

*Part 1 - 1911 - 1912 - 1913 - 1914 - 1915 - 1916 - 1917 - 1918 - 1919 - 1920 - 1921 - 1922 - 1923 - 1924 - 1925 - 1926 - 1927 - 1928 - 1929 - 1930 - 1931 - 1932 - 1933 - 1934 - 1935 - 1936 - 1937 - 1938 - 1939 - 1940 - 1941 - 1942 - 1943 - 1944 - 1945 - 1946 - 1947 - 1948 - 1949 - 1950 - 1951 - 1952 - 1953 - 1954 - 1955 - 1956 - 1957 - 1958 - 1959 - 1960 - 1961 - 1962 - 1963 - 1964 - 1965 - 1966 - 1967 - 1968 - 1969 - 1970 - 1971 - 1972 - 1973 - 1974 - 1975 - 1976 - 1977 - 1978 - 1979 - 1980 - 1981 - 1982 - 1983 - 1984 - 1985 - 1986 - 1987 - 1988 - 1989 - 1990 - 1991 - 1992 - 1993 - 1994 - 1995 - 1996 - 1997 - 1998 - 1999 - 2000 - 2001 - 2002 - 2003 - 2004 - 2005 - 2006 - 2007 - 2008 - 2009 - 2010 - 2011 - 2012 - 2013 - 2014 - 2015 - 2016 - 2017 - 2018 - 2019 - 2020 - 2021 - 2022 - 2023 - 2024 - 2025 - 2026 - 2027 - 2028 - 2029 - 2030 - 2031 - 2032 - 2033 - 2034 - 2035 - 2036 - 2037 - 2038 - 2039 - 2040 - 2041 - 2042 - 2043 - 2044 - 2045 - 2046 - 2047 - 2048 - 2049 - 2050 - 2051 - 2052 - 2053 - 2054 - 2055 - 2056 - 2057 - 2058 - 2059 - 2060 - 2061 - 2062 - 2063 - 2064 - 2065 - 2066 - 2067 - 2068 - 2069 - 2070 - 2071 - 2072 - 2073 - 2074 - 2075 - 2076 - 2077 - 2078 - 2079 - 2080 - 2081 - 2082 - 2083 - 2084 - 2085 - 2086 - 2087 - 2088 - 2089 - 2090 - 2091 - 2092 - 2093 - 2094 - 2095 - 2096 - 2097 - 2098 - 2099 - 2100*

**A Few**  
**Useful Hints . .**



Keep Machine well Oiled.  
Before Starting take  
Ribber off. \* SEE PAR. 3.



**IMPORTANT.**—The tension is set  
ready for learning. Learn plain  
knitting first. Hold the work  
well down by hand in addition  
to Weights.

Hold work firmly down, and use  
Buckle and Weights provided.

Read Carefully before  
Starting to Work Machine.

**INSTRUCTION**  
**BOOK**

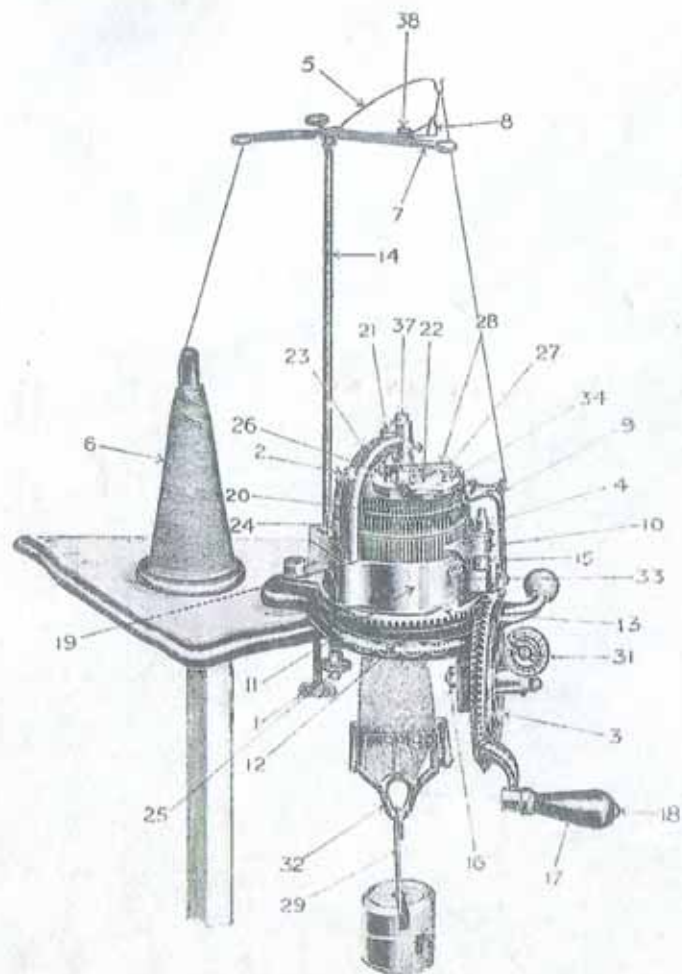
FOR THE CELEBRATED

:: Ribber ::  
**Knitting Machine**



HIGHEST AWARD:

Paris, 1905; Antwerp, 1906; Vienna, 1906.



## Section I.

### Instructions for Knitting.

Read the First 9 Paragraphs before starting to Work Machine and

**LEARN THE PLAIN KNITTING FIRST.**

1. **UNPACKING MACHINE.**—The greatest care must be exercised in doing this, so as not to damage any of the parts, particularly the needles, nor to disturb the work which is on the Machine. A little care here will save trouble later on.

Place the box on a table or bench, lid downwards. (The lid is the side to which the address label is attached). Remove the bottom of box, and take out the packing material, the weights, and such other loose parts as are accessible from this side. Turn the box carefully right side up again; remove the lid, and take out the remaining accessories and packing material. It will then be observed that the Machine is secured to a wooden crosspiece, to prevent any possibility of moving in transit. Undo the Clamp Screws (No. 1), take the Machine out, and fix at once, by means of the Clamp Screws, firmly to a bench or table. The knitted work already on the Machine is tied to the Crank Wheel (No. 3) so as to prevent the stitches coming off; undo this, and attach the Weights to the work by means of the Buckle (No. 32), as shown in the illustration, page 2. The string which holds the Crank Wheel in position may now be cut, care being taken, however, at this stage not to let the wheel move round.

2. Most of the parts are on the Machine, ready for work, but the illustration on page 2 shows how to fix the Yarn Stand Rod (No. 14), and the Yarn Stand Top (No. 7). The Swift wires and holder will be found amongst the Accessories. The wires should be mounted in clamp of holder as shown in illustration on page 5. Undo the thumb-screw, and slide in the wires one at a time, in opposite directions, the large or open end first; then tighten thumb-screw. The wires can be adjusted to suit different sizes of hanks. The heel-shaped tray is for spare needles and fits in socket at right hand corner of name plate.

3. **TO REMOVE RIBBER.** The Ribbing arrangement should now be removed, as this is not required for plain knitting. Cut any pieces of string by which the parts have been secured for safety in transit, **being careful not to cut the wool.** The end of the wool is wrapped round the envelope containing the Ribber Needles and spare Cylinder Needles, and then round the top of the Ribber Arm (No. 23). Untie this wool and let it hang down outside the Machine for the time being. Take hold of Ribber Arm and lift it out of its socket; if stiff, assist with Screw-driver in slot at base. This brings away the complete Ribbing arrangement, which may be placed in the hole at left-hand corner of name plate, or on the table out of your way.

4. See that a stitch is on each Cylinder Needle. If any have come off by accident, they should be replaced at once by means of the Work Hook or a spare needle.

#### WORK HOOK.

Should the stitch have slipped too far down for recovery it is sufficient, just for first rough practice, to pull up on to the

### List of Parts.

- |   |  |
|---|--|
| 1. Clamp Screw                            | 21. Driving Pin  |
| 2. Needles                                | 22. Tappet Plate (see also illustration page 16)               |
| 3. Crank Wheel                            | 23. Ribber Arm   |
| 4. Cylinder Tension Nut                   | 24. " " Screw  |
| 5. Heel Spring                            | 25. Dial Adjuster  |
| 6. Bobbin                                 | 26. Timing Screw   |
| 7. Yarn Stand Top                         | 27. Ribber Tension Screw                                       |
| 8. Take-up Lock                           | 28. Switch Pin for putting Ribber Needles in and out of action |
| 9. Yarn Carrier                           | 29. Weight Holder  |
| 10. Tension or V Cam for Cylinder Needles | 30. Weights  |
| 11. Cam Cylinder, or Shell                | 31. Counter, or Indicator                                      |
| 12. Bedplate                              | 32. Buckle   |
| 13. Gear Ring                             | 33. Left hand Uphrow Spring                                    |
| 14. Yarn Stand Rod                        | 34. Ribber Tension Spring                                      |
| 15. Cylinder Tension Cam Spring           | 35. Winder   |
| 16. Crank Wheel Stud and Nut              | 36. Swift  |
| 17. " " Handle                            | 37. Centre Stud for Dial                                       |
| 18. " " " 15a                             | 38. Lug on Yarn Stand Top                                      |
| 19. Needle Cylinder                       |  |
| 20. Clasp Ring                            |  |

### Remarks.

Several parts of the Machine have had to be shown in unusual positions, so that everything could be clearly seen in the illustrations.

The bobbin should be **directly** under the eye of yarn stand top.

The yarn is shown carried over heel-spring as used when knitting heels and toes. In ordinary knitting it should pass through the front eye of yarn stand top without going over the heel spring.

The counter, or indicator, is shown vertical, but its correct position is horizontal. Turn the end screw slightly to the left, adjust counter to its correct position and tighten screw again.

The actual Uphrow (No. 33) is the Pointer inside the shell and cannot be seen in the illustration. There is an Uphrow on each side of the V Cam (No. 10).

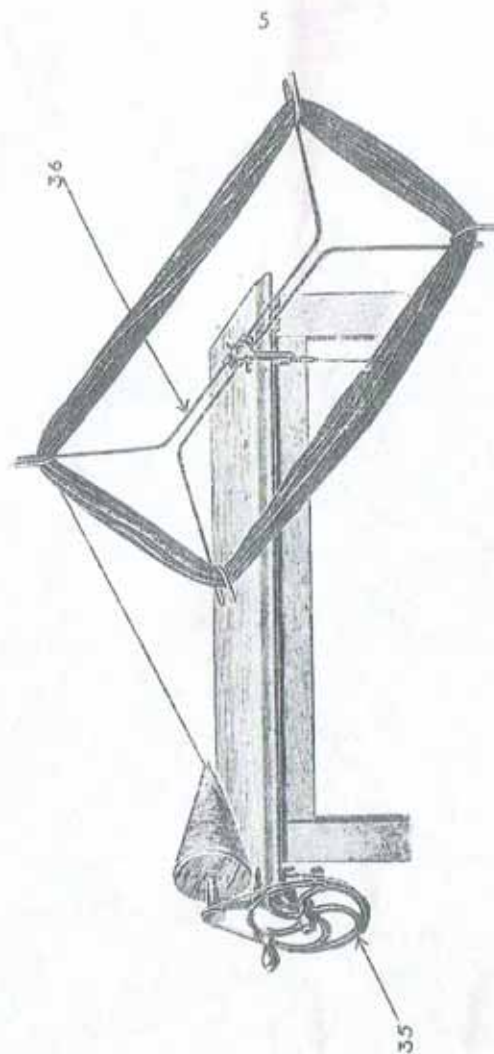
needle any stitch from the nearest part of the knitting, the only object being to get a **distinct and separate loop round each needle**, so that it will knit properly. **One loop must not** be taken round **two needles**. If only a single stitch is off at any point, the cross thread of wool just behind the needle should be pulled on to it. (N.B.—“Behind a needle” is “inside the Cylinder.”)

5. **IMPORTANT.** Every Machine is carefully tested before dispatching, and the tension is correctly set for using the wool sent with the Machine. No screws or adjustments should therefore be altered in any way until the entire working of the Machine is mastered. The learner will by that time understand the proper function of each part, and can make any necessary alterations intelligently.

6. **TO THREAD MACHINE.** Place the bobbin of wool (No 6) **directly under** one of the eyes—it does not matter which—at back of Yarn Stand Top (No. 7). Pass the wool up through the eye; forward through hole in raised lug (No. 38), and under Take-up Lock (No. 8); then down through front eye of Yarn Stand Top, which must be exactly over centre of Cylinder (No. 19). Draw the wool down, threading it from the outside through the two holes in top of Yarn Carrier (No. 9), leaving a little wool hanging inside over the Cylinder.

7. The other eye at back of Yarn Stand Top is used for extra bobbin, when making double heels and toes. Observe, that for the present, the wool is **not** passed over heel-spring (No. 5) as shown in illustration, the heel-spring being allowed to fly back free.

8. **TO KNIT.** If all the stitches are on the needles, the wool may now be joined on to the end of wool hanging from the work on the Machine. Make as **fine a knot as possible**—the weaver’s knot is the best, and the ends



is quite automatic in its action, and when the work is once started, the latches will look after themselves, but if either of these injunctions be neglected, the needles will get damaged, and satisfactory work be impossible.

10. After knitting a sufficient number of rounds to gain confidence, watch the working of the Machine, so as to follow and understand the formation of the stitches. If any needle drops too soon, it is because no stitch is on it. Having knitted a length of plain work, break the wool near the bobbin, and join on some strong white cotton. (Crochet cotton, or No. 10 Sewing Cotton will do, or we supply special Dividing Cotton for the purpose.) Take up any slackness as before, and knit three or four rounds. This is the method employed for dividing one sock or stocking from the next, as will be explained later. Now proceed to start new sock as directed in next paragraph.

11. **TO FORM SELVEDGE.** Raise out of action (see par. 12) all needles not engaged in V cam (No. 10). Holding down the work, knit forwards until V cam passes under the needles raised out of action, thus releasing those which were engaged in Cam, and these must now be raised also. Break the cotton, leaving a short length hanging, say 10 or 12 inches, and pass this down inside the Cylinder (No. 19). It will now be noticed that the Crank Wheel may be turned freely, without actuating the needles, which are therefore "out of action."

Thread Machine with wool, as directed in par. 6, leaving about a yard hanging on the inside, over the Cylinder. Make a neat slip knot at the end of the wool, and drop this over one of the needles at the right hand side of the Cylinder, to form the first stitch. Then, taking the wool in the right hand, pass it **across the back** of the next needle away from you, round it, and in again at the side nearest to you; then along the back of the next needle farther away from you and round it in the same manner.\*

In doing this, **hold each loop down** (with forefinger of left hand) **close to top of Cylinder**, whilst making the next. The Yarn Carrier may be moved freely out of your way if

\*NOTE.—The back of the needle is the side facing the inside of the Cylinder; in other words, the opposite side to the latch, see illustration, page 7.

of wool should not be cut close, but left long and knitted in. Take up any slackness in the wool, by pulling it back to the bobbin; **see that all needle latches are down** (the needle latch is the small hinged tongue which closes on to the needle hook, see illustration); assist the weights



by **pulling the work well down** with the left hand, so that the stitches do not creep up the needles, but remain at the top of the Cylinder; and proceed to knit by turning forward the Crank Wheel (No. 3). If the wheel sticks slightly at the start, as it may do sometimes after lying unused, a few smart taps on the handle in the direction of which the wheel should move will generally put matters right, and this is better than applying forcible pressure. Knit slowly when the knot reaches the needle, and always knit carefully when passing knots in the wool.

If all the details mentioned have been carefully attended to, you should now be able to go on knitting any number of rounds of plain knitting without further trouble.

9. It is of the utmost importance always to **pull the work well down with the left hand** in addition to the weights, and to **see that all needle latches are down before commencing to knit at any time.** The Machine

lifting them, with Work Hook or spare needle, until the Heel of the needle rests against the Clasp Ring (No. 20). It will then be found that the Tension Cam will move freely in either direction, without affecting the needles. They are put in action again by pressing them firmly down as far as they will go.

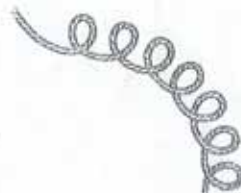
**13. NEVER RUN THE WORK OFF THE MACHINE.**—When the stocking, or other garment, is finished, knit three or four extra rounds for roving; break the wool; join on cotton; and proceed to form selvedge for next article, exactly as directed in par. 11. Whole rows of Stockings, &c., can be knitted in this way, dispensing entirely with the old-fashioned "Set-up," which is now practically obsolete and seldom used by a practised knitter. The garments are afterwards separated by cutting and roving out the cotton, or they may be cut off one by one, as they appear below the Cylinder, always leaving, of course, a sufficient length of work to attach the weights to.

**14. TO PUT WORK ON MACHINE.**—If the work accidentally runs off through breaking of wool or other cause, press the end of the knitted work with a hot iron, to make the stitches firm. Then rove one or two rounds to get an even row of stitches and pick the stitches on to the needles again with Work Hook as follows:

Have Yarn Carrier at front of Machine, put stitches on about 40 needles, commencing at right hand side of Cylinder and working round the back, letting the loose end of wool hang down at right hand side. (The stitches at first need only be **just inside the hooks** so as not to stretch them, but when all are on the needles they must be pulled down to Cylinder top as usual.) Raise these 40 needles out of action and turn Yarn Carrier forward to back of Machine, **being careful not to damage any of the needle latches**, which are apt to fly out when no stitch is on the needle, and may catch against the Yarn Carrier if care is not taken. Put stitches on the remaining needles and raise them out of action. Now pull the stitches down to the top of the Cylinder; bring the Yarn Carrier to the front; thread the Machine with wool or cotton (see par. 6) and join up to hanging end. Take up any

either direction, as the needles are out of action, but care must be taken to keep the wool outside the needles.

The illustration below shows the direction and the method in which the wool should be twisted round the needles to form the loops, commencing from the right hand side, working towards back of Machine, and continuing in the same direction all round the Cylinder until a loop is on every needle.



This Selvedge must be of medium tension—neither very tight nor very slack. Having placed loops on all the needles, have Yarn Carrier at front of Machine (the side nearest to you); press down into action (see next paragraph) about two-thirds of the needles, commencing with that on which the first loop was placed; **see that all latches are down**; take up any slackness in the wool; **pull work well down**; turn handle slowly forward; see that the wool feeds into the hook of the **first** needle; and knit half way round. (**Whenever you stop knitting do not let Yarn Carrier move backwards.**) Having moved the V cam forward, the remaining needles can now be pressed down into action. Again, see that **all needle latches are down**, and proceed to knit slowly, holding work well down. There being a double stitch (the cotton and wool) on each needle, the Crank Wheel may work a little stiffly in knitting the first round. Practise the forming of Selvedge until thoroughly mastered, and do not attempt to knit too quickly at first. In this, as in other things, speed will come by practice.

**12. TO PUT CYLINDER NEEDLES IN AND OUT OF ACTION.**—Needles are raised **out** of action by

properly in each course. If they do not it is either because the work is not being pulled down properly, or that the wool is hanging slack, or that the V Cam has not "cleared" the last needle. Continue raising one needle each course knitted, always raising same on the side on which Yarn Carrier is stopped, until only 14 needles are left in action. The last course knitted will be to the right.

17. **TO MAKE HEEL (Second Part).** Fix the Heel Hook with a weight attached, in the work as near the top as possible, one hook at each end of the 14 stitches:



HEEL HOOK.

press down into action the first needle up on the right; and **lift the wool from front of this needle to back.** (This is important, and if not attended to holes will appear in the Knitting). See that the **latch** of this needle is **down**, and knit one course to the left; press down into action the next needle on the left; place the wool behind it, see that the latch is down, and knit one course to the right. Continue this, always pressing the needle down on same side as Yarn Carrier, looking to the latches, and placing the wool behind the needle pressed down each time, until all the needles are put down again up to **one before** the half-cylinder mark on each side.

18. **TO KNIT FOOT.**—In finishing heel, always press down the last needle on the left side; knit forward until the Yarn Carrier stands at front of Machine, press into action all the remaining needles, remove wool from Heel-spring, see that all latches are down, and knit round the Machine. Proceed to knit length of foot required, and stop Yarn Carrier at front of Machine as when starting heel.

19. **A LARGER HEEL** can be made by raising out of action **two less than half** of the needles (that is, one short of the half-cylinder mark at each side) when commencing the heel, and continuing first part as usual until only 14

slackness; press down about 50 needles, commencing with the **first after** that from which the wool hangs, and knit half way round; then press down the remainder of the needles and proceed to knit as directed in par. 8. **Before beginning to knit see that all the needle latches are down, and do not forget to pull the work down**, as enjoined in par. 9.

A little practice will give facility in thus putting work on the Machine, and it is worth acquiring as the stitches have to be placed on the needles in this way for re-footing.

15. **Never turn Crank Wheel when no work is on the Machine**, as this damages the Needle Latches, and **do not turn it backwards** except when knitting heel and toe, or flat web (see par. 57).

### Knitting Heel and Toe.

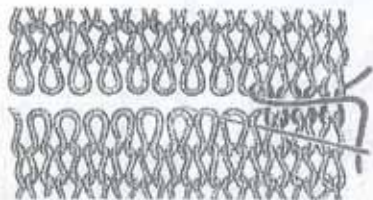
Having become familiar with the plain knitting, the heel and toe may now be attempted.

16. **TO MAKE HEEL (First Part).**—Stop the Yarn Carrier at front of Machine, and raise out of action all the needles at back of Cylinder marks. (There are two marks on the top of the Cylinder, in red enamel—one at each side—dividing the Cylinder in halves). Only half the needles will now be in action, viz., those at the front of the Machine. Pass the wool over Heel-spring (No. 5) **between Take-up Lock (No. 8) and front eye of Yarn Stand Top** as shown in illustration on page 2, and proceed to knit the heel as follows:—

Hold the work **well down by hand at the side on which you are making Heel**; knit one course to the right, taking Yarn Carrier well round to the back, to make sure that V Cam clears the last needle in action. (A slight "click" of the Uthrow pointer will indicate when the last needle is properly cleared). Raise out of action the first needle down on the right, and knit one course to the left, again seeing that V Cam clears the last needle; raise out of action the first needle down on the left, knit one course to right, and so on. See that the first and last stitches knit

one on the opposite side; again **in** through the **second** stitch and **out** through the **third** stitch on the first side, and so on, as illustrated below, until the opening is closed.

23. This joining up of the toe is very simple, if the instructions are followed precisely, and the illustration carefully studied. It is best practised at first on light coloured work, joining up with dark wool, so that the



formation of the stitch can be better followed, and if correctly done, it is a proper knitted stitch and not discernible from the remainder of the knitting. The stitches must not be twisted or crossed, and the tension of the joining stitch should be the same as that of the knitting itself, neither tighter nor slacker. The number of rows roved should be exactly the extra number knitted; if fewer, a lump will be caused at each end of the joining up.

24. When the toe is joined up the Sock or Stocking is ready for pressing. They should be neatly pressed, with the iron **not too hot** (or the wool will be glazed or scorched), and tied up with tape in bundles of one dozen. The welt should not be pressed.

25. **TO REGULATE LENGTH OF STITCH ON CYLINDER NEEDLES.**—To **shorten**, or **tighten**, stitch, **raise** Tension; or V Cam (No. 10) by turning to **left** (that is, **unscrewing**) Tension Nut (No. 4); for a **long**, or **loose** stitch **screw** Tension Nut **down**, by turning to the right. The Tension is only adjustable within certain limits, and on this account should not be altered until the learner is thoroughly familiar with the working of the Machine.

needles are left in action. In this case, the pressing down of needles in the second part must be continued **right up** to the half-cylinder marks.

20. **TO KNIT TOE.**—The first part is knitted the same as the heel, except that the needles are raised for the first half until only 12 or 14 needles are left down; then for the second part of toe, the needles are put down, one each course knitted, the same as in knitting heel, until all the needles are put down right up to cylinder half marks.

The last needle in toe, the same as in the heel, should be put down on the left side, and the last course of toe knitted forward until the Yarn Carrier stands on the front or side of the machine next you; then all needles are put down, and three rounds knitted for roving (see par. 22); break the wool, join on cotton, knit three or four rounds to separate this garment from the next, and form selvage for the next article in the usual way, as described in par. 11, not taking the work out of the Machine until it comes below the Cylinder.

21. **TO SPLICE HEEL OR TOE.**—Heels or Toes are made double by knitting in "Splicing" Yarn. Place the bobbin on which the Splicing is wound under the other eye at back of Yarn Stand Top; thread the yarn through the eye and tie it neatly to the other wool in use, so that the two pass together through the raised lug (No. 35). The tension should be slackened one point when knitting splicing in, and altered back to its original position when heel or toe is finished.

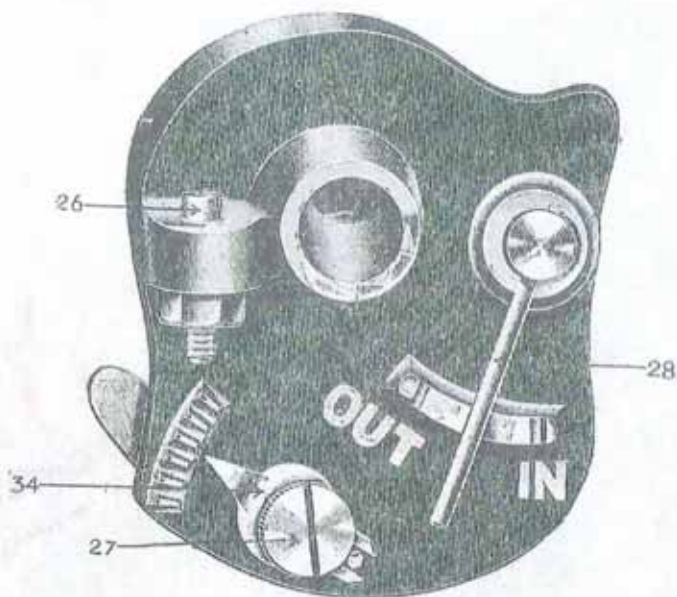
22. **TO CLOSE UP THE TOE.**—When the Sock or Stocking is taken out of the Machine, the toe should be laid flat and pressed under a damp cloth with a hot iron. This makes the stitches flat and firm, and prevents their running down. Rove exactly the number of extra rounds knitted: it will be observed that a small hole appears in the knitting at each side of the toe where the actual finish took place, and this is the point to rove back to. Then join up the stitches by hand as follows:—

**Each** stitch, it will be noticed, has the needle passed through it **twice**, thus: put the needle **in** through the first stitch and **out** through the second one **on the same side**; then **in** through the first one and **out** through the second



### The New Selvedge Tappet.

Our Machines are now fitted with an Improved Selvedge Tappet, which enables the worker to make Selvedge Tops on Hosiery more quickly and easily.



#### IMPORTANT.

The above illustration shows the Switch-pin 28 between the two positions. It was engraved thus to show the "out" and "in" clearly, but should **never be in this position**. It should always be either in the "out" or the "in" groove.



DIAL NEEDLE.

26. Alterations in Tension should generally be made gradually, one or two points at a time, and a round knitted between each alteration; otherwise a great strain is placed upon the stitches, and the wool may break.

27. A thick or heavy wool requires a loose tension, whilst a tight tension is more suitable for fine yarns.

28. Plain socks, or stockings, should be shaped at the ankle by tightening the tension **very** gradually.

29. **TO REGULATE HEEL SPRING.**—Unfasten screw at back of Yarn Stand Top, which holds heel-spring No. 5. Throw the Heel-spring back for a strong spring and forward for a weak spring. Tighten screw after regulating the Heel-spring. Coarse wool requires a stronger spring than medium wool.

30. **TO WIND THE WOOL.**—Fix the bobbin on the Winder Spindle, and the wool on the Swift (see illustration on page 5). The wool must be firmly and evenly wound, and fullest at the bottom so that it will come off freely; otherwise it will be apt to break, and to cause irregularity in the knitting. A badly wound bobbin may also cause the Machine to work stiffly. It is a good plan to wind the wool through a bit of oiled wool—an old piece of knitted stuff will do—holding this, of course, in the left hand. This makes the wool knit more freely, but cannot very well be done with delicate or light-coloured wools, as it would spoil the appearance.

31. **A COUNTER, OR INDICATOR,** is fixed on the Crank Wheel Spindle (No. 16), to show the number of rounds knitted from any given starting point. The pointer, or finger, can be moved round to **O** at any time, and will indicate the number of rounds knitted from that particular point. A complete revolution of the Indicator Dial denotes 100 rows of knitting, and if the number of rows to be knitted is over 100, notice must be taken when a complete revolution has been made.

32. **RE-FOOTING.**—Cut off the waste part, press the end of the leg with hot iron to make the stitches firm, row a few rounds to get an even row of stitches, and put the work on the needles as directed in par. 14. If the sock or stocking contains more stitches than the number of needles in your Machine, two stitches must be placed on one needle at regular intervals round the Cylinder.

the "Ribber Post." If adjustment backwards is necessary, turn the milled nut to the right and this will move the Dial backwards. If forward adjustment is needed, turn the nut to the left, at the same time pressing the Dial forward with the finger. When the adjustment is completed, hold the Dial firmly in its position, and turn Tappet Plate (No. 22) back in the opposite direction until Timing Screw (No. 26) touches Driving Pin (No. 21). Then place the Ribber Needles in the Dial as directed in next paragraph.

35. **TO PUT RIBBER NEEDLES IN.**—It will be noticed that the Ribber (or Dial) Needles are shorter than the Cylinder Needles, and that the number of grooves in the Dial is exactly half the number in the Cylinder. The Ribber Needles slide into the grooves heel first, with the plain side downwards—the same position as illustrated. They should be pushed in as far as they will go, and must have the **latches open**. Bring the Yarn Carrier round to front of Machine, and holding Dial and Tappet Plate firmly in the positions indicated in par. 34, proceed to slide in the Ribber Needles, commencing at right hand side of Machine and working round the back, as usual. See that the Switch Pin (No. 28) is at the "IN" position, and move the Tappet Plate forwards gradually, as necessary, to clear the way for the remainder of the needles, by turning Crank Wheel in usual direction, not forgetting to hold the work down so that the Cylinder stitches will continue to knit properly.

36. For early practice, there is no need to put stitches on the Ribber Needles when sliding them in, **as if the latches are left open**, they will form their own stitches, but in actual work a stitch must be caught up on each, or transferred from a Cylinder Needle.

37. 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, when using the Ribber, 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.

## Section II.

### Instructions for Using Ribber.

33. **TO FIX RIBBER.**—Take the complete Ribbing Attachment, and remove all needles from the Dial. (In the first instance, this has already been done before packing the Machine, and the Ribber Needles will be found, along with spare Cylinder Needles, in small envelope which was tied to Ribber Arm. The Dial is the circular disc or plate, with grooves in, forming part of the Ribbing Arrangement, the whole of which is attached to the Ribber Arm, No. 23). Fix the Ribber Arm on Cam Cylinder (No. 11), the two pins under base of Ribber Arm fitting into the corresponding holes in thick part of Cam Cylinder, and the Dial being over the centre of the Cylinder. The pins are a tight fit, but will slide in without much difficulty if first dipped in oil. Press the Ribber Arm firmly down into place, until point of Ribber Arm Screw (No. 24) actually touches the top of Cam Cylinder (No. 11).

34. **TO ADJUST DIAL.**—The Ribber Arm being pressed "home," turn Dial in the same direction in which the Yarn Carrier travels as far as it will go—that is, until the lug underneath presses against the "Ribber Post" inside the Cylinder, where it should rest in working. Having done this, notice whether the Dial grooves are central with the Cylinder Needles, so that, when the Ribber Needles pass out, they will do so exactly midway between two Cylinder Needles. If not, adjust the Dial by means of the Dial Adjuster (No. 25) which is at the left hand side, under the Bed-plate (No. 12). The milled nut underneath actuates a lever which stands up inside the Cylinder, and which is called

latch, then hook into Cylinder Needle, and slide the stitch on to it. See that Cylinder Needle has the latch open.

45. **TO REGULATE RIBBER TENSION.**—For a long loose stitch and coarse yarn, unfasten the Ribber tension screw (No. 27), move Pointer towards the centre of Dial; for a short tight stitch and fine yarn move Pointer outward; and secure firmly again with screw. Setting the Ribber tension for an extremely loose stitch may involve an alteration in the Timing Screw (No. 26), especially in dials of the lower counts. There is seldom any need to alter the Ribber tension, it being usually sufficient to alter the Cylinder tension. The Ribber tension should only be altered when rendered necessary by extreme fineness or coarseness of the wool.

46. **The Timing Screw** (No. 26) (see page 16) is adjusted and set before leaving the works, and should not require altering except under special circumstances.

It times the Ribber (Dial) Needles so that they take their stitch just at the same time as the Cylinder Needles. If its adjustment has been disturbed, work the Machine slowly, watching the Dial Needles to see what is taking place. If the Dial Needle is too "late" the yarn gets behind the latch and slides off, closing the latch without making a stitch; if too "soon" it gets back without the yarn getting on at all; in either case it drops its stitch. To rectify this turn timing screw slightly to the left if too late and *vice versa*. When correctly set hold with screw-driver and tighten up the lock-nut.

38. A variety of different Ribs can be knitted, e.g.

1	and 1	rib = 1	plain	stitch	and 1	ribbed	stitch.
2	" 1 "	= 2	"	" 1 "	"	"	"
3	" 1 "	= 3	"	" 1 "	"	"	"
4	" 1 "	= 4	"	" 1 "	"	"	"
5	" 1 "	= 5	"	" 1 "	"	"	"
6	" 1 "	= 6	"	" 1 "	"	"	"

and so on, but the higher numbers, from 5 and 1 upwards are, generally speaking, more suitable for Machines with fine Cylinders of 108 grooves and upwards.

39. For a 1 and 1 rib, all the Ribber Needles must be in the Dial, but only every alternate needle in the Cylinder, and the Dial must be adjusted so that the Ribber Needles are opposite the empty Cylinder grooves. This makes the most suitable welt for a gentleman's sock.

40. 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.

41. 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 par. 39.

42. For a 4 and 1 rib, all needles are in the Cylinder, and every alternate needle in Dial; adjustment as in par. 40.

43. For a 5 and 1 rib, every sixth needle is left out of Cylinder, and every third needle only is left in Dial; adjustment as in par. 39.

Other ribs are formed in a similar manner to the above.

44. It is often necessary to change from plain knitting to ribbed and *vice versa*, and this is done as follows:—

#### TRANSFERRING FROM PLAIN TO RIB.—

Remove Clasp Ring (No. 20); take the Cylinder Needle which is to be removed, pass it up through its stitch until the stitch is below the latch; then hook into Ribber Needle (which must have its latch open) and slide stitch on to it.

**Transferring from Rib to Plain.** Put in Cylinder Needle where left out for rib, with Work Hook, or spare needle, pull out Ribber Needle until its stitch is behind the

49. Care must always be taken that the two socks or stockings in a pair are **knitted at the same tension**, and that they contain exactly the same number of rounds in each part, otherwise they will not "pair" correctly when finished.

50. To suit some wools it may be necessary at times to alter the height of the Dial, and this is done by means of the Ribber Arm Screw (No. 24). To raise or lower the Dial, undo the small lock-nut, and turn screw to right to raise, and *vice versa*. When adjusted, tighten lock-nut again. The correct height for Dial is that it should just give comfortable room for the knitted work to pass down, allowing for occasional knots.

51. **TO REGULATE HEIGHT OF YARN CARRIER.** An alteration in height of Dial may entail adjustment in height of Yarn Carrier. The correct height of Yarn Carrier is that the Ribber Needles, with their latches closed, shall just pass under without touching. If too high the Ribber Needles will drop their stitches; if too low they will catch and get damaged. It can be adjusted by undoing the screw in the slot at its lower end; tighten up again when set.

52. **TO FORM SELVEDGE FOR GENTLEMEN'S SOCKS.**—The quickest and best way of doing this is by means of our **New Selvedge Tappet**. (See page 16).

Set Machine for 1 and 1 rib (see par. 39), knit a few rounds, break wool, join on cotton and knit three or four rows for dividing, stopping Yarn Carrier at front of Machine. Break cotton, join on wool and knit **exactly one round**, and put Ribber Needles out of action by moving Switch Pin (No. 28) to the **OUT** position; then knit three rounds, holding the work **well down**, put Ribber Needles in action again, and proceed to knit well as usual. In moving Switch Pin, care must be taken to see that it goes the full distance, and rests in the **OUT or IN** groove, as required.

53. When putting Ribber Needles **in or out** of action, it may sometimes happen that a needle will be in such a position as to block the movement of the Switch Pin. In this case, work the Tappet Plate slightly forward so as to clear the needle; the Switch Pin can then be moved to the desired point.

## Section III.

### General Hints and Observations.

47. **OILING MACHINE.** The Machine should be kept well oiled, and oil may be applied with advantage wherever two metal parts rub together in working. The special parts to oil are:

- The Cylinder Grooves **with the needles in.**
- The Dial and Dial Grooves **with the needles in.**
- The Ledge inside the Shell (No. 11).
- The Crank Wheel Teeth.
- The Crank Wheel Axle, or Stud.
- The Worm on Crank Wheel Axle, which actuates Counter or Indicator.

Generally speaking, oil will do no harm except where it is likely to get on to the knitted work, but flooding the Machine with oil is to be deprecated. Oiling is best done frequently, and in small doses. The Machine can then be kept neat and clean, and all fluff from the wool should be regularly cleaned off. A little trouble in this direction is well repaid by the sweeter running of the Machine.

Only the best machine oil should be used, and this can be obtained from us (see Price List page 48).

48. A careful record should be kept of the number of rows in the various sections of articles knitted, and of the tension at which they are knitted, as the latter affects very considerably the length of the knitting and the amount of wool consumed. The flange of the Tension Nut (No. 4) is numbered, and a record can be kept by noticing which number is to the front, and noticing also the height of the **top** of the nut.

pull this wool slightly upwards. This will free the last row of stitches and will cause the previous row to come over into the hooks. Get the stitches off about 20 needles at the back in this way, repeating the operation according to the number of rows it is desired to unravel, and raise these 20 needles out of action. Then knit round until Yarn Carrier is under the needles raised, and unravel the same number of rows off the remainder of the work in a similar way. With care, this can be done to any extent without dropping a stitch. Pull back the slack wool to the bobbin, raise 20 more needles leading up to the others so that the Yarn Carrier can be moved backwards in order to start knitting at the needle from which the wool hangs, and proceed to knit as directed in latter part of paragraph 11, page 9.

If it be necessary to unravel when making heel, pull the stitches into the looc. Draw the wool out tightly in a line with the hooks, then pull gently a little upwards and outwards, when the stitches will slide off. If in the first part of heel push a needle down as each row is unravelled; if in the second part pull a needle up each time.

**57. TO KNIT FLAT WEB.** By this is meant knitted work which is flat instead of tubular when it comes from the Machine. It can be most conveniently done with **not less than one-third** of the needles removed from the Cylinder at the back of the Machine, knitting backwards and forwards with the **wool over Heel-spring**, just as in making heels. If specially desired, flat web can be knitted with all the needles in the Cylinder, but this involves putting a number of the needles in and out of action each course knitted. It is done as follows:

**58. TO KNIT FLAT WEB WITH ALL NEEDLES IN THE CYLINDER.** Having formed the Selvedge as directed in paragraph 11, the **first** course must be knitted **backwards**. The Yarn Carrier must be under the first 24 needles upon which the Selvedge was put (for convenience sake we will refer to these as "batch A," and to the **last 24 upon which Selvedge was placed** as "batch B"), and the other needles must be pressed down into action, commencing with that upon which the **last** Selvedge stitch was placed, and working round the Machine backwards. When the Yarn Carrier is at the **left** of the Machine, press

**54. PICKING UP SLIPPED STITCHES.**—If a stitch slips off the needle from any cause it will generally, if the weights are on, run down through a number of rounds. The weights should be taken off immediately and the stitch picked up as follows:—

Take a spare Cylinder Needle and pass this down, hook end first, between the work and the Cylinder, with the hook pointing inwards towards the work. Pass the left hand up inside the Cylinder from underneath the Machine, take hold of the work and bring the dropped stitch within reach of the needle hook, get the stitch on to the hook, being careful not to split the wool, slide the needle through the stitch until the stitch is behind the latch, then turn the needle a quarter turn to the right, pull it slowly back until the latch stands out almost straight, but not quite, the **wool** still being behind it. Then work the latch up behind the **wool** immediately above the stitch, this done proceed to draw the needle slowly back and the latch will take the wool inside the hook, allowing the old stitch to slide over and thus forming the new one. Having now a new stitch inside the hook, slide the needle through the work again until the stitch is behind the latch, and repeat the whole operation until you get the stitch to the top, when it must be played on its Cylinder Needle.

If the Ribber is in use when the stitch slips off the Cylinder Needle, the Ribber Needles must first be taken out, as directed in the next paragraph, and the complete ribbing attachment removed.

**55. PICKING UP RIB STITCHES** is done on the same principle, except that, of course, it is done from the inside of the work instead of the outside. The whole of the Ribber Needles must be taken out of the Dial and left hanging to their stitches outside the Cylinder. The complete ribbing attachment can then be removed so as to allow free access to the work.

**56. TO ROVE OR UNRAVEL WORK WHILST ON THE MACHINE.** This can only be done when the Ribber is not in use. Stop Yarn Carrier at front of Machine, push work up at the back so as to get the stitches inside the hooks of the needles: with Work Hook, pull tightly outwards the cross thread of wool between two of the stitches and then

No. 4 Type Machines the Dial Adjuster must be loosened before the Cylinder can be removed. It will be noticed also that there is a "flat" inside the Cylinder to accommodate the Dial Adjuster, and in putting the new Cylinder in this "flat" must be at the left hand side. Put the new Cylinder in and start one screw, giving it two or three turns only; then start the other screw, **tightening up both gradually.** In changing Cylinders there is no need to disturb the Shell and Gear Ring, but lest they get moved out of place by accident, it is well, before starting, to turn the Crank Wheel so that the large knob is at the top and notice the position of the Yarn Carrier and Tension Cam. The Yarn Carrier is at the front of the Machine and the Tension Cam close behind it, the lug in which the Tension Cam Screw is fixed being between the two projections on upper side of Gear Ring, and the various parts must occupy these relative positions when the change is completed.

**62. TO CHANGE DIALS.** Undo set-screw in the side of sleeve in which the centre stud for Dial is fixed; the stud will then slip out and the Dial and Tappet Plate may be taken off. Hold the Dial Stud, head downwards, in left hand, place the new Dial on it with grooved face upwards, and drop the Tappet Plate (No. 22) over the stud on to the Dial. Then slide the Dial Stud into the Ribber Arm Sleeve, press home and fix firmly by means of the small set-screw at the side. The Tappet Plate should just move round freely but must not have any play.

into action "batch A" and raise out of action "batch B"; knit round until last needle of "batch A" has knitted, then return and when Yarn Carrier is about half way round raise out of action "batch A" and press into action "batch B." Knit round until last needle of "batch B" has knitted, then return repeating the process; each course knitted. By this means a good width of Flat Web is produced, of any length, and fairly large garments can be made with comparatively few joinings. Flat Web cannot be knitted with Ribber on Machine.

**59. TO RELEASE UPTHROW POINTERS WHEN BLOCKED.** In knitting Flat Web it may sometimes happen that the Yarn Carrier will be taken too far, and the Uphrow Pointer get past one or two needles on the opposite side, which it is not intended to knit. Should this happen it will be found that in endeavouring to return the heel of a needle will block the passage of the Uphrow Pointer, and to remedy this that particular needle must be pressed down so as to give the Pointer a clear passage. A similar difficulty may arise by the Crank Wheel being accidentally turned back under other circumstances, especially when the Machine is set for 1 and 1 rib, and the remedy is the same except that in this case it will be necessary to **raise** one or two Cylinder Needles in front of the "forward" Uphrow Pointer so that it may regain its position **under the heels** of the needles.

**60.** Our Standard Machine with 72-needle Cylinder is the most suitable one for general domestic use, but for special purposes, or in localities where very fine or very coarse wools are chiefly used, it is advisable to have other Cylinders and Dials of counts suited to the particular requirements. Our Machine can be supplied fitted with these to begin with if so ordered, or they can be had afterwards as extra or spare Cylinders. Particulars and prices of the various counts may be had on application. The method of changing Cylinders and Dials is as follows:—

**61. TO CHANGE CYLINDERS.**—Take off Ribbing Attachment and remove all needles out of Cylinder. Take out the two screws underneath which fasten the Cylinder to the Bedplate, and the Cylinder can then be lifted out. (In

course. Knit 8in. leg, stop Yarn Carrier at back of Machine, take 10 Ribber<sup>o</sup> Needles out at front of Dial, transferring their stitches to Cylinder Needles which must be put in the empty Cylinder grooves. Bring Yarn Carrier round to front, take out Driving Pin (No. 21) to prevent Ribber Needles knitting, raise out of action the Cylinder Needles at back of half-cylinder marks, and knit heel as usual. At finish of heel,



stop Yarn Carrier at front, press the Cylinder Needles into action again, insert Driving Pin, knit 6 to 7 rounds, then put in one Rib Needle at each side. Knit length of foot required, stop Yarn Carrier in front, knit toe exactly as heel, taking out the Rib Needle on each side. Stop carrier at front and transfer every other plain stitch to Rib Needle to make one and one rib, knit a few rounds and join on cotton.

#### Ladies' Ribbed Hose.

##### 4 and 1 rib. With Scalloped or Vandyck Top.

65. Put on Selvedge in usual manner with all Cylinder Needles in; knit one  $\frac{1}{2}$  round, put on Ribber without needles in the Dial, and regulate Dial for 4 and 1 rib; then proceed

<sup>o</sup>Note. - Some knitters take out the 10 Ribber Needles about 6 rows before the commencement of the heel, and this gives a longer appearance to the heel.  
<sup>1</sup>Note. - The Scalloped top can be made more pronounced by knitting 2 rounds, and there will then be 3 extra threads to catch up.

## Section IV.

### Gentlemen's Socks.

#### Plain, with Ribbed Top.

63. Commence by forming Selvedge with the New Selvedge Tappet as explained in paragraph 52, and knit  $4\frac{1}{2}$ in. Ribbed Top (1 and 1 rib) for the welt; then place all needles in the Cylinder where left out for rib, transfer the rib stitches on to these (see paragraph 44), knit an 8in. leg,



making  $12\frac{1}{2}$ in. with ribbed top, and stop Yarn Carrier at front of Machine. Knit heel, foot (70 to 80 rows according to length required), and toe, and finish off, as explained in pages 11 to 14. Size of foot, 10in. to 11in.; medium,  $10\frac{1}{2}$ in.

### Gentlemen's Socks.

#### Ribbed.

64. Commence and knit welt, just as in paragraph 63, then put in additional Cylinder Needles to form 3 and 1 rib. Transfer the stitch from every alternate Ribber Needle to the new Cylinder Needle, taking the Ribber Needle out of

ankle, and make heel, foot, and toe as in gentleman's sock, but shorter. Size of foot, 9 to 10 inches; medium,  $9\frac{1}{2}$  inches.

### Ladies' Ribbed Hose. With Hem Top.

66. A Hem Top is made as follows: Take Ribber off Machine, have stitches on all Cylinder Needles and proceed to knit straight off, after the dividing cotton, there being no need to form a selvedge. Knit from 10 to 20 rounds according to depth of hem required; then pull the work up inside the Cylinder and place the first row of stitches on the needles (so that there will be two stitches on each needle) being careful not to twist the work; knit one round, put Ribber on and adjust for 4 and 1 rib; catch a stitch up on to each Ribber Needle from the **back** of the adjoining Cylinder Needle and proceed to knit stocking as usual.

### Ladies' Ribbed Hose. With 3 and 1 Welt.

67. Start without Ribber, all Cylinder Needles in, form selvedge in usual way, knit one round only, put on Ribber, adjust for 3 and 1 rib, put in every alternate Ribber Needle, transferring a stitch on to same from the Cylinder Needle in front of it which will then of course be taken out. Knit 3 or 4 inches, as desired, for welt; adjust Dial for 4 and 1 rib, put in the other Cylinder Needles, catching a stitch on to each from the **back of the adjoining Cylinder Needle on the same side of Ribber Needle**; that is to say, **a stitch must not be pulled across the Ribber Needle from the Cylinder Needle on the other side**. Proceed to knit stocking as usual.

If **Scalloped or Vandyck Top** be preferred, start with every fourth needle out of Cylinder and knit one round before putting Ribber on. Then put Ribber Needles in opposite the empty Cylinder grooves, catching up the **two** cross threads of wool to form first stitch, as explained in paragraph 65.

### Ladies' Plain Hose, Fashioned. On 72-Cylinder Machine.

68. A lady's plain stocking can be knitted and fashioned as follows:—

to put in every alternate Ribber needle, at the same time catching up into its hook **both** the cross threads of wool (it will be noticed there are two) between the Cylinder Needles. Tighten tension nut (No. 4) two or three points, knit 6 rows, slacken tension again, and knit length of leg required, say 12 inches.

**Narrowing Ankle.** Lift out two needles directly in front of Machine on the left of Rib Needle (half-way between the



half-cylinder marks), place the stitch of the second needle on the third, place the first needle in the second groove, leaving an empty groove in front of Dial needle. Knit six rows, narrow once on each side of first narrowing, knit a further six rows, narrow again once on each side of last narrowing, and repeat this until the narrowings have gone all round the Machine. The result is then a 3 and 1 rib, and the Dial should be re-adjusted so that the Ribber Needles will now be central with the Cylinder Needles. Knit 45 rounds for



When the Stocking comes from the Machine, it will require joining up at the toe, the sides of the feet, and the back of the leg from the commencement of the narrowings to the beginning of the heel.

### Gentlemen's Hose.

69. These are knitted same as Ladies' Hose except that the wool used is of stronger counts, and the tension consequently a few points looser. They are usually made with the 3 and 1 welt top, the length of leg and foot being altered as required. Length of leg is generally about 22 inches overall.

### Youths' or Boys' Stockings.

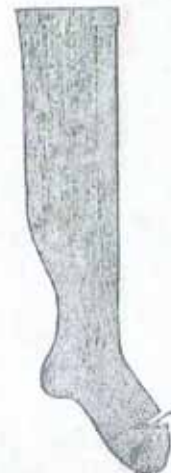
#### Knitted on 72-Cylinder.

70. Form Selvedge with Selvedge Tappet (see par. 52) 1 and 1 rib, knit length of welt required, say 4 inches, change to 3 and 1 rib for leg as in Gentlemen's Socks, knit straight leg



of the length required, narrowing for ankle for tightening tension **very gradually**. Take 7 Ribber Needles out for heel and make heel on the 31 Cylinder Needles at the front of Machine, taking out Driving Pin as usual. In finishing second half of heel, stop one needle short of the point you started at. The toe is made in the same way, but knitting

Commence with Hem Top, or Ordinary Selvedge, as preferred, knit 4 inches with tight tension, slacken tension, and knit usual length of leg prior to narrowing. Then begin to knit flat web with all needles in (see paragraph 58) dividing at front of Machine, half way between the half-cylinder marks. Narrow by taking out the third needle on **each** side of the division, transfer its stitch on to the fourth needle, and close up by moving the first and second needles into the second and third grooves. Knit 8 rows, narrow on each side again and so on, narrowing 6 times in all, which will leave 60 needles in.



Raise out of action 15 needles at each end which will be used later for the heel. Knit the top of the foot backwards and forwards on the other 30 needles, say 50 to 60 rows according to length of foot required. Then commence narrowing exactly as in the leg, but knitting only two rows between each narrowing, and continue until only 6 or 8 needles left in the work. Now press down into action all the needles remaining in the Cylinder, and take off the Clasp Ring. Bring together all the 30 needles for the heel by moving one lot to the other side, and knit the heel on these in the usual way. After finishing the heel, knit the lower part of the foot exactly like the upper part.

left and right again (a double course), raise another needle, and so on, raising one needle each double course knitted until you have only about three needles left, then commence pressing these needles into action again, one each double course, placing the yarn behind the needle, just as in doing the second part of an ordinary heel, and proceed until you have 11 needles in action (or one less than you started the heel with), then press all the remainder into action, knit right across and do the other half of heel at the opposite side in a similar way.

The toe is best knitted in the centre of the work at the front of the Machine, just in the ordinary way, but of course with a suitable number of needles, say 24.

Smaller sizes, even doll's stockings, can be done by starting with fewer needles, and when first trying the experiment it is best to take at least 30 needles out of the Machine.

A mock rib top can be made for the welt by leaving out every alternate Cylinder Needle, and in that case it will be necessary to start with an **odd** number of needles. Knit welt with a rather tighter tension.

### Child's Sock

#### With Ornamental Body Part.

73. A very nice effect is produced by making a plain welt and then knitting the body, or leg part with a fancy "pyramid" stitch as follows, working on the flat web plan as in paragraph 57: -



Raise out of action the first needle on the left hand side of Machine, and every fourth from the first needle you raised. Hold the work well down, and knit three rows; press into action all needles that are raised and knit two rows; raise the third needle from the end on the left hand side of Machine, and every fourth from the third needle raised; knit three rows, then press needles into action, and knit two rounds. Repeat

right up to the starting point again, instead of stopping one short. In joining up the toe, it will be found necessary to join **two** stitches at the one side to **one** stitch at the other, about every third stitch.

71. A Youth's Plain Stocking can be fashioned by knitting Flat Web where the narrowings are to begin. Knit Welt and leg as in Gents' plain sock (see paragraph 63) and when ready to narrow, commence knitting flat web on all the needles as explained in paragraph 59. Let the division in the work come at the back of the Machine, and exactly half-way between the half-cylinder marks. Narrow on each side every ten rounds, by taking out the third needle from the division and placing its stitch on the fourth needle. Put the second needle in the third groove, and the first in the second, on each side. After sufficient narrowings have been made, knit the required length for ankle and make the heel half on each side, as in Child's stocking (see next paragraph). Knit the toe at the front of the Machine as usual, and then join up the lower half of leg and the under side of foot, along with the toe, after the stocking leaves the Machine. The joining must be carefully done, and pressed so that no ridge is left.

### Child's Sock or Stocking.

#### Made on the Flat Web plan.

72. Have the necessary number of needles in Cylinder according to width of stocking (or sock) desired, form selvage on these in the usual way, and make the length of leg required, by knitting backwards and forwards, just as in



making heel and with the wool in heel spring. The ankle may be shaped by tightening the tension slightly. Finish the leg by knitting to the left.

The heel is knitted half at each side of the work. Raise out of action all needles except 12 at the left. Knit to the right, raise out of action the last needle knitted, knit to the

on the principle of small heels all round the Machine, and the following particulars are for a 6-diamond top made on the 72-Cylinder Machine. Commence with small hem top as in paragraph 74, and run in stripe in the same way. Knit 3 rounds of original colour and three rounds of another colour (same as stripe or different, according to wearer's preference).

(a) Raise out of action all needles but 12, put wool over Heel-spring, knit backwards and forwards as in making heel, raising one needle each course knitted. See that both end needles knit each time, and particularly the last stitch when only one needle is left up. When this last needle is raised, press down into action the next 12 needles, and repeat the process all round the Cylinder. In passing from



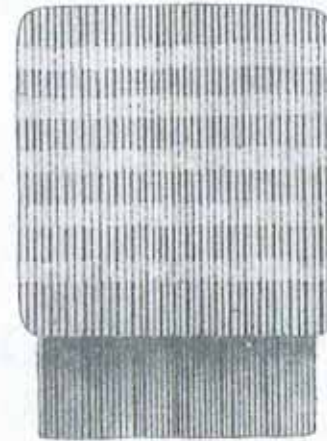
one lot of 12 to another let the wool remain outside the needles, and it will knit in later on.

(b) When the last batch of 12 has been knitted break the wool, join on the colour you wish to use for the actual diamonds, press down the **sixth** needle from the last one knitted, knit forwards (making sure that the needle knits), press down the next needle on the same side as the wool, place the **wool behind the needle**, knit backwards, press down another needle, and so on, just as in second half of heel until you have twelve needles in action again, the last course being knitted backwards. Then begin raising these needles again, one each course knitted as in section (a).

this several times to give required length of leg; knit ankle plain, and finish as in par. 72.

### Gentlemen's Cycle Stockings. With Striped Top.

74. Commence with small hem top as in Ladies' Stocking (see paragraph 66), and after knitting a few rounds farther, run in stripe of 3 or 4 rounds of another colour. Join on original colour again, making striped top of 4 to 5 inches with 1 inch of main colour at commencement and finish, say 6 to 7 inches altogether for the turnover top. Then take the work out of the Machine, turn it inside out, pick the stitches on to the



needles again, and knit the leg in the usual way, commencing with 4 and 1 rib. The length of leg over all may be 24 to 27 inches, or 18 to 20 inches when the top is folded over.

The pattern is improved by varying the width of the stripes, and may be elaborated by further ornamentation by hand after the stocking leaves the Machine.

### Gentlemen's Cycle Stockings. With Diamond Top.

75. This makes a very effective Cycle Top, though it requires a little patience to work out the first time. It is done

this rib need not be taken off the needles to reverse, but can be knitted straight on and folded over afterwards in the usual way. A 1 and 1 rib Cycle Top should be knitted with slack tension, especially on a 72-Cylinder, otherwise it may come out too small.

### Children's Combinations.

#### Knitted in four pieces in Vest Wool, or 4 or 5-ply Fingering, on 72-Cylinder Machine.

78. Set up, making selvage with Selvage Tappet as directed in paragraph 52, with 1 and 1 rib. Knit 30 rows with tight tension; then transfer rib stitches on to plain needles, stopping with Yarn Carrier in front of Machine. Take off Ribber; lift all the needles at back half of the Machine out



of their grooves and let them drop inside the Cylinder **with the stitches remaining on them.** Knit forwards taking the Yarn Carrier to the back of Machine where the needles are out of Cylinder; loosen tension; put wool into heel spring; knit backwards and forwards four rows and increase one needle on the right side by moving two end needles a groove forward, putting a needle into the empty groove and catching with this extra needle a stitch from the **back** of the next needle to it. Knit another four rows in the same way and increase one needle again on the right, repeating this operation until you have 46 needles in the Machine. Then

When the last needle is knitted and raised bring the Yarn Carrier back a little so as to be able to knit **forwards** the first course in the next diamond, press down the 11th needle from the last one knitted, and repeat the same process all round the Cylinder.

(c) Then change the wool back to the preceding colour, press down into action the **fifth and sixth** needles from the last one knitted. Knit forwards and backwards until 12 needles in action, last course being knitted forwards. Raise the 12 needles out of action, move Yarn Carrier backwards a little, press down into action the **sixth and seventh** needles from the last one knitted, and repeat all round the Cylinder as before. In the last half diamond, before knitting forwards on the last 12 needles, press down into action **all** the needles as far as possible, knit half-way round, press down remainder, knit several rounds, run in original colour and stripe, finishing with original colour to match the commencement of the diamond top. Take the work out of Machine, reverse, and put stitches on needles again, proceeding exactly as in paragraph 74.

### Gentlemen's Cycle Stockings.

#### With Large Hem Top.

76. This method obviates the necessity for taking the work off the needles and reversing. No selvage need be formed, but instead of the usual small hem top knit about 4 inches of the principal colour, then make fancy portion (diamond, striped, or other ornamental pattern), finish top with a further 4 inches of principal colour, then pull up the work inside the Cylinder and place the first row of stitches on the needles, forming a large hem top. When the stocking comes from the Machine, fold the hem over in the usual manner.

NOTE.—The proper way to fold a hem top is so that the joining shall come at the middle of the inside, and the full pattern be displayed.

### Gentlemen's Cycle Stockings.

#### With 1 and 1 Striped Rib Top.

77. The appearance of a 1 and 1 rib being practically the same on both sides, a Striped Cycle Top formed with

two different colours. Lay the one flat on the other, join up each side with crochet or chain stitch, and finish off the ends with fringe.

### Child's Toque or "Monkey Cap."

82. No selvedge is necessary. Proceed to knit straight on after dividing cotton, but with **very loose** tension. Knit 60 rounds and pull up the work to form hem top; knit further 20 rounds still with loose tension, then tighten tension 4 or 5 points, run in stripe of 3 or 4 rounds, tighten tension slightly, knit 10 rounds original colour, tighten tension a further 3 points, run in another stripe, tighten tension again and knit length required, say a further 9 to 12 inches. A third stripe can be run in if desired. When finished, draw the end up, passing a thread of wool through the stitches, and finish off with a bob and tassel.



If desired, the roll (or head part) can be made to fold over twice (3 thicknesses) instead of the hem. In this case, a selvedge must be formed, and 100 to 120 rounds knitted before running in first stripe.

### Cord.

83. A very neat cord can be knitted by having only 2, 3, 4, or 5 needles in the Cylinder at the front of the Machine. Commence the work by looping the wool round each needle, and to and from the weight hook between each stitch so that the work will be properly pulled down. Pass the wool over heel-spring, and knit round the Machine in the usual way. The effect is enhanced by using variegated wools.

increase one needle every **sixth** row until you have 54 needles in, after which knit 30 rows. Cast off eight stitches; knit 150 rows; cast off 27 stitches; knit 16 rows and run work off Machine, being careful, of course, not to let any stitches slip back. This forms **half back** of combination.

Now insert in front of the Machine the needles which were left hanging in the work with the stitches on them and, still using the take-up spring, proceed as before, but increase on the **left** side until you have 46 needles in. Knit 200 rows; cast off 27 stitches; knit 20 rows, and run work off Machine. This forms **half front** of combination. The two parts are then joined together at the shoulder with the knitting stitch just as used in joining up the toe of a stocking, and if this is neatly done the joining will not be perceptible. The two parts when joined together form one-half of the complete garment.

Make the two pieces for the other half in a similar manner, but reverse the sides for increasing and decreasing in each case. When these are completed, join neatly together and finish the neck and sleeves with the crochet stitch.

Sleeves can be knitted for the foregoing by commencing as for gentlemen's socks - 1 and 1 rib, knit 20 rounds tight tension; transfer rib stitches to plain; loosen tension; knit 25 rounds; break wool and tie on cotton; knit 3 rounds and change needles back to 1 and 1 rib for next sleeve. Press the stitches of sleeves before joining on to combination.

If preferred the front of the garment can be left open about 5 inches at the top.

79. **Casting off stitches** is done as follows: Take out the needle which knitted the last stitch, catch the wool inside the hook and draw it through the stitch, this makes another stitch which must be placed on the next needle.

### Muffler or Scarf.

80. Knit about 36 inches plain with all needles in Cylinder; then throw every alternate stitch off its needle and pull the work so that these stitches run back to the commencement. Finish off with fringe or tassel at each end.

### Motor Scarf.

81. A very neat two colour Motor Scarf can be made by knitting two separate lengths as directed in paragraph 80, in

remaining Cylinder Needles in to form 2 and 1 rib, catching up a stitch on to each from the back of needle on the left, loosen tension and knit sleeve of length required. Knit the two sleeves, dividing with cotton, and knit 4 inches in 2 and 1 rib for collar.

**TO FINISH.** Press body part, collar and sleeves. Unravel three rounds from body, and work a loose chain stitch round. Cut up and fold over and join up sides same as Lady's Vest (paragraph 84) leaving 7 inches for sleeves. Secure stitches of sleeves and collar by running a thread of wool through. Cut across top of Jersey width required for neck, turn collar inside out, sew on firmly, and turn over to form roll.

### Knee Cap.

86. Commence with Scalloped Top, 4 and 1 rib, as in paragraph 65, knit 50 rounds, take off Ribber, transferring the rib stitches to Cylinder Needles, and raise 9 needles out of



action at the back of Machine. Knit on the remaining needles to form the knee part, as if making the first half of a very large heel, raising one needle out of action each course knitted. During the first 12 rounds it will be found necessary to raise additional needles each time, beyond those already up, so as to

### Lady's Ribbed Vest. In 3 or 4-ply Vest Wool.

84. Commence with Scalloped Top as in paragraph 65, knit 56 inches with **very loose** tension for the body part. (This is double length, having to be folded afterwards). Run in dividing cotton, and knit in a similar manner two pieces, each 5 inches long, for sleeves, separating with cotton as usual.



**TO FINISH.** Body part must be pressed, two or three rows unravelled to get an even row of stitches, and finished off with loose crochet stitch. Then cut up evenly along one of the rib stitches, open out flat, fold over, bringing the Scalloped and Crocheted edges together, and join the sides up neatly, leaving 8 inches space for the sleeves. The neck is made by cutting out a rectangular piece, leaving the front one inch lower than the back. Finish neck with crochet or ornamental stitch and draw-cord.

### Boy's Jersey. 2 and 1 rib.

85. Set the Machine for 2 and 1 rib, knit 20 rounds with tight tension, loosen tension and knit 350 rounds; tighten tension again and knit 23 rounds. This forms the body part of Jersey. Run in dividing cotton, change to 1 and 1 rib, and form selvedge with Selvedge Tappet; knit 4 inches, put

needles again, holding the thumb part well down. Put Ribber on, change back to 3 and 1 rib, and knit 40 rounds to complete. Finish off the ends of thumb and hand with chain or other suitable stitch, and press.

### Plain Mittens.

88. Plain Mittens are made either with ribbed cuff or large hem for double cuff. In either case about one inch plain should be knitted after the cuff before commencing the thumb. In this case the trouble of putting the Ribber off and on again in doing the thumb is saved. The end may be left open, or closed as in toe of sock.

Stripes may be run in either plain or ribbed mittens if desired.

### Girl's Victorine, or Cape.

89. Start flat web on say 50 needles. Knit about 10 inches, raise one needle on the right, knit one course, raise another needle on same side, continue knitting to and fro, raising one needle each course and always on the right, until only four needles are left in action. Press all needles down again, knit one or two complete rows, and then decrease again one needle on the right each course. Repeat this until five of these taper sections have been knitted, and then knit 10 inches full width again. The cape may be wadded and lined, and fringed at the ends. The effect is considerably enhanced by using "Eis," "Ostrich," or other fancy wools. If a larger size be required add one or two more of the taper sections, and knit the plain part also a little longer.

### Toilet Mat.

90. Neat Toilet Mats in white cotton may be made by knitting in taper sections as explained in paragraph 89. Six sections will make the complete circle, and the outer edge should be fringed or finished with some ornamental stitch.

Table Mats may also be made in wool, varying the colour for the different sections. If two needles be raised each time there will be twelve sections to the circle instead of six.

### Babies' Overalls.

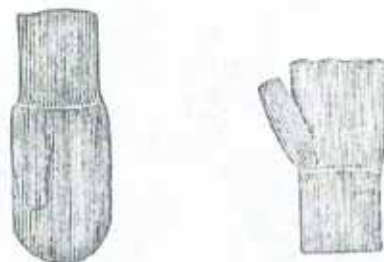
In White, or other suitable Wool.

91. A Baby's Overall, similar to the lower half of Children's Combinations, but with feet, is made as follows:

allow the V cam to pass sufficiently forward to knit the last needle in action, and on the return course these additional needles must of course be pressed down again. After the first 12 rounds or thereabouts, a sufficient number of needles will be out of action to render this unnecessary. Continue decreasing until only 15 needles left in action, letting the last course be knitted to the right, but stopping Yarn Carrier at front of Machine. Press all needles into action, put on Ribber, change to 3 and 1 rib, commencing with the 9 needles first raised out of action, and working round the Machine in the usual direction. Knit 50 rounds and finish off. Secure the stitches by passing a thread of wool through, or by any other desired means, when the work comes from the Machine.

### Ribbed Mittens.

87. Make  $4\frac{1}{2}$  inch ribbed cuff just like welt of Gent's Sock, change to 3 and 1 rib, knit one inch, take out at front of Machine 6 Ribber Needles, inserting corresponding Cylinder Needles to which the stitches must be transferred. This will give 21 Cylinder Needles together, upon which the thumb will be knitted. Bring Yarn Carrier to the front so

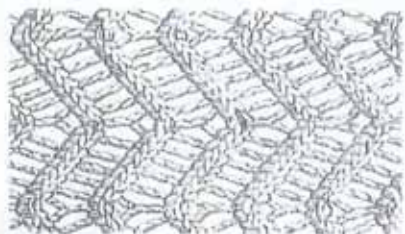


that the V cam is under these 21 needles, put in remaining Cylinder Needles, take off Ribber, transferring the stitches to the empty Cylinder Needles, and raise out of action all but the 21 needles for the thumb. Knit backwards and forwards (flat web) 40 rows holding work well down, break the wool, and then lift from each selvedge edge of the thumb stitches on to 11 needles, being careful that there are no holes at junction of hand and thumb. Bring Yarn Carrier round to the left, join on wool, and knit forwards to bring V cam under the 21

Machine, and most of the patterns can be varied by altering the number of needles and the number of rows knitted between each alteration. Commence with ordinary selvedge in each case, knit a few rows plain and have tension **loose**. When knitting backwards and forwards always thread wool over heel-spring.

94. **CHEVRON, or HERRING-BONE PATTERN.**

Have needles in every groove, knit once across or round, put the stitch from each alternate needle on to the next needle to the right, knit one row, forming loops across the empty needles, change the loops one needle to the right; knit one row, change loops again, and repeat, say twelve times; then change the loops to the left for the same number of times; afterwards again to the right until sufficient length knitted.



95. **NET, or FILET PATTERN.** Needles in every groove; raise out of action all but five; knit to-and-fro five rows, last row backwards; press into action the next five needles, knit across the ten, raise the first five out of action, knit five rows across the remaining five; press down the next five, knit across the ten, raise the previous five, and so on. Start the second row two stitches earlier or later to vary the position of the holes.

96. **BAR & DIAMOND PATTERN.** Change every alternate stitch to the left, knit across or round, forming loops, and back forming stitches on the empty needles; change the stitches formed with the loops to the right. Knit twice across, or round, as before, change to the left, and so on.

97. **HONEY-COMB PATTERN.** Every alternate needle out of Cylinder. Raise every 2nd needle, knit 2 rows; press down the one lot of needles and raise the others, knit 2 rows, and so on.

Commence with ordinary selvedge, knitting flat web, on 40 needles, slack tension. Knit 8 rows, then widen one stitch, knit 4 rows, widen again, and continue widening every 4 rows until 55 needles are in use. Then knit 8 rows, after which begin to narrow **two** stitches every 4 rows, and continue until 16 narrowings have been made. Run in dividing cotton, and knit another piece exactly like the above, following on with two other similar pieces, but with the widenings and narrowings on the opposite sides. Join up the four parts neatly to form the upper portion.

For the feet knit 40 rows on 54 needles, no selvedge being necessary; run in dividing cotton, and knit another 40 rows for the other foot. These pieces are doubled over to form the feet, and joined up to the ends of the legs with the usual joining stitch, as used in finishing the toe of a stocking. For the front part of feet, the knitted web is turned in to the shape required and joined up or worked over in any suitable way.

Finish off the waist with crochet stitch, and run in draw-cord both at the waist and ankles.

### Baby's Jacket.

#### In Blue, White or other Colours.

92. A Child's Jacket is made on a similar plan to the Boy's Jersey, but is also cut down the front, the edges being worked over with a suitable ornamental stitch. The neck, instead of a collar, should have a fancy pattern crocheted round, and a draw-cord should be run through at the waist. Some of the fancy stitches given on pages 46 and 47 are very suitable for articles of this kind.

If the sleeves are required narrow, they must be knitted flat web, and joined up as usual.

### Fancy Stitches.

93. These fancy stitches make very attractive patterns, but in most cases the effect cannot be adequately realised in woodcuts, and we therefore recommend our customers to try a length of each in order to see the actual effect produced. They are well worth the trouble of working out, and they lend themselves to a variety of purposes, e.g., scarves, table mats, antimacassars, children's bonnets and caps, trimmings, &c. They can be knitted either "flat web" or all round the



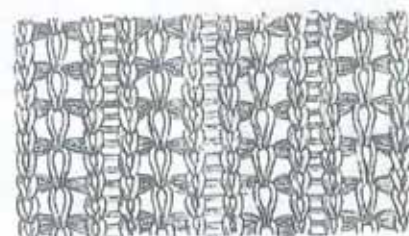
### Prices of Parts for Renewals.

1 Clamp Screw.....	s. d.	20 Clasp Ring.....	s. d.
2 Needles, per dozen.....	0 8	21 Driving Pin .....	1 6
3 Crank Wheel.....	2 6	22 Dial Tappet Plate.....	0 9
4 Cylinder Tension Nut ...	9 6	23 Ribber Arm .....	8 6
5 Heel Spring .....	1 0	24 Ribber Arm Screw ...	5 6
6 Bobbin .....	0 8	25 Dial Adjuster, Milled	0 3
7 Yarn Stand Top .....	0 6	Nut .....	0 9
8 Take-up Lock .....	1 8	26 Timing Screw .....	0 3
9 Yarn Carrier .....	0 5	27 Ribber Tension Screw... 0 8	
10 Tension Cam for Cylinder	3 0	28 Switch Pin for putting	
Needles .....	3 6	Ribber Needles in and	
*11 Cam Cylinder, or Shell	20 0	out of action .....	0 2
12 Beelplate.....	22 0	29 Weight Holder .....	2 0
13 Gear Ring .....	8 0	30 Weights .....	3 6
14 Yarn Stand Rod .....	1 0	31 Counter, or Indicator ...	0 9
15 Cylinder Tension Cam	0 4	32 Buckle .....	0 3
Spring.....	1 6	33 Uphrow Springs, per pr.	0 3
16 Crank Wheel Stud & Nut	0 5	34 Ribber Tension Spring... 4 6	
17 Crank Wheel Handle ...	0 5	35 Winder .....	3 6
18 Crank Wheel Handle Pin	18 0	36 Swift .....	1 6
19 Needle Cylinder .....		37 Centre Stud for Dial ...	
Bottle of Oil ... ..	6d.		
Oil Can ... ..	3d.		
Work Hook ... ..	4d.		
Heel Hook ... ..	9d.		
Uphrow Pointers ... ..	each		
Pressing Boards for Socks ... ..	1/-		
"    "    Stockings... ..	2/-		
Dividing Cotton, in Balls ... ..	each, 1l.; per dozen		
White Tape for tying up Hosiery ... ..	per dozen knots		

\*NOTE.—As the Shell (11) and Ribber Arm (23) are made to fit and are not interchangeable, they must be ordered together, or the one part returned for the other part to be fitted to.

G. HARGREAVES, Printer, Smalley Road, Chorlton, Manchester.

98. **LACE-WORK PATTERN.**—Raise every 3rd needle, knit 3 rows, press all needles down, knit one row, raise same needles again, and repeat. This pattern is more effective with every alternate needle **out** of the Cylinder.



99. **LATTICE PATTERN.** Transfer stitch from every alternate needle to the one on the left, knit one row forming loops, move the loops one needle to the right; knit one row, move loops to left, and so on.

Another form of Lattice Pattern is produced by moving the loops alternately to right and left in the same row, and reversing in the next row. Start on the same needle each time.

100. **PYRAMID PATTERN.**—All needles in Cylinder, raise every 6th needle, knit 4 rows; press all needles down, knit 2 rows; raise the middle needle of each group in the first section, knit 4 rows; press all down, knit 2 rows; and so on.

101. **SPECIAL RIBBED PATTERN.** This requires very loose tension. Change every 3rd stitch one needle to the left, knit one row forming loops, carry each loop over the needle both to its right and left so that it will then be in front of 3 needles; knit one row forming loops on the same needles again, carry them to right and left as before, and continue. This forms an exceedingly neat pattern.

102. **RIBBON-WORK PATTERN.** Take off clasp ring, knit several rows, take out alternate lots of 3 needles, letting them hang on their stitches inside the Cylinder, and thus leaving 3 in and 3 out. Knit 3 rows, put all needles in, knit 3 more rows, and throw out the other groups of needles in the same way as the first. Continue thus, throwing out first one set of needles, and then the other.

When \_\_\_\_\_

## Returning Machines or Parts for Repairs

place your Name and  
Address on the Parcel,  
as well as inside, so that  
we may know whom  
it is from, and send  
Carriage Paid.

## When Ordering Needles

Send Sample.

This will save time and  
prevent mistakes.

Always enclose postage in letter or  
parcel, if a reply is required.