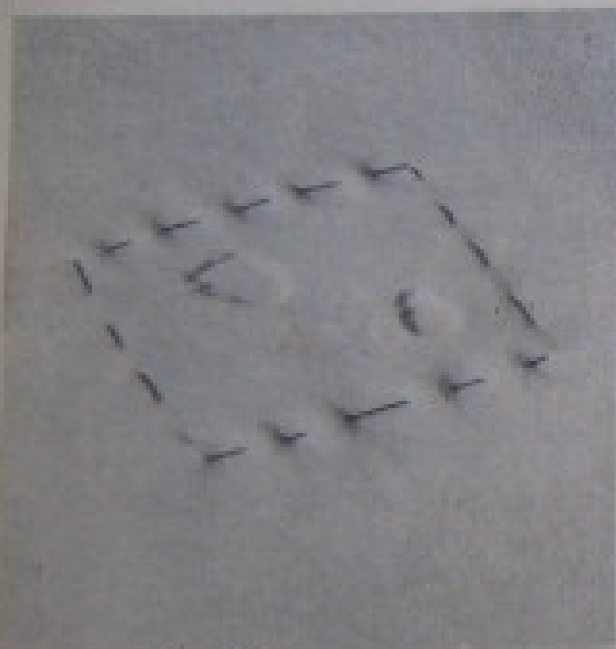


Fig. 22 b

Now sew a zigzag seam along the basting stitches (Fig. 21c) using stitch length 1 and width 3 or 4, and a second seam at a distance of approx.  $\frac{1}{4}$ ". Then cut the damaged area out along the inner stitches and trim the free edge of the patch below along the outer seam. Finally remove basting.

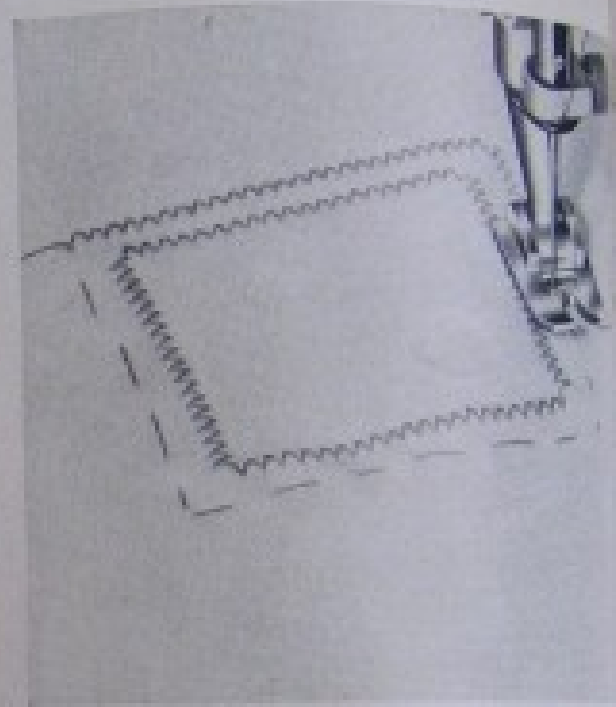


Fig. 22 c

### Sewing on Lace

To sew on lace use short stitch lengths and narrow stitch width as a rule. Normally the stitch length regulator 15 (Fig. 1) is set at 1 and the zigzag knob 12 at 1-2. Place lace on the material, so as to overlap by about 1", thus facilitating sewing on. Now attach the lace by zigzag stitches and then cut off the free edge of the material along the zigzag seam.

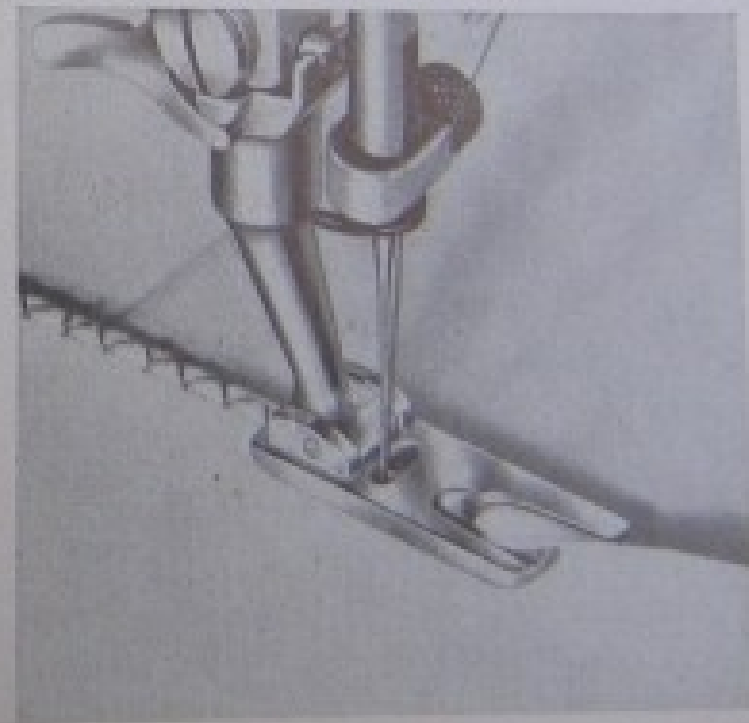
# Roll Hemmer

The roll hemmer (2 red lines) is similar in shape to the ordinary hemmer but is provided with an elongated stitch hole so that zigzag seams can be sewn. The roll hemmer is operated in the same manner as the ordinary hemmer. The zigzag control knob 12 (Fig. 1) is set at approx. 3-4. Roll hems are used particularly for edging fine material.

Fig. 28

## Shell Roll Hem

For shell roll hems, use the roll hemmer (2 red lines). The material with knitted fabric is inserted in the spiral guide tongue as for roll hemming. The zigzag stitch bridges the entire seam. Tight top thread tension and large stitch length produce the shell-type effect. This shell roll hem is used mainly for edging knitted goods.



# Braiding

Insert a soft cord in the guide hole of the zigzag embroidering foot (1 red line) and stitch or embroider over with zigzag stitches. Use mercerized thread 50/2 or 50/3 and 602 or 603. A variety of effects can be obtained with this type of stitch. - Coloured thread, coloured cord, and number of adjacent rows etc. will enhance the effect.

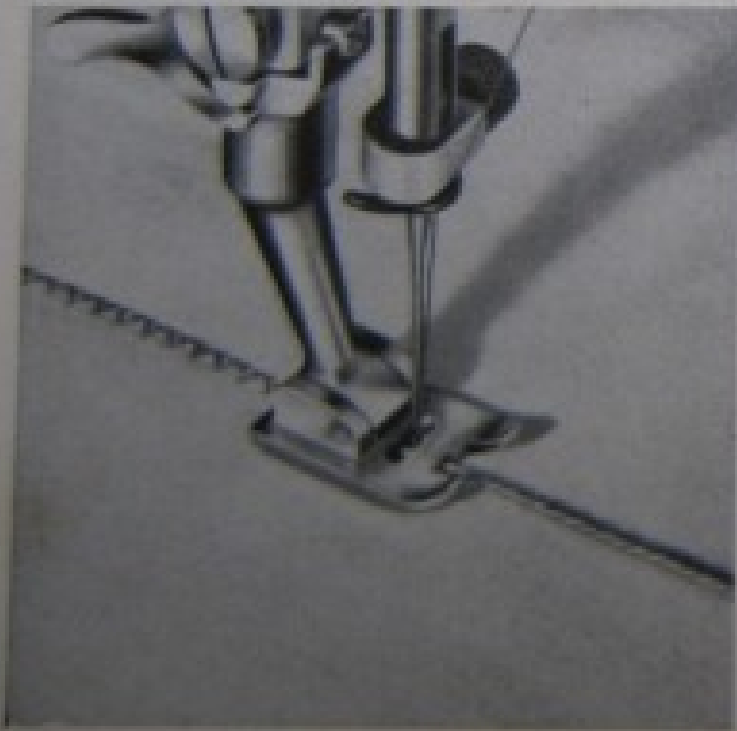


Fig. 24

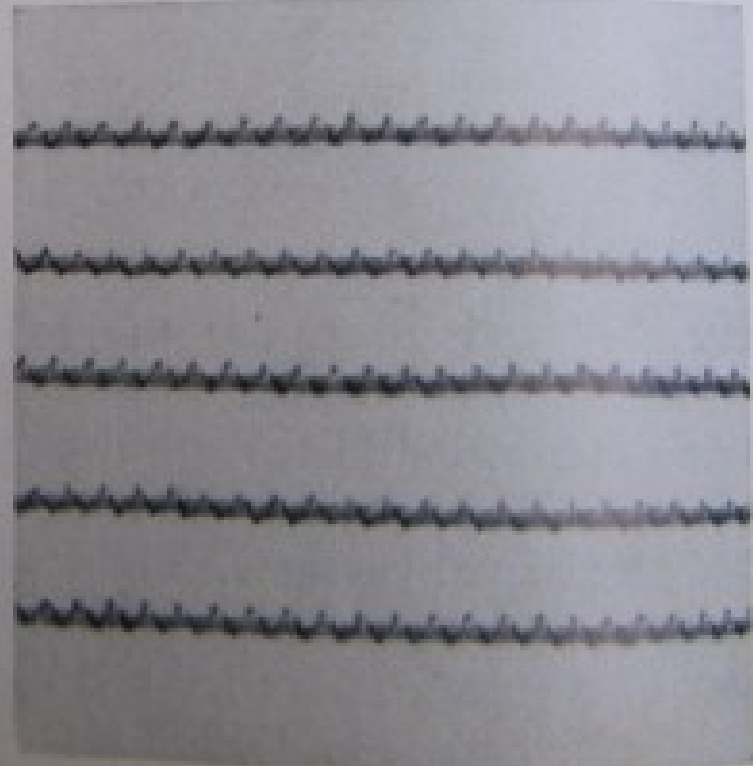


Fig. 25



## Buttonhole Sewing

*automatic*

There are three kinds of buttonholes:

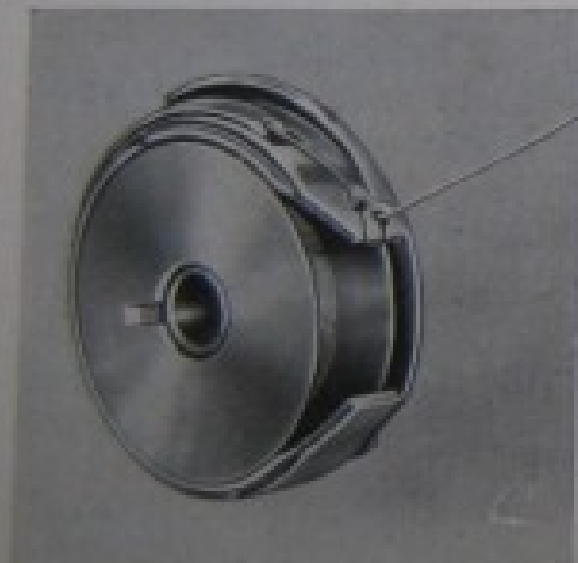
- A) the ordinary buttonhole
- B) the buttonhole with cord inlay
- C) the raised buttonhole

### A. The ordinary buttonhole

This is sewn with normal lower thread tension, but with special threading of the bobbin case (see Fig. 26). The sewing of the buttonhole with the *new buttonhole device* is effected *without* turning the cloth over. The buttonhole can be sewn either *step by step*, the machine being stopped after each operation, or in *one working operation*, i. e. without interrupting the various working stages. It will be well to *learn sewing buttonholes step by step*. After a little time you will naturally sew the whole buttonhole in one working operation.

Threading the upper thread see page 17 of the Working Instructions

Threading the lower thread when sewing buttonholes



CL 640-2

Fig. 26

Neat buttonholes are obtained when the lower thread tension, which is correct for normal sewing, is increased.

For this purpose the lower thread is threaded as shown in the accompanying illustration.

In normal sewing the bobbin case is threaded as shown on page 12.

**a**

Lever (for actuating the locking catch)

**15**

Stitch-length lever

**a**

**15**

Fig. 27



For sewing buttonholes, the machine is adjusted as follows :

1. Insert buttonhole presser foot.
2. Feed-change knob 17 (Fig. 2, page 8) must stand at "sewing".
3. Push lever a (Fig. 27 and 28) to the back in the direction of the arrow, in order that it comes into the position shown in Fig. 29.  
In this way the locking catch c (Fig. 29), which determines the width of stitch for the bead and for the lock, comes into its working position.

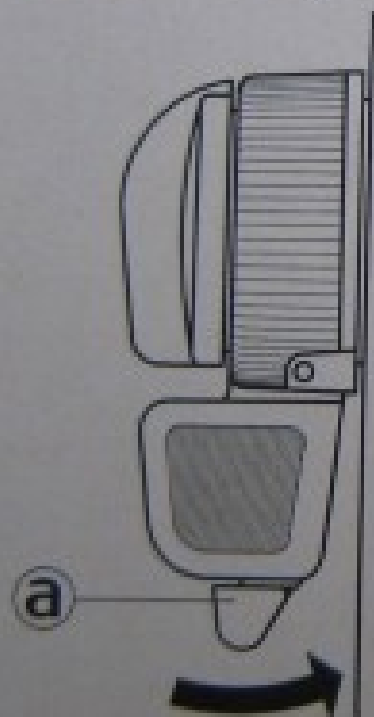


Fig. 28

Lever set for zig-zag sewing

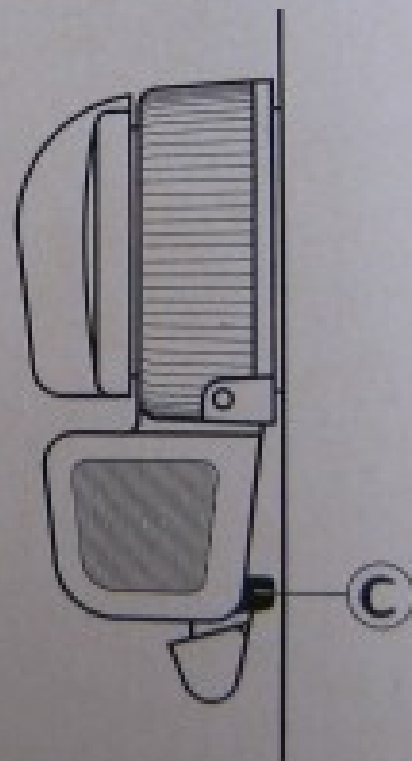


Fig. 29

Lever set for buttonhole sewing

4. The stitch length lever 15 (Fig. 27) has two marks on its ball-shaped end, the zig-zag mark Fig. 30 and the buttonhole mark Fig. 31.

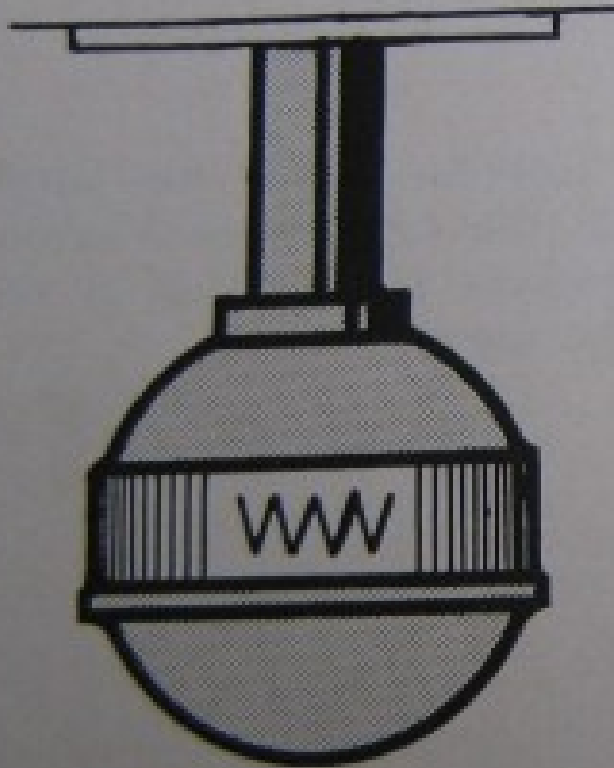


Fig. 30  
Buttonhole device disengaged  
(zig-zag mark)

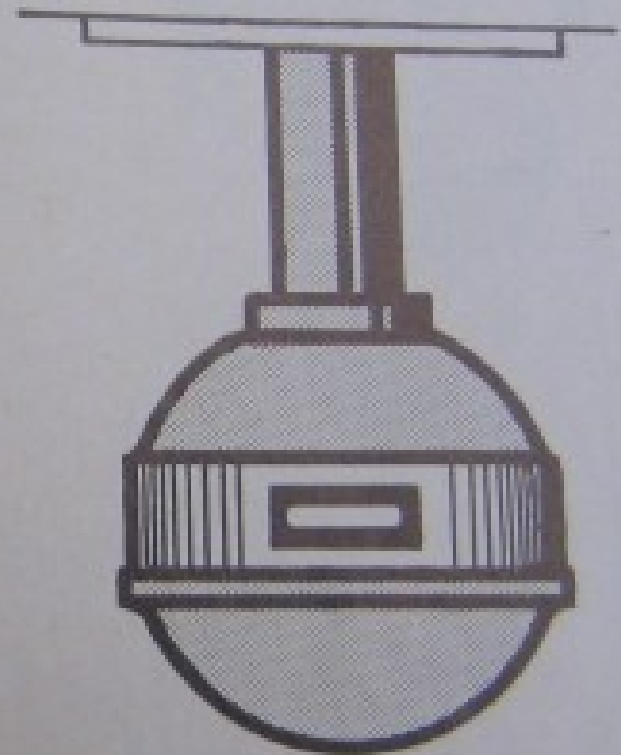


Fig. 31  
Buttonhole device engaged  
(buttonhole mark)





With thumb and forefinger, the stitch length lever 15 (Fig. 32) is pressed as far as possible towards the machine in the direction of the arrow.

Fig. 32

Then turn the ball-shaped end clockwise until the buttonhole mark appears at the top.



Fig. 33

Now let the end go loose and push it in the direction of the backward stitch (direction of the arrow) as far as possible upwards (Fig. 34).

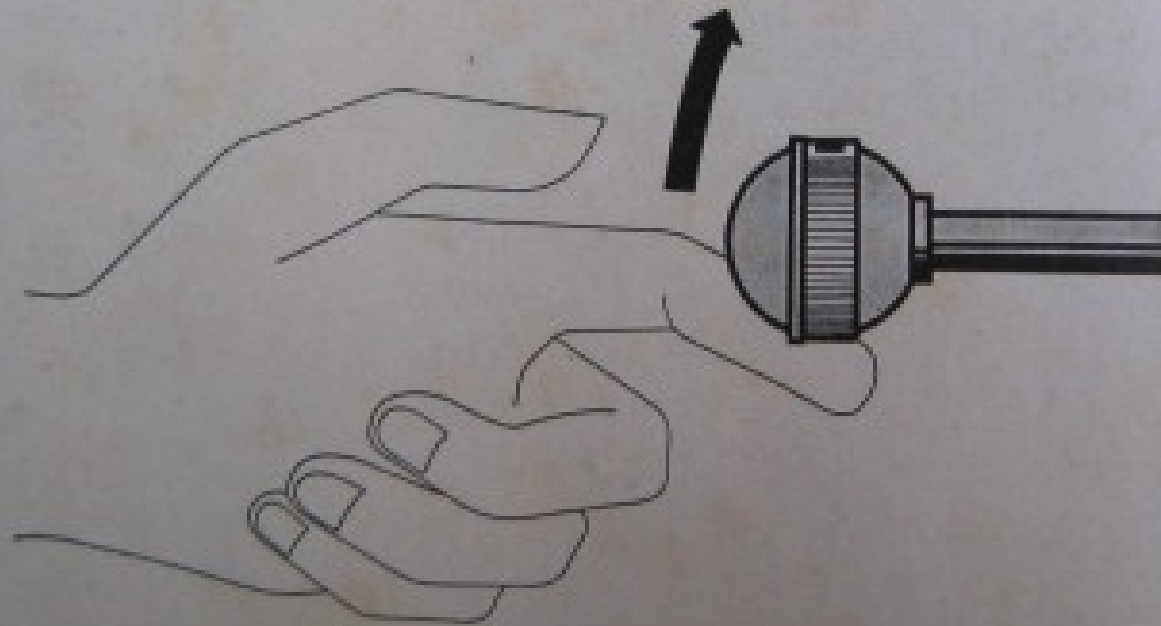


Fig. 34

5. After the stop c (Fig. 29) has been brought into the working position by moving the lever a, take hold of the lower part 12a of the knob 12, draw it to the front end, swiveling it in such a way that the pawl c comes to lie against the stop pin I. On the scale the number 1.5 must stand approximately opposite the mark b.

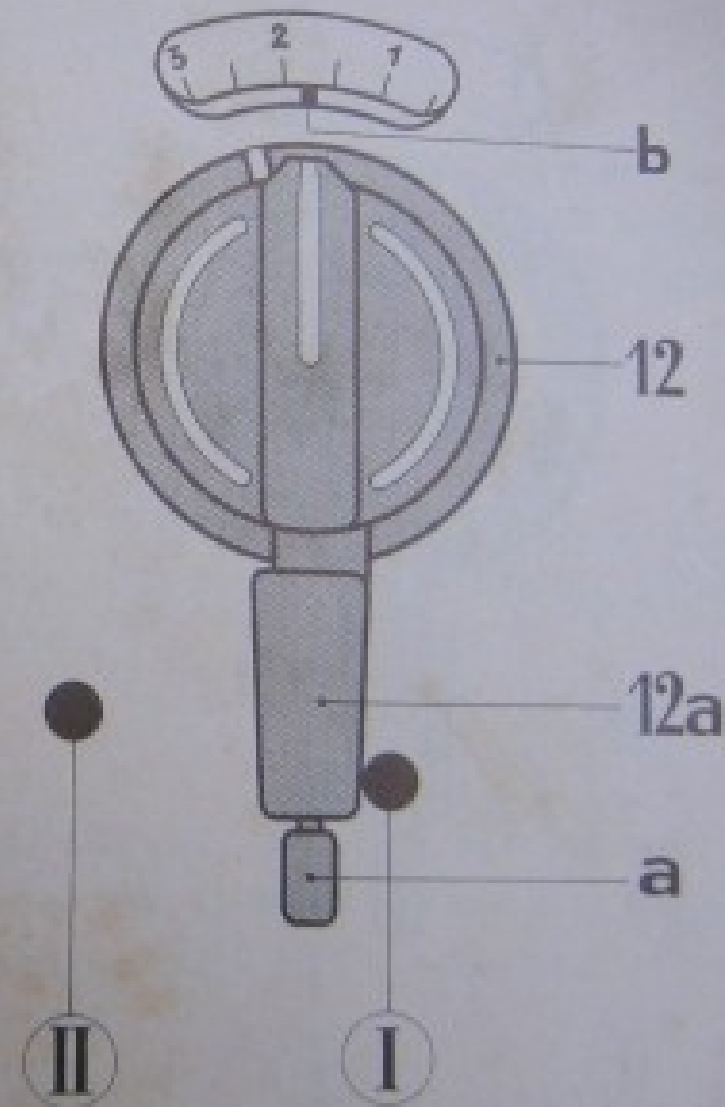


Fig. 35



6. Setting the lever 13 (Fig. 36). This lever is turned so far to the left until the *white mark* at its upper end lies opposite the white mark of the zig-zag lever 12 (Fig. 36). In this way the machine is set for buttonhole sewing.

Fig. 36

The step by step sewing of the buttonhole is now effected as follows:

1. Sewing the lefthand bead.

Start the machine, then the *lefthand bead* is sewn in *backward stitch*. A scale on the buttonhole presser foot serves for determining the length of the buttonhole. After the desired length of bead has been reached, stop the machine. Always take care that the needle is then up.

2. Sewing the first end stitches.

For this purpose take hold of the zig-zag lever 12a, give it a strong push to the left until it comes against stop II (Fig. 37). Then sew a few end stitches after that, stop the machine again and set the needle up.

3. Sewing the righthand bead.

Bring the zig-zag lever 12a back from the *lefthand stop II* to the *righthand stop I* (Fig. 38). Start the machine again. Stop it again a few stitches before the righthand bead has become as long as the lefthand bead and set the needle up.

4. Sewing the second end stitches.

Again set the zig-zag lever 12a to the stop II (Fig. 39). After a few stitches have been sewn, stop the machine once again, and set the needle up as before.

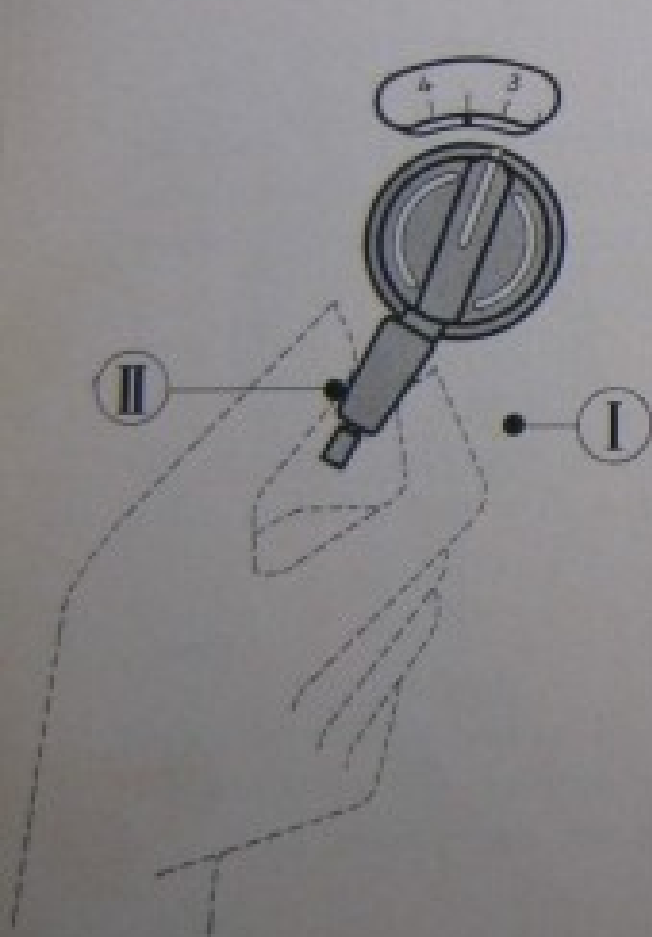


Fig. 37

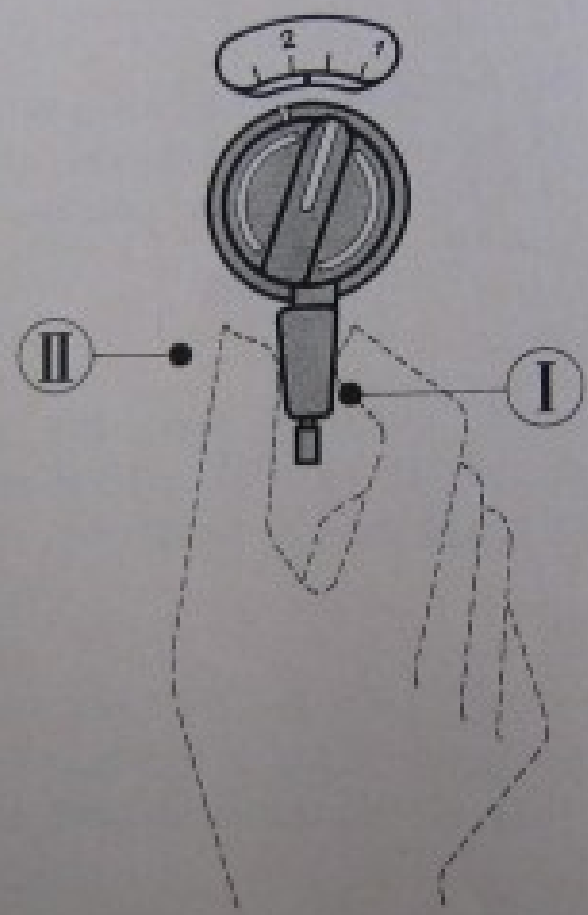


Fig. 38

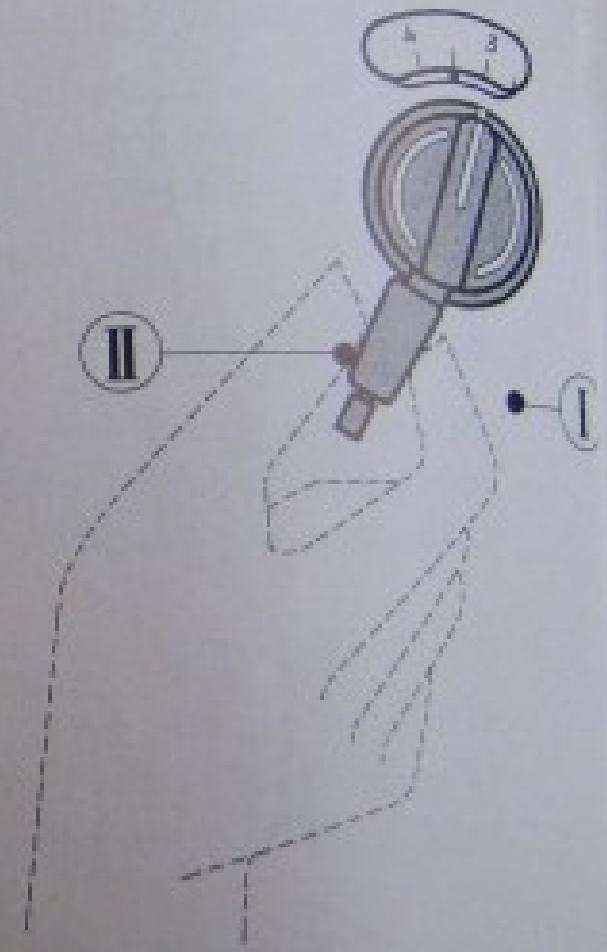


Fig. 39

5. **Stitching the fastening threads.**  
For stitching the fastening threads, pull the zig-zag lever 12a - which is still against the stop II (Fig. 39) - towards the front and push it entirely to the right, passing over the stop I. In this position the machine now sews the step stitch. When stitching the fastening threads, it will be well to hold the cloth slightly back.

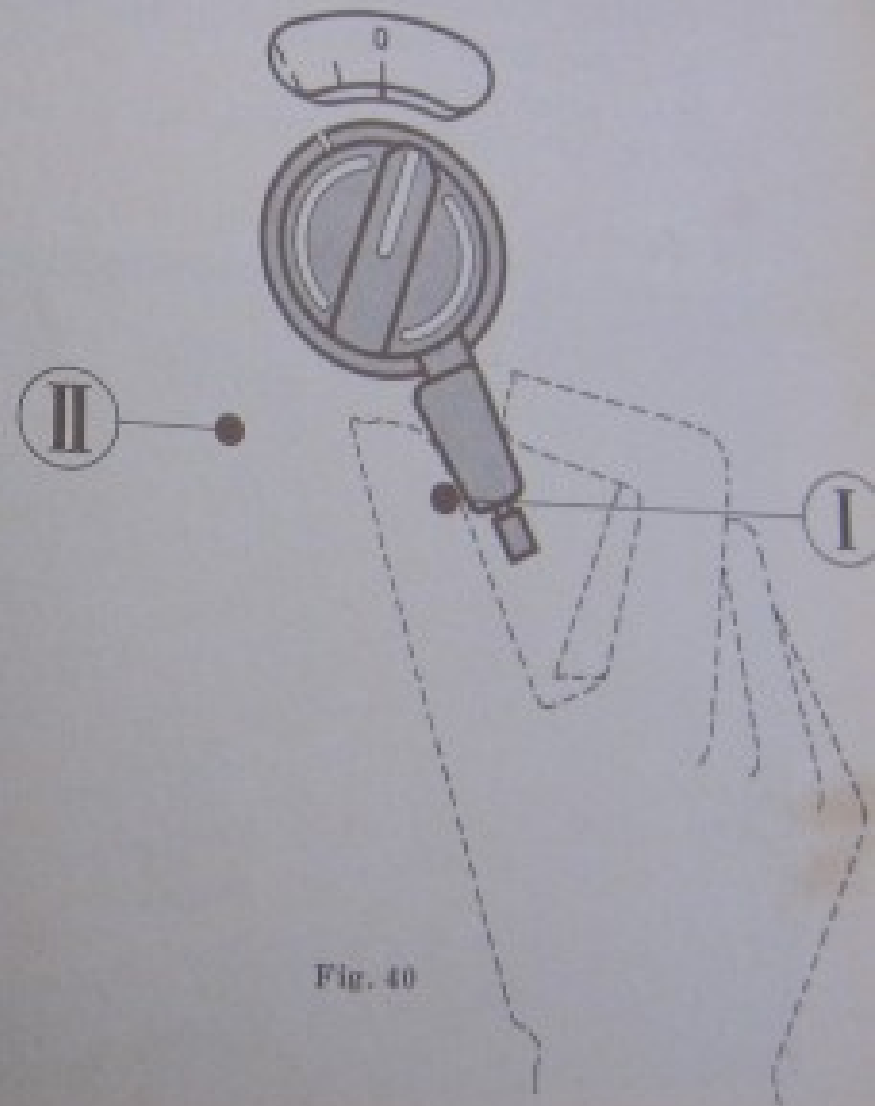


Fig. 40



6. Cutting the buttonhole.

Lay the sewn buttonhole on the wood block and cut it through with the buttonhole cutter (Fig. 41).

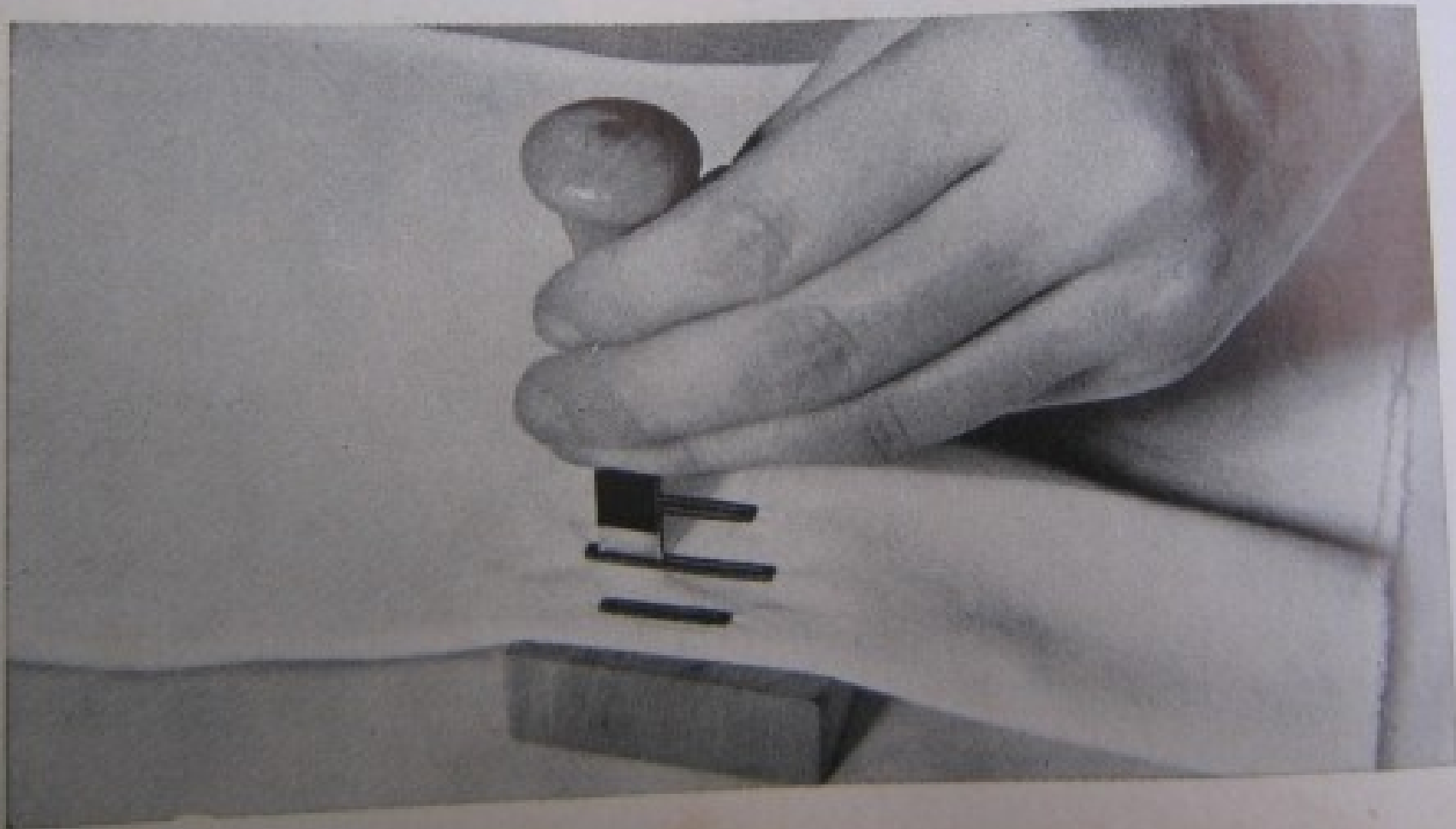


Fig. 41

For the next buttonhole the zig-zag lever 12a and the lever 13/15 have to be adjusted as follows:

1. Set zig-zag lever 12a again against the stop I.
2. Turn lever 13 to the left until the *white* lines of the levers 13 and 12 are opposite each other.
3. Push the stitch length lever 15 upwards as far as it will go. Now the machine is again adjusted for buttonhole sewing and the handling of the zig-zag lever 12a is again effected as stated under "*the step by step sewing of the buttonhole*".

### **Sewing the buttonhole in one operation**

In contrast to the described method, the buttonhole can easily be sewn in one operation, i. e. without stopping the machine after the different working steps. The buttonhole is sewn in one operation as follows:

After having set the machine for buttonhole sewing and having pressed the zig-zag lever 12a against the stop I (Fig. 38), start the machine and keep on holding the zig-zag lever 12a. As soon as the desired length of bead is reached, move the zig-zag lever 12a with a firm movement against the stop II (Fig. 37), and because only a few stitches are necessary for stitching the fastening ends, move the zig-zag lever 12a corresponding to the sewing speed (Fig. 38) at once again to stop I, and press it against this stop.

As soon as the second, righthand bead has reached the length of the first lefthand one except for a few stitches, move the zig-zag lever once again to stop II, and since also only a few stitches are required for the second fastening, move the zig-zag lever immediately quite to the right in accordance with the sewing speed, i. e. beyond stop I, by drawing the zig-zag lever 12a towards you, i. e. to the front.

## B. Buttonhole with cord inlay

As inlay, use thin cotton cord and put it, as shown in Fig. 42, on the nose at the back end of the buttonhole foot and sew the buttonhole in the described manner.

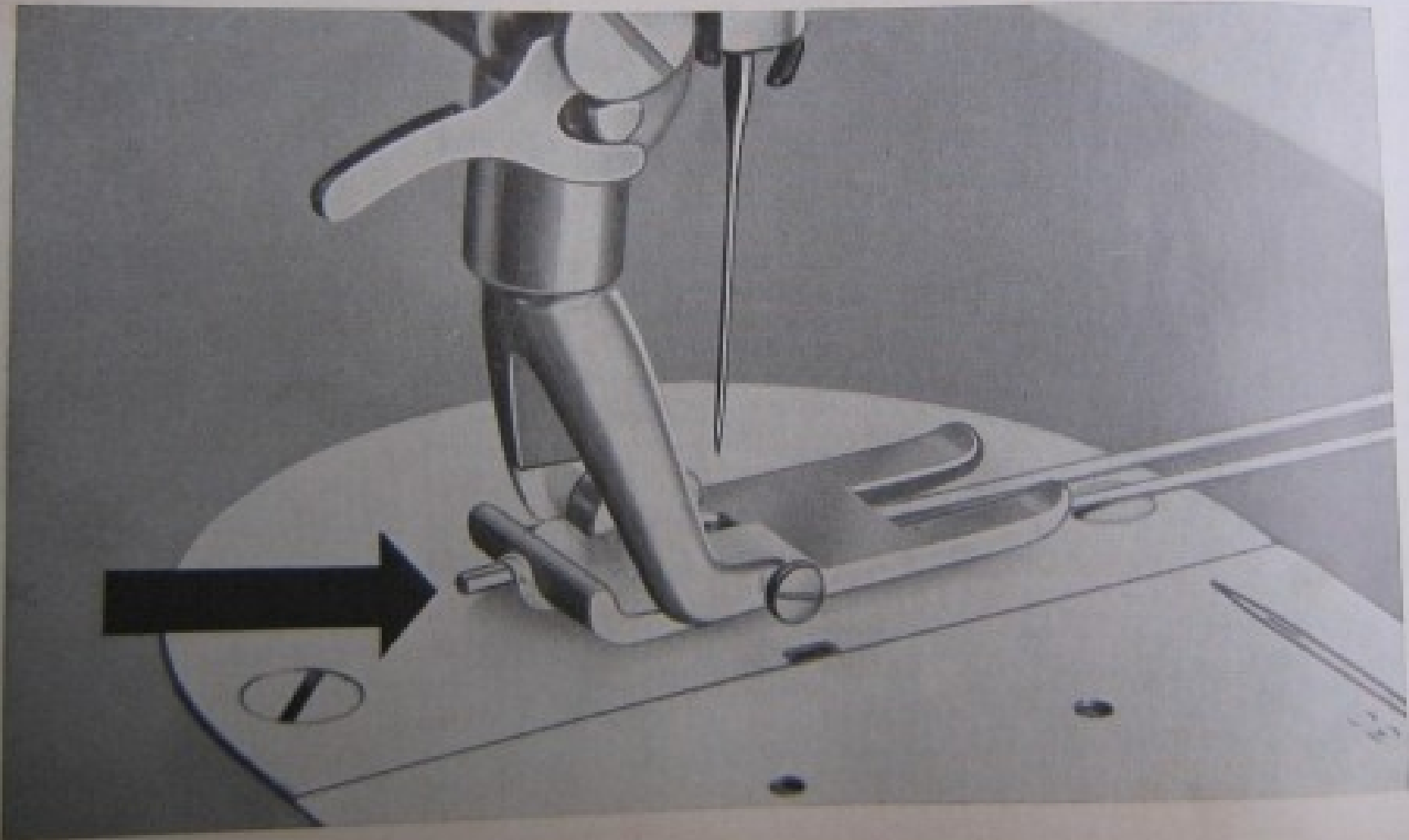
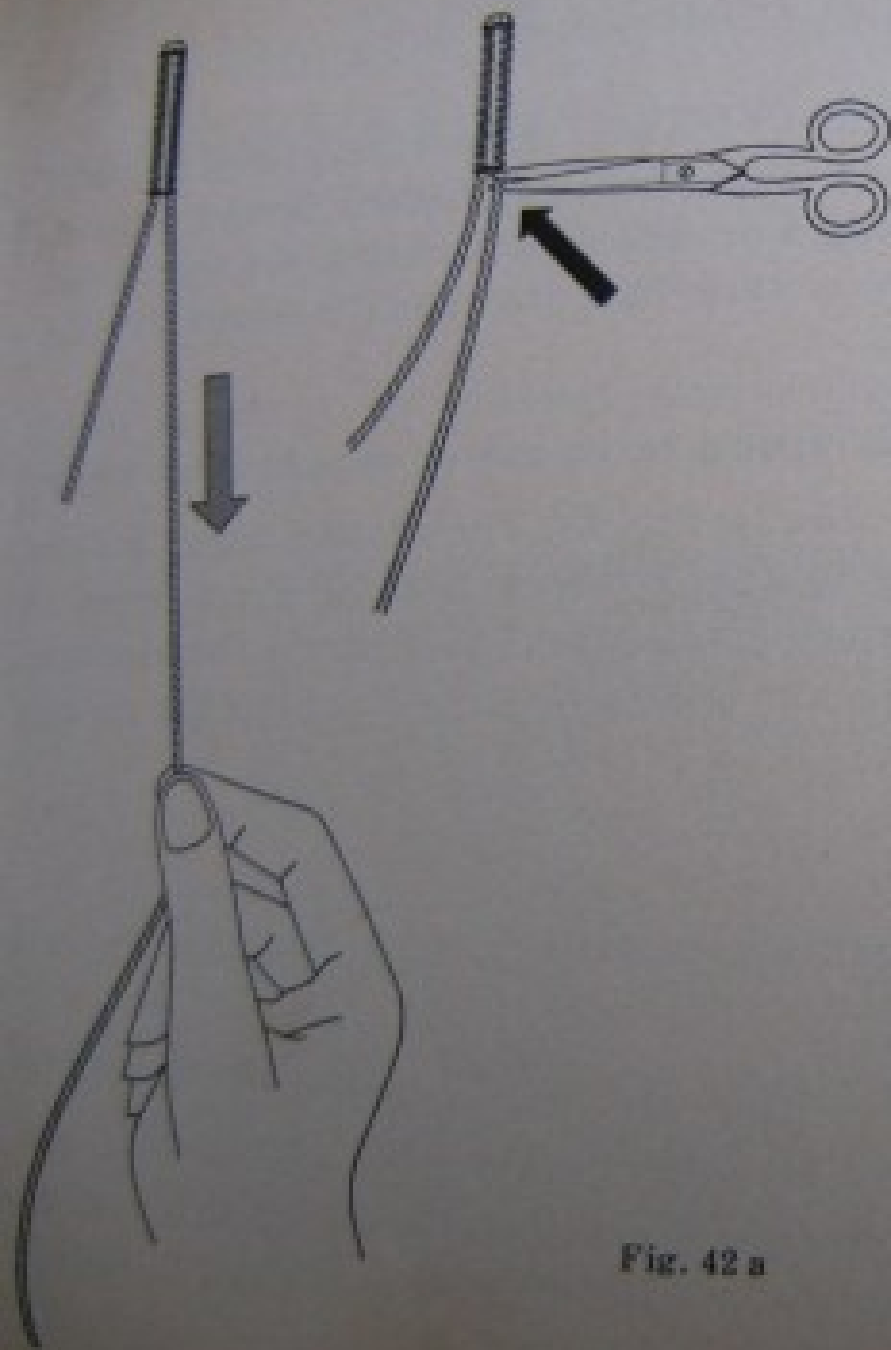


Fig. 42



The cord loop that is beyond the back end of the sewn buttonhole, has to be tightened sufficiently so that the loop under the back fastening disappears. Then, the two remaining thread ends are cut (Fig. 42 a).

Fig. 42 a

### C. The raised buttonhole

This buttonhole is sewn with a slack lower thread tension and a strong upper thread tension. The upper thread tension has to be so strong that the bottom thread appears in a straight line on the upper side of the cloth. For raised buttonholes, the top thread must be unglazed, 6-ply, No. 4 thread, while a very thin thread is required for the bobbin (60/2).

#### Adjusting the machine from automatic buttonhole sewing to zig-zag or straight-stitch sewing

Push lever a (Fig. 27) forwards into the position in Fig. 28. The zig-zag lever 12a can now be moved as desired beyond the stops I and II from 0 to 4. Move lever 13 into the vertical position. Again press the stitch length lever 15 towards the machine, the ball-shaped end turned to the left until the zig-zag mark (Fig. 30) until the zig-zag mark shows on top.

#### Buttonhole without using the automatic

Buttonholes may also be sewn without using the automatic buttonhole device. In such case check that

1. the lever 12a (for actuating the locking catch) is in position for zigzag sewing;
2. the stitch length lever, i. e. its ball-shaped end, shows the zigzag mark (Fig. 30);
3. the needle displacement lever is set to its normal "left" position, i. e. not in position opposite the mark on the zigzag knob, as is correct for automatic buttonhole sewing;

4. the buttonhole foot, marked with 3 black lines, is used.

In this case also 3 different types of buttonholes can be made:

- a) Ordinary buttonholes,
- b) Braided buttonholes, and
- c) Raised buttonholes.

Types a) and b) are obtained with normal thread tension.



## The actual sewing of the buttonhole without using the automatic

1. Set zigzag control knob 12 (Fig. 1) to No. 2; when sewing a buttonhole in knit material, select stitch width  $2\frac{1}{2}$ .
2. Set stitch-length lever 15 so that the white line on the left side of the shaft of said lever is somewhat below the zero mark on the stitch length scale plate. This can only be done if the screw 15a (Fig. 1) is not fully turned in.
3. Set drop feed knob 17 (Fig. 2) to the right.
4. Now sew the first bead to the length of the buttonhole. The last needle hole of the finished bead must be *on the right*, and the needle inserted only  $\frac{1}{16}$ " into the material.
5. Raise presser foot and turn cloth through  $180^\circ$  in clockwise direction. Then lower presser foot and allow the needle to enter cloth towards the left. Allow needle to penetrate cloth only to depth of  $\frac{1}{8}$ ".
6. Set zigzag control knob 12 to 3,5 and sew a few end stitches. Pull material lightly towards, you to shorten the feed. Last needle hole should be on the left. Allow needle to penetrate cloth only to depth of approx.  $\frac{1}{8}$ ".



Last  
stitch  
on right



Allow  
needle  
to enter  
on left



Last  
stitch  
on left

7. Set zigzag knob 12 again to No. 2 and sew the second bead over a length somewhat shorter than the first bead. Last needle hole on the left.
8. Set zigzag knob 12 again at twice the bead width and sew the end stitches. Again pull material back somewhat to shorten the feed. Last needle hole on the left.
9. Set zigzag knob at zero and sew a few fastening stitches again pulling the cloth lightly towards you to shorten the feed.
10. Finally cut the buttonhole as when sewn automatically (see paragraph 6, page 58).



Last  
stitch  
on left

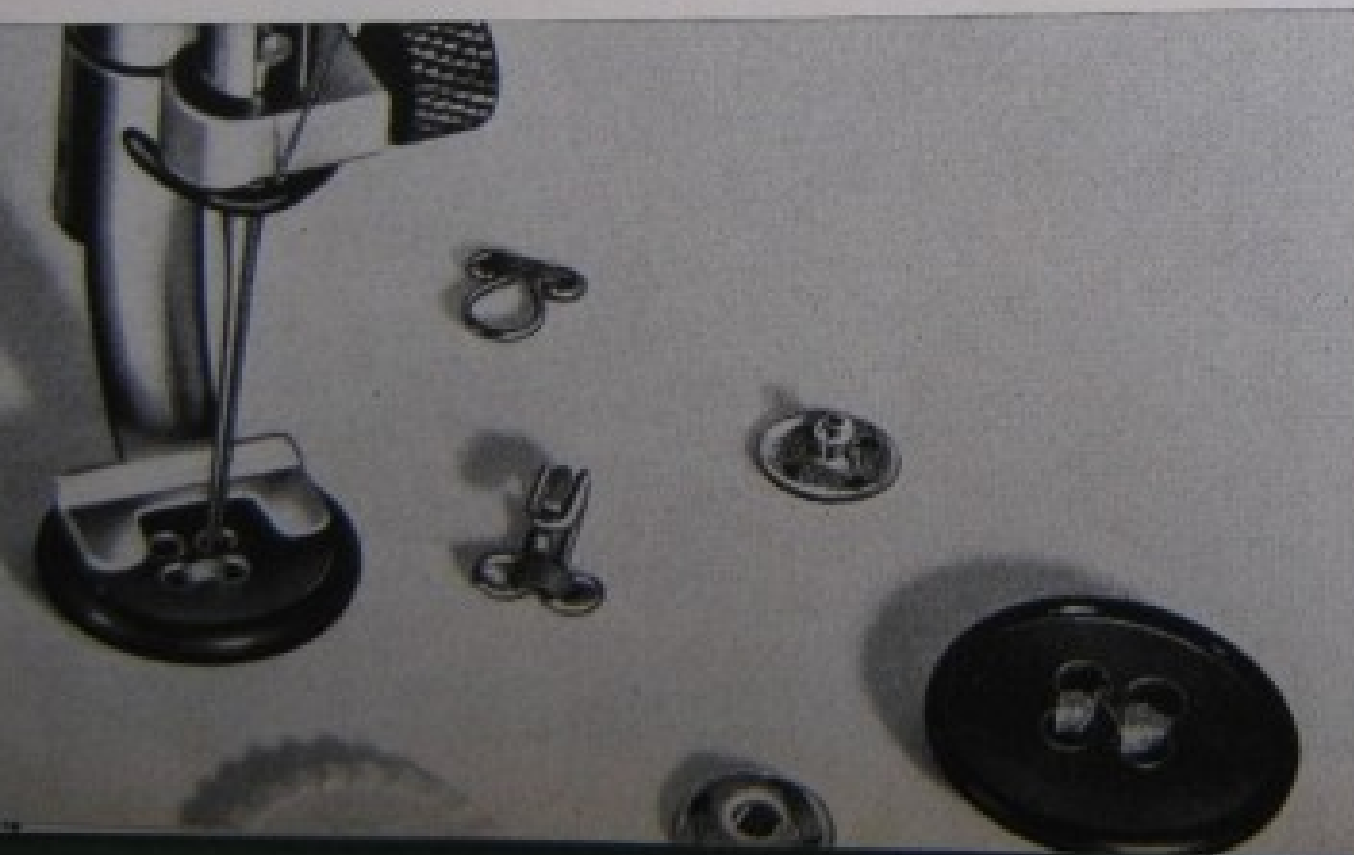


Last  
stitch  
on left



## Sewing on Buttons

1. Position needle to stitch on left.
2. Lower feed dog by moving knob 17 (Fig. 1) to the left.
3. Attach button presser foot (2 black lines) and place button under foot according to Fig. 43.
4. Adjust zigzag stitch width according to the distance between the stitch holes in the button and sew button on with 6-8 stitches.



5. To fasten the stitches, leave needle in the hole of the button. Lift the presser foot, turn zigzag knob 12 (Fig. 1) to zero, lower foot and fasten with several stitches.

With four-hole buttons, shift the cloth with the button and make 6-8 stitches in the second pair of holes. Press-studs and hooks are sewn on in like manner.

Fig. 43

## Darning with wool

When darning with wool, use the patented wooldarning foot. Proceed as follows:

1. Lower feed dog by moving knob 17 (Fig. 1) to the left.
2. Set stitch regulator 15 (Fig. 1) to zero to prevent lowered feed dog from being operated unnecessarily.

3. Set zigzag knob 12 (Fig. 1) to 3-4.

For top and bottom thread, use darning cotton. Wool is employed to cover the damaged area. Use top and bottom threads and darning wool of a colour corresponding to the piece to be mended so that the darn will be as invisible as possible. Thread tension is the same as in ordinary darning.

Darning with wool is performed in two stages:



Fig. 44

a  
b



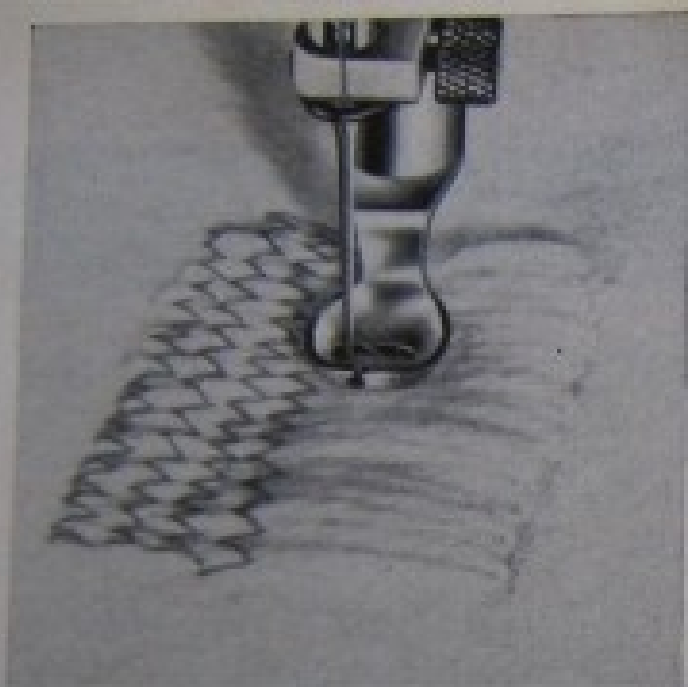


Fig. 44 c

1. The damaged area is covered with wool rows.
2. The rows are sewn down.

Figs. 44a, b and c clearly illustrate the operation. As shown by Fig. 44a, the wool is inserted in the slot of the foot, and the thread end allowed to project over the rear edge of the foot by about  $\frac{1}{2}$  inch. Now span the hole with wool as shown in Fig. 44b. Start at the left hand top corner of the damaged area and stretch wool sideways, i. e. from left to right and vice-versa, run by run, by shifting the fabric accordingly. At the end of each run a zigzag stitch will tack the wool to the fabric

when direction of movement is changed. Make sure that these runs are as close as possible, because later on no wool will be used. As soon as the damaged area is entirely covered with wool, the wool thread is cut at the darning foot. Now fasten the wool rows with zigzag stitches across them as shown in Fig. 44c, by shifting fabric forward and backward. Zigzag stitch is employed to ensure that the mend remains elastic, and care should be taken not to place the individual zigzag runs too closely together.

## Applique Work

(Needle in position for left-hand stitch)

An attractive decorative effect is obtained by sewing cut-outs of materials of different colors or tulle to the cloth. Applique work is employed mainly on collars, ladies' and children's dresses, linen, and the like.

The buttonhole presser foot (3 black lines) is advantageously employed for this type of work.

First draw the shapes to the *under side* of the material. The fabric from which the designs are cut should be of a pleasant contrast colour. Cut piece slightly larger than required and baste on the *right side* of the material. Then sew a narrow ( $1-1\frac{1}{2}$ ) zigzag stitch row (not too short) along the contours. The sewing thread should be of the same color as the fabric applied. Then remove basting and trim along sewing line on right side. Now finish work by sewing a wider ( $2\frac{1}{2}$ ), short zigzag line over the edges of the cut-out on the right side of the material.



# Ornamental stitches, hand-operated

## The Zigzag Ornamental Stitch

With the Bernina Zigzag Sewing Machine Cl. 640-2 and 642-2 a variety of ornamental stitches can be produced in the simplest possible manner. According to the ornamental stitch desired, the stitch regulator 15 (Fig. 1) is more or less depressed and the zigzag knob 12 turned in both directions during sewing. After a few experimental stitches, the sewing of ornamental stitches becomes easy.

For ornamental stitches of normal stitch length (sample a in Fig. 48), use the zigzag sewing foot (Fig. 46). For stitches of very short length (sample b in Fig. 48), use the zigzag embroidering foot (Fig. 47). The latter has a recessed lower face.

Zigzag Sewing Foot

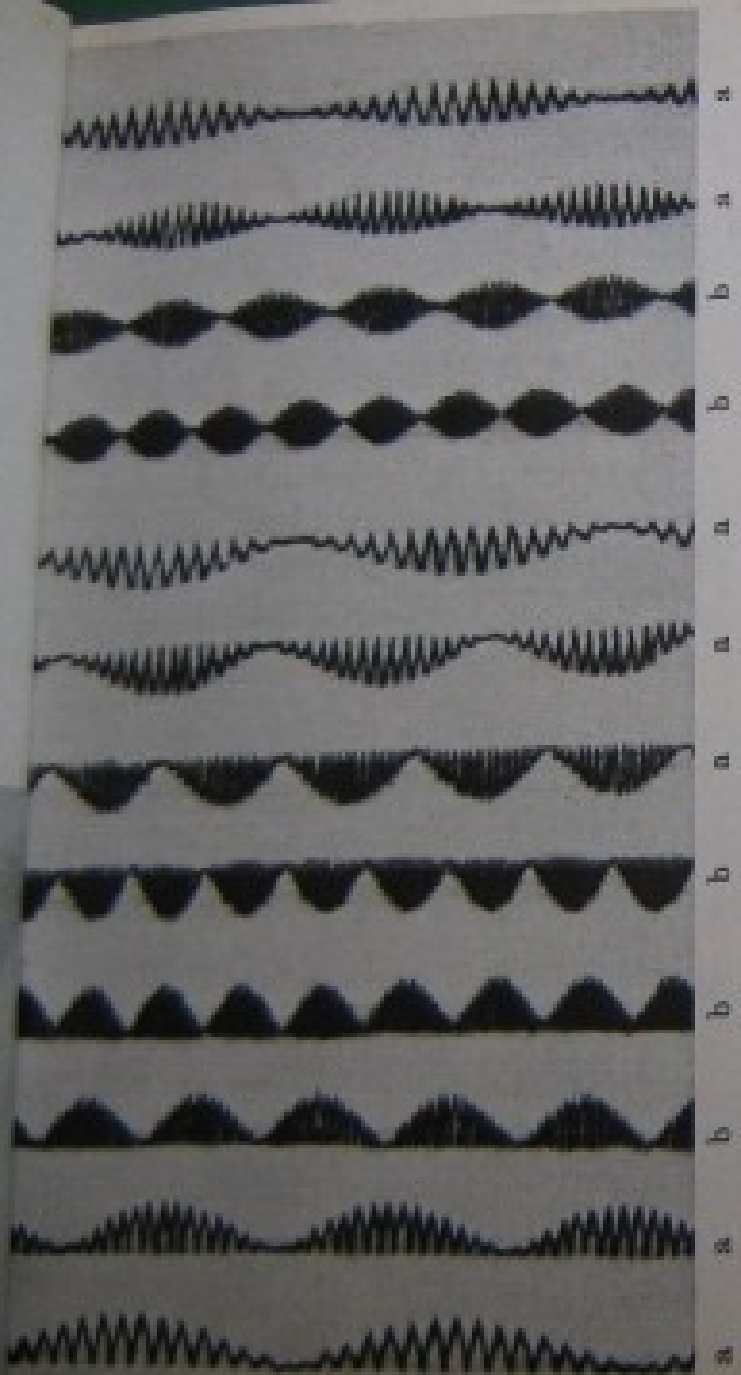
Fig. 46



Zigzag Embroidering Foot

Fig. 47





a = normal stitch length, zigzag sewing foot  
 b = short stitch length, zigzag embroidering foot

Fig. 48

*Needle Position*

combined

right

centre

left

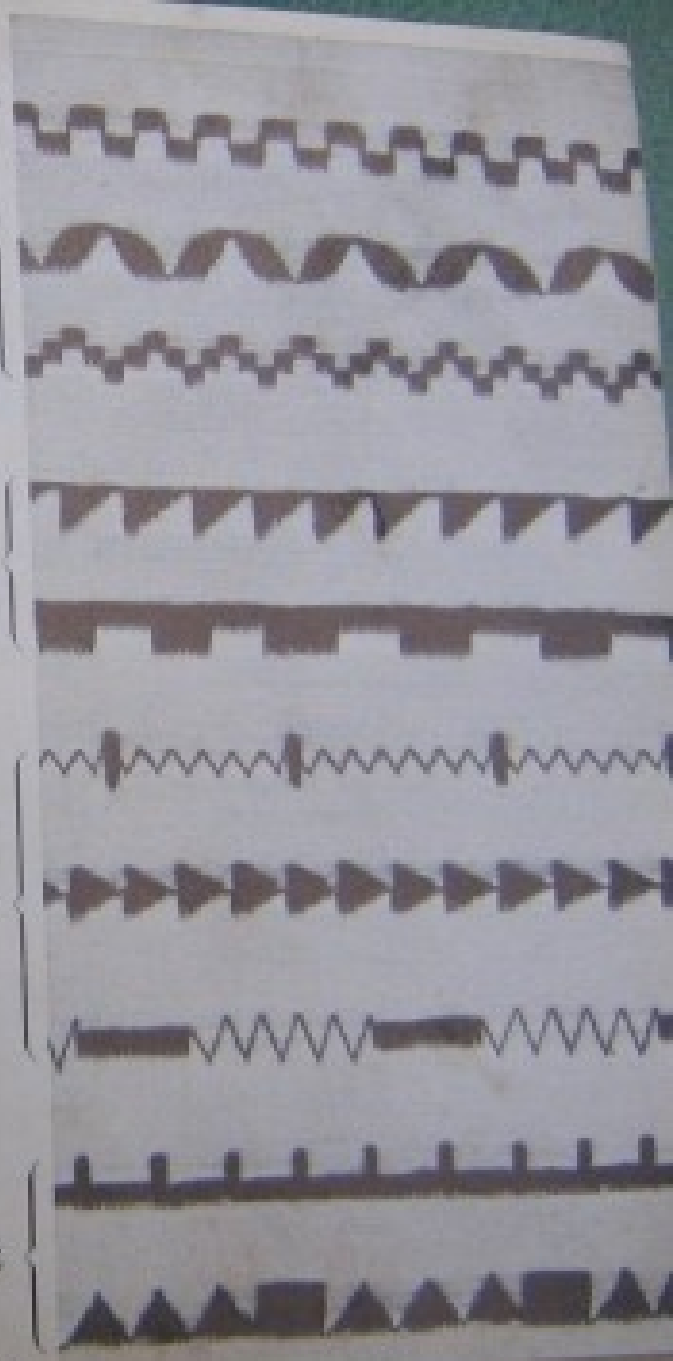


Fig. 49

## **Zigzag Ornamental Stitches and their Combinations**

As seen from the various descriptions, zigzag stitches are the result of the combination of

1. Stitch length (fabric feed) from zero to  $\frac{1}{4}$  inch.
2. Stitch width (needle throw) from zero to  $\frac{1}{4}$  inch.
3. Stitch location (adjustment left-centre-right).

Ornamental stitches are produced by adjustment of the control knobs during actual sewing.

Stitch location centre  
 Stitch width 1 1.5 2 2.5 3 3.5 4  
 Stitch length 1

Fig. 50

Stitch length 2

Stitch length 3

Stitch length 4

Stitch length approx. zero

When sewing with adjusted stitch length and width, the following designs are produced:

Naturally, intermediate values for both stitch width and length can be employed as well.

Alteration of stitch length, width and needle position, will produce the following varieties:





$\frac{1}{7}$   
0-4  
right



$\frac{1}{7}$   
0-4  
left



$\frac{1}{2}$   
0-4  
centre



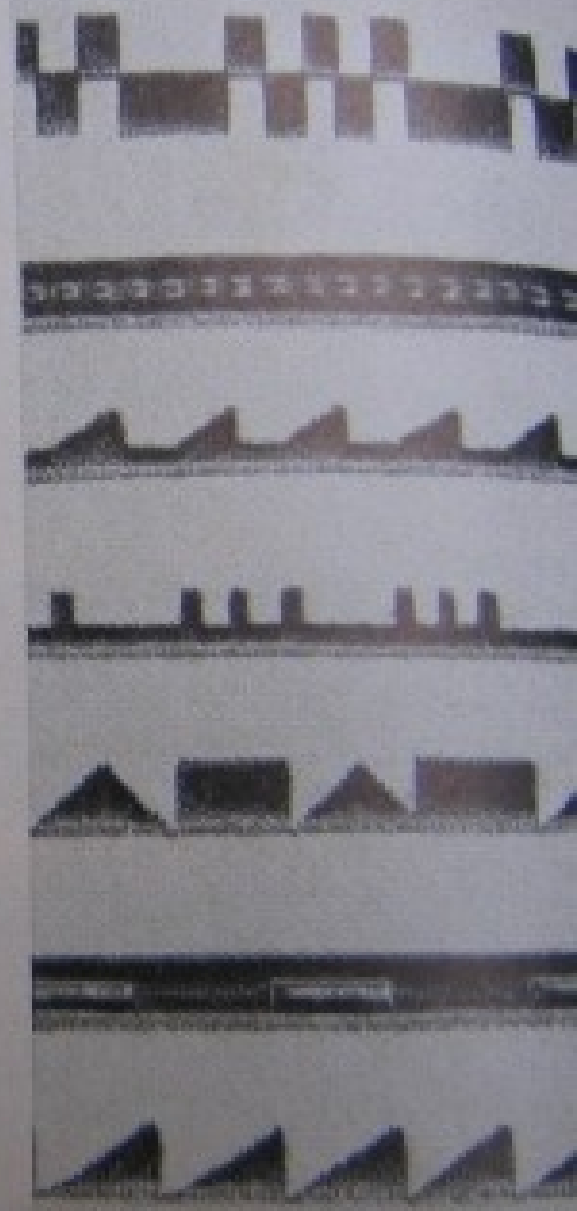
1  
2  
centre

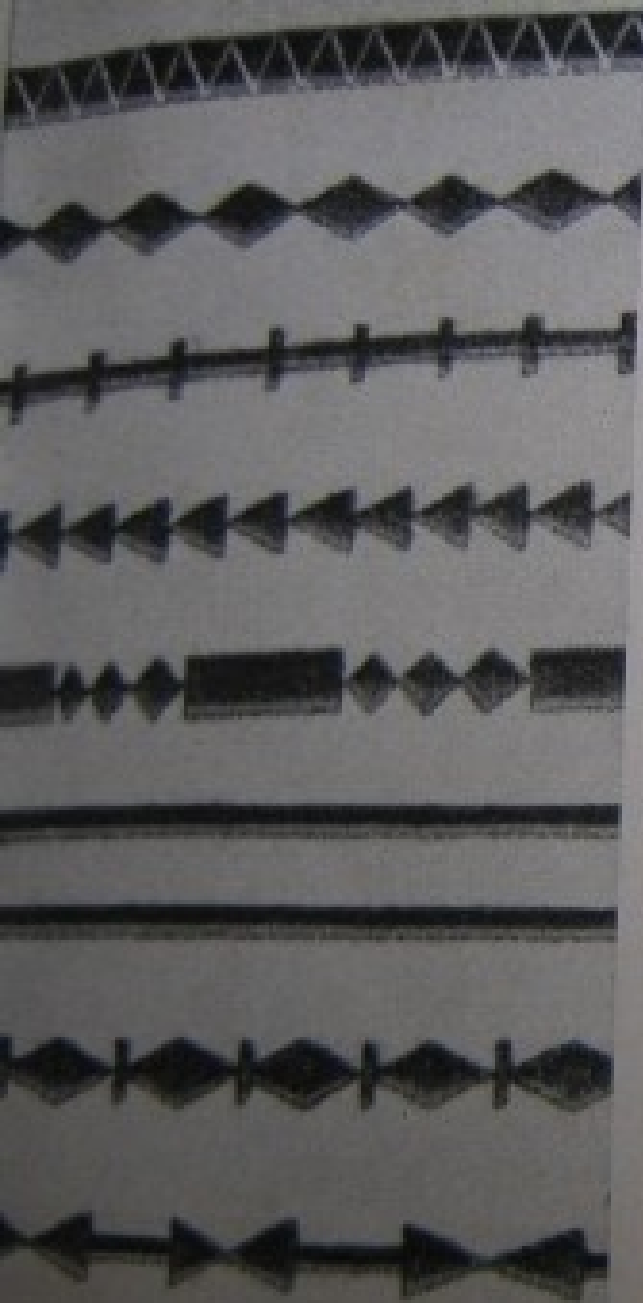
Stitch length  
Stitch width  
Stitch location

Length approx. zero

Width 0-4       $1\frac{1}{2}$ -3      0-4       $1\frac{1}{2}$ -4       $1\frac{1}{2}$ -3      4

Locat. left



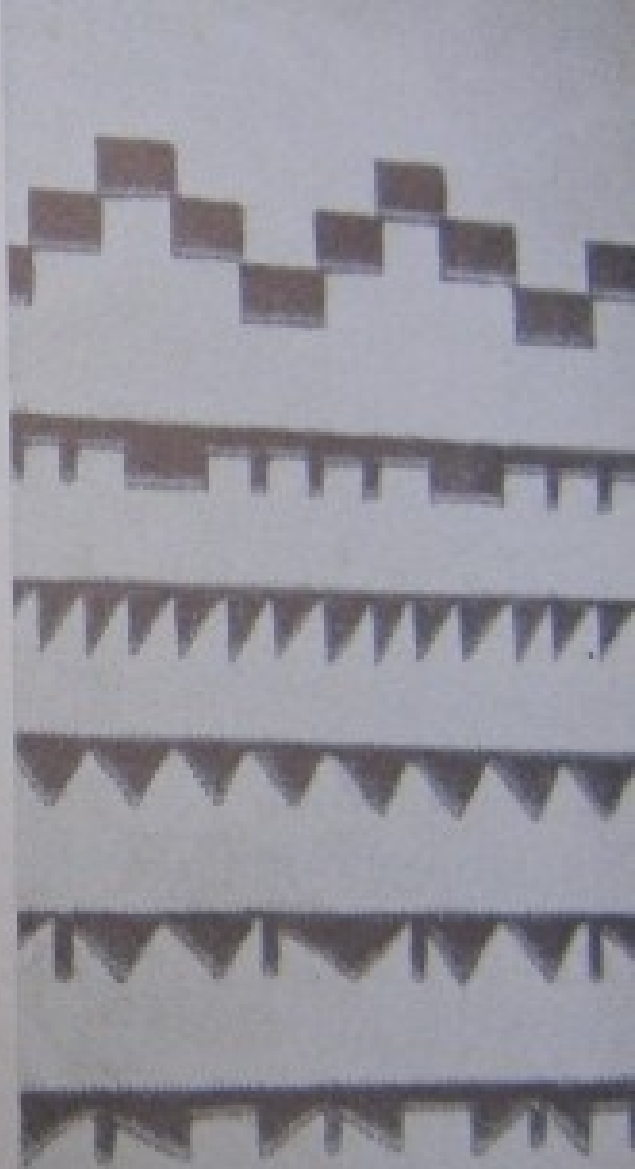


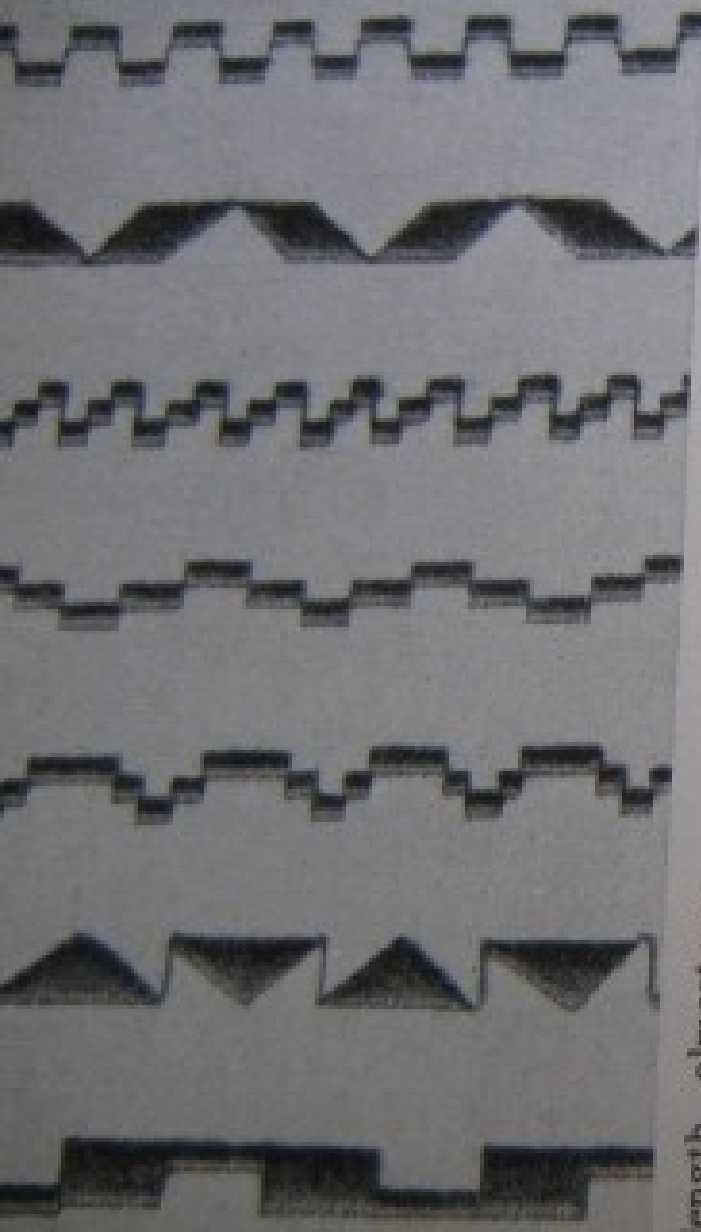
Stitch length almost zero

|        |  |     |     |     |     |     |     |     |     |
|--------|--|-----|-----|-----|-----|-----|-----|-----|-----|
| Width  | $\left\{ \begin{array}{l} 1\frac{1}{2}-4 \\ 0-4 \end{array} \right.$ | 0-4 | 0-4 | 0-4 | 0-4 | 0-4 | 0-4 | 0-4 | 0-4 |
|        |  | 4   | 4-0 | 4   | 4-0 | 4   | 4-0 | 4   | 4-0 |
| Locat. | C  | C   | C   | C   | C   | C   | C   | C   | C   |

Stitch length almost zero

|               |  |     |     |     |     |                   |   |
|---------------|--|-----|-----|-----|-----|-------------------|---|
| Width         | $\left\{ \begin{array}{l} 4-1\frac{1}{2} \\ 4 \end{array} \right.$ | 4   | 0-4 | 0-4 | 0-4 | 4-1 $\frac{1}{2}$ | 4 |
|               |  | 0-4 | 4-0 | 4-0 | 4-0 | 4                 | 4 |
| Stitch length | R  | R   | R   | R   | R   | R                 | R |



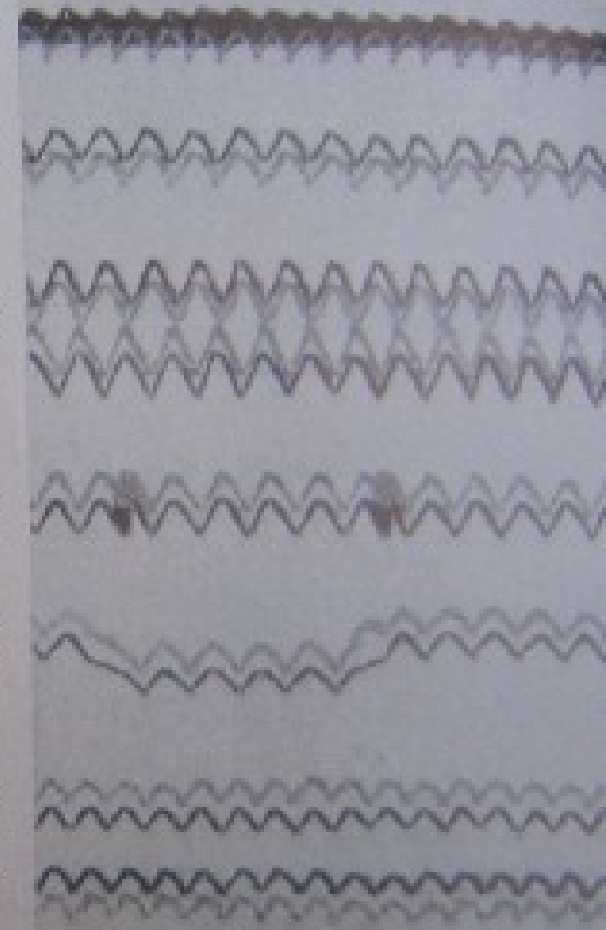


Stitch length almost zero

|        |                   |     |                |     |                |                |    |
|--------|-------------------|-----|----------------|-----|----------------|----------------|----|
| Width  | $1\frac{1}{2}$ -4 | 0-4 | $1\frac{1}{2}$ | 0-4 | $1\frac{1}{2}$ | $1\frac{1}{2}$ | LR |
| Locat. | LR                | LR  | LCR            | LCR | LCR            | LCR            | LR |

2 Needles

|                 |   |   |   |    |                |                |                |                |                |                |
|-----------------|---|---|---|----|----------------|----------------|----------------|----------------|----------------|----------------|
| Stitch length   | 1 | 1 | 1 | 1  | $1\frac{1}{2}$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ | $1\frac{1}{2}$ |
| Stitch width    | 1 | 1 | 1 | 1  | $1\frac{1}{2}$ | $1\frac{1}{2}$ | 2              | C              | C              | C              |
| Stitch location | C | C | C | LR | C              | C              | C              | C              | C              | C              |



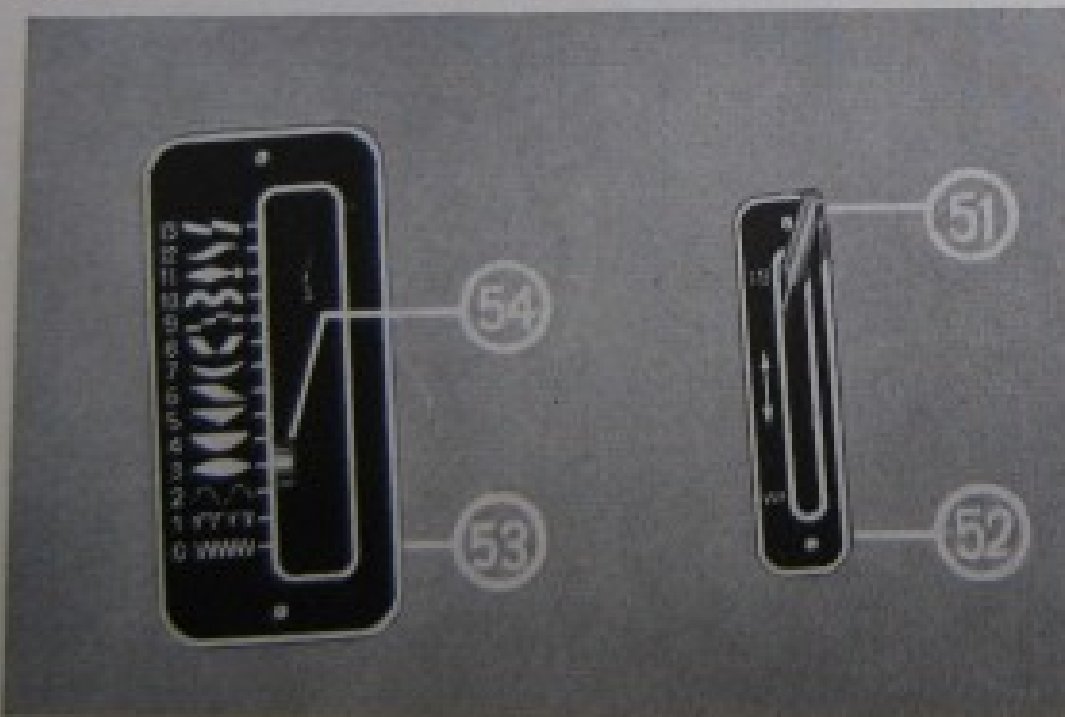


# Automatic Fancy Stitches

*Only available in Model 640-2*

Every BERNINA Class 640-2 is equipped with the automatic ornamental stitch device which enables ornamental stitches to be sewn without manipulation of the controls. Just select the pattern desired, set the control lever and then simply concentrate on guiding the fabric through the machine with both hands free to do so.

Fig. 60



## Adjustment for Automatic Ornamental Stitch Sewing

The lever 51 for zigzag or ornamental stitches is placed at the right-hand side of the top arm (Fig. 60). It projects from the slot in the plate 52. If the machine is to be set for control by the automatic ornamental stitch device, push lever 51 backwards. Reset for zigzag and all other types of stitching by pulling lever forward.

At the left of the zigzag lever is placed the ornamental stitch selecting lever 54 which projects from the plate 53. This plate bears the symbols of the 13 possible ornamental stitches. When sewing zigzag stitches, or all type sewing, except automatic embroidery the lever 54 with its white line on the symbol side of the scale is set at zero, marked by a zigzag line, i. e. in front position.

Select an ornamental stitch and set lever 54 at the corresponding symbol so that the white line thereon lines up with its mark. This is effected as follows:

Pull lever 54 to the right clear of engaging slots, move it until its line and the stitch symbol line up and then release. It will automatically move back to the left and be locked and stay in this position. When displacing the lever, make sure that the needle is outside the fabric, i. e. in raised position. The stitch width adjusting knob 12 should be set so as to show the numeral 4 in the sight opening, i. e. to produce the largest stitch width.

After threading the machine, stitching can be started in the same manner as ordinary sewing.

When switching back to normal zigzag stitches, place control lever in zero position as described above.

## Automatic Ornamental Stitches with one Needle

Various stitch lengths, Fig. 61

The stitch patterns may be varied by changing the stitch length from almost 0 to 4.

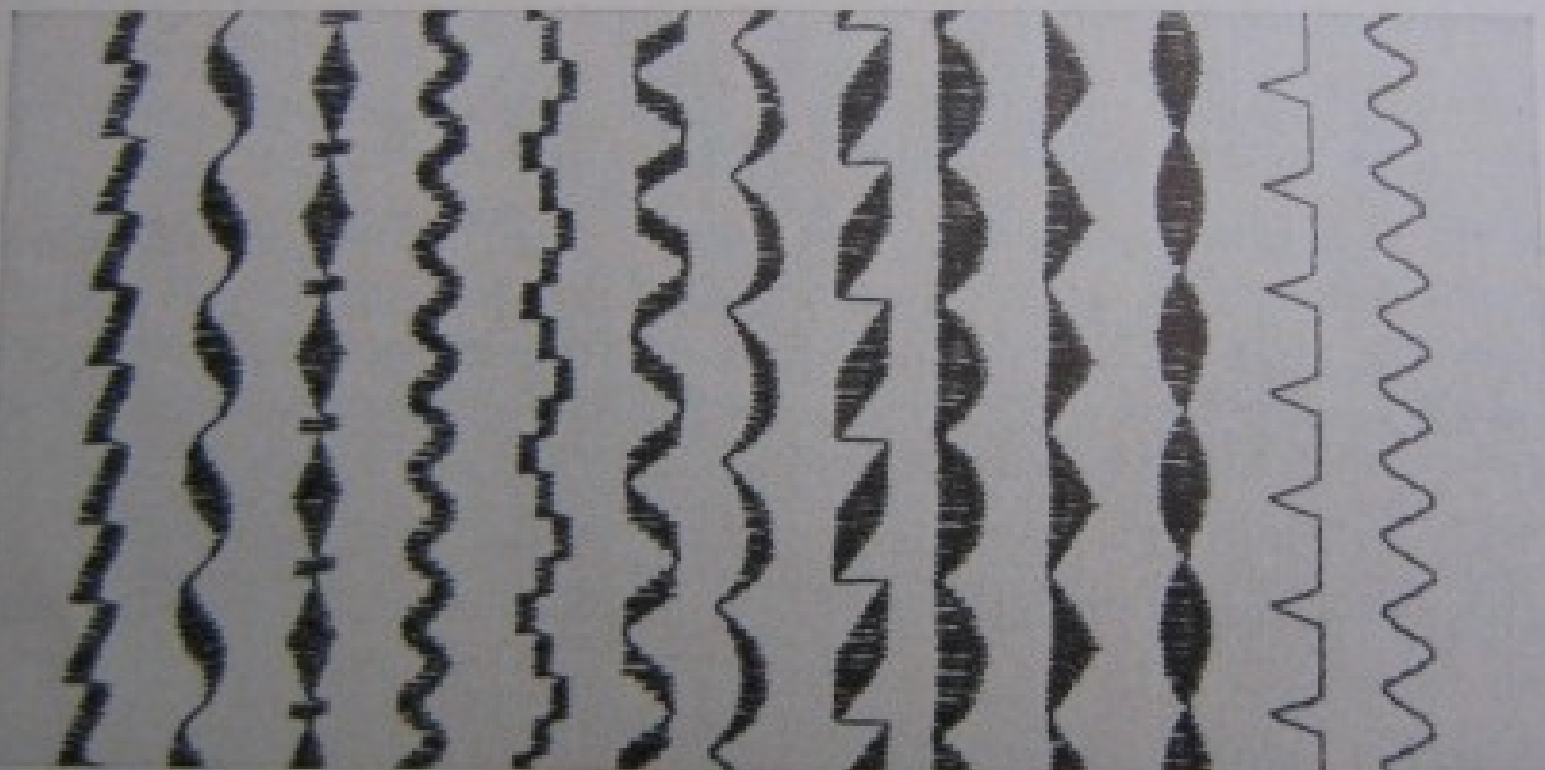


Fig. 61

A further variation is possible by combining individual ornamental stitches during sewing as seen from the example below.

- Combination patterns:
- |                                 |         |
|---------------------------------|---------|
| a) Stitch patterns combined     | Fig. 64 |
| b) Several stitch rows combined | Fig. 65 |

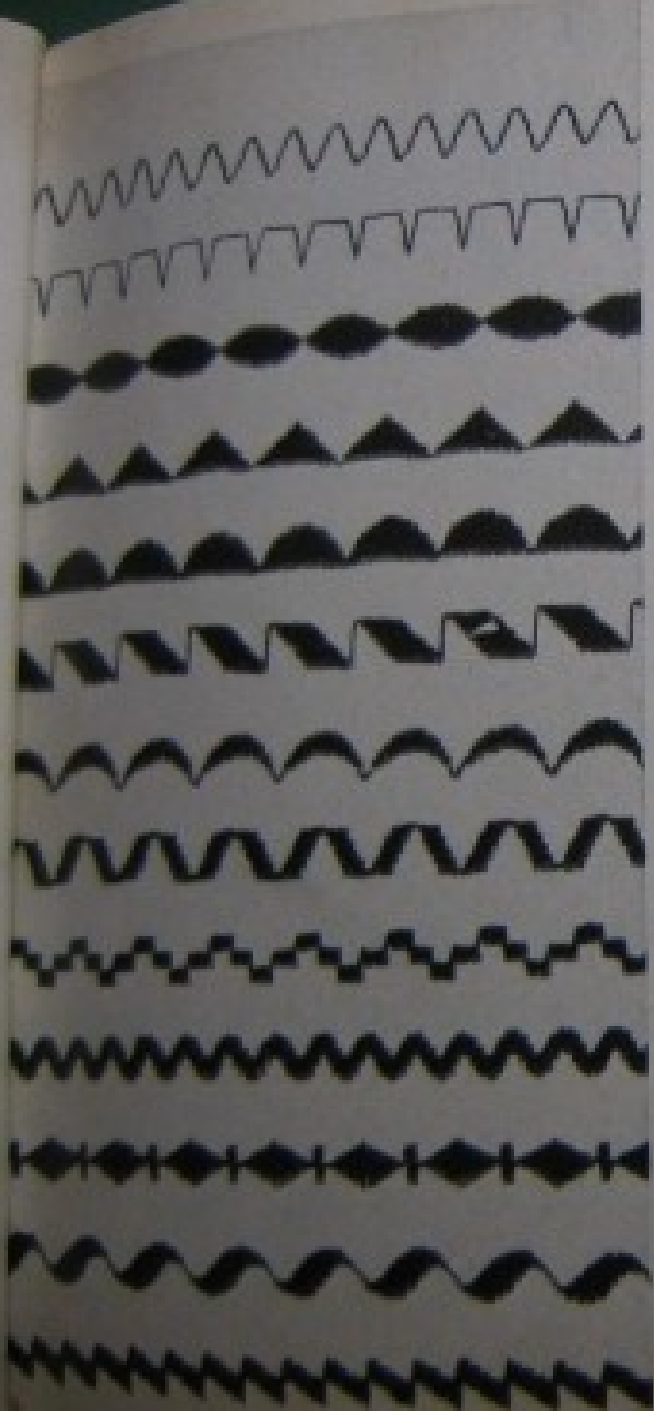
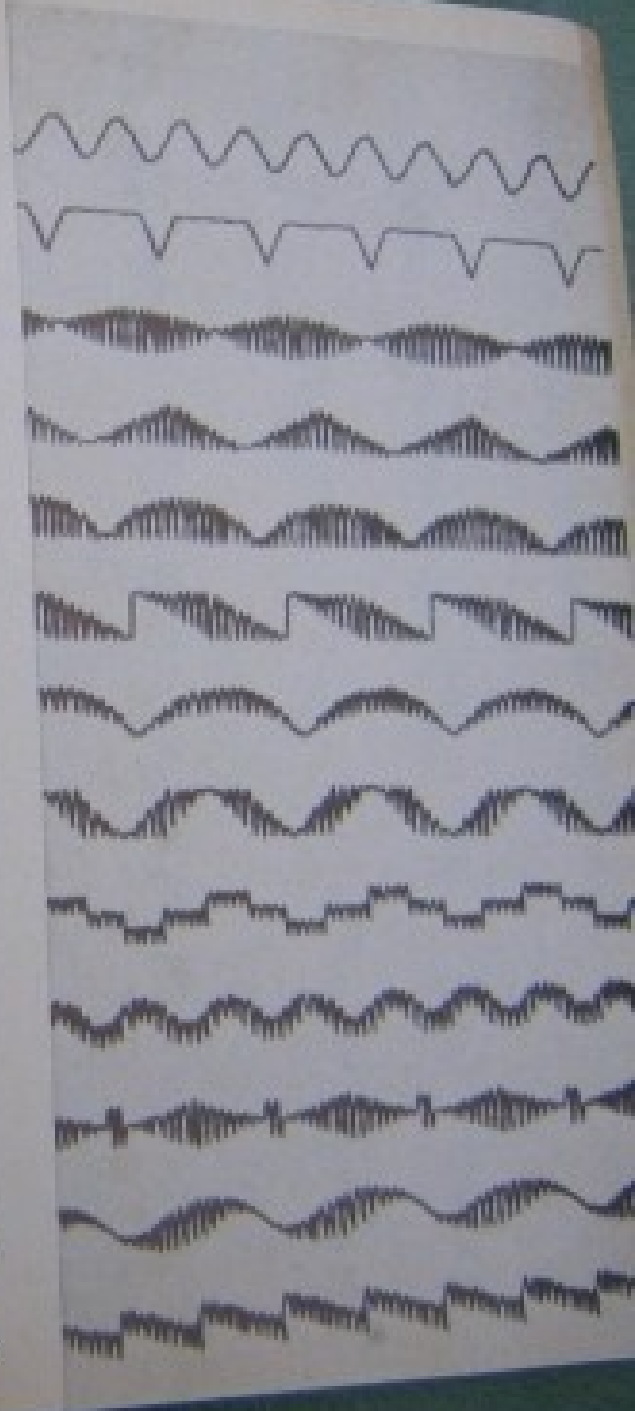


Fig. 62

Stitch length      alm. 0  
 Stitch width        4



Stitch length      1/2  
 Stitch width        4

Fig. 63



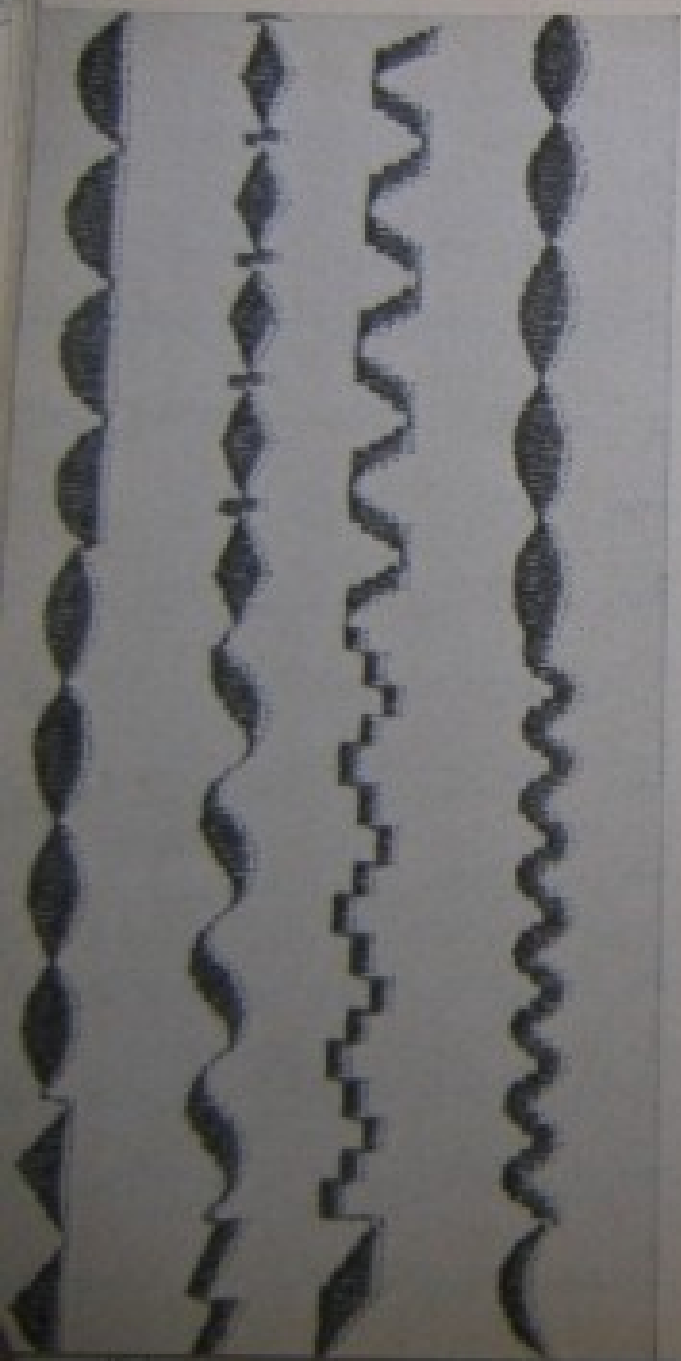


Fig. 64

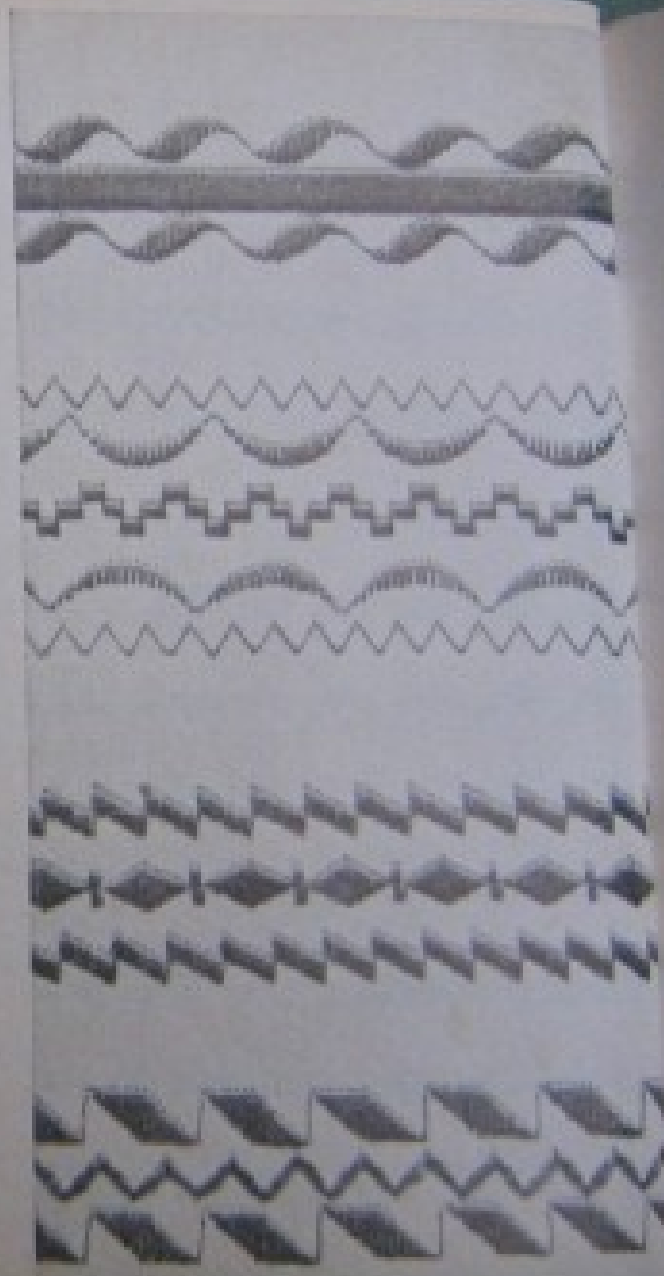


Fig. 65

## Automatic Ornamental Stitches with two Needles

Zigzag stitches are also possible when sewing with two needles. However, make sure that the two needles are not displaced further than allowed by the elongated hole in the throat plate.

Needle throw plus distance between needles equals width of elongated hole. When a double needle with  $\frac{1}{12}$  inch needle distance is used, the stitch width must not exceed  $\frac{1}{12}$  inch.

Naturally ornamental stitches made with two needles may also be modified by altering the material feed and by thread selection (2 colors).

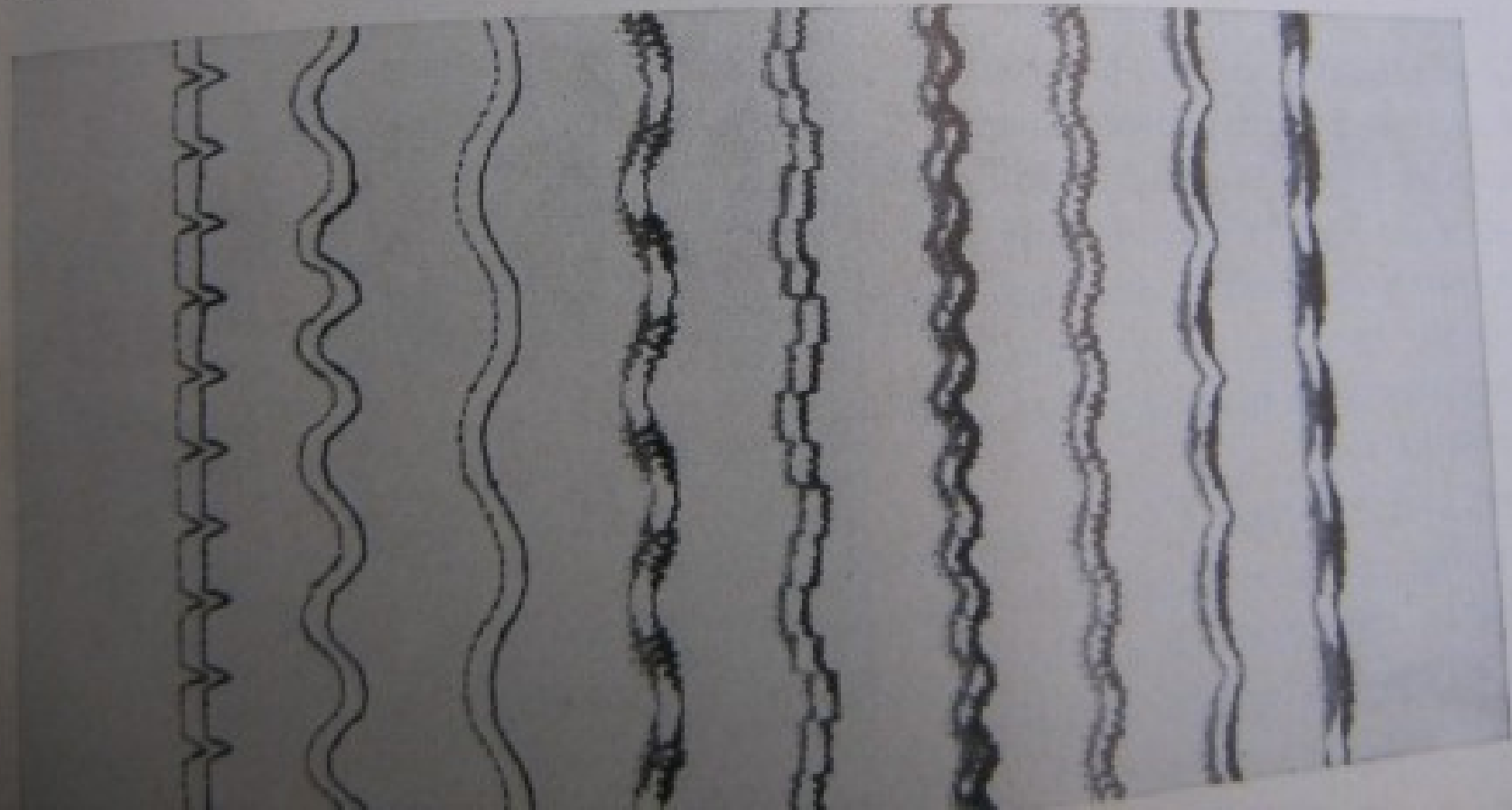


Fig. 66

## Blindstitch sewing

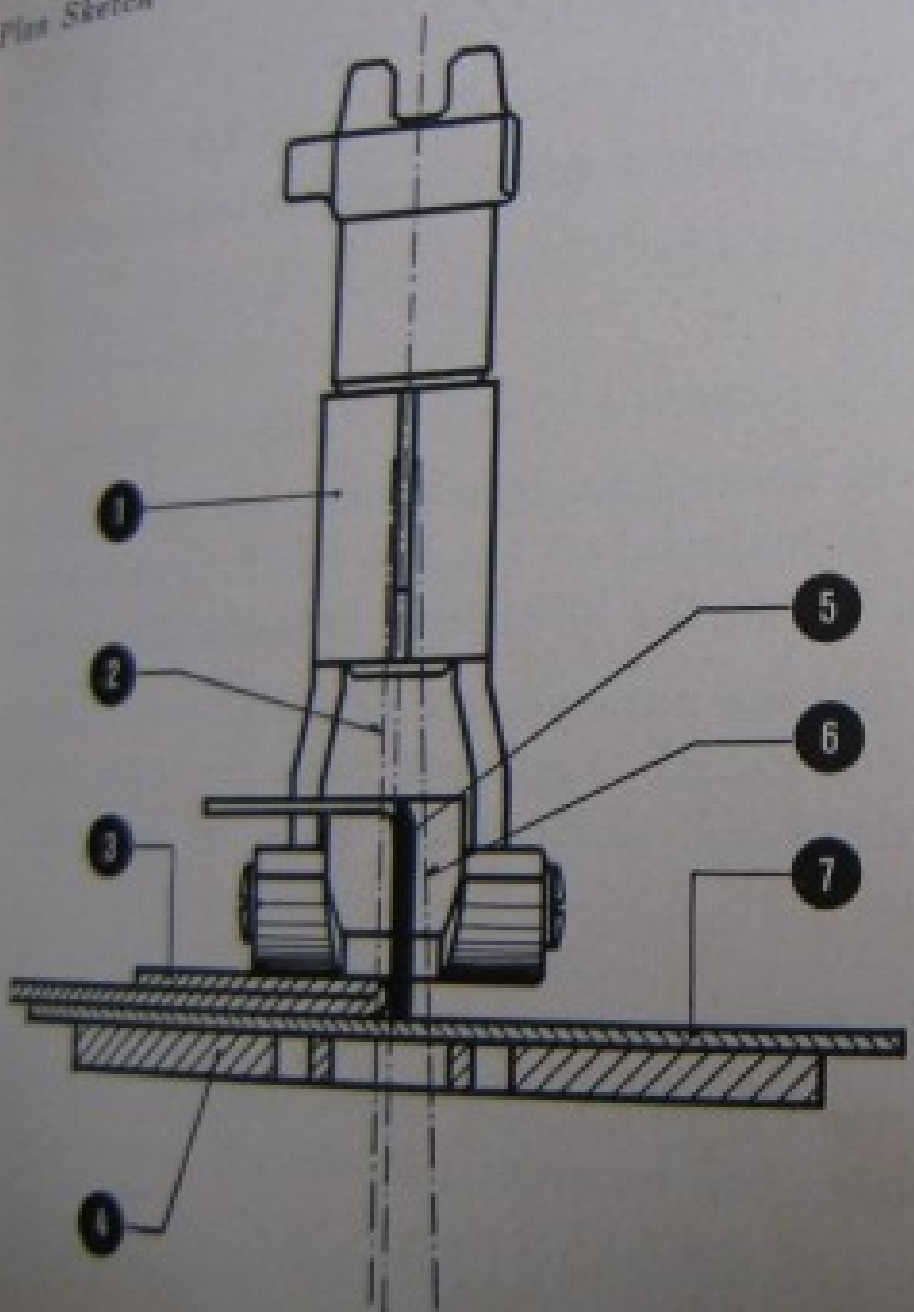
Blindstitch sewing means sewing together two pieces of cloth, the upper one being folded and sewn to the lower one in such manner that the stitches are invisible on one side. Such work is done with the blindstitch foot which has an elastic cloth guide between the fingers of the base, but otherwise is identical to an ordinary presser foot.

Blind stitch sewing can be accomplished with the ordinary zigzag stitch or by means of the automatic built-in blindstitch cam.

Fig. 61



Flat Sketch



- 1 Blindstitch foot  
(No. 53 06 82 02)
- 2 Left position of needle
- 3 Folded upper piece of material
- 4 Needle plate
- 5 Material stop and guide
- 6 Right position of needle
- 7 Flat lower piece of material

Fig. 68

### 1) Setting of machine when using ordinary zigzag stitch

- a) Attach blindstitch foot
- b) Deflect needle to right position
- c) Set zigzag knob to a stitch width between 2 and 3 according to thickness of material
- d) Set stitch length to 4
- e) Set feed dog for normal sewing.

After having threaded the machine, put the lower flat piece of material underneath the blindstitch foot, then put the upper piece of material on top and fold it in such manner that it always touches the elastic guide, lower the blindstitch foot and start sewing.

The zigzag stitch width should be set so that the needle on its left deflection is stitching through the middle of the folded piece of material, which will make the seam invisible on the upper piece of material, when flattened. Such stitch width is, depending on thickness of material used, between 2 and 3.

### 2) Setting of machine for automatic blindstitching

When blindstitching with the ordinary zigzag stitch, the folded piece of material is pierced on every second stitch; when using the automatic blindstitch cam, there are five straight stitches between each piercing of the folded piece of material. The machine is set as follows :

- a) Attach blindstitch foot
- b) Push zigzag ornamental stitch lever 51 (Fig. 60) to the back (1-13)
- c) Put ornamental stitch selector 54 to blindstitch pattern (1)
- d) Set needle to centre position
- e) Set zigzag knob to a stitch width between 2 and 3 according to thickness of material
- f) Set stitch length to 2, 3 or 4 according to kind of material
- g) Set feed dog for normal sewing.

The blindstitching then is done as mentioned under 1).

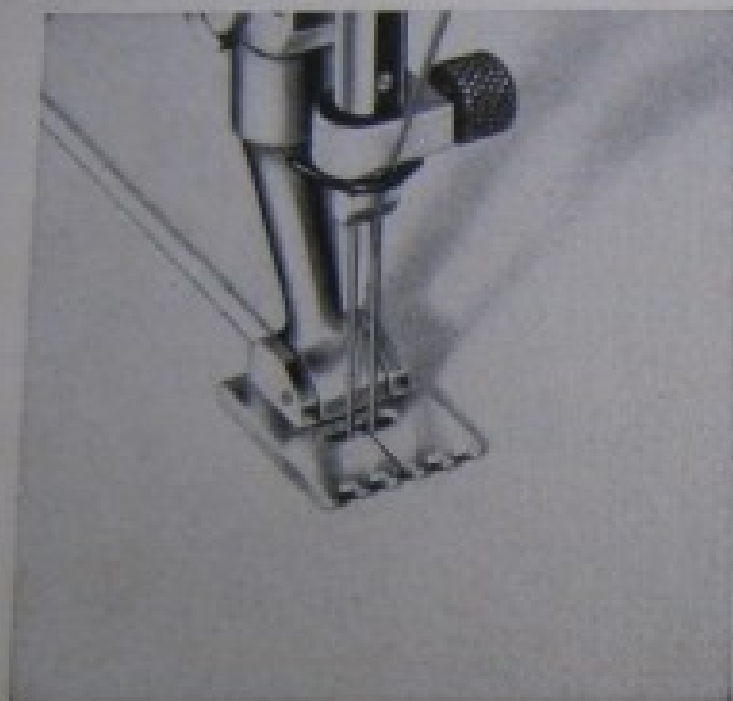


Fig. 69

## Pintucking

*Available as an extra*

The complete pin-tucking attachment comprises the following members:

- 3 double needles for pin-tucks of approx.  $\frac{1}{12}$ ,  $\frac{1}{8}$  and  $\frac{1}{6}$  inch width
- 3 pin-tuckers with 3, 5 and 7 grooves
- 1 pin-tucking tongue
- 1 pin-tucking yarn threader

When preparing the machine for pin-tucking, proceed as follows:

1. Set needle to centre position in hole by adjusting control 13 (Fig. 1) to centre.
2. Set zigzag lever 12 (Fig. 1) to zero.
3. Remove standard needle from needle bar and insert a double needle (proceed as for standard needle).
4. Attach the pin-tucking foot corresponding to the needle distance.

- 7 Take-up lever
- 8 Thread guide
- 9 Supplementary thread tension
- 22 Spool pins
- 27 Pin-tucking plate
- 32 Thread guide
- 33 Needle holder eye

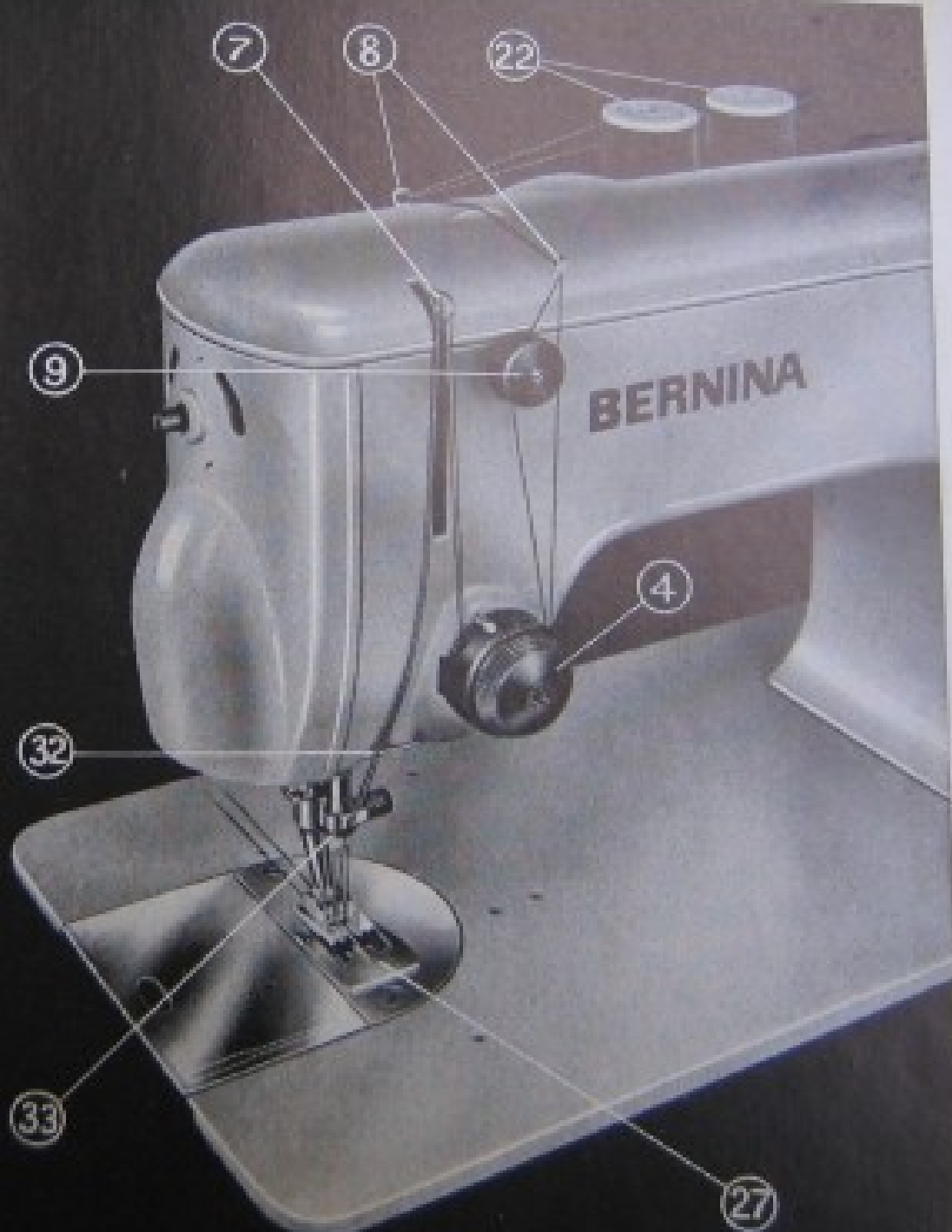


Fig. 70



## Threading the two Top Threads

Fig. 70

To thread the machine for pin-tucking with two top threads, proceed as for normal sewing. The thread spools are slipped on the double spool holder with the two spool pins 22 at the rear of the machine. The thread of the front reel is passed through the rear eyelet 8 on the top of the stand, hence to the eyelet 8 in front and through the rear thread tension disc which is separated from the front disc by an intermediate disc. Then pass the thread through the upper opening of the take-up lever 7, down behind the thread guide 32 on the stand and then behind, the thread guide 33 and finally through the left-hand needle eye. The second thread is threaded similarly, but passed through the front thread tension disc to the lower hole in the thread take-up lever 7, and through the right-hand needle eye. Both threads should be separate from each other in the thread tension unit since better pin-tucks are obtained that way.

## Pin-tucking

Fig. 71

A pin-tuck is formed by the bottom thread which pulls the two top threads together so that the fabric between the two needles is raised into a tuck.

Additional tension is necessary so that the threads of the left-hand and right-hand needles can be adjusted separately. Thread tension is adjusted according to the type of material and the desired shape of the pin-tucks.

For pin-tucks with inserted cord, insert a cord, using threader, in the cord guide from below and pass it upwards through the small oblique hole in front of the slot in the

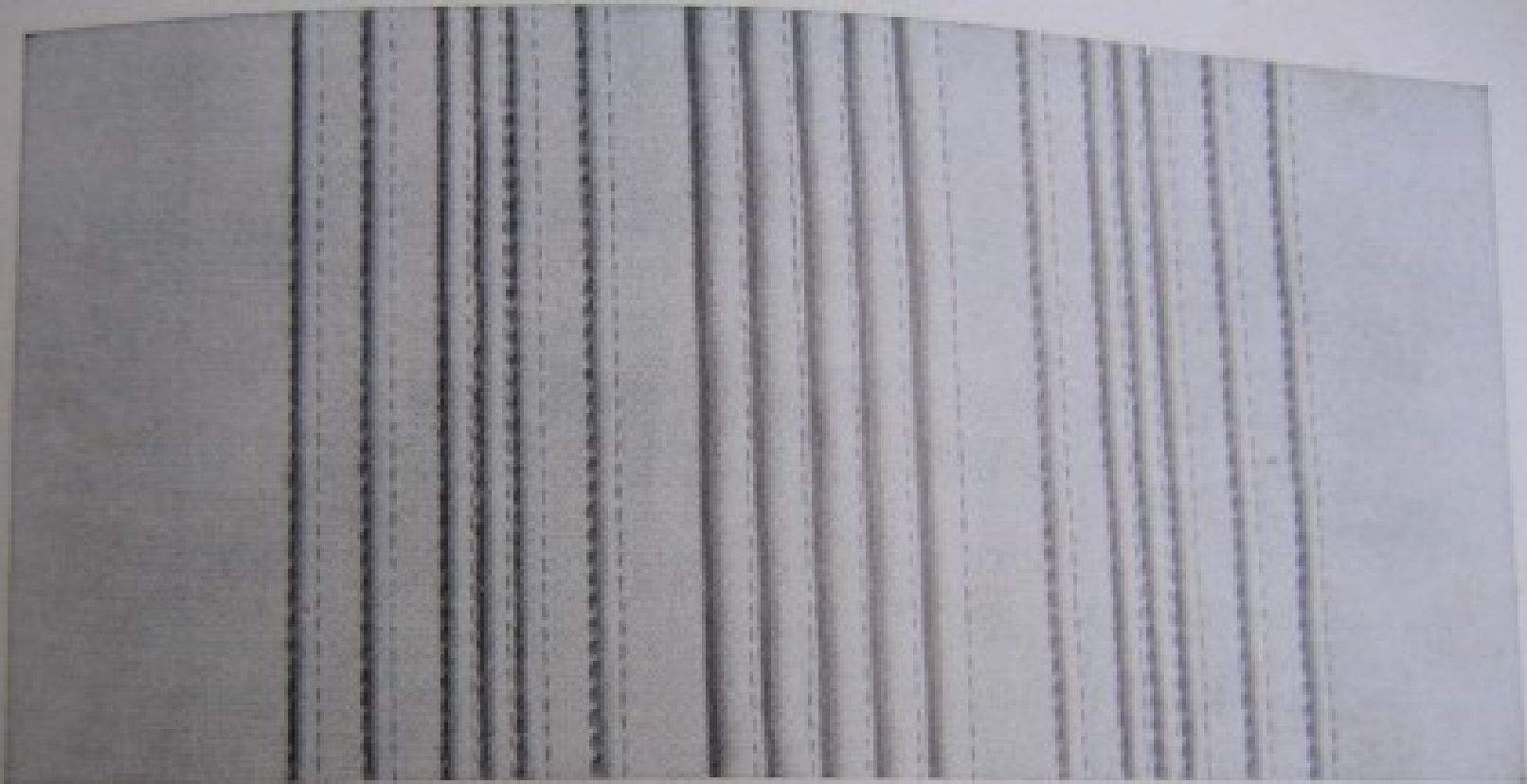


Fig. 71

throat plate. The cord guide is attached by the two front screws holding the gear-box cover.

In order to obtain well-defined, attractive beads when making large-size pin-tucks, use pin-tucking plate 27, which can be attached to the throat plate in the same manner as the darning plate.

## EMBROIDERING AROUND HOLES

The complete equipment for embroidering around holes, which is not part of the standard accessories, comprises the following parts:

- 1 Hole embroidery plate No. 540660
- 3 Slides with guide lug for hole embroidering, 2, 3 and 5 mm diameter, Nos. 540689, 540691 and 540694
- 1 Hole embroidery foot No. 530662
- 3 Punches No. 541107 with 1½, 2 and 3 mm hole diameter
- 1 Wooden block No. 541108

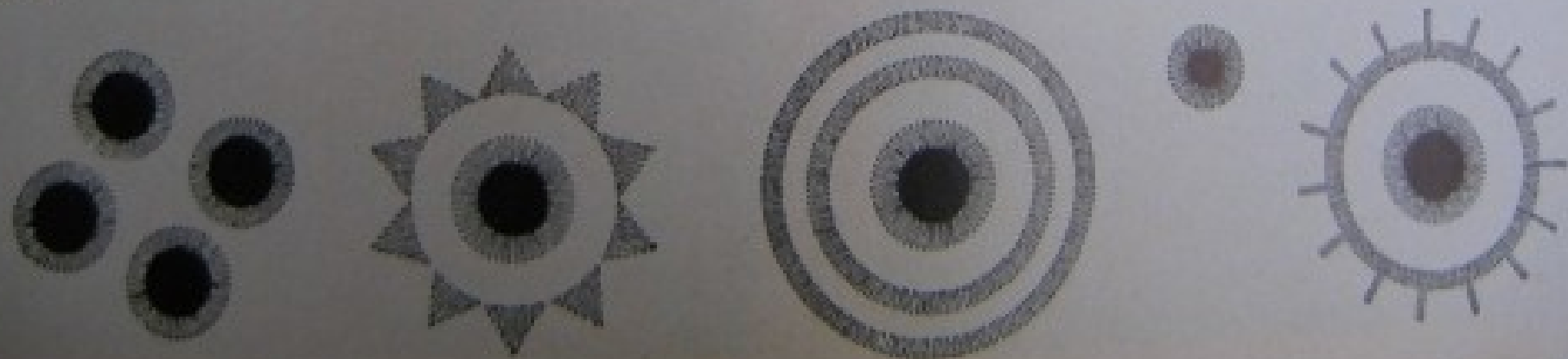
For hole embroidering, set up the machine as follows:

1. Set needle to the *left* by turning handle 13 (Fig. 1) to the left.
2. Lower feed dog by moving control lever 17 (Fig. 14) to the left in direction of darning symbol arrow.
3. Attach hole embroidery plate with the slide suitable for the work planned.

Embroidering threads No. 60-80, two-ply three-ply, are employed for top and bottom threads in order to sew around the hole evenly. Bottom thread tension should be slightly tighter than that of the top thread so that the thread knots will be located on the under side of the material. Always use the embroidery frame. We recommend winding strips of cloth round the outer ring in order to increase the tension of the material to be worked and to prevent damage. After clamping the material in the embroidery frame, punch the holes on the wooden block, using the appropriate punch. An awl may be used in place of the punch. It is advantageous previously to mark the location of the holes on the material by means of a pencil or the like. Then place the material under the hole embroidering foot so that the guide lug of the slide projects through the hole. As mentioned above, the needle should be set to the left, as shown in Fig. 21c.

The slide in the embroidery plate should be so positioned that the needle, when effecting a right-hand stitch, enters in the recess of the guide lug just beyond the edge of the material. This position changes according to stitch width and should therefore be

Fig. 72



readjusted after each change of stitch width. Then allow the machine to operate at uniform speed, at the same time turning the embroidery ring three or four times around the guide lug, again at a uniform rate, in the clockwise direction. Then set zigzag knob 12 (Fig. 1) to zero and secure the thread by a few stitches. These stitches should be parallel with the threads of the embroidery so that they remain practically invisible.

If the slide of the embroidering plate is reversed as shown in Fig. 74, the guide lug can be used as a centre in making circular round embroidery. The needle enters the elon-

Position of slide  
for hole embroidery



Fig. 73

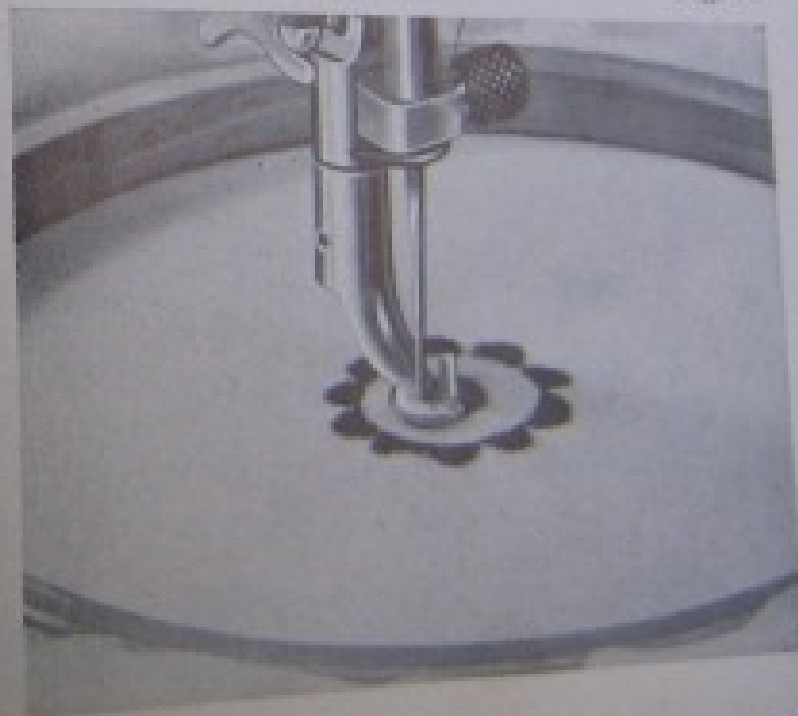
Position of slide  
for circular embroidery



Fig. 74

gated slot of the slide. In this case, with a change of the stitch width and or of the rate of rotation of the embroidery ring during stitching, or the use of threads of different colours, very attractive and varied patterns can be produced. When embroidering around holes, observe the general rule that holes of the same size should be finished successively so that the slide need not be changed too frequently.

Fig. 75

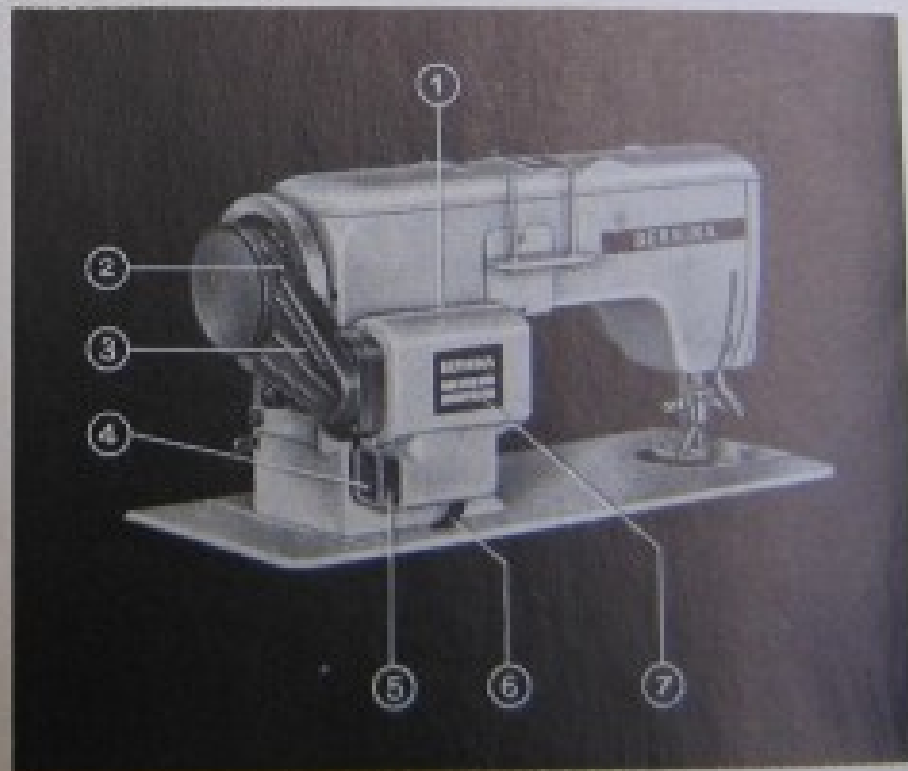


# Motor

The BERNINA Favorit Class 640-2 and Class 642-2 can be supplied with a horizontal motor mounted at the rear of the machine on the balance wheel side. The power is transferred directly onto the running groove of the balance wheel by means of a V-belt. The plug socket for foot control and the mains plug socket are fitted as a unit below the motor.

Fig. 76

- 1 Motor
- 2 V-belt
- 3 Belt cover
- 4 Plug socket for foot control
- 5 Mains plug socket
- 6 Light cable
- 7 Motor specification plate



Attached to the housing is the so-called rating plate which indicates voltage and motor output. Before connecting the machine to the mains, be sure that the voltage indicated on the plate corresponds to that of the mains. Mains voltage is given on the current meter of your home. Do not rely on voltage indications given on wall sockets or plugs.



## Useful Hints

Various causes of little troubles, which can easily be eliminated, are listed below:

### Top Thread Breakage

Needle of inferior quality, badly polished needle.

Needle not properly inserted. Long groove must face front.

Needle blunt or bent.

Needle too fine in relation to thread used.

Top thread tension too tight.

Thread passages not polished.

Thread control spring broken.

Needle hole in throat plate damaged by needle, requires repolishing.

Shuttle point has become too sharp by needle action (call mechanic).

Shuttle not oiled.

Inferior thread or knotted thread.

Thread dried out in storage. Threads should never be kept in heated rooms.

### Bottom Thread Breakage

Bottom thread tension too tight.

Bottom thread not properly wound on bobbin.

Bobbin deformed or jamming in case.

Needle hole in throat plate damaged by needle, requires repolishing.

### Faulty Stitches

Unsuitable needle. Use needles System 130 or Standard 15×1 only.

Needle blunt or bent.

Needle not properly inserted. Long groove must face front. Push needle home completely.

Inferior, badly polished needle.

Cheap needles often tear thread and break easily. This may cause costly damage to throat plate and feed dog. The best needle is the most economical in use.

Needle not in proper relation to thread number.

### Needle Breakage

Needle bent.

Needle too fine in relation to thread.

Needle holding screw not properly tightened.

Top thread tension excessive.

When the work is pulled towards the operator on completion, the needle often bends.

When the needle performs the first stitch subsequently, it fouls the throat plate and breaks. Therefore always pull work *away from you* from under the presser foot.

During sewing, however, the work should not be pulled away from you *too hard*.

Use of cheap thread which is unevenly twisted or even knotty. A single knot on a

thread reel may break the needle and even damage the throat plate so that far more expense may ensue than by securing the best possible thread.

### **Faulty, uneven Stitch Rows**

Thread ends etc. between the thread tension discs.  
Thread ends or lint under bobbin case tension spring.  
Bobbin case damaged, jamming.  
Bobbin case tension spring not adjusted correctly.  
Shuttle not oiled.  
Uneven thread thickness.

### **Work Puckers**

In most cases this is caused by excessive tension in relation to type of work. When sewing Knitted Goods, never pull work away from you with your hands which will cause work to pucker. It is advantageous, on the contrary, to assist the forward movement by pushing.

### **Slow Operation of Machine**

If the machine has stood in a damp room for some time without being used, or if inferior oil becomes tacky during protracted idleness, the machine will operate slowly. In such a case, squirt petroleum into all oil holes, run machine for some time until the gummy oil residues have dissolved and then oil again. This operation should be repeated until all gummy oil has been flushed out of the bearings. In stubborn cases of resinification, the machine must be completely stripped and cleaned by a sewing machine mechanic. If the machine operates easily when balance wheel is turned by hand but sluggishly when starter pedaloperated, the driving belt is too tight.

### Thread jammed in Hook

This may occur because of faulty handling of the machine. In such case unthread needle. After tilting machine backward, remove all visible thread ends from hook. Then oil hook race slightly and allow oil to act on jammed thread for one or two minutes. After that, turn balance wheel forward and backward several times. The jammed thread ends fall apart by these movements and can now easily be removed. If despite all these thread ends remain, then use the tool named "hook key", which is part of the normal accessoires. With this hook key, the hook may be turned forward and backward from its shaft, which is more efficient than the turning movement from the balance wheel. Set the short end of the hexagonal hook key into the hexagonal opening in the hook shaft and move the long end of the key back and forth until the hook turns easily again. Do not by any means loosen the hook retaining screws and do not remove the hook, or press on hook with a screwdriver or scissors, because the hook is hard as glass and therefore an extremely delicate part, which must not be touched with a hard object at all.

### Prevention of Thread Jamming in Hook

Jamming of thread in the hook can only occur when machine is handled inexpertly, i. e. when the following rules have not been observed:

1. Movement of the balance wheel *in the wrong direction*, will cause the top thread to catch and jam the hook. Always turn fly-wheel towards you.
2. Prior to sewing, bring up the bottom thread, place beneath the presser foot and pull to the rear together with the top thread. Hold between thumb and index finger of your left hand until the first stitches have been made.

3. After every sewing operation make sure that take-up lever is in extreme raised position.
4. When sewing a corner, first raise take-up lever, then allow needle to slightly penetrate material. Lift presser foot, turn material, lower presser foot and recommence sewing.
5. When machine is not in use, unthread needle and place a piece of cloth under presser foot.

## **Note**

To prevent damage to presser foot, place a piece of cloth under it whenever practicable.

Place a piece of cloth under presser foot whenever machine is out of use.

In order to avoid thread jamming, make sure after every sewing operation that the take-up lever is in its raised position.

*We reserve the right to change designs, specifications and accessories at any time without notice and without incurring obligations.*



