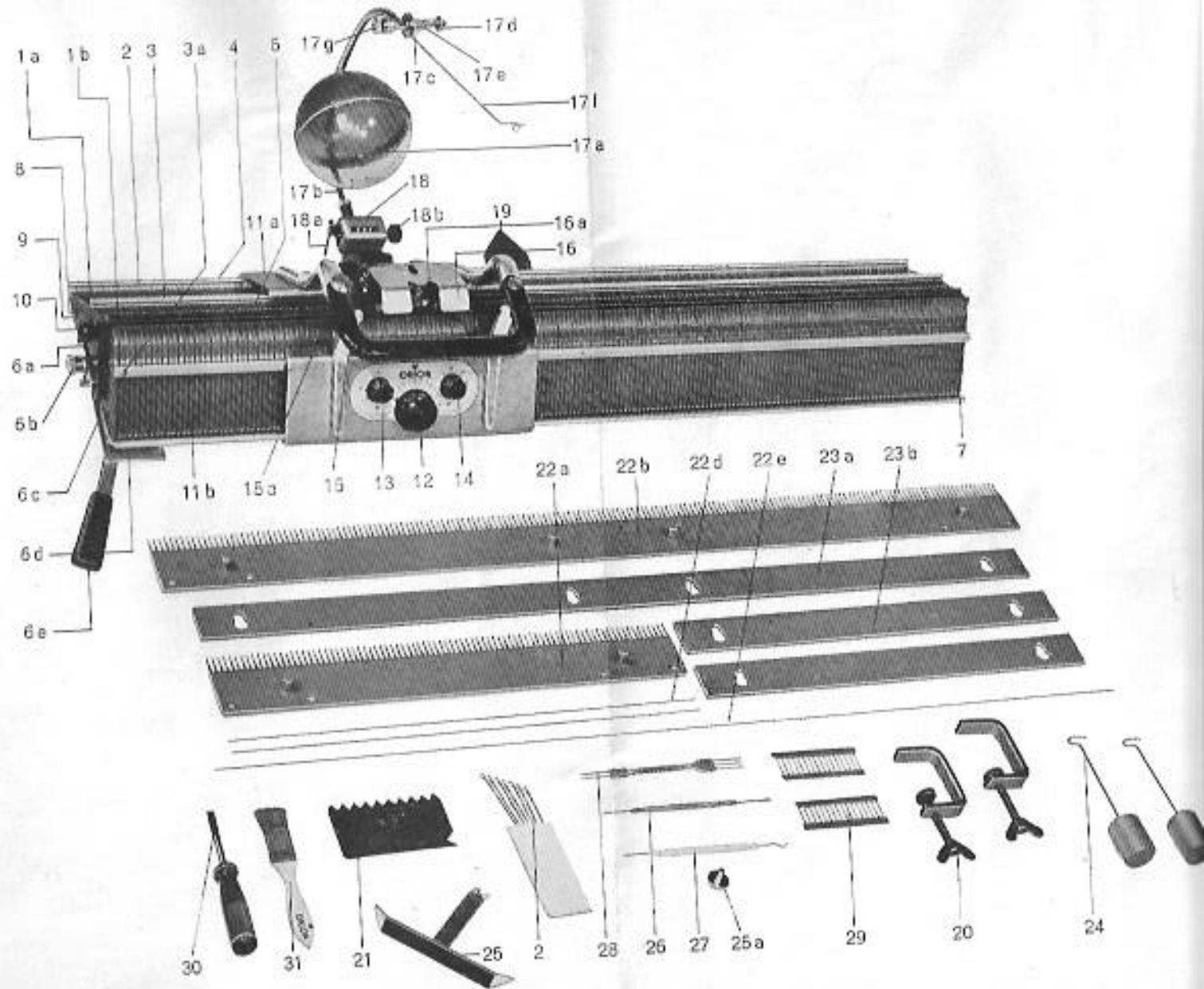




Made by
Press- & Stanzwerk Ltd.
Eschen - Liechtenstein
Swiss Economic Territory



General View with Accessories numbered



	Order No. for spare parts
1a Back Needle Bed (BNB)	1
1b Front Needle Bed (FNB)	2
2 Latch Needles	27
3 Numbered Gauge (at the same time Upper Slider Rail)	5
3a Set Screw	6
4 Lower Slider Rail	Back 3, Front 4
5 Braking Spring (underneath Numbered Gauge)	32
6 Adjustable Racking Device	
6a Positioning Lever	2313
6b Adjusting Nut	312
6c Spring Clamp	303
6d Lock Plate	301
6e Racking Lever with Lock Bolt and Angle-iron	2307
7 Needle Bed Stop Screw (below, at right end of FNB)	21
8 End Plates (for coupling BNB with FNB)	2007, 3008
9 Hinges (at the bottom of End Plates)	2009, 2010
10 Locking Bolts with Ball Grip	2018
11a Back Slide	3101
11b Front Slide	3102
12 Tension Knob	2125
13 Knob R for Circular Knitting (turning off)	
14 Knob P for Double Texture (Fisherman's Rib) Knitting	2126
15 Handle	107
15a Lock-nut	109
16 Special Latch Opener with 4 Brushes	
16a Small Thread Guide Nut and Set Screw	2166
17 Thread Feed and Tensioning Device	
17a Wool Ball Globe	170
17b Wool Feed Arm with locking collar	173/175
17c Thread Brake Discs	
17d Knurled Nut with Braking Spring	
17e Axis with Slotted Eyelet	2185
17f Span wire	
17g Tensioning Spring Uptake with Knurled Nut	
18 Row Counter	183
18a Row Counter Lever	184
18b Row Counter Knob	
19 Row Counter Stricker plate	181
20 Two Clamps	206
21 Needle lifter	211
22a Casting-on Comb, small	2237
22b Casting-on Comb, long	2238
22d Two Short Wires	234
22e Long Wire	235
23a Long Weight Strip	242
23b Short Weight Strip (in two pieces)	241
24 Two Side Weights	2205
25 Stripping Rail for Stocking Stitch	2227
25a Clamping Screw	21
26 Latch Needle with Single Transfer Tool	2218
27 Working Hook with Single Transfer Tool	2219
28 Double Transfer Tool	2217
29 Reversing Comb with 16 Transfer Needles	2224
30 Screw Driver	232
Wool Winder (delivered upon request)	252
Swift (delivered upon request, see Fig. 11)	253
31 Brush	236

INSTRUCTION BOOK


ORION
HAND KNITTER

Model No. 2

The following Table shows the needle sizes which correspond to the different tensions obtainable on the ORION Knitting Machine. This information is intended as a guide only and should not be taken as being absolutely accurate, and it is suggested that a test piece be run off before starting to make a garment, until such time as the user is more familiar with the machine.

DOUBLE BED TENSIONS		SINGLE BED TENSIONS	
TENSION	NEEDLES	TENSION	NEEDLES
0	14s	2	14s
1	13s	3	13s
2	12s	4	12s
3	11s	5	11s
4	10s	6	10s
5	9s	7	9s
6	8s	8	7s
7	7s	9	6s
8	6s	10	5s
9	5s		
10	4s		

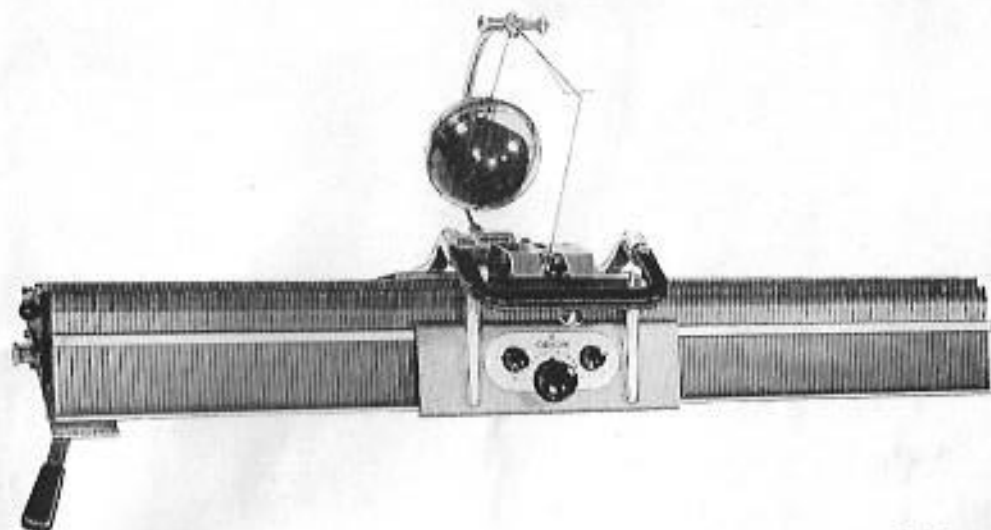


Fig. 1

Introduction

The Orion Knitting Machine is made of duralumin, a light but very strong metal which will not rust. It is a double bed machine for doing all kinds of ribbing. You can cast on 174 stitches on each bed although it is possible to knit 179 on each bed.

Every thickness of wool from 1 ply to quicknit, and cotton can be knitted. Tensions are equal to knitting needle sizes 14 to 4.

The machine knits stocking stitch, all kinds of ribbing including fishermans ribs, also circular and «horseshoe» which enables you to knit stocking stitch over 344 stitches. (Or the two beds can be assembled into one long single bed if preferred).

The Racking lever moves the stitches on one bed in relation the other over six stitches, making many zigzag patterns.

Mounting the Machine

The machine when unpacked must be clamped to a firm level table with the two clamps (20) bringing the back needle bed (BNB) to the edge of the table and with the front needle bed (FNB) overhanging. Care should be taken to fasten the clamps directly over the felt pads fitted under the bottom rail for this purpose.

Description

The latch needle consists of the butt, the shaft, and the hook and the latch.

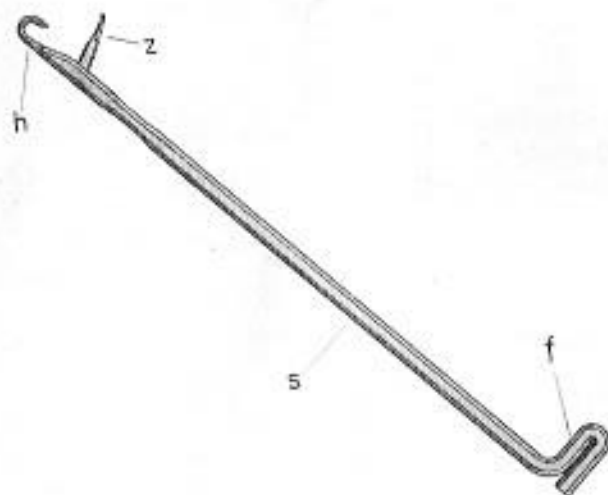


Fig. 2

The different positions of the latch needle (Fig. 3)

- No. 1. Not-in-use. The butts of the needles not in use lie at the bottom of the needle channel. In patterns these needles are shown as a dot.
- No. 2. Working position. The needle hooks are flush with the edge of the bed. The latches will open when the slide is passed across. In patterns these needles are shown as a vertical line.



Fig. 3

- No. 3. Upper working position. This is the highest position of working needles. The stitches are on the needle shaft under the latches which should always be open. This position is always used after needles have been in No. 4. position.
- No. 4. Holding position. The needle butts are as high as they will go. Stitches on these are held and not knitted when the slide passes over.

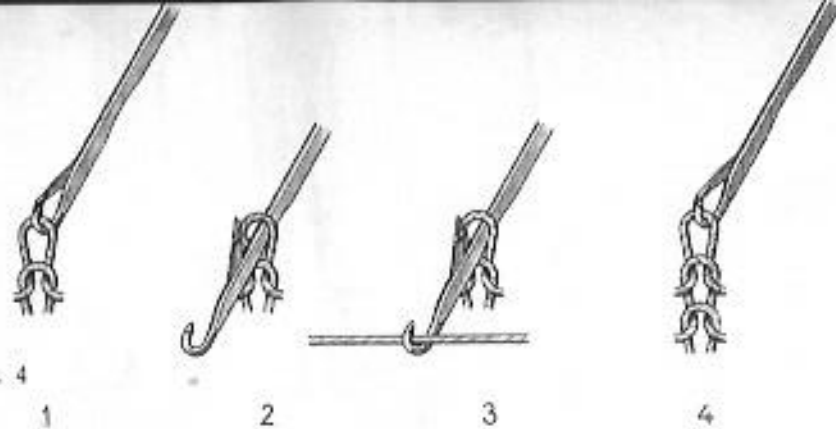
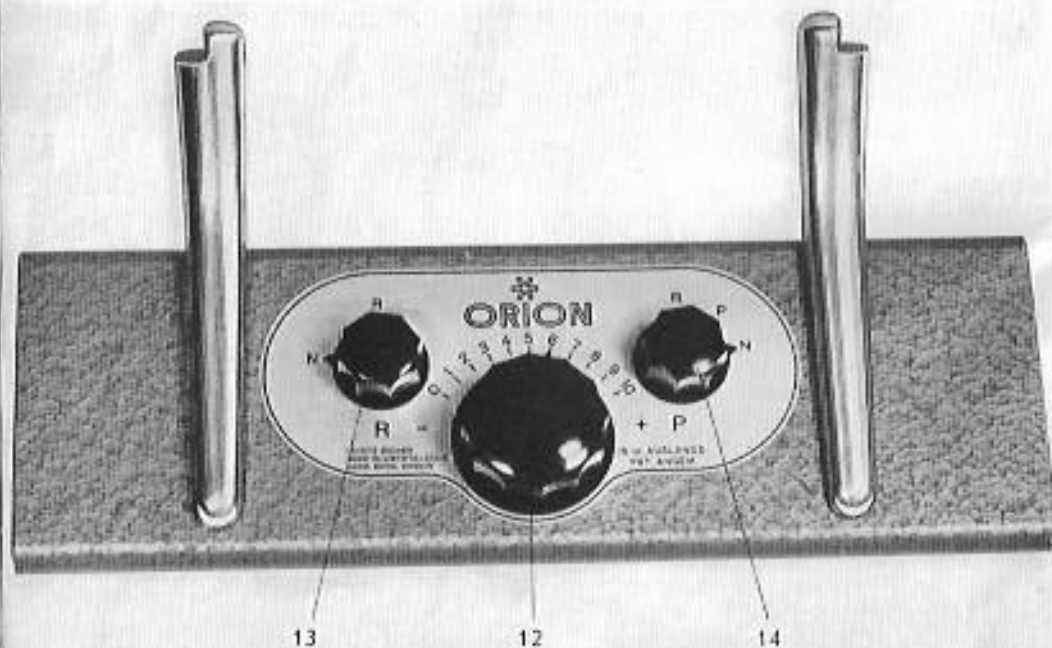


Fig. 4

Diagrammatic formation of a stitch [Fig. 4]

The needle is set into the working position. A stitch is in the hook (1). The needle is lifted. The stitch opens the latch and slides from this onto the needle shaft (2). Now the thread is inserted by the thread layer (3). The needle hook pulls the thread through the previously formed stitch, thus forming a new one (4).

Fig. 5



The slide [Fig. 5]

The tension regulating knob is in the centre and gives eleven definite different stitch sizes from 0 to 10. A chart in the front of the book shows how these numbers compare approximately with ordinary knitting needle sizes.

To the left, Knob R (for Round) has two positions, N for normal and R for round or circular.

On the right, Knob P (for Patent) has three positions, N for normal; P for Patent or Fisherman's Rib when using both beds; and R which in this case is not for round but for Release. It is used in conjunction with Knob R. When both knobs are set on R, the slide can be passed across without stitches knitting or dropping. For normal knitting both knobs are set at N.

Racking:

A great variety of patterns can be made by shifting the FNB in relation to the BNB giving a slanting stitch forming a zigzag pattern in the knitted fabric.

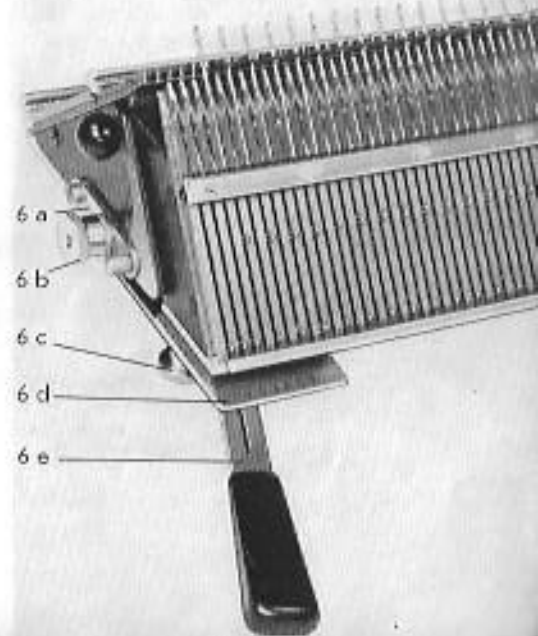
The Racking Device (6)

This is located on the left side of the machine. There are two starting positions for the FNB in relation to the BNB and then you can rack over six needle positions, one at a time, from either starting position.

Starting position 1. [Fig. 5a]

Needles on FNB exactly opposite needles on BNB. Positioning lever 6a lies its lowest position behind knob 6b.

Fig. 5a



Starting position 2.
(Fig. 5b)

The FNB has been shifted half a needle space so that a needle on the FNB is now opposite the edge of a needle channel and not opposite a needle on the BNB. Positioning lever has been disengaged upwards by loosening adjusting nut 6b which is then tightened up again holding the angle iron close to side flange.

The racking lever (6e) with angle iron is held in place by a spring loaded catch (6c) holding it against the lock plate (6d) trough a slot in the lever.

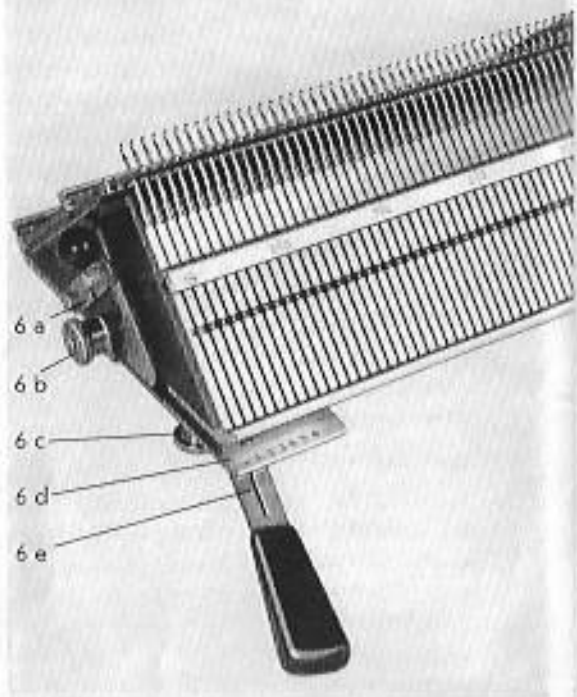


Fig. 5b

To disengage the racking lever, pull it sufficiently far to the right that the spring loaded catch snaps out of the slot, and it will then hang free. To engage the racking lever, pull the spring loaded catch (6c) down by hand so that the slot in the racking lever may be inserted under it. The six positions are marked on the lock plate with numbers 1 to 6. For racking, press the lever lightly downwards and towards the required number. It will lock in this position until the lever is moved again. You should only move one position at a time. The needle bed locking screw (7) holds the FNB in position and should be loosened before racking or removing the FNB.

Plain knitting on one bed (Fig.6)

To remove the front needle bed:

Take away locking bolts (10) and loosen handle (15). Disengage the racking lever and draw the front needle bed out to the right. Alternatively, the FNB can be tipped forward (see Fig. 7). Screw the stripping rail (25) to the handle (15). The space between the stripping rail and the front needle bed should be as small as possible.

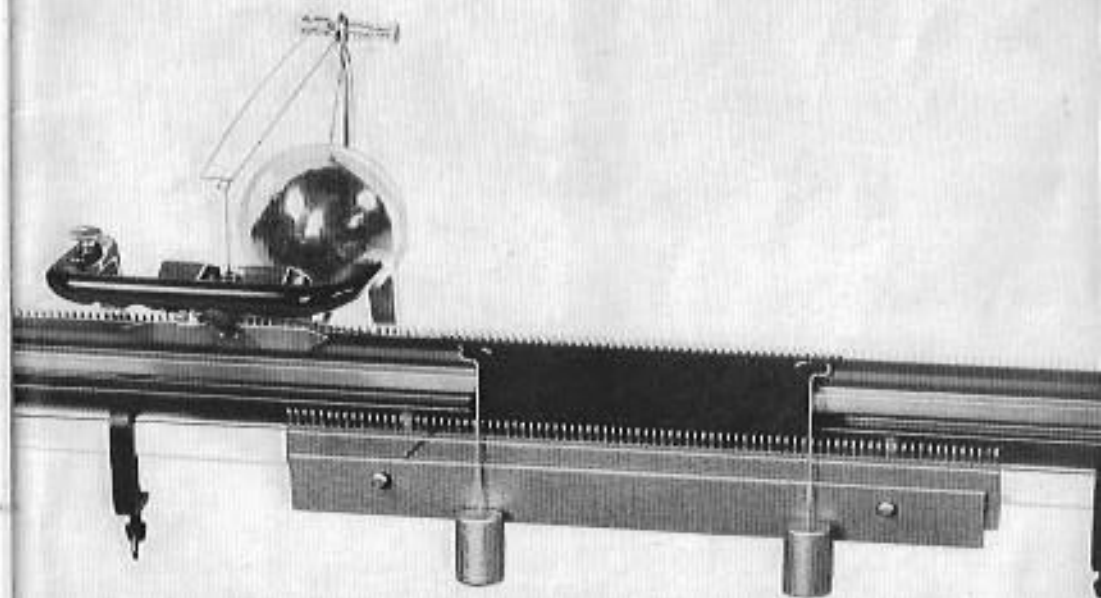


Fig. 6

Plain knitting on two beds (Fig. 8)

Assembling of the two beds into one single bed:

To do this, you need a long table, and additionally a second cast-on comb and two more clamps (20). Take away the front slide and the FNB, leaving the BNB fastened to the left of the table. To make the slide rails fit to each other, push the slide over both bed ends, whilst clamping them. Lay a spare needle into the newly formed channel.

[The second cast-on comb and the 2 additional clamps will be delivered as extras.]

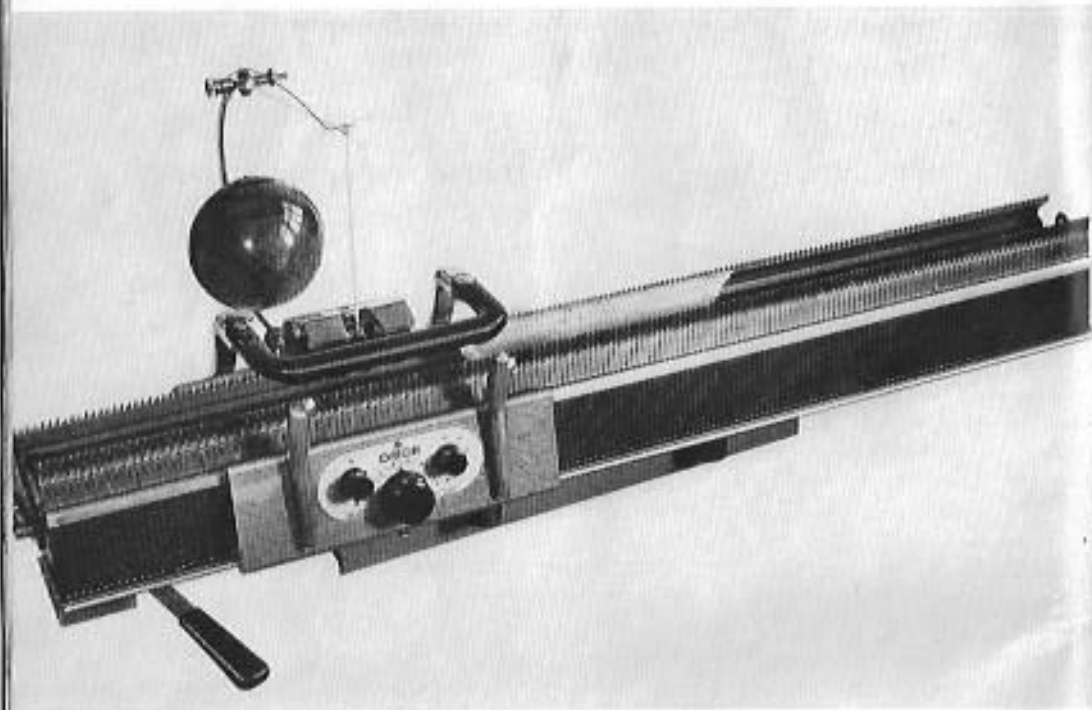


Fig. 7

The numbered Gauge (3)

This shows the number of stitches on the machine, reading from 00 in the centre. The work should always be in the centre of the machine.



Fig. 8

The special latch opener with 4 brushes (16) and wool guide (16a)

These are adjusted exactly and should not be altered.

Wool feed and tensioning device (17 when threaded)

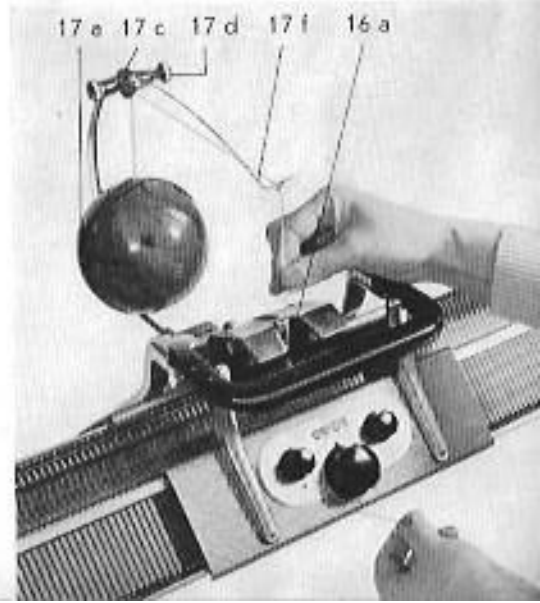
Draw the wool through the opening in the wool holder (17a) between both thread brake discs (17c), opening them to see that the wool passes into the slot and through a hole in the shaft; span wire eyelet (17f) and wool guide (16a) and both beds, and fasten it to the clamp or some similar anchorage. This is just for casting on.

Adjust knurled nut (17d) so as to allow the wool to run smoothly. Too much tightening will impede the free running of the wool and reduce the stitch size.

The row counter (18)

This device counts the rows. One round of circular knitting equals two rows on the row counter. Turn the knurled nut to reset to zero.

Fig. 9



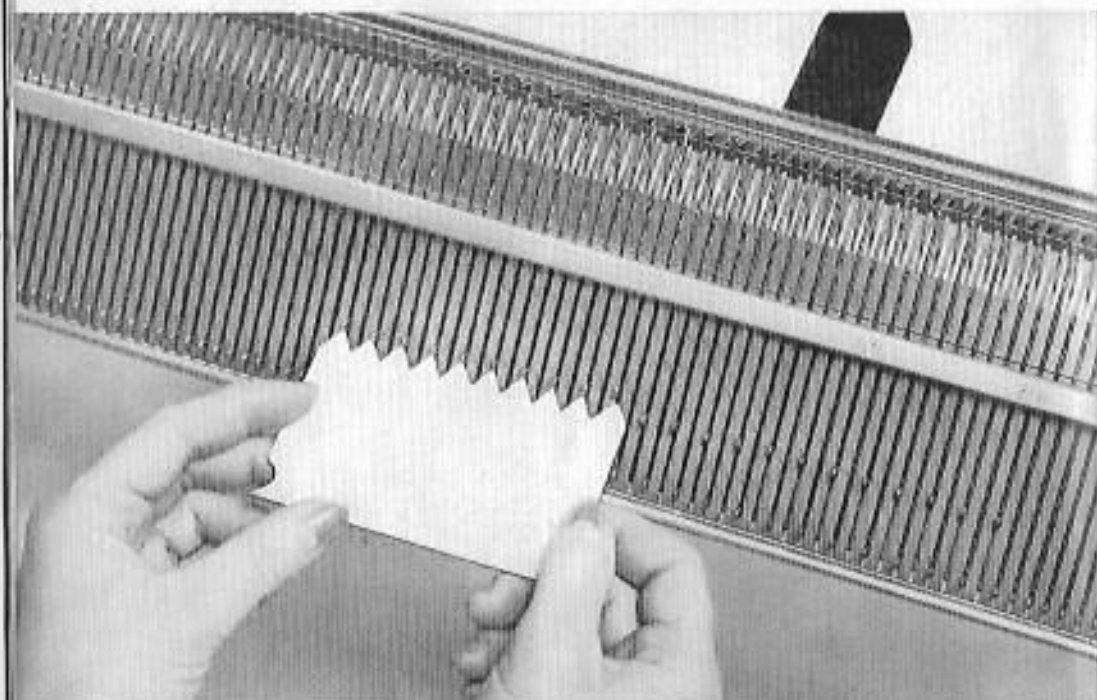


Fig. 10

The needle lifter (21, Fig. 10)

Use the toothed edge to raise every other needle to the working position for 1 plain 1 purl rib, and the straight edge when all needles are needed either for stocking stitch on one bed or for fine rib with 2 ply wool with the FNB moved to Starting position 2.

The casting on comb (22)

It reaches across 172 needles. For not more than 85 stitches use one half of the comb. It should always be placed exactly in the centre. When knitting on two beds, the wire should be placed on the cast on stitches and the comb lifted through the stitches and dropped over the wire.

The weight strips (23)

The casting on comb should be used alone for very fine wool. One weight strip should be used for 3 ply and two weight strips for 4 ply or quicknit.

The side weights (24)

These weights are hung into the edge of the work and should be moved up every 10 to 15 rows. When increasing stitches or turning a heel the side weights should be moved up every two or three rows.

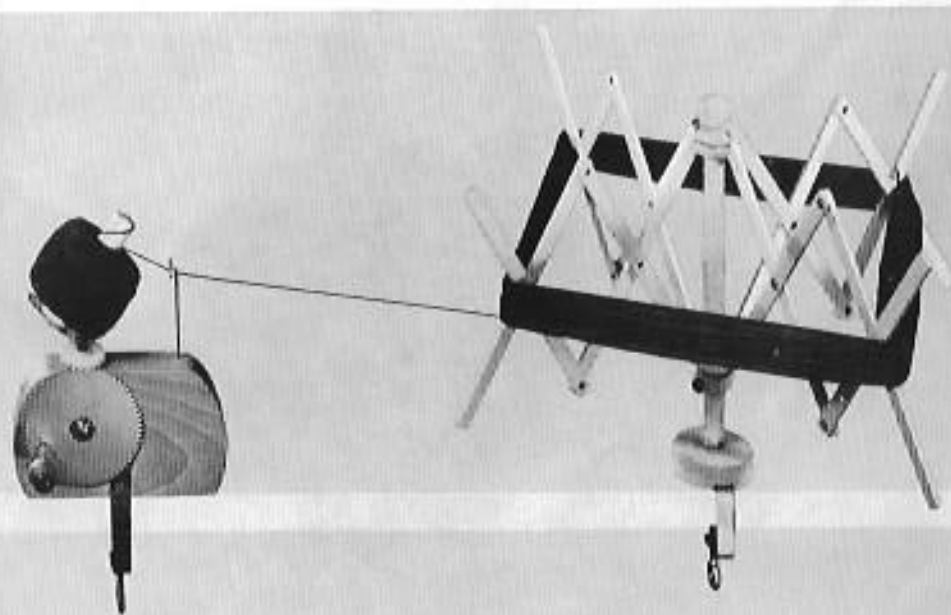
The reversing or transfer comb (29)

This comb is used for transferring stitches for circular knitting, and moving 16 stitches at a time when decreasing in the middle of a row.

Wool winder (Fig. 11)

This is an accessory which is recommended. Balls are beautifully wound so that the wool unwinds from the inside while the ball stays still. Supplied as an extra on request.

Fig. 11



Knitting instructions

It is recommended that you try the following types of knitting in the order given, gradually leading up to the more elaborate patterns.

Casting on on the double bed

Knit 1 purl 1 rib with 3 ply wool (Fig. 12).

See that the machine is set in Starting position No. 1. - needles on the FNB exactly opposite needles on the BNB (See under Racking Device).

Fig. 12

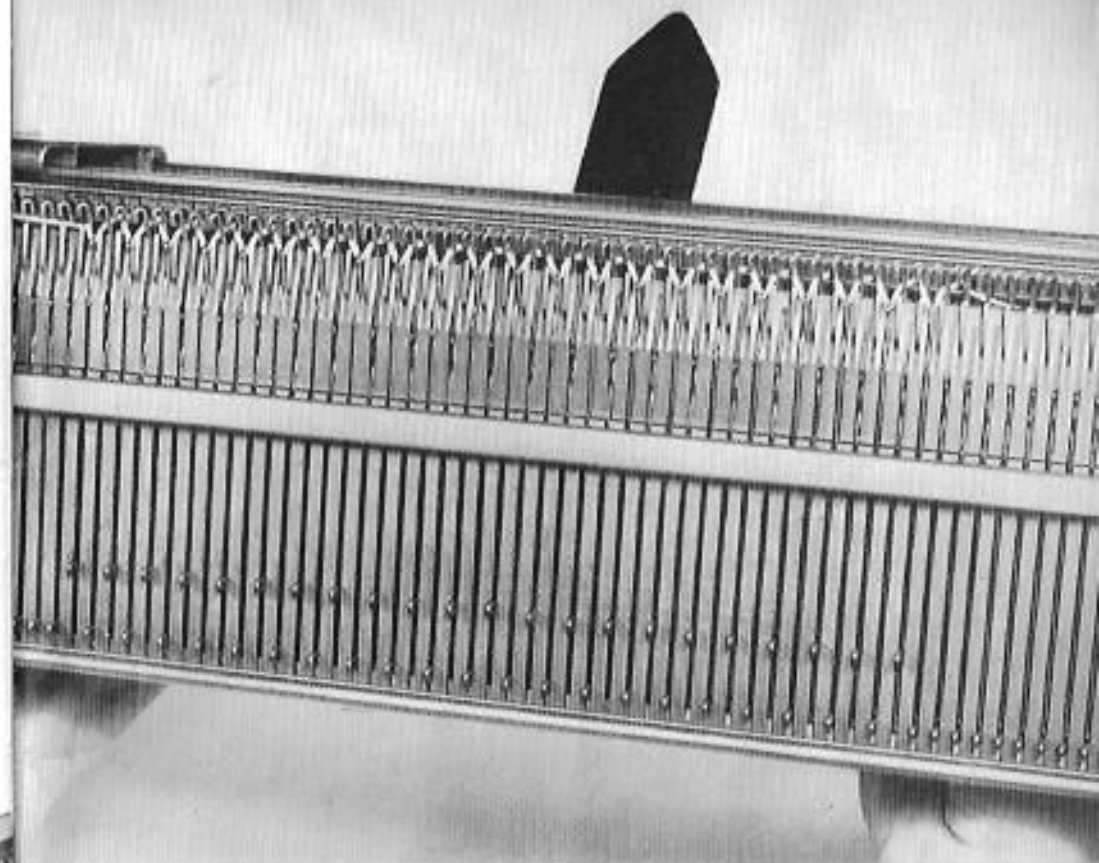
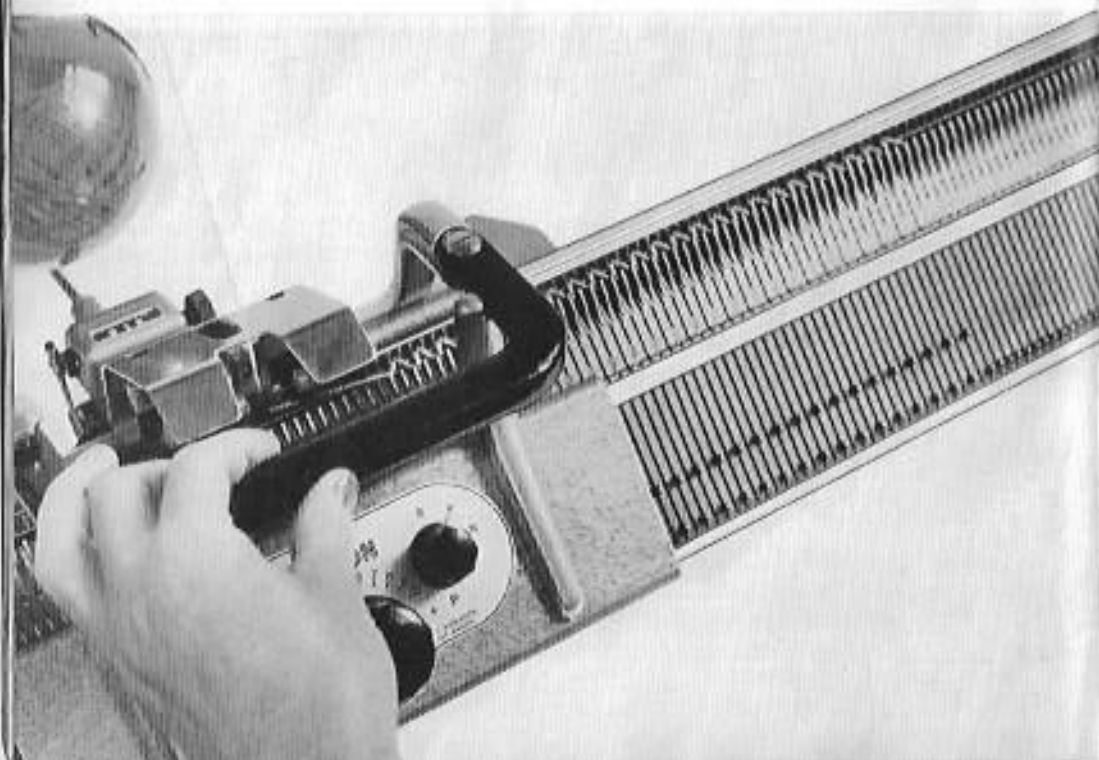


Fig. 13

Raise the required number of needles into the working position as in the diagram below, noting the relative positions of the end needles.

Diagram Back needle bed | . | . | . | . | BNB
 Front needle bed | . | . | . | . | FNB

| | Needle in working position.
. . Needle not in use.

Pass the slide slowly across the bed once or twice to open the latches. Thread the wool when the slide is on the right.

Set all knobs, back and front, to N and tension to 1 for casting on. Pass the slide slowly across the needles. Place a finger on the wool after the last needle, so that the slide can be moved to the left without pulling the wool tight on the last few stitches.

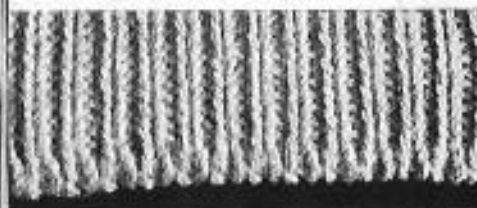


Fig. 14

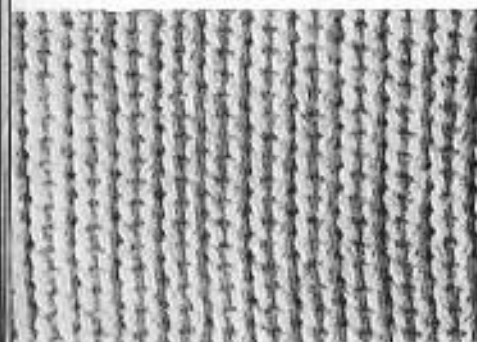


Fig. 15

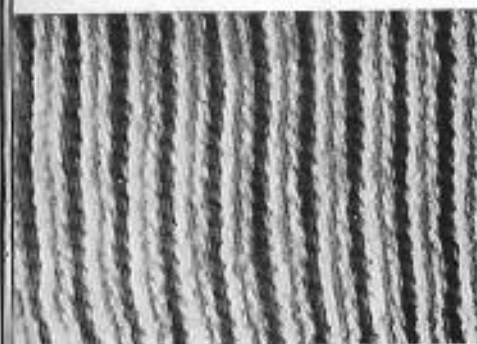


Fig. 16

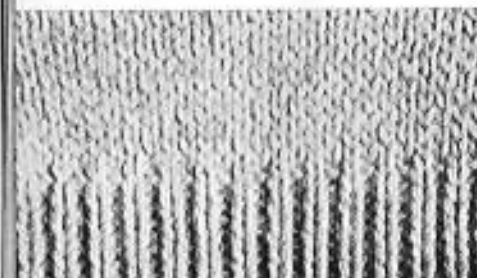


Fig. 17

Hang the casting on comb. Lift the casting on comb with one weight strip with the left hand, through the row of stitches, tipping it slightly backwards, and lay the wire on the row of stitches. Drop the comb onto the wire and the stitches and pull it well down. To make a firm edge to the rib, two rounds of circular knitting are incorporated into the rib as follow: — Turn knob R on both beds to R. Tension No. 2. Pass the slide across four times, i.e. twice in each direction, at the same time pulling slightly on the comb with your left hand. Now reset all knobs to N and leave the tension at No. 2. Continue knitting. Hook the side weights over the ends of the knitting after a few rows and then reset every ten to 15 rows.

Fishermans Rib

Picture No. 16 (and No. 44 at end of book. Set the knobs and tension as given. See the knitting instructions for pattern 44 and note that the needle setting is correct.

Smocking Pattern No. 42 (showing one use of the Holding position).

Stocking Stitch

For this, the stitches on the FNB have to be transferred to the needles not in use on the BNB. Hold the yellow handled transfer tool above a stitch on the FNB with the bodkin end downwards and hook the hole in the bodkin over the hook of the needle. Pull

the needle upwards till the stitch is beyond the latch; then push the needle downwards as far as the tool will go. Tip the tool slightly backwards so that the stitch slides on the tool, near the shaft. With your left hand push the appropriate needle on the BNB up and into the stitch on the tool. Withdraw the tool. Continue till all the stitches are transferred from the FNB to the BNB (Fig. 18). Take off the front slide by unscrewing 15a. Take off the FNB by taking out the black knobbed locking bolts (10). Loosen stop screw (7). Disengage the racking lever. Hold the FNB with both hands and pull to the right when it will slide off. Fasten the stripper (25) under the front of the slide handle.

Important: Note that the tension settings for single bed are different from those on double bed. Reset to No. 5. Also remember to readjust the side weights regularly (Fig. 7). For a few rows, the FNB need not be detached, but can be tipped forward as in Fig. 7.

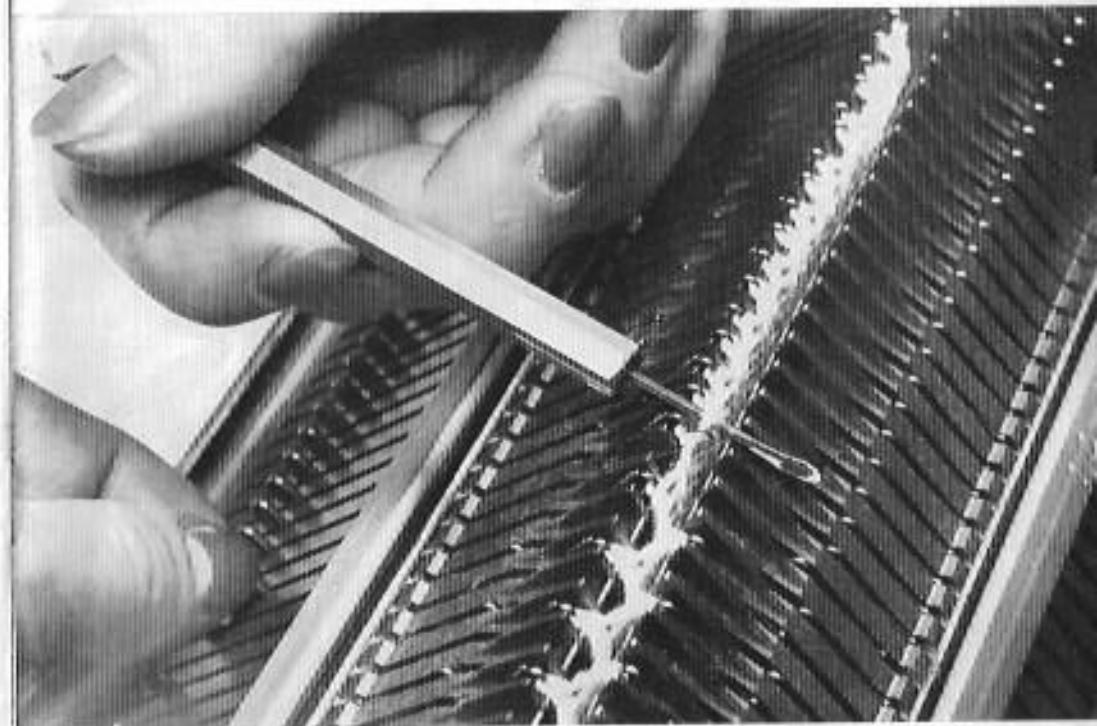


Fig. 18

Tension for Different Patterns

(for hand knitting wool, four ply, cablé twist)

Patterns	Tension	position Starting
1 plain, 1 purl	· · · · · ·	BNB 2-4
	· · · · · ·	FNB 2-4
2 plain, 2 purl	· · · · ·	BNB 3-5
	- · · · · ·	FNB 3-5
1 plain, 2 purl	· · · ·	BNB 3-5
	· · · · · · · ·	FNB 2-3
1 plain, 1 purl half fishermans rib on one bed only	· · · · · ·	BNB 3-5*
	· · · · · ·	FNB 1-2
1 plain, 1 purl fishermans rib	· · · · · ·	BNB 2-4*
	· · · · · ·	FNB 2-4*
Plain		BNB 5-8
		FNB 5-8
Circular (plain)		BNB 5-8
		FNB 5-8
5 purl, 1 plain and fishermans rib on one bed only (FNB on P)	· ·	BNB 5-7
	· · · · · · · · · ·	FNB 2-3
5 purl, 1 plain alternately		BNB 5-7
	· · · · · · · · · ·	FNB 2-3
3 plain, 3 purl	· · · ·	BNB 4-7
	· · · · · ·	FNB 4-7
3 purl, 1 plain 3 purl, 3 plain	· ·	BNB 5-7
	· · · · · · · ·	FNB 3-5

| | = Needle in idle position BNB = Back Needle Bed
 · · = Needle in working position FNB = Front Needle Bed
 * = Kindly notice needle position at selvage!

Important!

As a rule, the numbers given here are only indicative. The tension to be used depends mostly on wool thickness and quality.

With a finer wool, use smaller numbers, e. g. for a fine Mohair wool knit one purl, one rib on every needle, using tension 0 to 2.

For coarser wool, knit one plain, one purl with every second needle, on tension 3—2.

Double knitting wool will be advantageously knitted 1 plain, 1 purl with every third needle on 3-4. The correct hanging of the weight is just as important as the tension.

For thin wool with 2 and 3 ply, use the cast-on comb only.

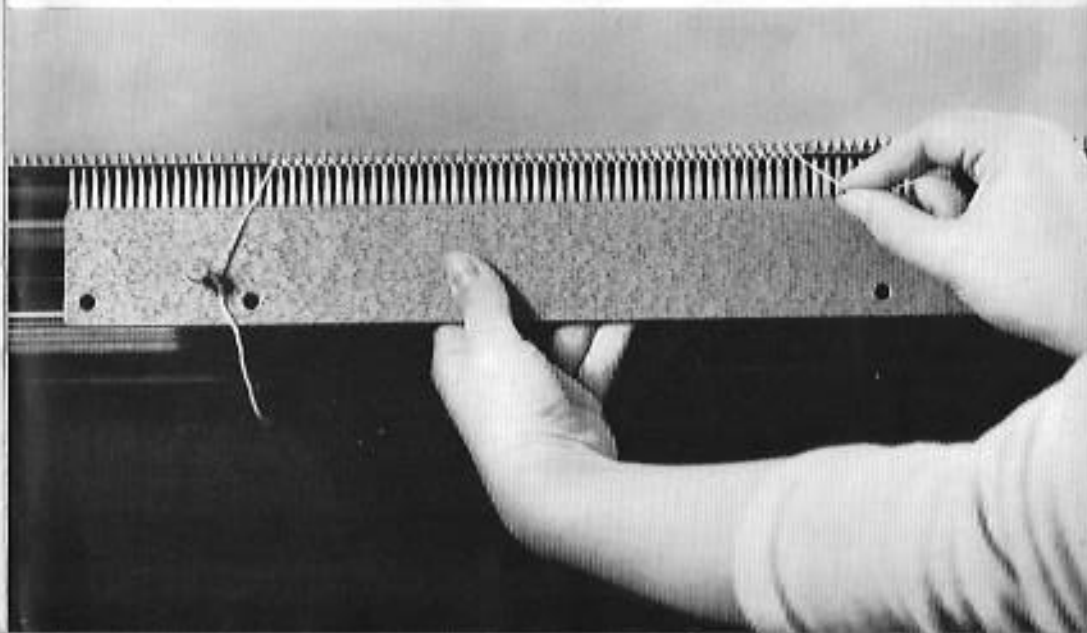
For thicker wools it is necessary to use both weights on the cast-on comb.

It is important to note that you cannot obtain a larger stitch by adding more weight, nor a tighter stitch by subtracting weight. This is entirely controlled by the tension knob.

Sample for Tension

Cast on 40 stitches and knit 40 rows. Take out of the machine and press or leave for some time, but at least for 2—3 hours. Measure and calculate the correct number of stitches and rows needed. Or

Fig. 19



do 20 rows of three different tensions and see which compares with the one required. It is recommended that a sample should always be made as the different makes of wool vary in thickness, and the correct size of garment is worth the few minutes spent.

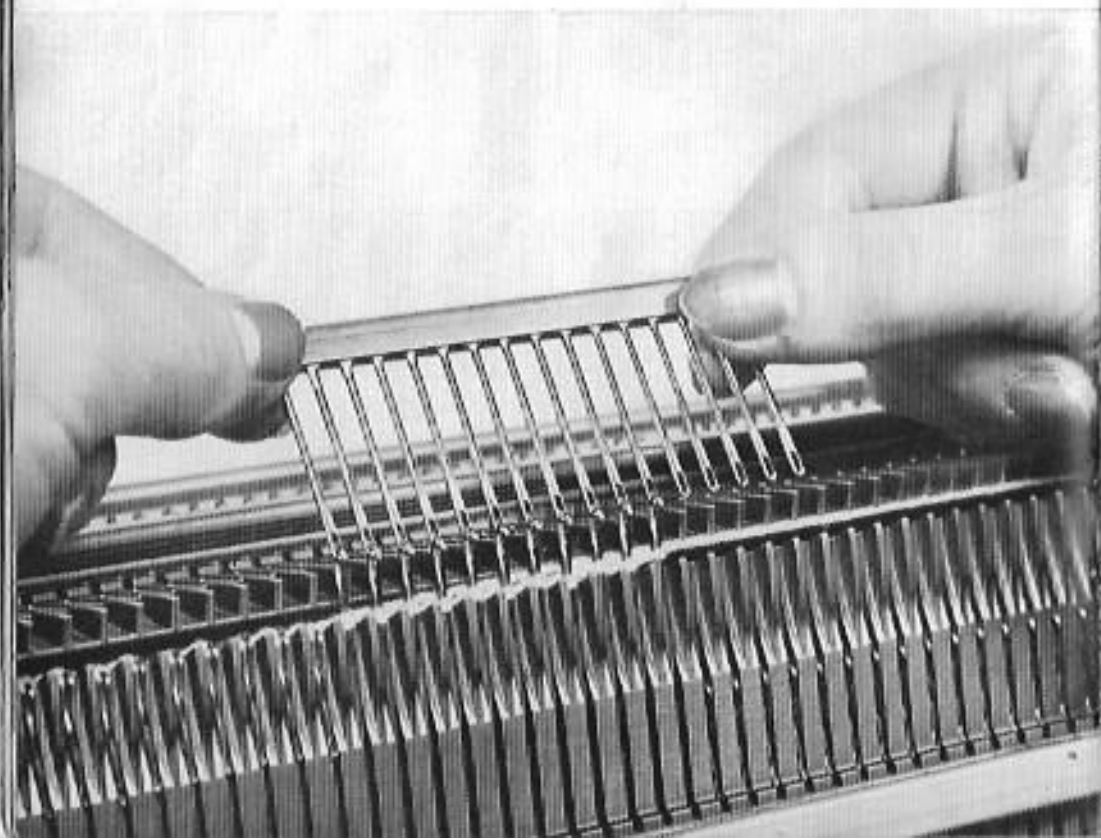
Readjusting the comb

Take the comb out of the bottom of the work. Using the flat edge of the needle lifter, push the butts of the working needles on the BNB up a quarter of an inch so that there is a space between the knitting and the BNB. Push the comb up through this space and drop it over the work. Make sure it is in the centre. On a single bed, release the stripper for five rows, simply by opening the handle.

Decreasing

To decrease one stitch at the edge of the work, transfer one stitch with the yellow transfer tool onto the next stitch and put the empty needle into the lowest position. Knit the row.

Fig. 20



For fully fashioned decreasing, use the green transfer tool and transfer 3 stitches simultaneously one needle inwards. After this transfer it will be seen there are now 2 stitches on what was the 4th needle from the end before the transfer. The needle which is now empty should be put into the lowest position. (Fig. 37 shows the use of the double transfer tool for decreasing on circular knitting.)

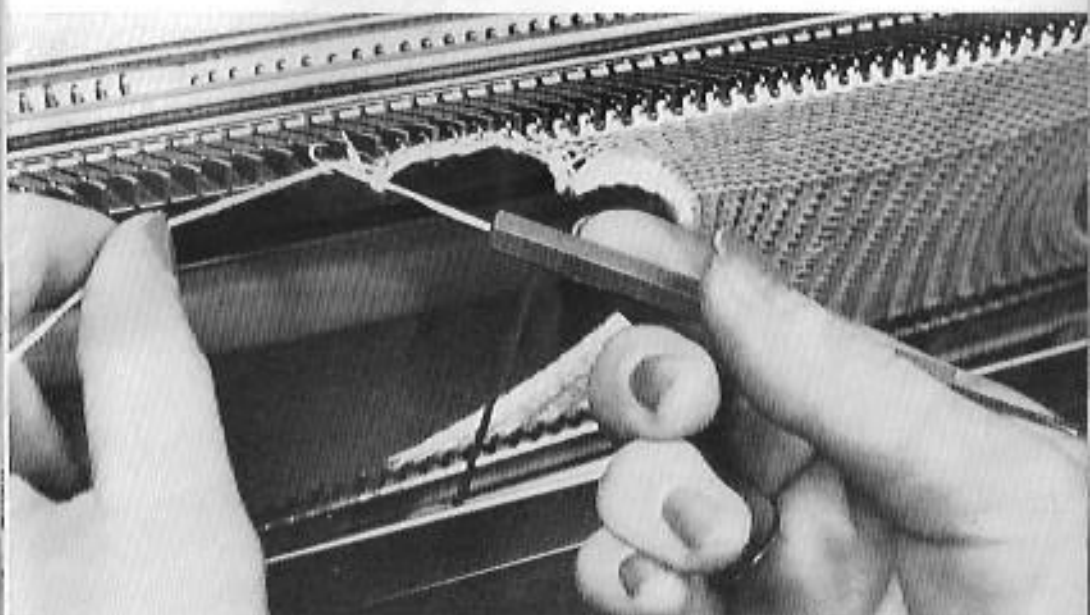


Fig. 21

Increasing

To increase one stitch at a time. At the end near the slide, place one extra needle into the working position and see that the latch is open. Knit. Adjust side weight.

To increase several stitches at one time. At the end near the slide, pick up the last stitch with the red handled latch tool and draw the wool through the stitch to form a chain stitch. Bring the next needle into the working position, and slip the newly formed stitch on to the needle. Continue as necessary. Readjust the side weights and knit across slowly.

To increase a larger number of stitches on one bed. Readjust the comb the row before. Cast on the extra stitches as shown in Figs. 24. Increasing a large number of stitches on the double bed may be done by setting up the required needles at the opposite end from the slide as in casting on. Pass slide across and readjust the comb.

Casting off

Hook the eye of the single transfer tool into the hook of the first needle. Draw it upwards till the stitch is below the latch, then push well down, and the stitch is on the tool. Transfer this onto the second needle. With your hand, push up this needle slightly, and with your other hand put the wool in the latch. Pull the needle down by hand and the two stitches are knitted together. Transfer this stitch onto the next needle, and so on. Casting off can be done tightly or loosely by altering the distance that the needle is pulled down by hand in knitting the stitch.

How to transfer stitches onto a knitting needle (Fig. 22)

On a double bed, transfer stitches from BNB to FNB. Push the needles into the Holding position No. 4. From the front, pass the knitting needle into the stitch. Pull the latch needle down by hand and the stitch will slide onto the knitting needle.

To transfer stitches from a knitting needle onto the machine (Fig. 23)

Push the single transfer tool into a stitch and lift it off the knitting needle and hang it on the latch needle.

Fig. 22

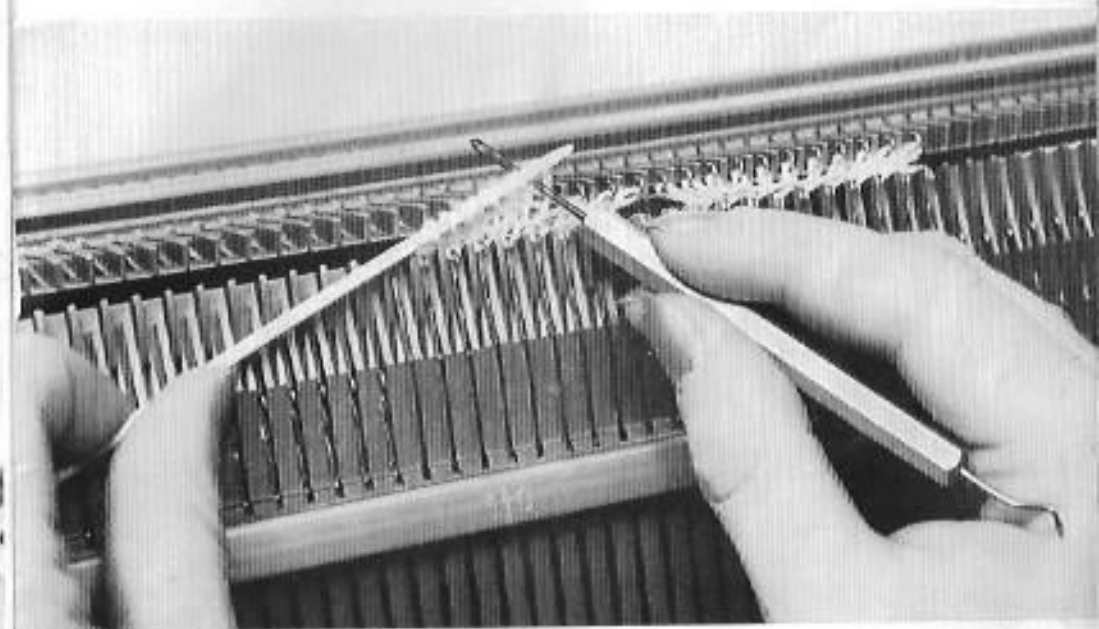
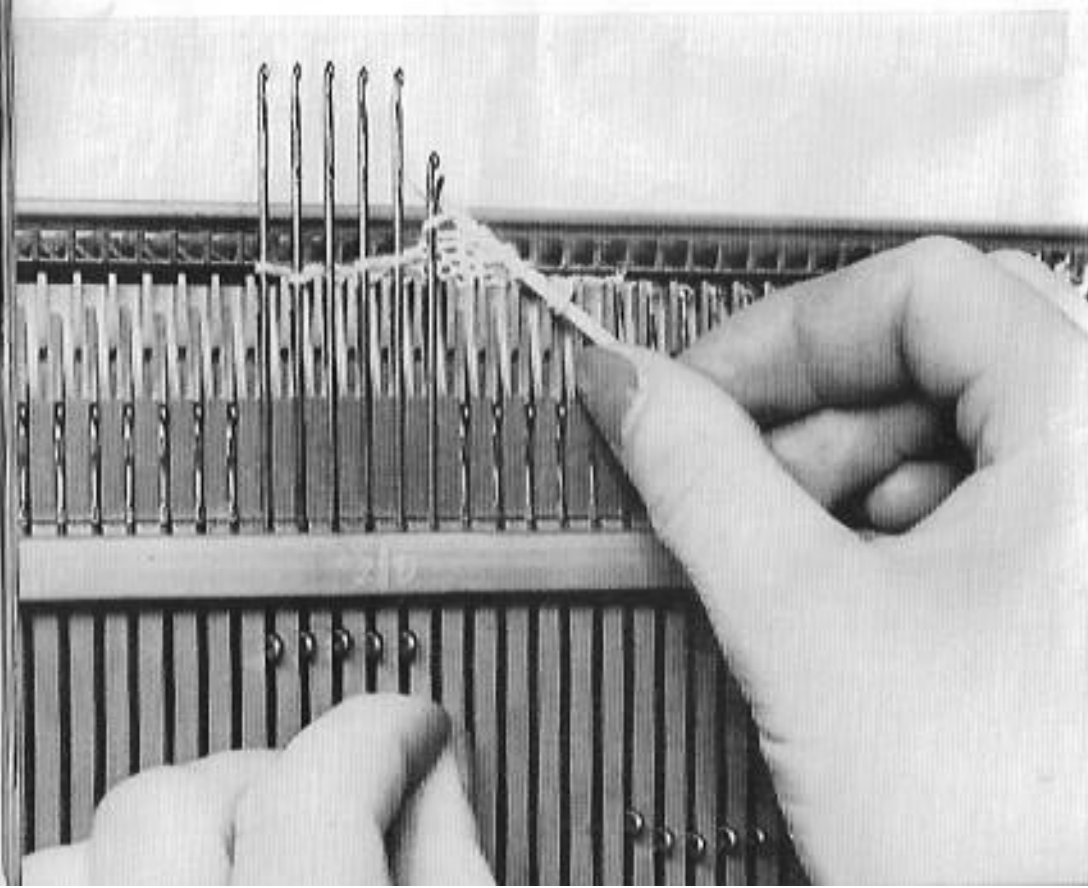


Fig. 23

Casting-on on one bed

Remove the FNB and place slide to the right. Put the required number of needles into the working position with the flat edge of the needle lifter. Pass the slide across twice to open the latches. With the needle lifter now raise the needles a little more till the hooks are just over the needle bed. Thread the wool and fasten the end to the left hand knob on the casting-on comb. Hold the comb with your left hand exactly in the centre of the needles and a quarter of an inch below them. Wind the wool anticlockwise round the left-hand end needle and under the hook on the comb just

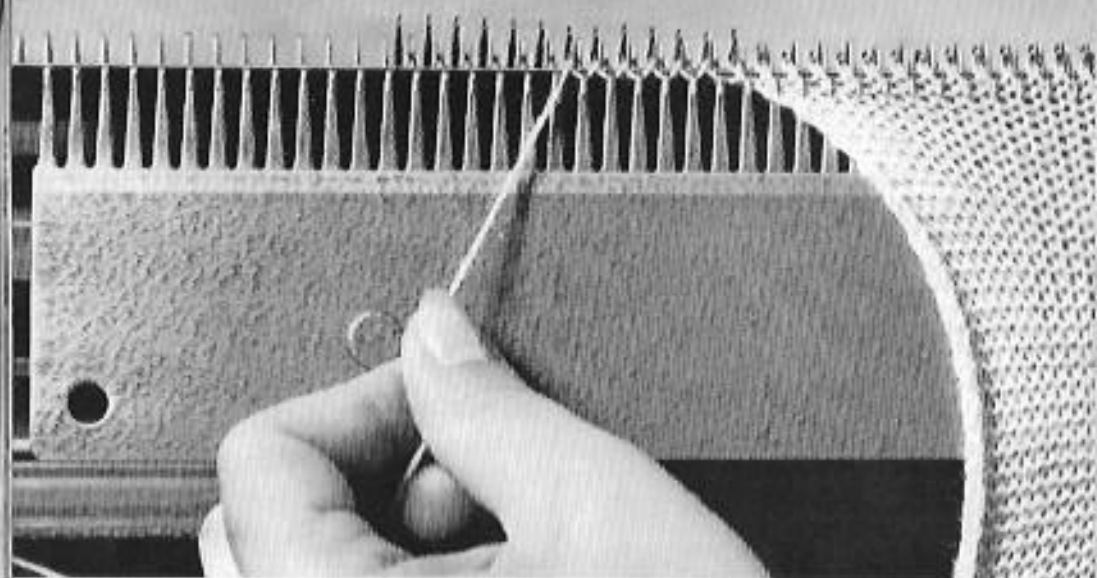


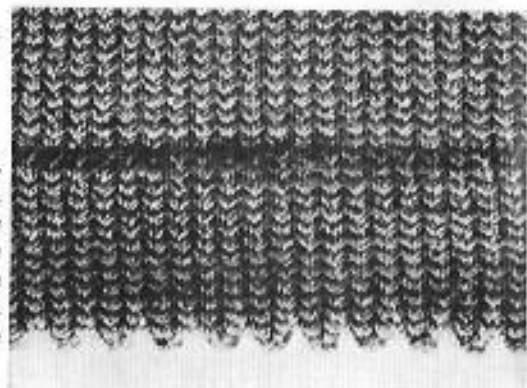
Fig. 24

below, going from left to right under the hook. Then round the next needle and so on. Set both knobs to N and tension about No. 5 for three-ply wool. Fasten the stripper under the handle on the slide. Pass slide across slowly, then go on knitting adjusting side weights every ten to 15 rows (Fig. 24).

Hem (also useful for inserting elastic)

After casting on, knit 16 rows. Take off the comb and readjust it (see above). Turn up a hem of the work and with the transfer tool hang the loops made by casting-on onto the appropriate needles. Knit the first row slowly, creasing the stripper for the first five rows by opening the handle.

Fig. 25



Picot-edged hem (Fig. 25)

After casting on, knit eight rows. Then transfer every other stitch onto the next needle. Bring the needles thus emptied into the working position, making sure the latches are open. Now knit a further eight rows, and finish the hem as for an ordinary one.

Holes and Buttonholes

Small hole as in a lace pattern. Transfer one stitch onto the next needle. Put the empty needle into the working position with the latch open, and knit.

A larger hole which can be used as a quick buttonhole. From two adjacent needles transfer one stitch to the left and one to the right. Put empty needles into the working position with the latches open. Knit two rows. The two stitches have not knitted properly. Push up one needle slightly till the thread is below the latch. Lift the loop which is below the needle into the latch and pull the needle down by hand to knit the stitch. Do this on one needle only. Continue knitting.

Horizontal buttonholes are knitted with an extra piece of wool (Fig. 26). Push the required number of needles into the upper working position. Lay a small piece of wool across the latches, and pull the needles down one by one to knit the stitches by hand. Continue knitting. When the work is finished and pressed, withdraw the extra thread carefully and with a needle run a thread through the loops of the stitches and finish with a buttonhole stitch.

Pocket slits (horizontal) are knitted in the same manner as buttonholes.

Buttonholes (vertical), Fig. 27.

With the slide on the right, push the needles on the left of the

26



27



28



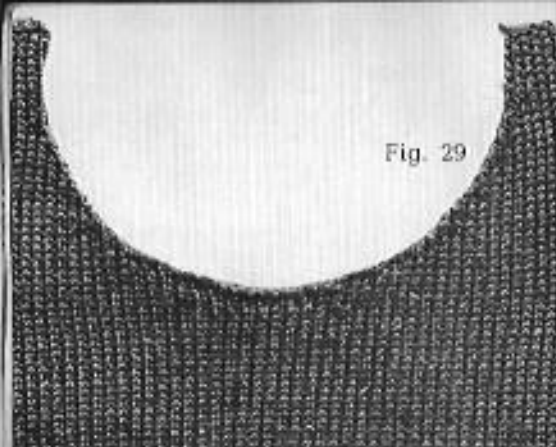


Fig. 29

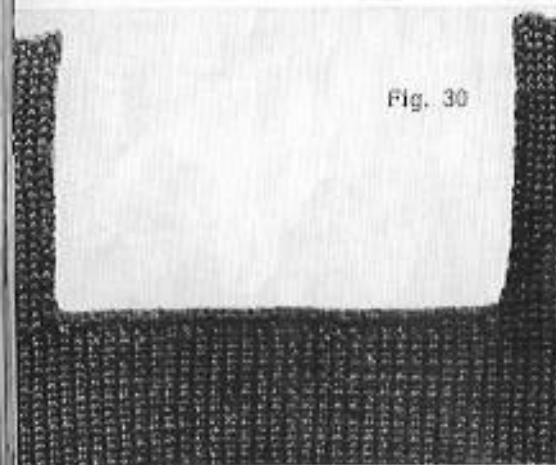


Fig. 30

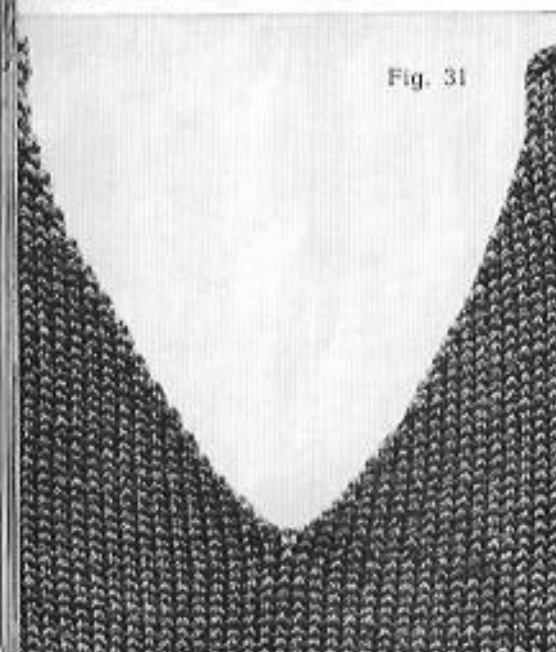


Fig. 31

buttonhole into the holding position. Knit the required number of rows on the needle on the right. Place the slide to the left and break the thread. Put the needles just used into the holding position, and put the slide to the right. Put the needles which were originally in the holding position into the upper working position with the latches open. Hold the thread end through the buttonhole and knit as many rows as before. The slide is now on the left. Bring the other needles into the upper working position and continue knitting. If desired, the buttonhole can later be reinforced by working round with a buttonhole stitch.

Neck openings (Fig. 28, 29, 30, 31).

Slits for zip fasteners (vertical). These are worked in exactly the same way as vertical buttonholes. Readjust the side weights every few rows.

V neck, round neck and square neck are worked in the same way as vertical buttonholes, but decreasing as required on the neck edge; casting off the centre stitches in the case of square necks.

Circular knitting

Circular knitting is always in stocking stitch or variations of it in the form of lacey holes, or stripes of colour.

Casting on for Circular knitting

By this method the work is closed at the bottom by the casting on stitches which are unpicked when the work is finished, and the

stitches cast off on ordinary knitting needles or a thread run through them and a hem made.

Set up very other needle as for ordinary knit 1 purl 1 rib. Cast on and put in the comb. Then lift every other needle on both beds into the working position with the latches open. Set the knobs $\begin{matrix} N & R \\ R & N \end{matrix}$ and continue knitting. Remember that for casting on you set up only half the final number of stitches. The advantage is that you have only half the number of stitches to unpick, and they are larger.

Turning to circular after rib. See under socks.

Stocking stitch over 345 stitches by Horseshoe or U method

By this method you can knit stocking stitch over 345 stitches and open it out when it comes off the machine. Cast on as for circular knitting but from left to right. Then set up every needle with the latches open. Starting from the right hand side, knit two rows with the control knobs as follows:

$\begin{matrix} N & R \\ R & N \end{matrix}$

Then reverse the controls to $\begin{matrix} N & R \\ R & N \end{matrix}$ and knit two more rows. Continue this reversing method throughout. When the work is finished, unpick the casting on row and cast off by hand or finish with a needle and thread.

Zigzag knitting

(See racking Device)

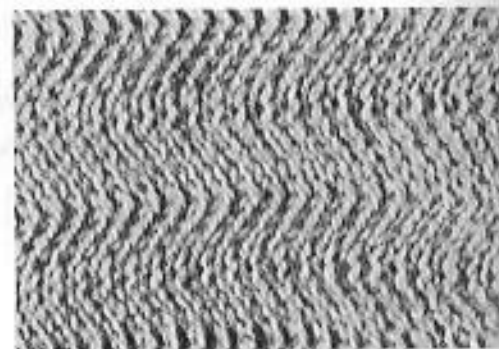
With the racking lever the FNB can be moved one needle per row in relation to the BNB. Note carefully before starting a pattern that the lever is in the correct starting position for that pattern. You can rack once or up to six times to one side.

The following basic patterns are all moved six times each way.

1 plain 1 purl (Fig. 32)

5 purl 1 plain (Fig. 33)

4 purl 1 plain, with knob P on P on the FNB (Fig. 34)



32



33



Fig. 34

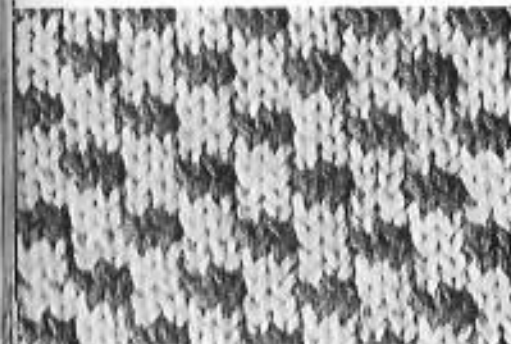


Fig. 35



Fig. 36

Multicoloured knitting (Fig. 35)

Basic colour 2 rows

Now set both knobs on R. By hand shift 2 needles upward into position no. 3, the next 2 needles remaining in position no. 2. Make sure that the stitches of the lifted needles slide behind the needle latches and that the latches of same are open. Now put by hand the contrasting shade on the open latches (the thread end being on the side where the slide stands) and close the latches by pushing down the needles with the needle lifter.

Move the slide once in each direction. Now shift the needles with the basic colour into position No. 3 and open the latches and knit one row. In this way, the basic colour will be inserted together with the second colour. Repeat both operations. Place knobs on N and knit 2 rows in basic colour. Repeat pattern by adjusting needles accordingly.

Thread change

If the contrasting shade must be knitted with the slide, thread basic colour out and contrasting shade in. Different stitches can be knitted with various colours. Bring the needles which must not knit first into neutral and then into upper working position. When two different colours are to be knitted in direct successive rows, shift after one row of basic colour the needles into the upper working position with the needle lifter, making sure that the stitches slide behind the latches and the latter are open. Insert the wool by hand, place buttons on R, and

move the slide once in each direction. Place knobs on N and knit 1 row. Now shift the needles again upward, and so forth.

Pleating

Set racking lever in Position 2, set up required number of needles using every needle for a fine K1 P1 rib. Use 2 ply wool. Cast on and knit one row. Then transfer stitches as follows: — The 15th stitch on the BNB from the left hand side to be transferred to the FNB and the empty needle put into the lowest position. Then the following 5th stitch on the FNB should be transferred to the BNB and the empty needle put into the lowest position. Repeat this until the end. Other variations of this can be obtained according to the size of pleat required. The pleats which are formed will be permanent.

The use of Orion stitch Patterns

Choose the pattern from the picture and set the knobs on the slide as given under the pattern. It is very important to set the racking device to the position given (Pos. 1 or Pos. 2. See Shifting device). Look up also the Knitting instructions for that pattern. It is not always possible to cast on as the needles are required for the pattern. They can be cast on as for a rib and transferred, or they can sometimes (as in Knit 2 Purl 2) be set up and 1 needle shifted before casting on and shifted back after 1 row to the proper pattern. Note when the tensions are different in the two needle beds.

Socks and Stockings

The welt is knitted in rib on the double bed and seamed afterwards. The leg is knitted either in stocking stitch by circular knitting or in rib with a back seam.

To turn to circular knitting after knitting a welt

64 stitches are the easlet number to use. Work 40 rows of ribbing. Then unravel the wool back for 16 stitches. Transfer all the stitches to the FNB. Set up the middle 32 needles on the BNB and see that the latches are open. Now with the needle lifter push these needles down until they are a quarter of an inch from the top. Hook the 16 Transfer tool onto the end 16 stitches on the FNB. Pull it up, holding the work underneath with your hand. Now push the tool down smartly right to the bottom and the stitches are on the tool. Turn it upside down so the work hangs from the bottom, and turn it round so the end stitch becomes a centre one on the back row. Still holding the work underneath, hook the tool onto the hooks of the needles on BNB. Pull the needles up and tip the stitches onto them. Repeat at the other end. The wool is now at the end of a circular row. Set knobs $\begin{matrix} N & R \\ R & N \end{matrix}$ and continue knitting, for 120 rows (60 circular) or required length of leg to heel.

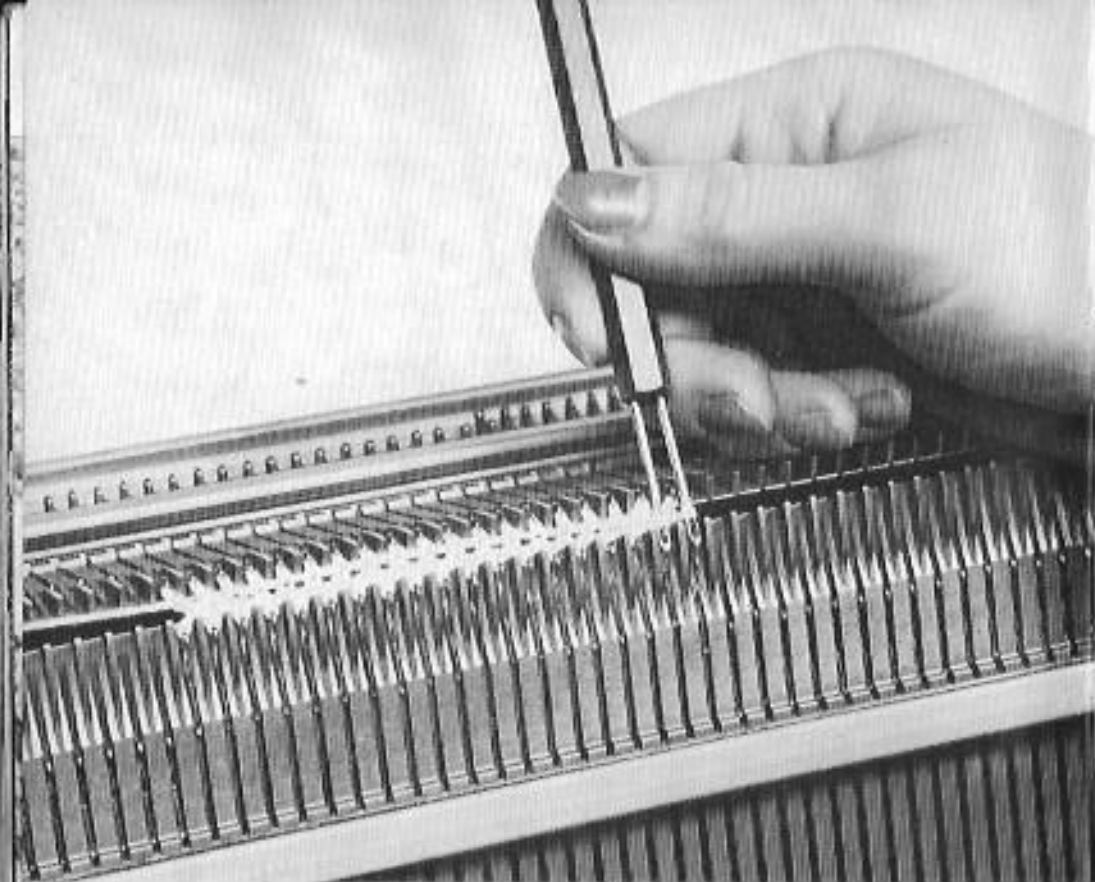


Fig. 37 Turning a Heel

With the slide on the right, release the handle, set the FNB controls to «R» and pass the slide over the FNB stitches to rest on the left-hand side during the operation of turning the heel. Set the BNB controls to «N», lift the first needle nearest the slide in the holding position and knit one row. Lift the first needle on the left-hand side in to the holding position and knit another row. Continue lifting the needle nearest the slide before each row. Move the side weights up and re-set them regularly every two or three rows into the back of the stitches as the rows get shorter. When there are only ten needles left in the working position, the return of the needles in the holding position is then carried out as follows: The needle on the side opposite to that on which the slide is located is put into the upper working position. After making sure the latch is open, knit one row. Continue to return the needle opposite the slide into the upper working position before knitting each successive row.

When the last heel stitch is knitted, the handle is released and the FNB is returned to the right hand side and re-engaged. All controls

are re-set $\frac{N}{R} \frac{R}{N}$. Continue knitting in circular knitting.

Sole and Instep

Knit 120 Rows (60 circular).

Toe Decreasing (Fig. 37 and 38)

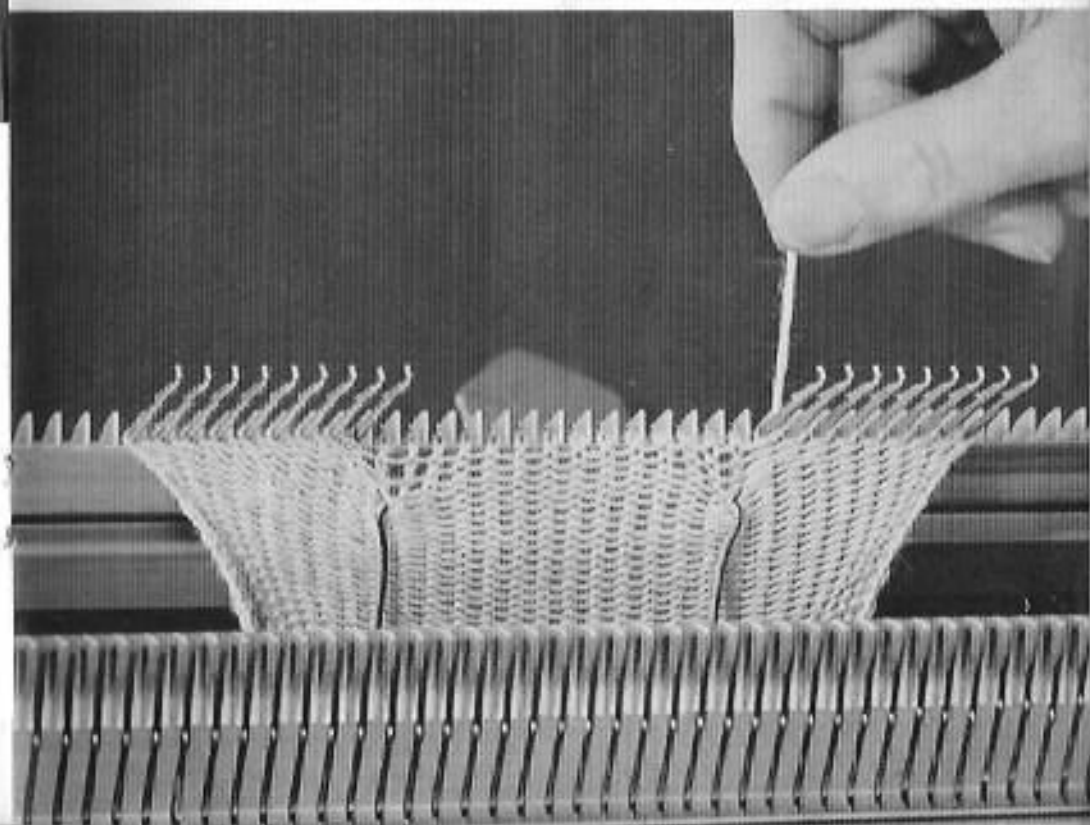
Decrease one stitch at each end of FNB and BNB with double transfer tool.

Knit 4 rows (2 circular) and decrease as before, continue this method until 12 stitches remain. Remove these from the machine and graft by hand.



Fig. 38

Fig. 39



Darts and Shaping (See Fig. 39 for a dart at each side)

Needles at the edge of the work are put into the holding position a few at a time each row, and then put back into the upper working position a few at a time from the centre until they are all back. A triangular shaped piece has thus been taken out of the work. In order not to have any small holes round the edge of the dart always put the needle nearest the slide into the holding position and when returning the needles to the upper working position always put the needle opposite the slide into that position.

Shortened rows for circular knitting (Fig. 40). As you cannot use the holding position when working needles are opposite one another, this method is used. Set all knobs to R. With the needle lifter move all needles which must work into the upper working position on one bed only. Then cross with the slide. Lift the same needles again. On the side of the slide put the wool round the hook of the nearest

non-working needle and pass slide back. Repeat on other needle bed and continue till all needles are again working. Readjust side weights at the edge of the shortened rows.

Types of Wool and Tensions

The numbers given for tensions on page 18 are suggested for 4 ply wool. For 1 ply 2 ply and 3 ply wool use Tensions 0 to 2 for a rib and 3 to 5 for stocking stitch. When every needle is being used for a fine knit 1 Purl 1 rib (Position 2) a 2 ply wool is recommended.

Quicknit and Double Knitting wool can be knitted using every third (Position 2) or even every fourth needle for a rib or Fishermans rib. All the weights will be necessary.

For a very fine wool, use the casting on comb without a weight strip, but in every other case weight strips must be used. Much better results are obtained by the use of plenty of weight and a small stitch size, rather than too little weight and a greater stitch size.

To pick up dropped stitches (Fig. 41 on single bed, Fig. 42 on double bed)

Immediately a stitch is dropped on the double bed, if you put a finger of your left hand up the front of the work if dropped from the FNB and the back if dropped from the BNB, the stitch can be felt protruding from the work. Put the hook end of the transfer tool down

Fig. 40

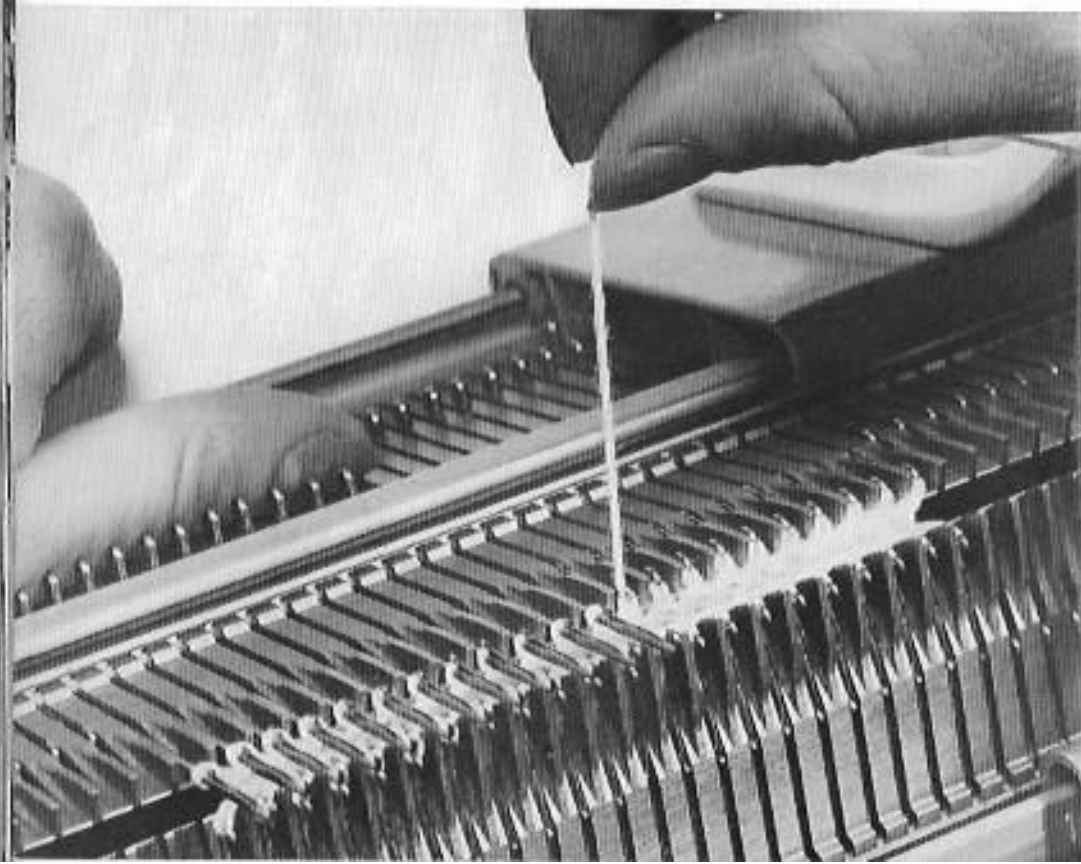
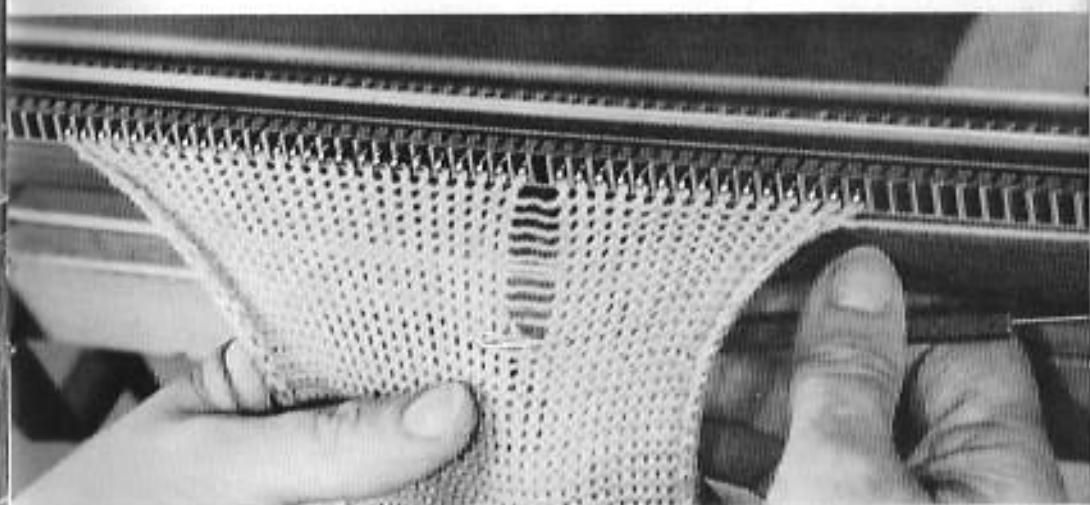


Fig. 41



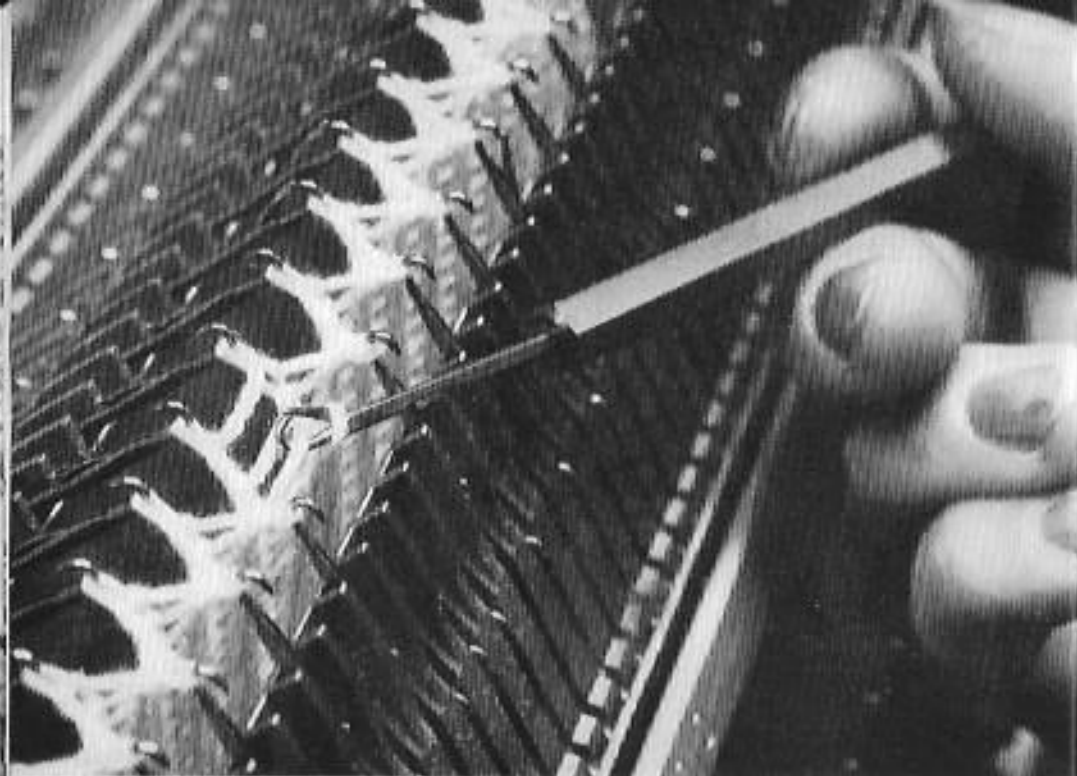


Fig. 42

and pick up the stitch off your finger. If this fails, draw out the locking bolts and open the beds to give enough space to pick up the stitch, using the red handled latch hook as the stitch will need to be knitted up to the top.

If the stitch is dropped irredeemably, open the latch of the needle concerned and continue knitting. When the work is finished, pick up the stitch with the latch hook, and finish off with a small sewing stitch. This is not then perfect work and only for use in an emergency.

Joining Wool

Never allow the wool to run out or all the stitches will be dropped. Stop at the end of the row before the wool comes to the end and pull the wool out of the guide. Join the new wool with a temporary but firm knot at the edge of the work. Thread up and continue knitting. When the work is finished, undo the knot and work the ends into the edge with a needle.

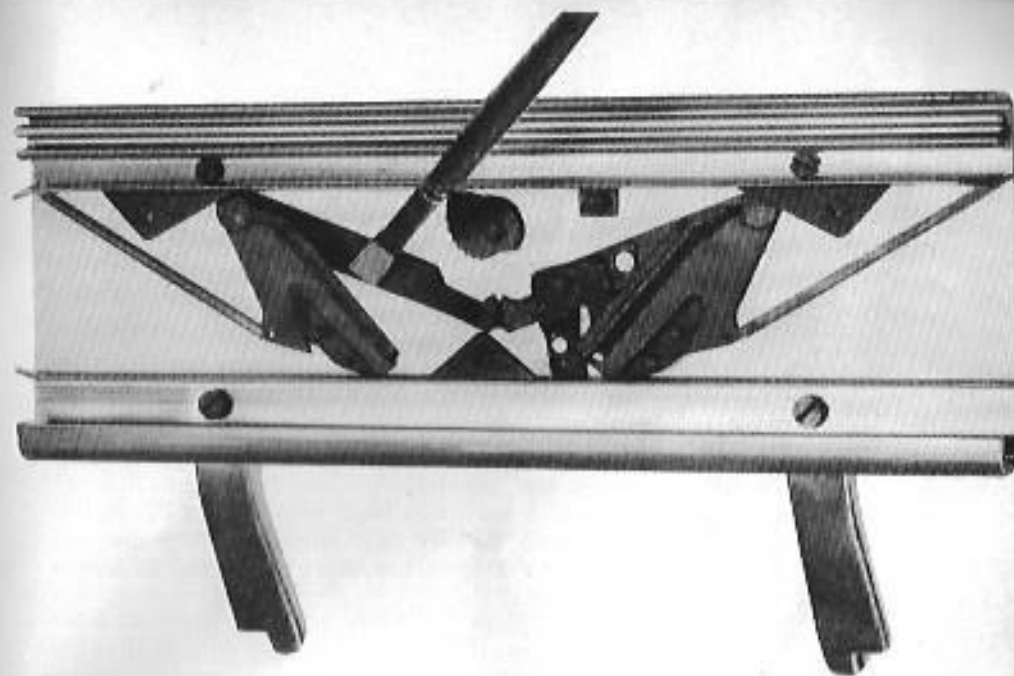


Fig. 43

Unravelling

By pulling the wool round and behind the hook, you can raise the stitch of the previous row onto the hook and the wool is free for the next stitch. After one row, see that the needles are not too high or stitches will be dropped.

To take the work off the machine without casting off.

Take off the side weights and hold the comb with the left hand. Remove the wool from the feed and pass the slide slowly across. Or, with the needle lifter, push the needles up to the upper working position and then down to the lowest position. The work then comes off into your hand.

Upkeep of the machine (Fig. 43)

Cover the machine with a clean cloth when it is not in use to keep out dust. Before beginning work, brush the needle channels and the lower parts of the slides with the brush supplied.

Oiling

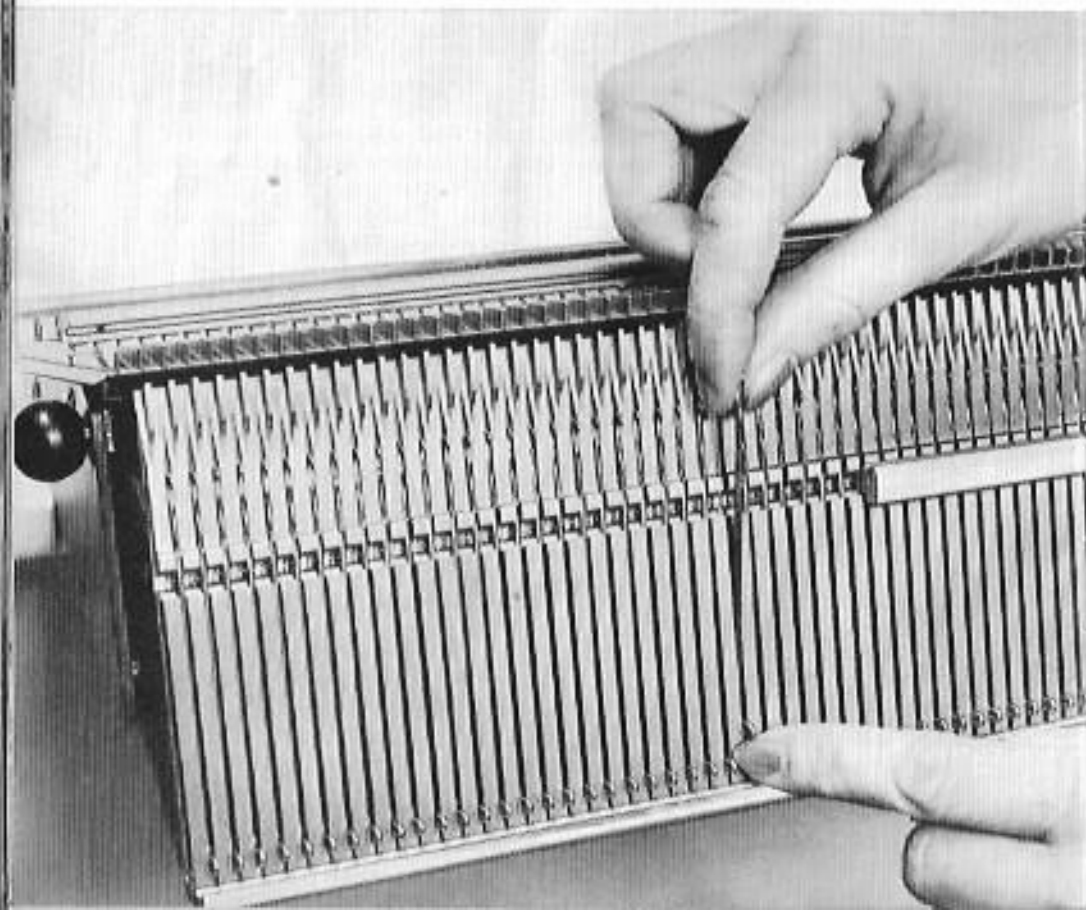
Now and again the moving parts of the slides and the gliding surfaces of the needle butts should be oiled with a good quality sewing machine oil. Use a small amount of oil in the groove in the upper slider rails and the lower rails. An oily rag can be used for the needles.

Apply the oil sparingly but often, particularly in the beginning. Thus the work will never come in contact with the oil. Wipe off any surplus immediately. If, for running in, or after cleaning, too much oil has been applied (perhaps unintentionally), the best thing to do is to knit a piece over the whole length of the machine, using some old wool.

Cleaning

From time to time after long intervals, the needles should be taken out of the machine (Fig. 44). Draw out the numbered gauge (3) after loosening the set screw 3a. Now the needles are lying open in their channels only held by the retaining spring (5). Wash the needles in petrol and allow them to dry completely. Clean the channels with the brush. Before the needles are fitted back they should be wiped on the shafts and butts with an oily rag. Note carefully that in fitting them back there are 3 coils of the breaking spring between the needles.

Fig. 44



To change a needle (Fig. 44)

Loosen set screw in the numbered slide rail and push the rail along until the needle is exposed. Lift it out and replace. Push the rail back and tighten the screw.

Hints in case of difficulties

Check if all needles not working are either right down to the rail or right up in the holding position.

A knot in the wool will stop you. Carefully ease it through the thread tensioning device and the wool guide.

If you cannot move the slide and cannot see what is wrong, set all knobs to R and tension to 0, open the slide and pass it across separately on FNB and BNB. Unravel the wool to the end of the row. Find out what is wrong and start the row again. Reset controls.

If the tension is too tight, the stitches have been knitted too closely. Alter the tension making it looser.

If the wool does not run evenly, check the tension and if necessary, rewind the wool.

If when knitting stocking stitch, the work rides up or does not knit properly, it is probable the stripper rail is not fitted correctly.

If the side weights have not been moved regularly the end stitches will ride up and jam the machine. They should be moved every ten to fifteen rows and oftener for fishermans rib and thick wool.

If the casting on comb has been bent it will not go down after the first row.

Bent needle latches. These should be straightened or the needles changed.

The wool runs heavily. Loosen the tension device.

The stitch size has been adjusted too large or too small. See table at beginning of book.

The machine runs dry. Oil the needle butts with an oily rag or lubricate as described under Upkeep of the Machine.

Dropped stitches. The stitch size is wrong - probably too loose. Side weights not moved often enough or not enough weight strips on. If the work has been increased much at the sides, it may be necessary to move the comb up, or hold down the work on the curve.

A bent needle latch. Repair it or replace the needle.

Dropped stitch at edge of work. The slide has been pushed too far across thus giving rise to a wool loop. Push the slide across only until the last needle is through.

No. 9  BNB Pos. I
FNB


Move the slide to the left. Knit eight rows. Then hang the FNB stitches onto the empty needles of the BNB; then shift following image.

No. 10  BNB Pos. II
FNB

Shift one needle to the right, then knit two rows. Now shift one needle to the left and knit two rows, a. s. o.

No. 11  BNB Pos. I
FNB

Move the slide to the right. Knit eight rows. Shift one needle to the right and knit eight rows. Shift one needle to the left, a. s. o.

No. 12  BNB Pos. II
FNB

Shift two needles to the right and knit two rows. Then shift two needles to the left and knit two rows, a. s. o.

No. 13  BNB Pos. II
FNB

Knit twelve rows; after each row shift one needle to the right, then one needle to the left (alternatively). Then knit one row without shifting anything; now repeat the entire pattern.

No. 14  BNB Pos. II
FNB

Move the slide to the right. Knit two rows, then shift one needle to the left. Knit two rows, then shift one needle to the right, a. s. o.

No. 15  BNB Plain.
FNB

With every row loosen the width of the stitch by one number, until arriving at No. 10; in the next row begin again with stitch width No. 3, a. s. o.

No. 16  BNB Plain.
FNB

Knit three rows; then glide during two rows the needles so as to be able to use the complementary shade in the upper neutral position; beginning from said position knit two rows by hand with the complementary shade; now replace all the needles into working position. Knit three rows and repeat the whole pattern, but with shifting following image.

No. 17  BNB Pos. II
FNB

Move the slide to the right. Shift two needles to the right and knit one row. Shift one needle to the left and knit one row. Shift one needle to the left and knit one row. Shift one needles to the right a. s. o.

No. 18  BNB Pos. II
FNB

Knit six rows; then hang the stitches of the FNB onto the BNB. Now knit again six rows with the same needle position, after which again hang the stitches of the FNB onto the BNB, but with shifting following image.

No. 19  BNB Pos. II
FNB

Knit one row, after which let drop all the stitches from the FNB. Knit three rows; then place again all the needles of the FNB into working position. Knit one row. Again let drop all the needles from the FNB, a. s. o.

No. 20  BNB Pos. II
FNB

Same pattern as No. 19, with the only difference that you will have to knit six rows, then two rows, then again six rows, a. s. o.

No. 21  BNB Pos. II
FNB

Knit one row. Shift one needle to the right. Knit one row. Shift a second needle to the right. Knit one row. Shift one needle to the left. Knit one row. Shift again a needle to the left, a. s. o.

No. 22  BNB Pos. II
FNB

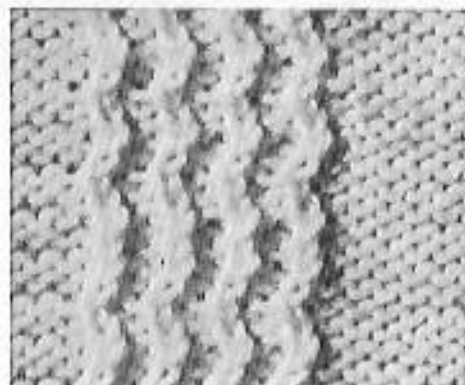
Knit normally.

No. 23  BNB Pos. II
FNB

Move the slide to the right. Shift one needle to the right and knit two rows. Shift one needle to the left and knit two rows. Repeat this working sequence three times, then recommence the entire pattern, but begin this time to shift to the left.

No. 24  BNB Plain.
FNB

Knit ten rows with the main shade, then one row with the complementary shade, then again one row with the main shade, one row with the complementary shade, and one row with the main shade once more. Then glide every second needle into the upper neutral position and knit one row with the complementary shade. Now remove the needles from the upper neutral



No. 5

N	N	6
N	N	4

 Pos. II



No. 6

N	N	5
N	P	3

 Pos. II



No. 11

N	N	5
N	P	3

 Pos. I



No. 12

N	N	5
N	N	3

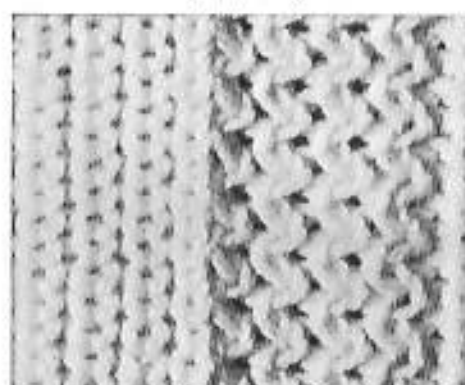
 Pos. II



No. 7

N	N	4
N	P	4

 Pos. II



No. 8

N	N	3
N	P	4

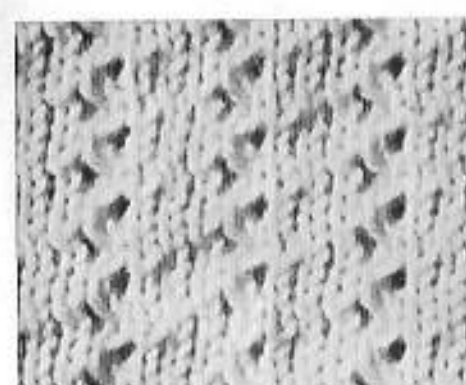
 Pos. II



No. 13

P	N	3
N	P	3

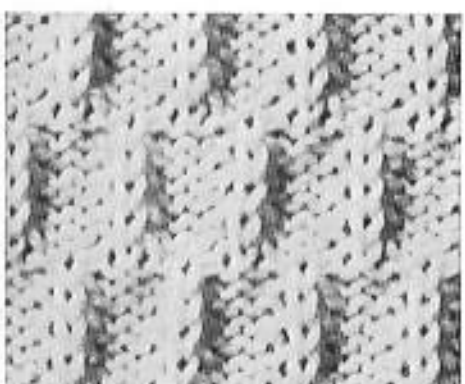
 Pos. II



No. 14

N	N	6
N	P	3

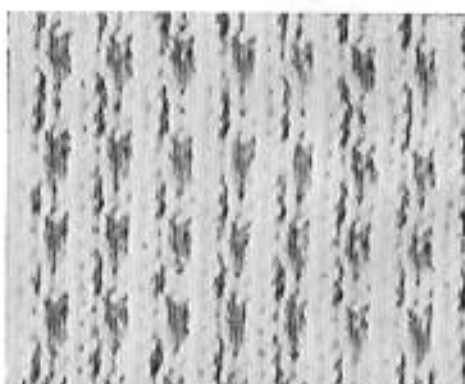
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No. 9

N	N	5
N	P	3

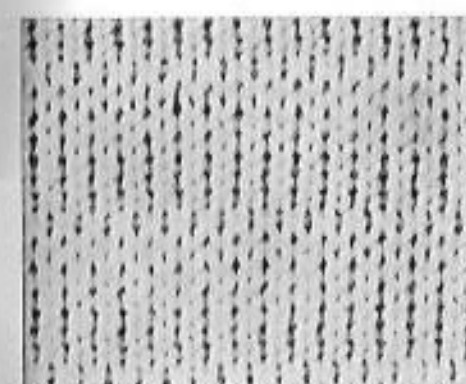
 Pos. I



No. 10

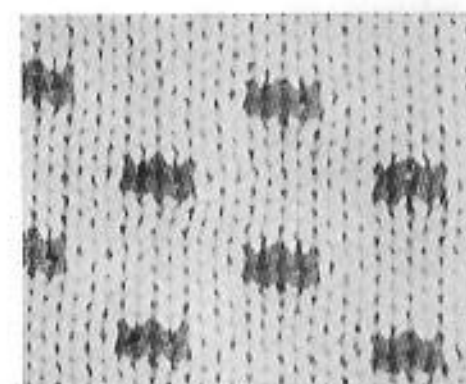
N	N	5
N	N	5

 Pos. II



No. 15

N	N	3
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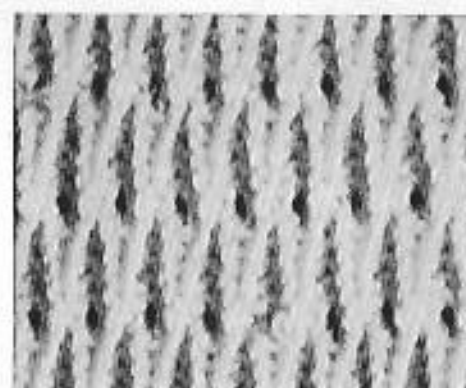


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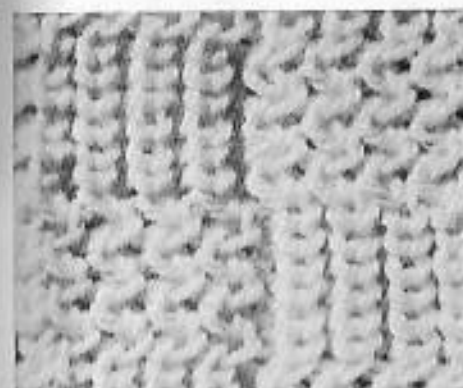
N	N	6
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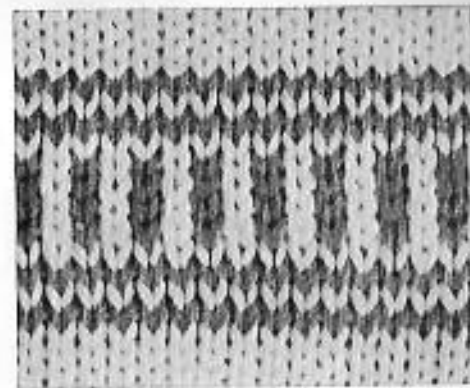
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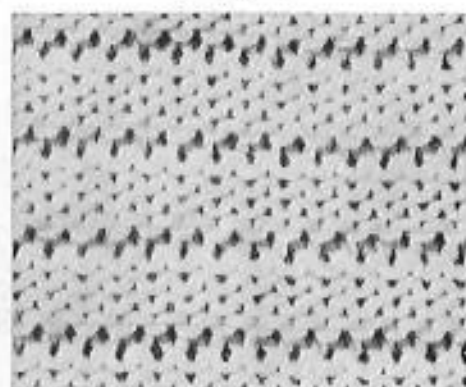
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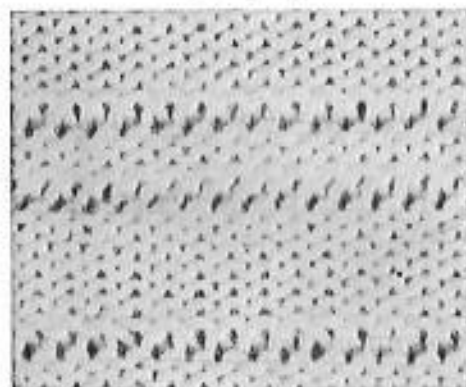
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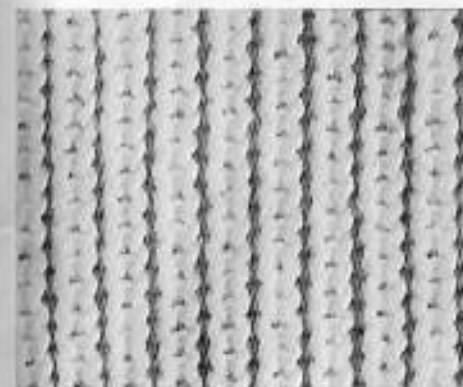
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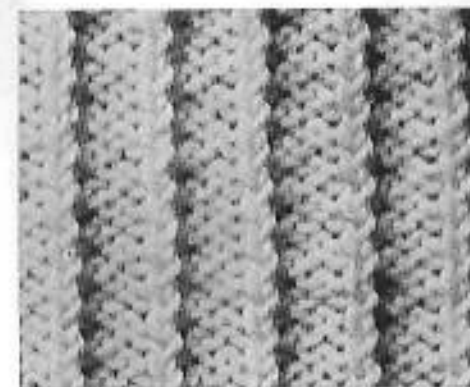
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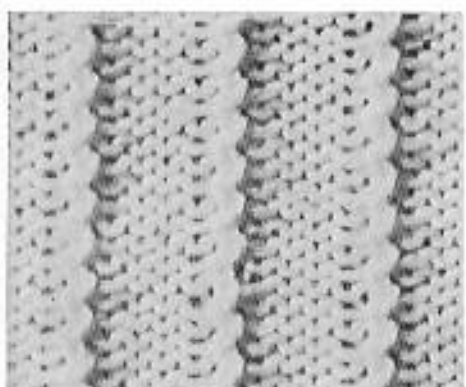
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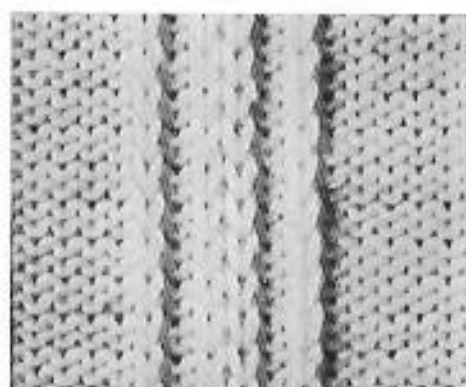
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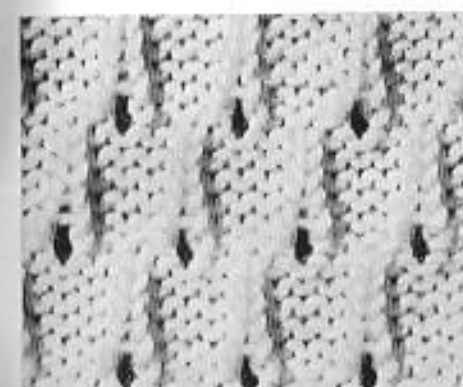
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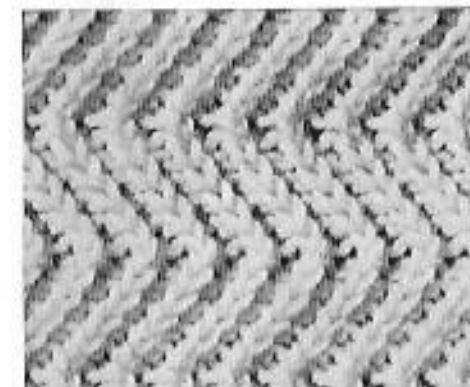
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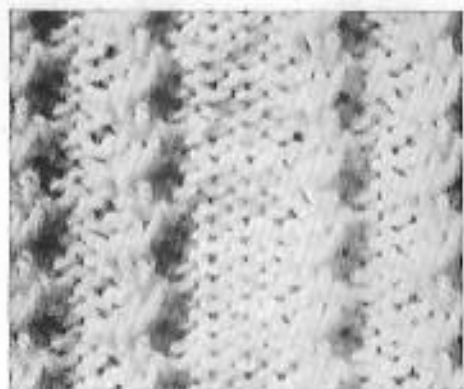
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No. 27 $\frac{N}{N} \frac{N}{N} \frac{6}{4}$ Pos. II



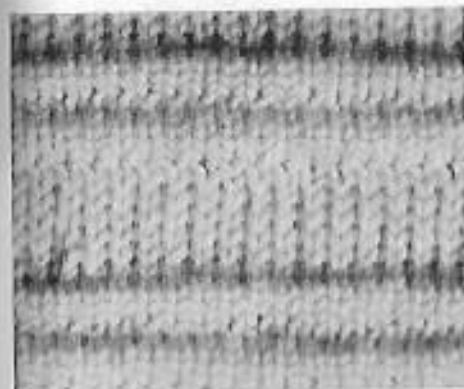
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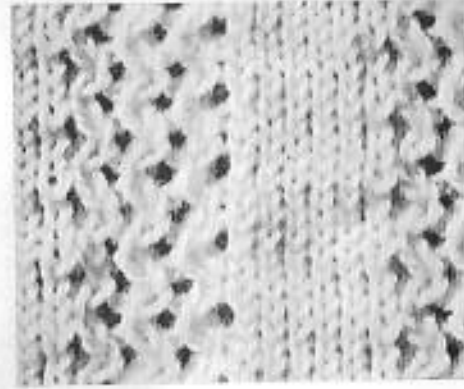
No. 29 $\frac{N}{N} \frac{N}{P} \frac{6}{4}$ Pos. II



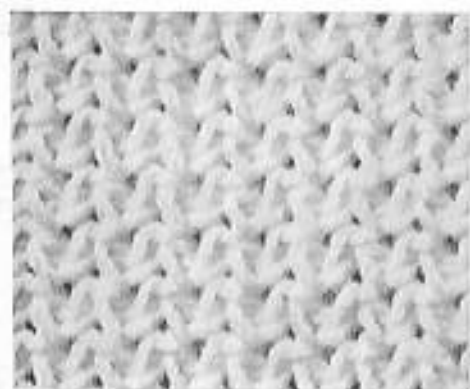
No. 30 $\frac{N}{N} \frac{N}{N} \frac{6}{4}$ Pos. II



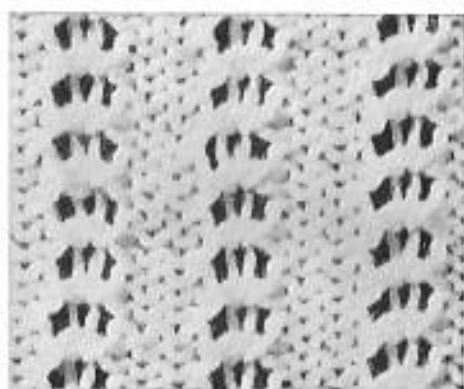
No. 35 $\frac{N}{N} \frac{N}{N} \frac{3}{3}$ Pos. II



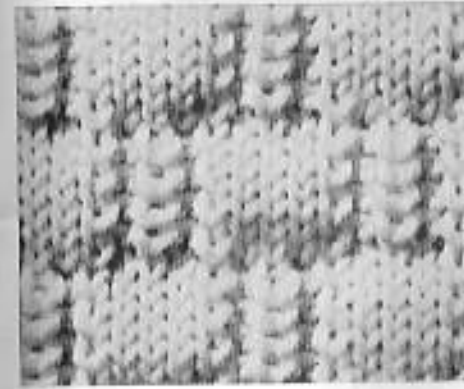
No. 36 $\frac{N}{N} \frac{N}{P} \frac{6}{4}$ Pos. II



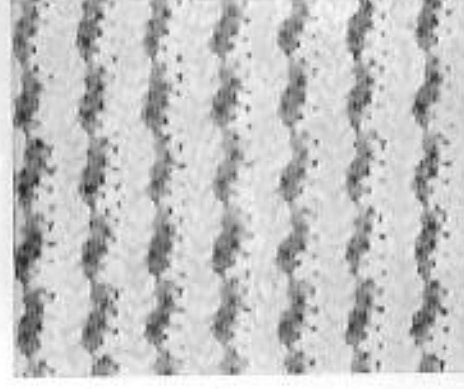
No. 31 $\frac{N}{N} \frac{N}{P} \frac{4}{4}$ Pos. I



No. 32 $\frac{N}{N} \frac{N}{N} \frac{6}{4}$



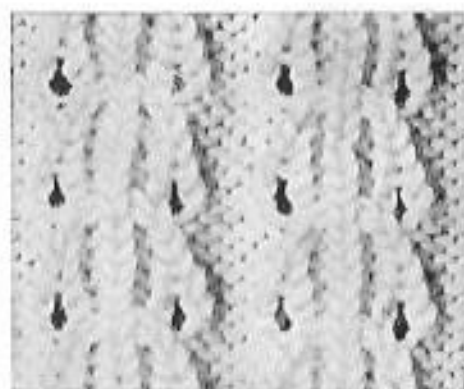
No. 37 $\frac{N}{N} \frac{N}{P} \frac{6}{4}$ Pos. I



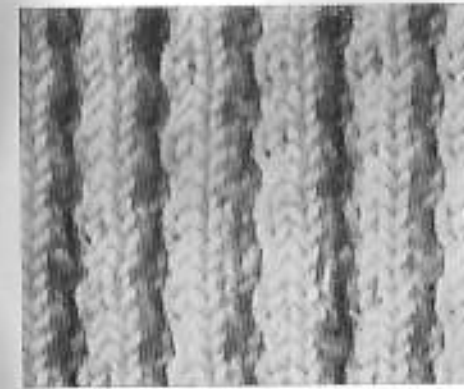
No. 38 $\frac{N}{N} \frac{N}{N} \frac{6}{5}$ Pos. II



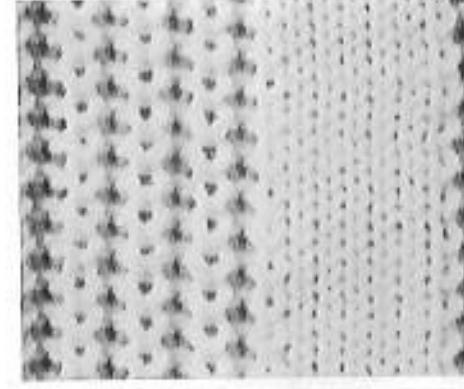
No. 33 $\frac{N}{N} \frac{N}{P} \frac{4}{4}$ Pos. II



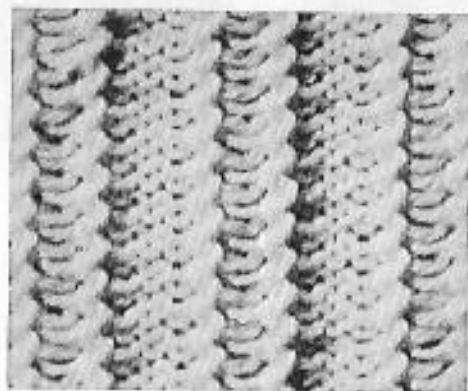
No. 34 $\frac{N}{N} \frac{N}{N} \frac{5}{3}$ Pos. I



No. 39 $\frac{N}{N} \frac{N}{N} \frac{6}{6}$ Pos. II



No. 40 $\frac{N}{N} \frac{N}{P} \frac{6}{4}$ Pos. I



No. 41

N	N	6
N	N	4

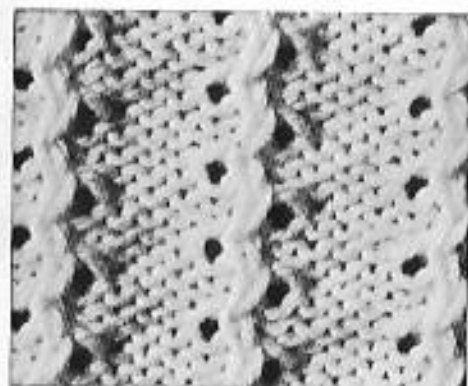
 Pos. II



No. 42

N	N	5
N	N	5

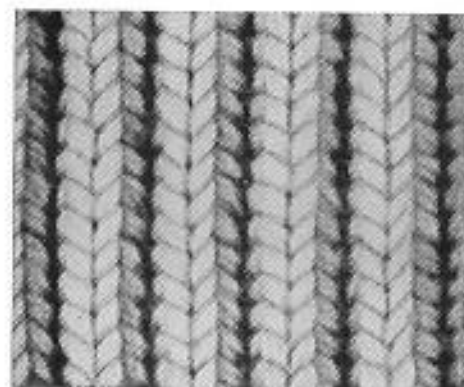
 Pos. I



No. 43

N	N	7
N	P	4

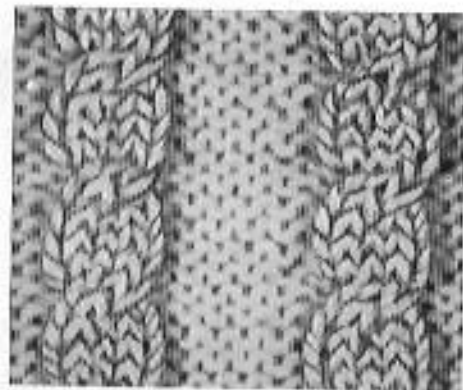
 Pos. II



No. 44

P	N	4
N	P	4

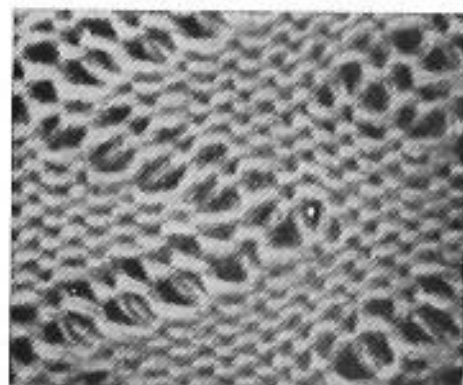
 Pos. I



No. 45

N	N	6
N	N	5

 Pos. I



No. 46

N	N	6
N	N	4

 Pos. II

CERTIFICATE OF GUARANTEE

The «ORION» hand knitter no.

sold on

is guaranteed for one year as from the date of purchase against faulty material and/or construction.

The present guarantee does not include wear and tear, nor damages caused by improper handling and upkeep.

Any manipulation done by people not belonging to the skilled staff servicing the machine releases us from all engagements.

The needles and the row counter are excluded from the present guarantee.

PRESS- & STANZWERK LTD.
ESCHEN (Principality of Liechtenstein)
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