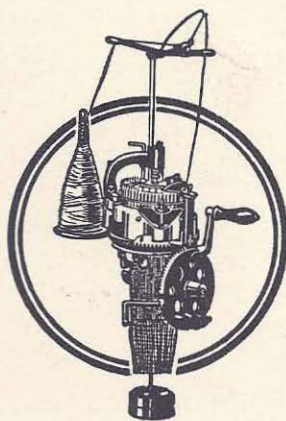


*The*  
**Auto Knitter**  
*Instruction Book*



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## IMPORTANT

When you knit with the  
AUTO-KNITTER, you should always  
grasp the work with the left hand, and  
pull downwards steadily.

## HOW TO USE THIS BOOK

This instruction book has been written for the person who has never seen a knitting machine, knows nothing about knitting of any kind and understands very little about mechanical things. By photographs and drawings everything is made so clear that almost anyone with a little study and application should readily learn to operate the Auto Knitter.

It is absolutely necessary to know the principal parts of the machine and understand how they work in order to use it intelligently.

Learn first the names of the principal parts, their functions; study carefully the needle action and get thoroughly acquainted with the machine. This should enable you to become a good operator in a very short time.

### — IMPORTANT —

With very minor changes, this book is a reproduction of the 1924 instruction book. Use it as a technical manual for learning the parts and their functions. Refer to the separate papers enclosed for beginner's knitting instructions, techniques, and additional adjustment information. When you make adjustments in timing, refer to the paper on dropped stitches.

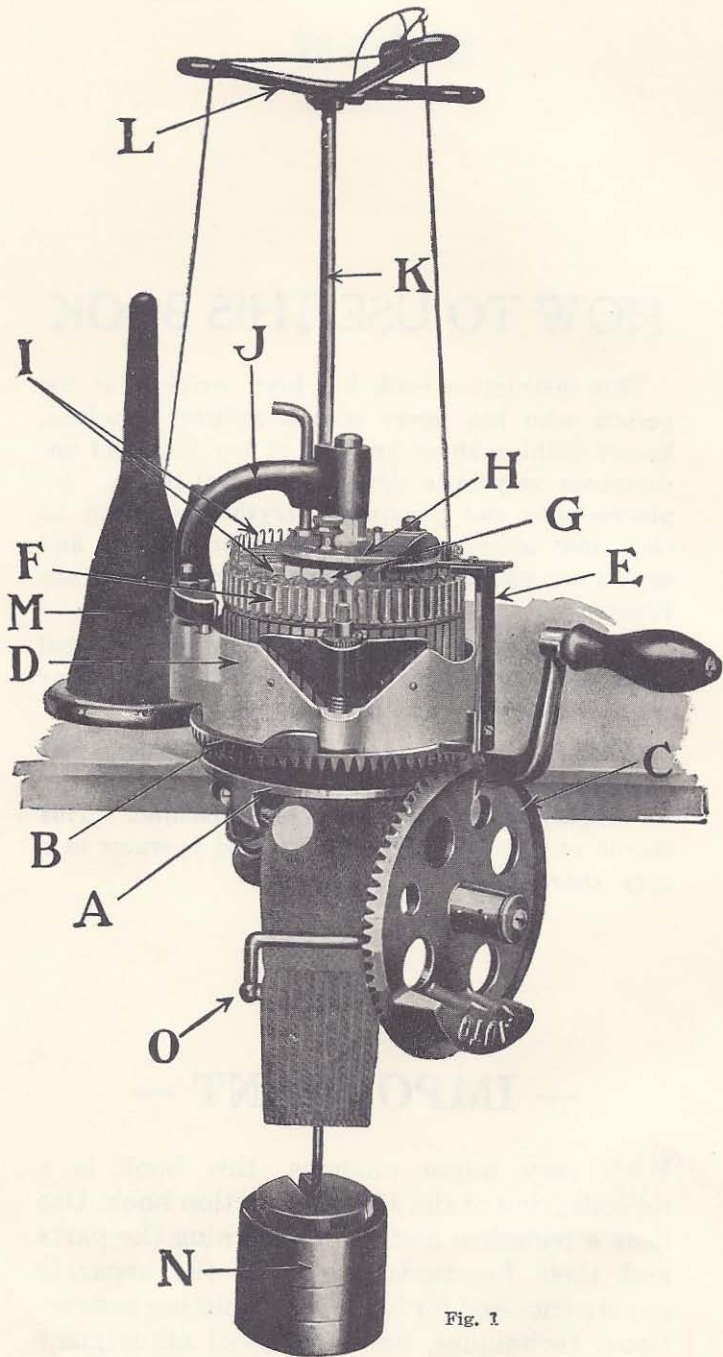


Fig. 1

From time to time mechanical improvements are made which are not necessarily illustrated.



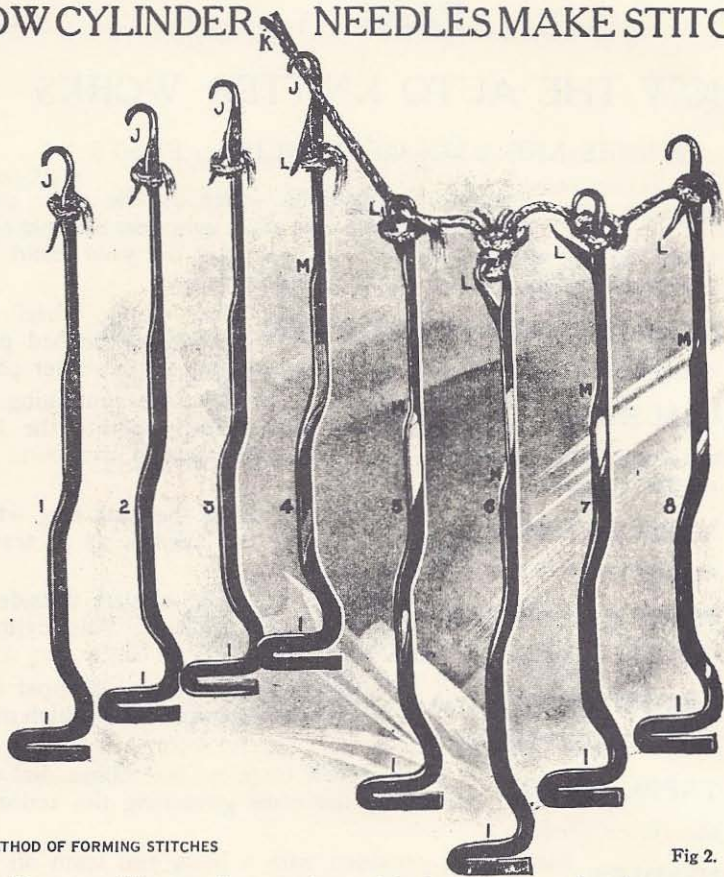
## PART I

### HOW THE AUTO KNITTER WORKS

#### NAMES AND USES OF PRINCIPAL PARTS

- A BED PLATE** The foundation upon which all the other parts rest—the stationary needle cylinder, the cam shell (with ribbing attachment when in use), and the yarn stand. It is secured to the bench or table by thumb screws.
- B & C GEAR RING AND CRANK WHEEL** The crank wheel attached to the bed plate operates the gear ring which in turn operates all the other parts.
- D CAM SHELL** The outside shell of the machine containing the needle paths and cams which operate the long needles. It rests on the gear ring which moves it around the needle cylinder.
- E YARN CARRIER** An upright attached to the gear ring which supplies yarn to the needles as it travels around the cylinder with the cam shell.
- F NEEDLE CYLINDER** A hollow cylinder, slotted outside to hold the long needles. This cylinder does not move but is stationary.
- G RIBBER NEEDLE DIAL** A flat disc, slotted on its upper side to hold the short needles which make the ribbing or “purling.”
- H TAPPET PLATE** A plate which rests on the ribber dial and containing the cams governing the action of the ribber needles.
- I NEEDLES** Steel wires provided with a hook and latch on one end and a projection called the “butt” or “heel” on the other end. When the butt or heel moves the needle out and in by the guidance of a pathway the hook catches the yarn while the latch automatically closes over the hook. This permits the new stitch to be pulled through the last one and the needle to move out again for another stitch. There are two sets of needles—long for use in the cylinder and short for the ribber dial.
- J RIBBER ARM** A detachable support for the ribber dial and tappet plate. It suspends these parts over the stationary needle cylinder.
- K & L YARN STAND** A long rod with several arms containing eyes by means of which the yarn is unwound from the bobbin and fed into the yarn carrier.
- M BOBBIN** is the wooden spindle to which the yarn is transferred from the skein or hank.
- N WEIGHTS** with holders to be attached to “set up” or buckle for holding work down close to top of needle cylinder.
- O BUCKLE** is the clamp which clasps the work and the weights are attached to it.

# HOW CYLINDER NEEDLES MAKE STITCHES



METHOD OF FORMING STITCHES

Fig 2.

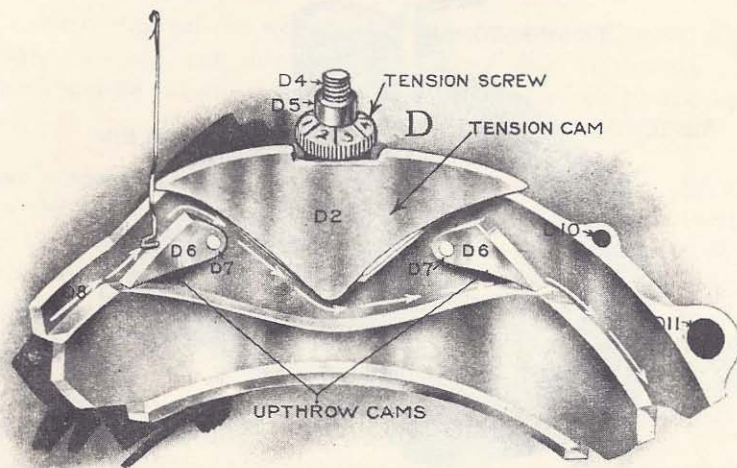


If you will examine a piece of knitted wear closely, you will see that it is only a succession of slip knots. You can cut it anywhere and it will unravel into a single piece of yarn. That is all there is to plain knitting—making slip knots. This is the principal operation of the Knitting Machine.

For this purpose each needle in the machine is made with a hook and latch. Follow the illustration which shows progressively each step of the needle in making a stitch. When the hook catches the yarn the latch is automatically closed over the hook by the previous stitch pushing the latch up. The position of the needle in 1 to 5 illustrates this. Positions 6 to 8 show how the latch permits the new stitch to be pulled through the previous one and how the needle in rising forces the yarn to push down the latch and permits the stitch to slide out of the hook. One slip knot or stitch is now completed and the needle is ready for the next stitch. Thus the stitches are made by the raising and lowering of the self-acting needles. One row of stitches is made at every revolution of the cam shell around the needle cylinder. Although there are many needles in the cylinder, only one needle makes a stitch at a time. Two or three needles ahead of it always have stitches in process of completion but only one needle at a time actually finishes a stitch. Needles work as rapidly as the machine is turned.



## HOW THE CAM SHELL OPERATES THE CYLINDER NEEDLES



INSIDE VIEW OF SECTION OF SHELL  
SHOWING CAMS AND NEEDLE PATH

Fig. 3

That part of the machine which moves the needles up and down in their slots in the cylinder is called the cam shell because it is a shell containing the cams or needle paths. You will notice in Figure 2 that there is a projection on the lower end of the needle called the "heel" or "butt." Just as there must be a flange in trolley wheels to fit the tracks so the needle has to have this butt in order to travel in the needle path or track.

Only that part of the cam shell path (D) which raises and lowers the needles is shown in the illustration, Figure 3. The three cams which take care of raising and lowering the needles (one D 2 and two D 6 make a sort of hill and valley path for the needles. The illustration shows a needle travelling uphill on the first D6 cam. When it reaches the top, cam D2 will send it downhill and it then rises on a gentle slope up-in-under the second D6 cam, after which it travels all the way around the cam shell before again entering the cams. Both D6 cams swing on pivots so that when operating the cam shell in the opposite direction the opposite cam will do the raising of the needles. Tension cam D2 is movable up and down to regulate the length of stitch or knitting tension. The lower this cam is, the longer the stitch, while the higher it is the shorter the stitch because the cam's position determines to what depth the needles shall travel.

The cam shell travelling around the needle cylinder makes what is called a "needle wave." That is, the rising and falling of the needles as the cams engage them one after another all around the cylinder resembles a wave.

The ribber arm which supports the ribbing attachment sets in a socket in the cam shell. It revolves with the cam shell thus operating at once both the cylinder and ribber needles.

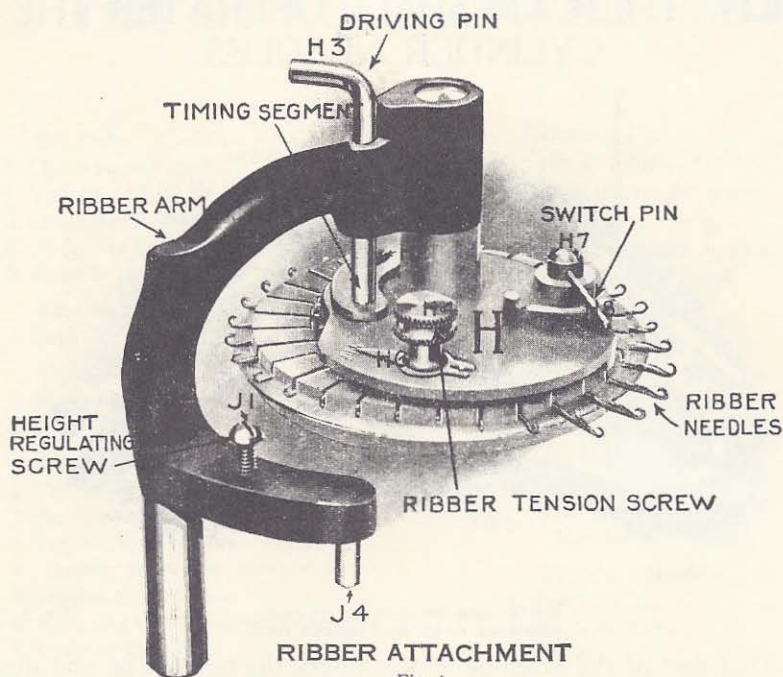


Fig. 4

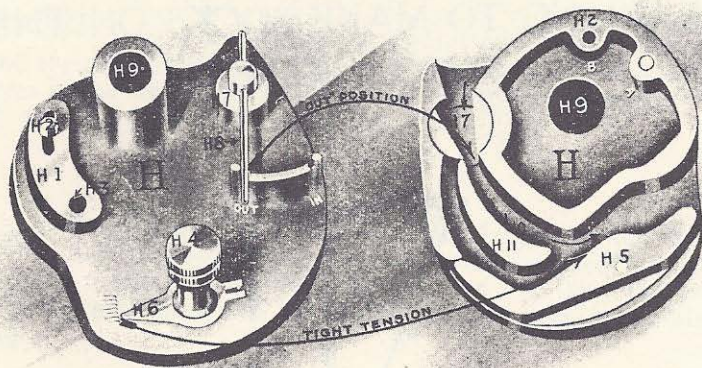
## HOW THE RIBBER WORKS

The ribbing attachment—ribber arm, tappet plate and dial—perform the same work horizontally that the cylinder and cam shell do vertically. They work in unison in order to produce the ribbing or “purling” which forms the top of the sock. That is why the ribbing attachment is made to set in the cam shell so that when it turns it operates both sets of needles at the same time.

The ribber arm “J,” from which are suspended the tappet plate and dial, is adjustable to different heights by set screw “J-1.” This is one of several adjustments which enables the ribbing needles to work in harmony with the cylinder needles.

The tappet plate “H” (Figure 5) corresponds to the cam shell. Its needle paths are flat instead of circular as in the cam shell. But they give the same “hill and valley” movement to the ribber needles as the cam shell gives to the cylinder needles. It is likewise fitted with a tension cam “H-5” regulating the distance out to which the needles shall go. A switch cam “H-7” throws the needles in or out of action. Another adjustment called the timing segment (H-1) enables you to regulate the exact time at which the needles shoot out to take the stitch so that they operate simultaneously with the cylinder needles. The pin “H-3” causes the tappet plate to revolve with the ribber arm over the dial containing the needles.

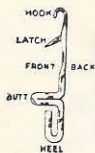




TAPPET PLATE-TOP VIEW

TAPPET PLATE-UNDERNEATH

Fig. 5



If you will look again at Figure 4 you will see that, just as in the cam shell, only a part of the needles, those at the front, are active, while those to the right and left are not engaged in the cams and are idle. Study the two views of the tappet plate well until you are sure you understand how these cams guide the ribber needles in and out and how the tension and switch cams work. This is very important and will make its operation easier for you.

The ribber dial "G" is a flat disc with slots radiating from the center. They hold the needles and are just half the number of those in the cylinder. This is because purling requires that the ribber needles operate between the cylinder needles. A projection on the under side of the dial fits against a dial adjuster and holds the dial immovable just as the cylinder is stationary.

The ribber needle is practically the same as the cylinder needle, but shorter. There is the same hook, latch and butt and they are also self-acting. The butt of the ribber needle moves in the needle path or cams of the tappet plate exactly as the cylinder needles move in the cam shell path.

\* \* \* \*

The ribber needles make their stitches in the same manner but work horizontally in and out instead of vertically up and down.

## PART II

### LEARNING TO MAKE SOCKS ON THE AUTO KNITTER

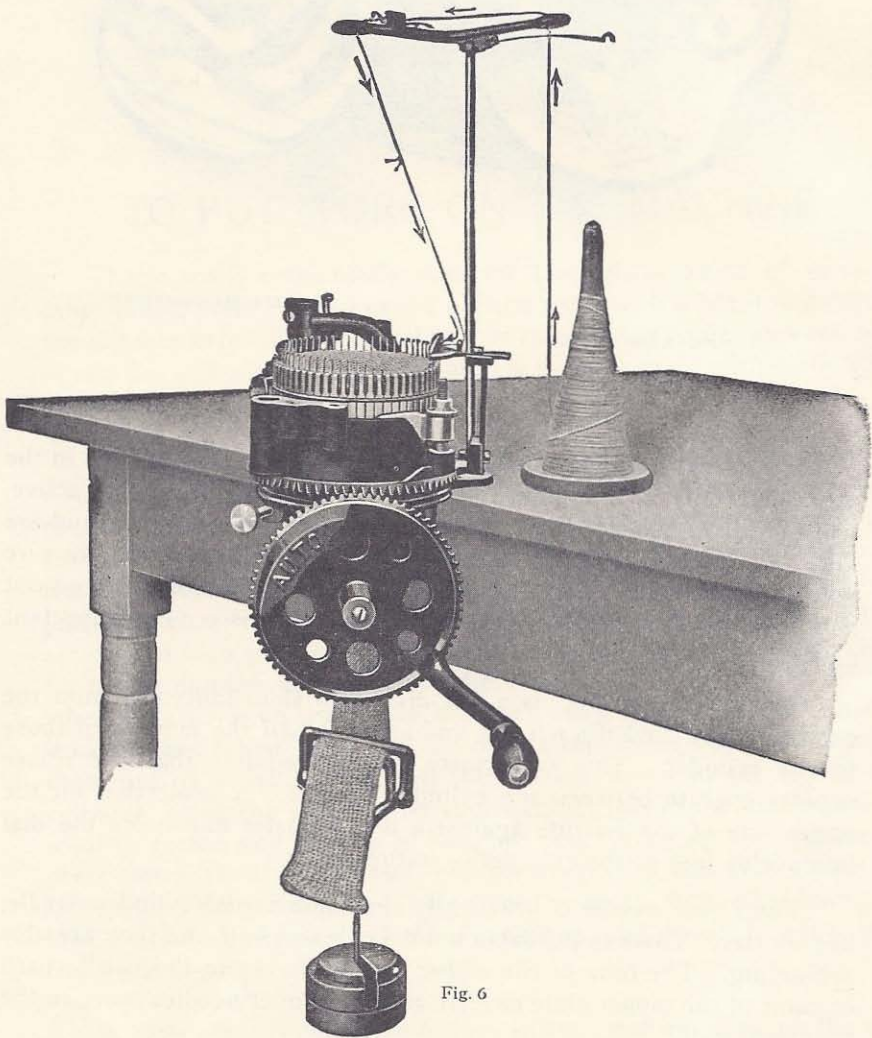


Fig. 6

Note how yarn travels from bobbin to needles. Also how buckle and weights are attached to work.



# LEARNING TO MAKE SOCKS ON THE AUTO KNITTER

When you understand the working principles of the Auto Knitter as explained in the preceding pages, these directions carefully studied will enable you to master its operation. Remember that going slowly and learning thoroughly as you go will save you much time and help to make it easy, and that speed comes with practice.

## HOW TO START

The knitted work in the machine is tied to the crank wheel (C) to prevent the stitches coming off. Cut this string, taking care not to turn the handle of the machine until you have the yarn in position to feed. Should some of the web have become tangled up in the needles, push it carefully down on the needles so as to free the latches, but leave the stitches on the needles. Then draw down the knitted web with your hand and attach the buckle (O) by drawing the fabric under its frame and over its clamp and hang the weights into the buckle. See Fig. 6.

Remove the ribbing attachment (J-H-G) from the machine and do not attempt to use it until you are thoroughly familiar with plain knitting. Put all loose parts in a safe place until they are needed.

Take the loose end of the yarn and unwind the rounds that are loosely wound around the needles and let this hang until you are ready to knit.

Screw the Yarn Stand Top (L) onto the Rod (K); insert the unthreaded end of Rod (K) into hole in Bed Plate (A) and tighten the set screw.

## SEE PAGE 42, "CARE OF THE MACHINE"

Do NOT try to use any part of the equipment until you have read directions carefully and are sure you know its use.

\* \* \* \*

Many different cylinders and dials may be used in the Auto Knitter to do a wider range of work. To avoid confusion, however, this explanation of the machine's working principles will mention only the 4½ inch, 60 x 30 outfit, as a basis for all other sizes.



## CAUTIONS

If the machine should block—before making any adjustments—see that nothing has dropped between the cam shell and the cylinder blocking the path of the cams.

---

If the machine works hard—it may need oil. Never leave the machine in a damp place, and if the machine is not to be used for a while, remove the needles from the machine and wrap them up in an oily cloth. Rusty needles will not do good work.

---

If the machine drops stitches—see that all your needle latches are open. Also see that you have no bent latches which are cutting the work and that there are no broken latches.

---

Never force the machine, find out the cause of its sticking and remedy this.

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Never turn the crank wheel backwards with the ribber needles in action.

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Never turn the crank wheel backwards unless you have cylinder needles out of action to allow the Uplthrow Cams to reverse their positions.

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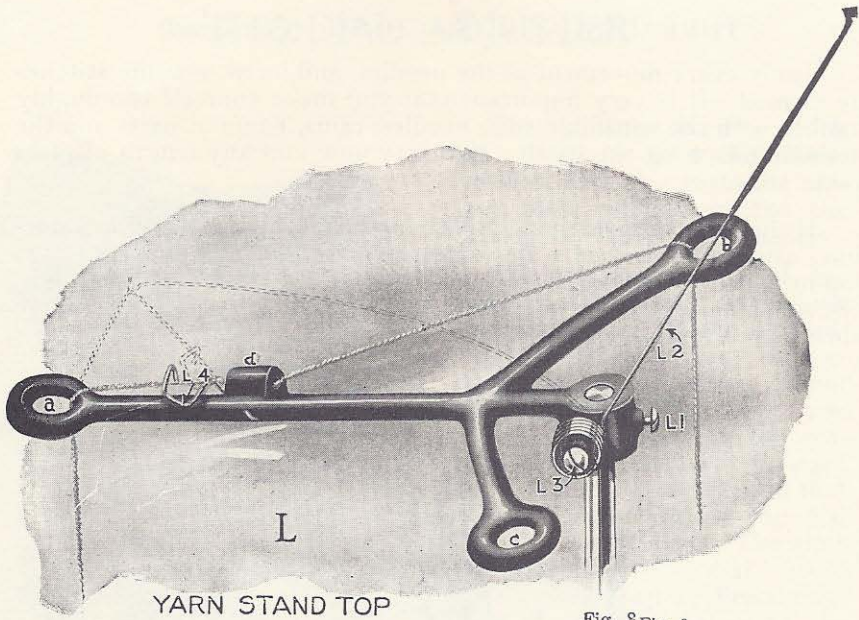
Never attempt to remove the ribber from the machine while the needles are in the dial. Remove needles first.

---

Always have the machine set up with plain work before putting the ribbing attachment on the machine.

---

Should the Switch Pin H8 become blocked when moving it from one position to the other, do not force it, but put it back in the position from which you are moving it, turn the crank wheel slightly to move the needle blocking the way, and then the switch pin can be moved without further difficulty.

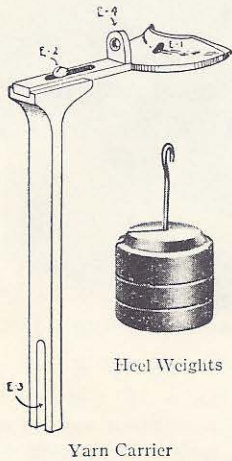


YARN STAND TOP

Fig. 8 Fig. 8

## THREADING THE MACHINE

Set a bobbin of yarn directly under the eye of either short arm (b or c) of the yarn stand top. See Fig. 6 and 8. Draw the yarn up through this eye, through the hole in the lug "d" on the long arm, under the take-up lock "L-4" and down through the eye "a" at the end of the long arm, which must be exactly over the center of the cylinder. Draw the yarn through the yarn carrier from the outside through the two holes if you are setting up new work or tie this end to the end of the yarn which you unwound from the needles and wind all slack onto the bobbin. See Fig. 6. (The illustration above shows by dotted lines the position of the heel spring when making heel and toe.



Heel Weights

Yarn Carrier



Take-up Lock

Buckle



Heel Spring

Before turning the handle see that all needle latches are open and pointing down—not straight out—and that the yarn has no slack and will feed evenly. Now you are ready to knit. Turn the handle clockwise (to the right) slowly at first until you see that everything is working properly. Don't fail to have sufficient weights to hold the work down properly. If the machine is blocked and the crank wheel will not turn, it is because the upthrow cams have been thrown out of adjustment in transit. To correct see page 31.



## THREADING THE MACHINE—(Continued)

Study every movement of the needles, and learn how the stitches are formed. It is very important that you make yourself thoroughly familiar with the working of the needles, cams, name of parts and the method of forming the stitch. You may now knit any length of plain work.

If the wheel should stick slightly at the start, as it may do sometimes after lying unused, a few sharp taps on the handle in the direction in which the wheel should move will generally put matters right. The machine will work much easier after a little use. Knit slowly when a knot reaches a needle.

## SETTING UP NEW WORK

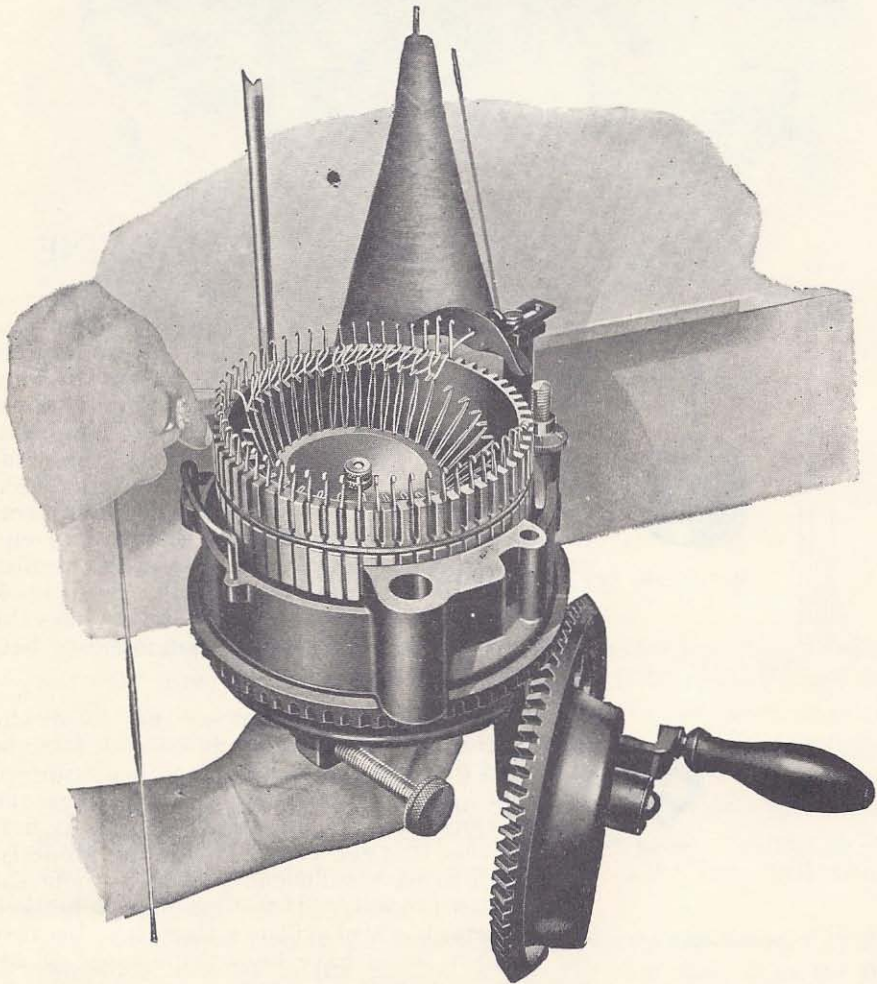


Fig. 9



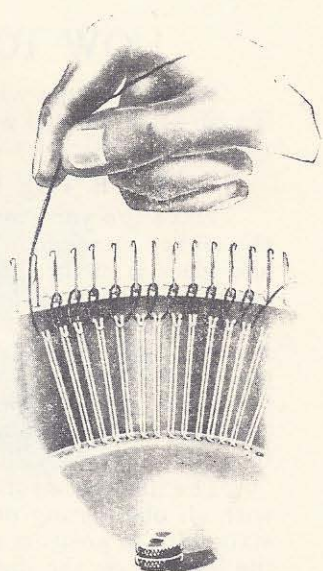


Fig 10  
SETTING UP  
NEW WORK

1. Move yarn carrier to front center of machine. Make certain all needle latches are open. Thread the yarn through the yarn carrier, drawing 5-6 feet of yarn through the carrier and falling freely inside the cylinder, ahead of the yarn carrier.
2. Grasping the loose yarn near the yarn carrier, hook it under the nearest hook of the setup, to the right of the yarn carrier. Now bring the yarn up to the nearest needle, and run the yarn in a clockwise direction around the needle, then back down to the hook of the setup. Pass the yarn, again in a clockwise direction, around the hook, then up to the next needle (in a direction away from the yarn carrier), looping the yarn around this needle exactly as the first. Then bring the yarn down to the next hook, and so on. Remember as there are one half as many hooks as there are needles, you will have to use each hook twice.
3. While winding the yarn with one hand, you must grasp the lower end of the setup and pull downwards with a firm but steady pull. You may want to attach one of the weights to the setup, and pull down on this. Without this pull the yarn will not be tight enough on the needle to properly operate the latch.
4. When you reach the needles which are down in the cams, turn the machine slowly until these lowered needles reach normal height, then complete looping the yarn around all needles and hooks.
5. When starting, the level of the top of the hooks on the setup should be a little below the edge of the cylinder. The actual distance will vary with the yarn used and the amount of pull given the yarn: about an inch is a good starting point for most knitters.
6. When all needles and hooks have been threaded, slowly turn the crank a round or two, and you're ready to knit. Should you miss a needle or two in setting up, don't worry, the machine will automatically pick up the misses, AS LONG AS THE LATCHES ARE OPEN ON THE MISSED NEEDLES.
7. REMEMBER — Except when turning the heel of a sock, the crank should always be turned in a clockwise direction!

## HOW TO DO RIBBED WORK

Ribbing is just what the name implies—a “rib” on the plain work. To rib—use the dial with ribber needles. They work horizontally between the vertical cylinder needles, making the rib.

### TO PLACE THE RIBBING ATTACHMENT IN POSITION

Have the yarn carrier (E) at the back of the machine. Pick up the ribber attachment, holding it by the arch in the ribber arm (J), and place it in the machine. Fig. 1 shows the correct position, with the ribber arm and the ribber arm guide pin (J4) resting in the holes provided in the cam shell (D). The Ribber Arm Height Regulating Screw should rest on the Cam Shell, and the Dial (G) should rest above the cylinder (F) with just space enough between them to allow the knitting to pass between. These parts will fit snug to begin with and may have to be tapped into position, but as you use the machine they will slide in with a nice working fit.

The illustration shows a picture of the dial adjuster in the machine with all obstructing parts removed. The dial adjuster holds the dial stationary in position (just as the cylinder is stationary) by engaging the lug G-1 on the underside of dial. See Fig. 11.

The correct position for dial slots is directly opposite cylinder needles. Move the dial forward with your hand till it presses against the upright. See Fig 11. If the slots are not exactly opposite cylinder needles, adjust the upright forward or backward by means of screw F6. Turn to the left for adjustment backward and to the right for adjustment forward at the same time.

When the ribber arm is pressed home the dial should be high enough to allow the web sufficient clearance to pass freely off the needles down between the cylinder and dial. Varying yarns may necessitate alteration in the height of the dial. To raise or lower the dial, turn Ribber Arm Height Regulating Screw (J1) to the right to raise dial, and to the left to lower it.

An alteration in the height of dial may entail adjustment in height of Yarn Carrier (E).

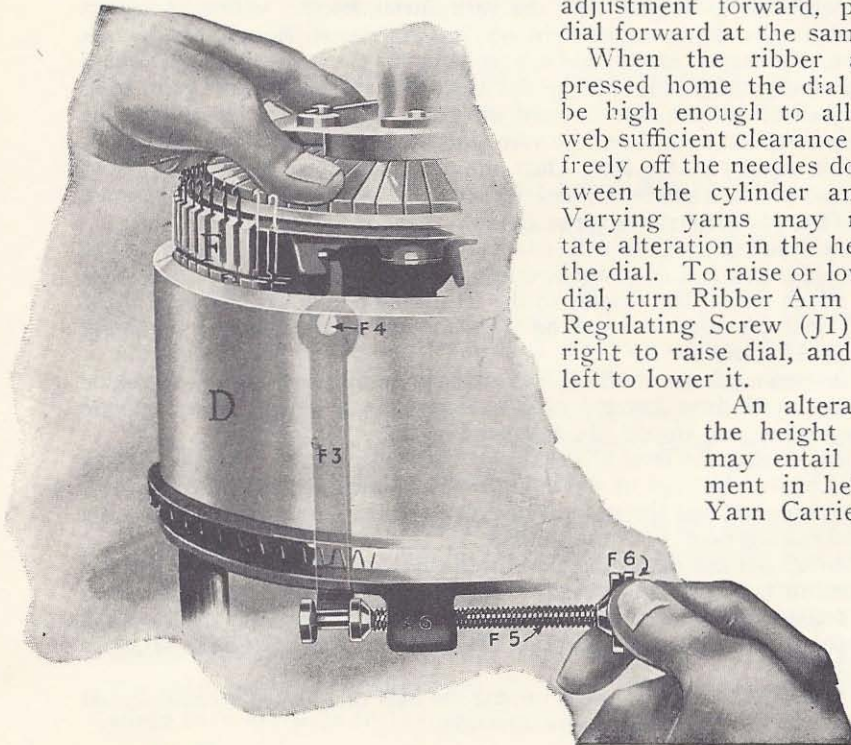


Fig. 11



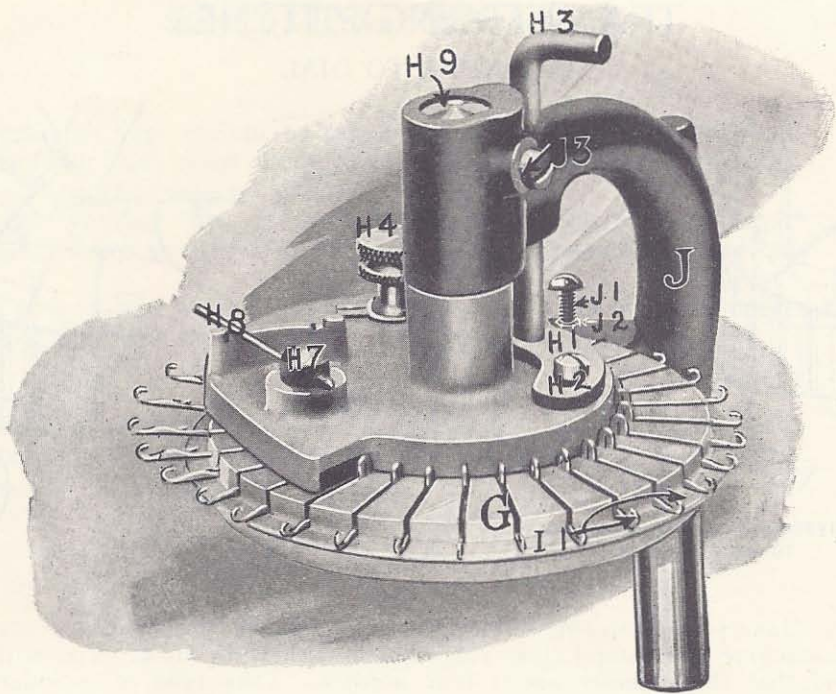


Fig. 12

### PUTTING RIBBER NEEDLES IN DIAL

Ribber needles slide into the slots of the dial, heel first, and lie on their back with butt up. They should be pushed in as far as they will go, so that the butt touches the rim of the tappet plate.

The needles can be placed in slots in any part of the dial with the exception of that part which is covered by cams of tappet plate. Slide in the ribber needles commencing at the left hand side and working around toward the right. See that the switch lever H-8 is at the "in" position, to clear the needle path, and that the driving pin H-3 is in place. Have all needle latches open so that needles can take stitches.

### A VARIETY OF RIBBED STITCHES

For a 1 and 1 rib, all the ribber needles must be in the dial, but only every alternate needle in the cylinder. The dial must be adjusted so that the ribber needles are opposite the empty cylinder slots. This makes the most suitable cuff for a gentleman's sock.

For a 2 and 1 rib, all the needles must be in both cylinder and dial and the dial must be adjusted so that the ribber needles are exactly central between the cylinder needles.

For a 3 and 1 rib, every fourth needle is left out of the cylinder, and every alternate needle out of the dial; adjustment as in 1 and 1 rib. This makes the most suitable leg for a gentleman's sock.

For a 4 and 1 rib, all needles are in the cylinder and every alternate needle in dial; adjustment as for 2 and 1 rib.

Other ribs are formed in a similar manner.



# TRANSFERRING STITCHES

## CYLINDER TO DIAL

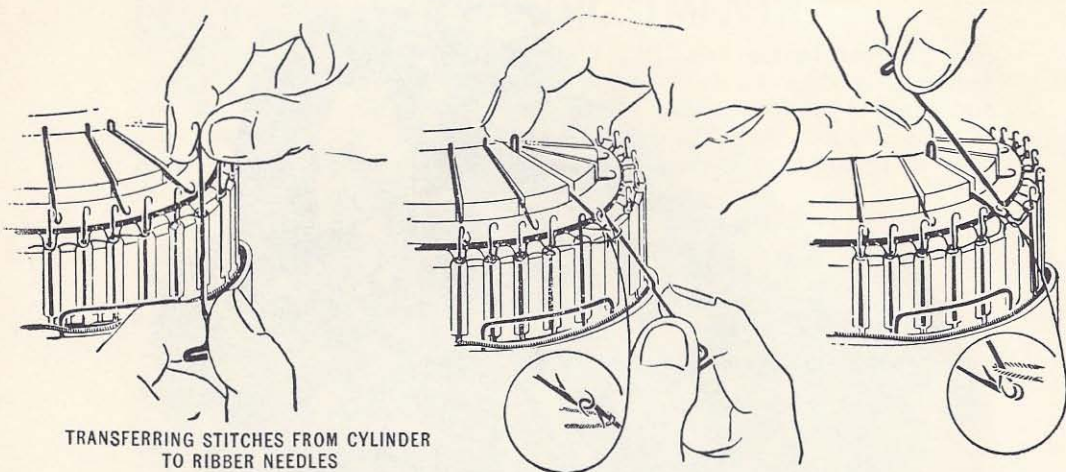


Fig. 13

Have your clasp ring holder, which sets in the cam shell, at front of machine and extend clasp ring over it with work hook. You will find that this releases about four needles. Take hold of cylinder needle farthest to the left as you are working toward the right, and draw it up through its stitch until the stitch is below the latch. Then place the hook of the cylinder needle into the hook of the ribber needle immediately above it which must have its latch open. Slide stitch from the cylinder needle over its closing latch onto the ribber needle with its open latch. Transfer in this manner necessary cylinder needles until you have your machine set for the rib desired.

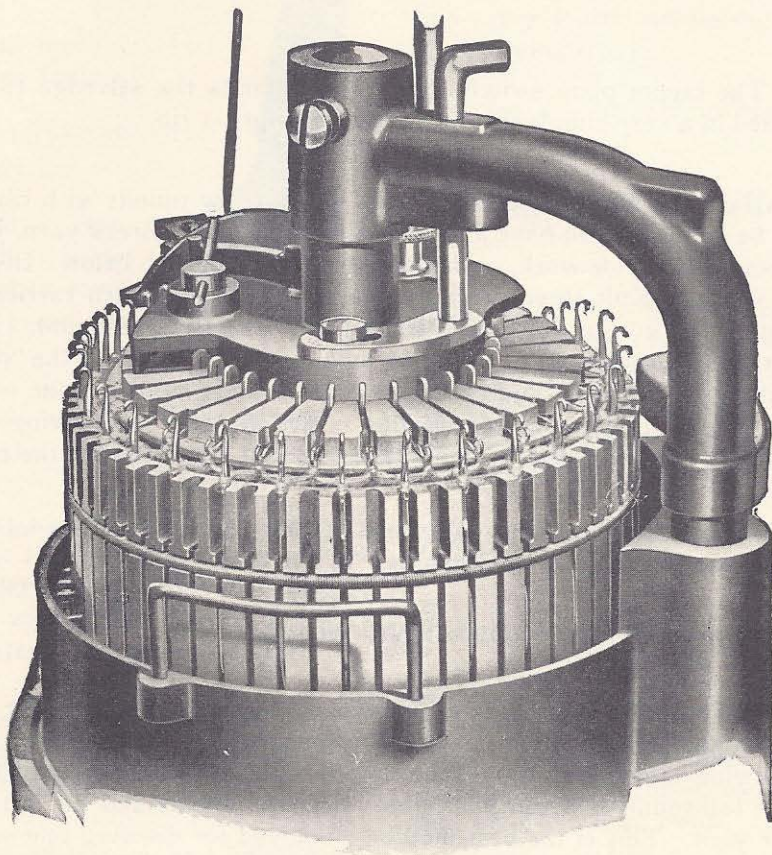
Turn the crank slowly to move the tappet plate forward and clear the way for the remainder of the needles, not forgetting to hold the work down so that the cylinder stitches will continue to knit properly. When you have finished transferring stitches slip clasp ring back.

It will be found that when the ribber is in use it is not necessary to pull the work down as strongly as in plain knitting. In fact, the left hand need do little more than rest on the work, but the pull must be steady, and in a vertical direction. If the pull be to one side, or unsteady or even too strong, it may cause the ribber needles to drop their stitches.

### 1 AND 1 RIB

If you have a needle in every slot in the dial and a needle in every other slot in the cylinder; that is, one rib needle to one cylinder needle, you are ready to knit 1-1 rib. See that all your needle latches are open and that your yarn is feeding properly, and then proceed to knit. Watch carefully the operation of the dial needles and how they work. You will notice in 1-1 rib that the dial needle works in exact time with the cylinder needle just ahead of it, and that they take their stitches at just the same time. If this is not true, then your ribber needs timing. (page 36).

## MACHINE SET FOR 1-1 RIB



THIS ILLUSTRATION SHOWS MACHINE SET FOR 1-1 RIB. READY FOR MAKING CUFF OF STANDARD SOCK.

Fig. 14

Notice that every *other* needle is in cylinder and every needle in dial.



# PART III

## STANDARD OLDE TYME SOCKS

### TO FORM A SELVEDGE FOR RIB WORK

The tappet plate switch cam (H-7) permits the selvedge to be formed in a very simple manner when knitting 1-1 rib.

Have the machine set for 1-1 rib. Knit a few rounds with ribber and be sure that you have a stitch on every needle. Break yarn, join on cotton to divide work, as explained in the paragraph below "Dividing Work". Knit three or four rows of cotton, stop yarn carrier at front, break cotton, join on yarn and knit exactly one round. Put your ribber needles out of action by moving switch (H-8) to the "out" position (see page 7) and then knit three rounds holding your work well down. Put the ribber needles in action again by moving the switch to the "in" position, and proceed to knit 1-1 rib as for the cuff.

In moving switch pin, care must be taken to see that it goes the full distance and rests in either the "in" or "out" groove.

### DIVIDING WORK

Having knitted a length of practice work, break the yarn near the bobbin and join on some strong white cotton (crochet cotton, or No. 10 sewing cotton will do.) Take up any slackness as before and knit three full rounds. Break your cotton near the bobbin and tie back on your yarn. This is the best method employed for dividing one sock, etc., from another. The garments are afterward separated by cutting and unravelling the cotton, or they may be cut off one by one as they appear below the cylinder, always leaving a sufficient length of work to attach the weights to. By using this method you need never run your work off the machine and you will save yourself the trouble of setting up new work.

### THE CUFF OF A STANDARD SOCK

The Selvedge being finished, knit 1-1 rib 5 inches long for the cuff of the sock.

## MEASURING WORK

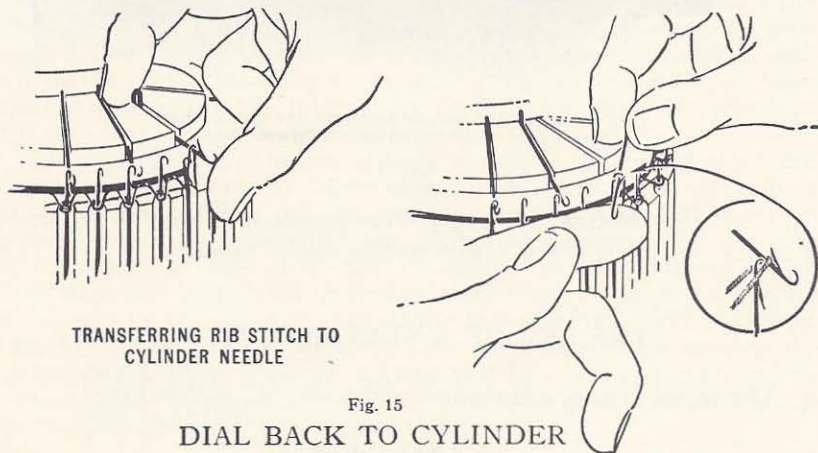
In order that all parts of the sock shall be of the proper length and in the right proportion to each other it is necessary for you to measure the web as it is made. Remember in measuring that the web is naturally stretched somewhat when the weights are on and you must allow for this.

A sure method of measuring work is by means of a foot rule. Hold the rule up inside the cylinder so that it presses against the dial and measure from the dial down. If the ribber is not on the machine measure from the top of the cylinder.

The cuff is measured from the selvedge to the beginning of the leg. The leg is measured from the end of the cuff to the beginning of the heel. The foot is measured from the gore in the heel, along the rib of the foot to the beginning of the toe. See Illustration Page 26. This measurement is 7" and will give a foot measure when toe is knitted of 11" from point of heel to point of toe. The toe is then knitted.

Measurements are sometimes taken by counting the number of rows made, although using the rule is a more certain method. However, if you are using the same weight yarn and the same tension you may find counting rows helpful. Remember though that different weights of yarn and different tensions effect the length of the work.

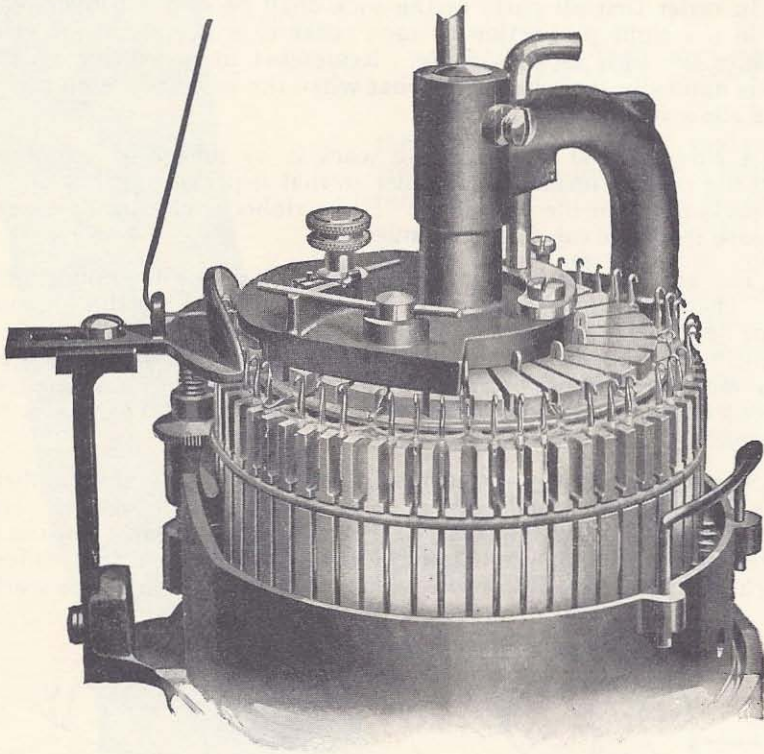
## TRANSFERRING NEEDLES



Put in cylinder needle where rib stitch is to be transferred. See page 20. With work hook or just your finger draw out the ribber needle until its stitch is behind the latch. Now hook it into the hook of the cylinder needle below and slide the stitch over the closing latch of ribber needle onto the cylinder needle with open latch. Transfer in this manner as many rib stitches as are desired for next pattern, turning the crank wheel slightly as required to release needles engaged in the cams.



## MACHINE SET FOR 3-1 RIB



THIS ILLUSTRATION SHOWS MACHINE SET FOR 3-1 RIB.  
READY FOR MAKING LEG OF STANDARD SOCK.

Fig. 16

Notice that every *other* needle is in dial  
and every *fourth* needle *out* of cylinder.

### THE LEG OF A STANDARD SOCK

The leg of the sock is made 3 and 1 rib,  $8\frac{1}{2}$  inches long.

#### 3 AND 1 RIB

For the 3 and 1 rib, every fourth needle is left out of the cylinder,  
and every alternate needle out of the dial; adjustment as in 1 and 1  
rib.

This will mean that you will have to transfer the stitches from  
every alternate ribber needle back to a cylinder needle.

## MAKING HEEL AND TOE

To knit the heel and toe only the front half section of the machine is used. Please study the cylinder chart (Fig. 19) carefully. You will then see that the actual knitting of the heel and toe is done by needles in the front half of the cylinder, the ribber needles in the front half of the dial having been removed. The inside circle represents the top of a sixty needle cylinder. Figures below the chart show the number of needles to be raised and lowered and to be left in action on various needle cylinders. The pond to figures or in-  
dle cylinder making

Fig. 17 shows the and toe, also heel position of the heel

figures 1, 2, 3 and 4 on the chart correspondences stamped on the top of the needle a visible guide.

heel spring in place for knitting the heel hook and weights attached. To show the hook clearly the ribbing attachment has been removed from the machine in illustration.

### HEEL—FIRST HALF

Watch the cylinder chart as you read these directions and all should be clear to you. Commence heel by stopping the yarn carrier at A or back of machine. Remove all dial needles in front of half cylinder marks, see chart, Fig. 19 and transfer their stitches to the cylinder needles which place in the empty slots. See page 22.

Turn yarn carrier to C or front of machine.

Remove driving pin to prevent rib needles knitting. See page 22.

Note that your machine is now set for 3-1 rib at back and plain work at front. Raise out of action all needles back of centre line B-D or at cylinder marks 1-2. Needles are raised out of action simply by pulling them up until their butt rests against the clasp ring holding them in their slots. They will stay there until pushed down again into action. The crescent

is the best thing to use in raising more than one needle out of action at a time. Simply hold the hollow side under the hooks of the needles and lift. It will raise about fifteen at once making this work much quicker and easier.

**READY FOR MAKING HEEL AND TOE**

It will raise about fifteen at once making this work much quicker and easier.

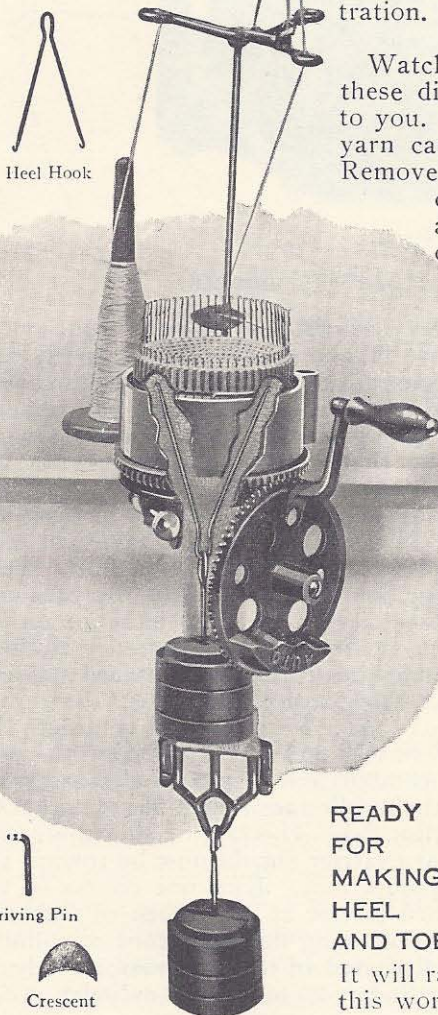
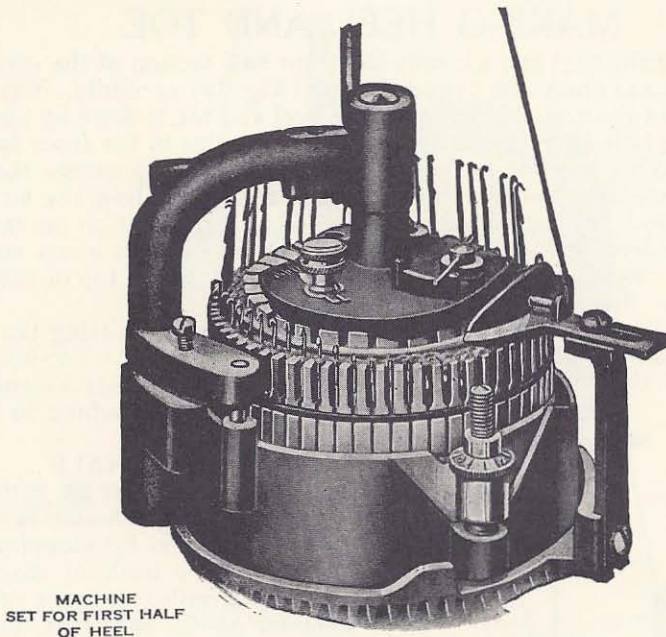


Fig. 17

Driving Pin

Crescent





MACHINE  
SET FOR FIRST HALF  
OF HEEL

Fig. 18

### HEEL—FIRST HALF—(Continued)

Pass yarn over heel spring between take-up lock and front eye of yarn stand top as shown in Figure 17, and see that it is properly regulated to take up all slack yarn caused by reversing the machine. The heel-spring is regulated by means of screw L-3; setting it back gives a stronger and forward a weaker spring effect. Hold down the work well at front half of machine so that stitches cannot rise on the needles. At the same time turn the crank forward to knit in the direction of C-D-A. Stop the yarn carrier at A or back of machine. Raise needle No. 1 out of action on the same side you have just knit, or at D. Hold the work down firmly at C or front of machine. Turn crank backward to knit in the direction of D-C-B. Stop the yarn carrier at A or back of machine. Raise needle No. 1 out of action on the left at point B which your yarn carrier has just passed. Holding down your work well at front of machine, turn crank forward and knit in the direction of B-C-D again. Stop yarn carrier at A. Raise one needle out of action—the last one to make a stitch—that is, needle No. 2 on the right at D. Hold the work well down at C and continue raising one needle (the last needle operated) out of action, alternately on the left and right sides until all the needles are raised out of action on the front of machine up to the line 3-4. The last needle raised will have been on the left, and the yarn carrier should now be toward the back of the machine, between points B-A. Knit one course in the direction of B-C-D, and stop yarn carrier at A or back of machine. See chart for number of needles remaining down in front of cylinder according to the number of needles used in that cylinder, namely 12 in the 60 cylinder; 16 in the 80 cylinder; 20 in the 100 cylinder, etc.