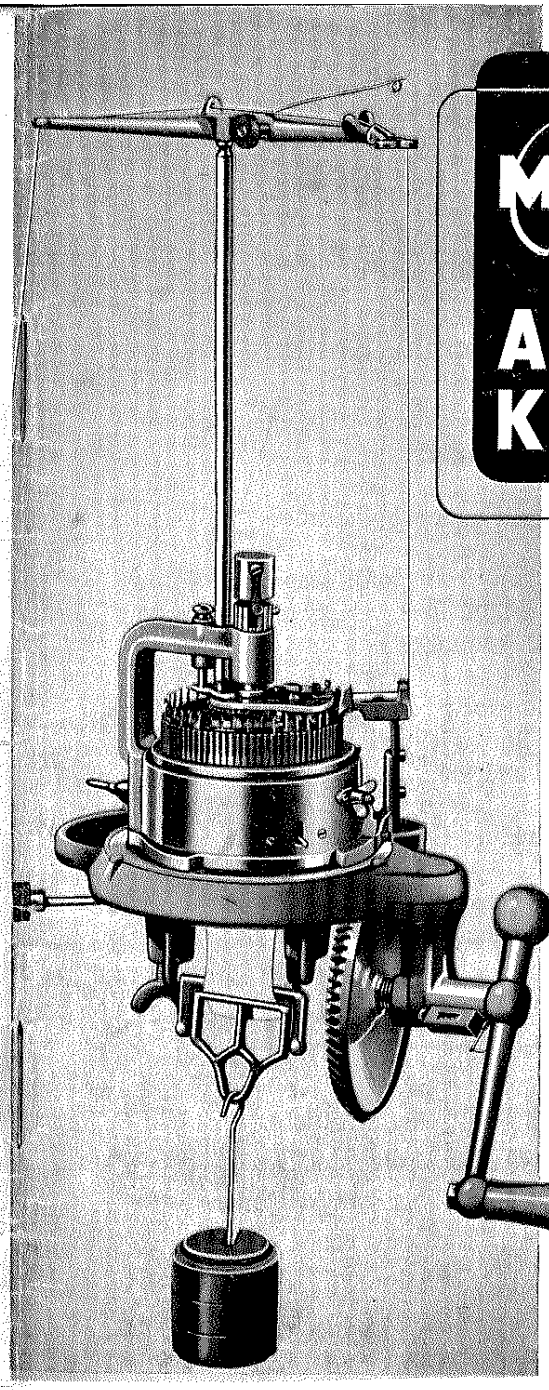
FOSTER KNITTING MACHINE
CO. LTD.

Established 1861

88/96 MARKET STREET
PRESTON
Lancashire — England

Telephone:
Preston 5262/3

Telegrams & Cables:
"Hosiery Preston"



THE MODERN *Victoria* AUTOMATIC KNITTER

This Machine was the first British built hand operated circular Knitter, being due to the enterprise of James Foster, the Founder of the firm 100 years ago. Primarily intended for Hosiery and circular knit goods, yet capable of making many types of stitches and articles, full instructions for which are given in this book.

ESTABLISHED 1861

FOSTER KNITTING MACHINE Co. Ltd

INSTRUCTION BOOK

for the

VICTORIA AUTOMATIC

KNITTING MACHINE

●

Manufactured by:

FOSTER KNITTING MACHINE CO. LTD.

Established 1861

88/96 MARKET STREET, PRESTON,
LANCASHIRE, ENGLAND.

INDEX

WHEN ORDERING

When ordering parts it is advisable to give the number of machine and the number of the part required, or if possible, send the old parts to ensure accuracy. When ordering needles, a sample should always be sent. Accessories may be ordered by quoting number. Ensure permanent satisfaction with your machine by buying "Foster" all-British needles, parts, accessories and yarn.

Enquiries for needles, jacks, springs, set-up combs, wires, tools, hooks, stands, bobbing, teazles, brushes, waxes, winders, swifts, etc., are invited.

The Prices quoted are nett, and do not include the cost of packing, carriage and postage.

Cases are used where necessary and charged, but are returnable.

HOSIERY SHAPES

To give the hosiery a uniform shape and size and a better appearance, it is advisable to use Hosiery Shapes. The stocking is drawn on to the shape for that size, a damp cloth is laid upon it, and the stocking is pressed with a hot iron. Afterwards the stocking should be allowed to remain on the shape for a few minutes.

The wood from which these Shapes are made, is specially prepared and dried.

Boy's ¾ Hose Boards 7″ to 10″ [illegible] each
Women's Hose Boards 8½″ to 10″ [illegible] each
Men's ½ Hose Boards 10″ to 12″ [illegible] each
rise ½″ sizes.

Other sizes can be quoted on special request.

STANDS

A useful and inexpensive stand with tray is supplied for the "Victoria Automatic Knitter," which takes up little space, tastefully coloured in a choice of 3 shades and can be readily moved about.

Price [illegible]

Stainless Knitting Machine Oil—[illegible] per bottle.

CAUTION

Learners should not interfere with any of the screws, nor alter any of the parts of the machine, until they are fully acquainted with the use of the various parts.

Do not try to get on too fast; learn perfectly one thing at a time and in the order given.

The machine is sent out with a sample in work, and the tensions and all parts are accurately set ready for knitting.

In the instructions, approximate tensions are given, but it is advisable to experiment with various tensions, in order to secure the best fabric for each particular purpose.

It is inadvisable to turn the machine over indiscriminately without fabric on the needles.

KNITTING WOOLS

The Knitting Wools offered below are the result of a century's study of the requirements of the knitting trade. They have been carefully selected for their wearing qualities, and will be found to knit out to a great length either by hand or by machine.

Quality	Plys & Counts or thickness	Description	Cylinder
Derby	3 and 4 ply 13's	Soft knitting firm twist for Boys' and Girls' Hosiery	84
Uneedit Super H.T. ...	2 and 3 ply 16's	Best Botany	120, 96
Uneedit Nylon/Wool ...	2 and 3 ply 15's	Hard wearing yarn ...	120, 96
Uneedit Hosiery Twist	2, 3 and 4 ply 16's ...	Specially prepared for machine use	108, 96, 84
Uneedit Splicing ...	1 ply on cones	For thickening heels and toes	
Nylon Splicing			
Patons' Super Wheeling	2 & 3 ply Alloa	Yarn for hand and machine	72, 60
Patons' Super Fingering	2, 3 and 4 ply 16's ...	Best Botany	108, 96, 84
Beehive Vest Wool ...	3 ply 16's ...	Unshrinkable	96
P.P. Super ...	2/24's, 2/32's on cone, 2/40's	Best Botany	120, 132, 148

CYLINDERS

The diameter of the cylinder is 4½ inches, measured from back to back of two opposite needles.

All cylinders of same diameter, but of different grooves, are interchangeable in every machine

The 84 and 72 cylinders, or for Scotland 60, with dials to correspond, will do the greatest variety of work.

To knit ribbed work each cylinder requires a dial.

The following cylinders are recommended as the most suitable for the several yarns mentioned.

4½ inch 60 cylinder:—
For thick, Alloa, 3-ply wheeling yarns, etc., coarse needles to be used. Also for 4-ply fingering for small size children's stockings, medium needles.

4½ inch 72 cylinder:—
For 5-ply fingering and 2-ply wheeling yarns, coarse needles to be used. Also for 4-ply fingering for boys' and girls' stockings, medium needles.

4½ inch 84 cylinder:—
For 3, 4 or 5-ply fingering, 5-ply merino, and yarns similar in thickness, but no thicker, use medium needles.

4½ inch 96 cylinder:—
Same yarns as for 84, but this cylinder is used chiefly for wider socks and stockings than are made on the 84 cylinder, use medium needles.

4½ inch, 108, 120, 132 or 144 cylinder:—
For fine merino, cashmere, fingering, andalusian, eider and silk, etc., yarns, use fine needles.

Heavy Wheeling, Alloa, or such heavy yarns should be kept out of the yarn eyelet or yarn bracket (excepting when forming flat web, a heel or toe) when knitting on 60 or 72 cylinder.
The halves of the grooves in each cylinder are shown by a corner filed off the top of a post at each side.
To change cylinders, after removing all needles, loosen the two screws (521c) Fig. 2 when the cylinders can be lifted out.

DIALS

A dial can only be used when the machine has a ribbing attachment supplied with it.
Dials with different grooves, but of the same diameter, are interchangeable in every machine.
A dial has generally half the number of grooves of a cylinder.
To change dials, take the ribber arm from the machine, undo the nut which is below the dial, remove the washer and the dial and put on the dial required, replace the washer and nut, tighten the nut with the spanner provided.

NEEDLES

These are of two forms—cylinder and dial.
These two forms are supplied for most purposes, in two grades, and are known as G.L.26 L.H. Cylinder and G.11 L.H. Dial (Coarse) and G.L.26 Cylinder and G.11 Dial (Medium) and are supplied for cylinders and dials as stated below.
G.L.26 L.H. Cylinder and G.11 L.H. Dial (Coarse) Needles have large hooks, suitable for thick yarn, and are used in cylinders of 72 grooves and coarser.
G.L.26 Cylinder and G.11 Dial (Medium) Needles are the same thickness as "Coarse" but have a smaller hook, and are used with cylinders having 84 grooves, also when working finer wools on the 72 cylinder. Other needles are supplied specially suitable for finer gauge cylinders and dials.
Dial Needles are to correspond with Cylinder Needles.
See under "Cylinders" as to yarns suitable for the different cylinders. When ordering needles it is best to send a sample.

WARNING

Bent latches of needles are caused by the latchopener striking them, which most frequently happens if the needle is turned quickly when there are no loops on the needles.
If the latches get bent they will be stiff, but can be readily straightened and loosened with pincers, or with the finger and thumb, and without removing the needle from the cylinder. Bent or stiff latches cause the yarn to gather about the needles, and the work to be full of holes, and sometimes stops the machine. Latches must open and close freely and fully upon their hooks and stems.
If a latch or a foot breaks off a needle when in use in the cylinder, it may get between the cams and block the needle way, and if the machine sticks and you attempt to force it, damage may result. Lift out and examine cylinder grooves and shell, and remove the obstruction, then replace the cylinder.
If a needle stem gets bent it will not work freely in its groove and so will cause the machine to stick. Straighten it with the fingers, and to make sure it is straight, place it in the cylinder (or dial of ribbing machine) and see that it moves freely in the groove.

Ordinary 4½ in. dia. Cylinders Dials and Sets of Needles

NOTE.—To knit ribbed, it is necessary to have a dial to match the cylinder to be used. The dial has half the number of grooves in the cylinder.

No. of Grooves in Cylinder	4½ inch Ordinary Cylinder Price	Cylinder Needle No.	No. of Grooves 4½ in. Dial to match Cylinder	Dial Price	Dial Needle No.	Price of Needles
	£ s. d.			£ s. d.		
60, 64, 72	1 10 0	G.L.26 L.H.	30, 32, 36	0	G.11 L.H.	per doz.
84	1 10 0	G.L.26	42	0	G.11	
96	1 10 0	G.L.56	48	0	G.11 Fine	per 100
108	1 10 0	G.L.27	54	0	G.11 Fine	
120	1 10 0	G.L.27	60	0	G.11 Fine	
132	1 10 0	G.L.27	66	0	G.11 Fine	
148	2 10 0	G.L.27	74	0	G.11 Fine	

NOTE.—Coarse Needles have a large hook and are to be used only with heavy yarns, such as wheelings. The medium needle is to be used for finer yarns on 60 and 72 cylinders.

Duplex 3¾ in. dia. Cylinders Dials and Sets of Needles

NOTE.—Price of necessary Cam Cap and Clasp Ring **£7 extra.**

No. of Grooves in Cylinder	Cylinder Price	Cylinder Needle No.	No. of Grooves in Dial	Dial Price	Dial Needle No.	Price of Needles
	£ s. d.			£ s. d.		
72	0	Duplex Cylinder	36	0	G.21	per doz. per 100

Cylinders and Dials to use for various grades of Hosiery 4½ in. dia. Cylinder and Dial

Needles in Cylinder	Grade of Needle	Yarns suitable	Hosiery Types
60	G.L.26 L.H. Cylinder-Coarse G.11 L.H. Dial	Heavy (or thick) as Wheeling (Alloa) &c.	B.D.
60	G.L.26 Cylinder-Medium G.11 Dial	4 or 5 ply fingering 4 ply Merino, &c.	B.
72	G.L.26 L.H. Cylinder-Coarse G.11 L.H. Dial	2 ply Wheeling (Alloa), &c.	B.D.
72	G.L.26 Cylinder-Medium G.11 Dial	4 or 5 ply fingering, 4 ply Merino, &c.	B.C.D.
84	G.L.26 Cylinder-Medium G.11 Dial	3, 4 or 5 ply fingering 4 ply Merino, &c.	B.C.D.
	3¾-inch, Diameter Cylinder and Dial-Duplex		
72	Duplex Cylinder G.21 Dial Medium	3 or 4 ply fingering 4 ply Merino &c.	A.B.

A—Children's Hosiery.
B—Youths and Small Ladies.
C—Ladies' Hosiery.
D—Men's Hosiery.

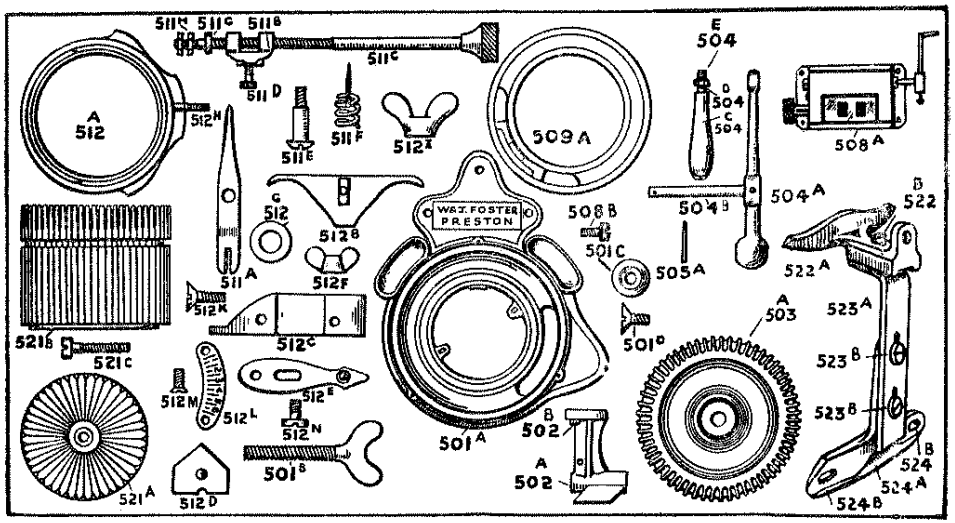


Fig. 1

PRICE LIST

No.	Name	Price £ s. d.
501A	Machine Bed ...	2 0 0
501B	,, ,, screws ...	0 0 6
501C	Counter sunk washer ...	0 0 5
501D	,, ,, screws ...	0 0 6
	DRIVING WHEEL AND SHAFT	
502A	Driving Bracket ...	1 0 0
502B	,, ,, Screw ...	0 0 6
503A	,, Wheel only ...	1 0 0
504A	Handle Crank ...	0 1 0
504B	,, Shaft ...	0 1 6
504C	,, Plastic Grip (Coloured) ...	0 1 6
504D	,, Stud (Short) ...	0 2 0
504E	,, ,, (Long) ...	0 2 6
820A	,, Nut ...	0 0 1
505A	Pin for driving wheel and shaft	0 0 6
509A	Gear Ring	0 5 0
	COUNTER	
508A	Counter	0 2 0
508B	,, screw ...	0 0 1
	RIBBER POST	
511A	Ribber Post ...	0 10 6
511B	Ribber Bracket ...	0 2 0
511C	Screw and knob ...	0 1 0
511D	Bracket screw ...	0 0 6
511E	Ribber post screw ...	0 0 6
511F	Coil spring	0 0 6
511G	Washer	0 0 3
511H	Hexagon nut ...	0 0 1

No.	Name	Price £ s. d.
	YARN GUIDE	
522A	Top part or latch opener	0 1 6
532A	Upright	0 2 6
524A	Carrier bracket	0 2 6
522B	Screw for opener ...	0 0 3
523B	,, ,, upright ...	0 0 1
524B	,, ,, bracket ...	0 0 3
	CAM SHELL	
521A	Shell only	3 3 0
521B	Stitch cam with stud ...	3 3 0
512C	Upthrow cam coverplate	3 3 0
512K	,, ,, screws	0 0 3
512	Cover cam Rt. or Left	2 12 0
512D	Upthrow cam with pin ...	0 15 0
512E	Pointer with knob ...	0 2 6
512N	,, ,, screw ...	0 0 3
512F	Wing nut for stitch cam ...	0 1 0
512G	Spring washer for stitch cam	0 0 1
512H	Shell stud for ribber arm	0 0 6
512.I	,, wing nut for ribber arm	0 1 0
512L	Index Plate	0 2 6
512M	,, ,, screw ...	0 0 1
	RIBBER ARM	
513A	Ribber arm only	1 0 0
513B	Ribber arm stud	0 10 0
513C	,, ,, head only ...	0 5 0
513D	Collar	0 0 4
513E	Flat spring	0 1 0
513/I	Coil spring	0 1 0

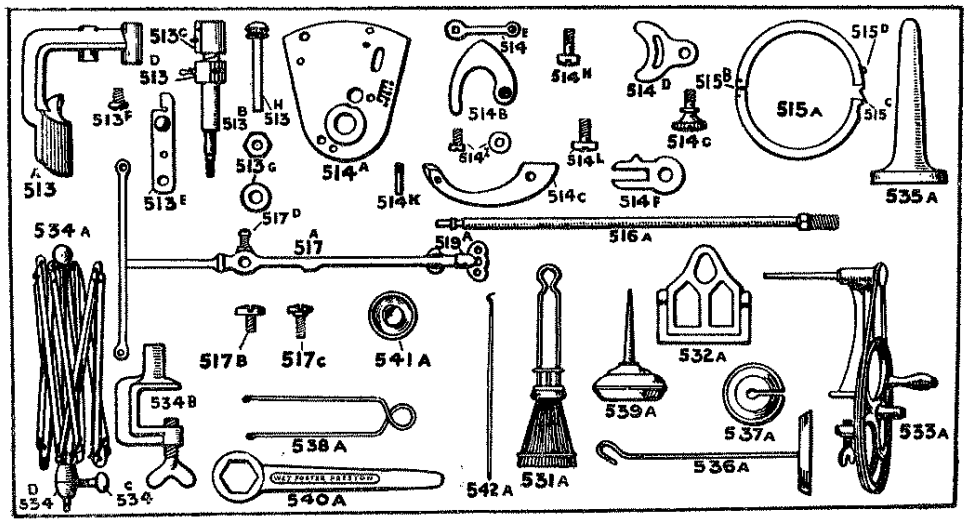


Fig. 2

PRICE LIST

No.	Name	Price £ s. d.
	Ribber Arm—*continued*	
513F	Flat spring screw ...	0 0 6
513G	Stud nut and washer ...	0 0 6
513H	Ribber driving pin ...	0 0 6
513J	Grub screw for 513C ...	0 0 6
	RIBBER CAM PLATE	
514A	Cam plate only	0 7 6
514B	Out-throw cam and stud	2 0 0
514C	Stitch cam	0 5 0
514D	Regulator plate on cam cap	0 2 6
514H	,, ,, screw	0 0 6
514E	Out-threw cam screw and knob	0 2 6
514.I	Out-threw cam screw and washer	0 0 6
514F	Pointer	0 1 6
514G	Pointer thumb screw ...	0 1 6
514K	Stop pin on cam plate ...	0 0 6
514L	Stitch cam screw	0 0 6
	CLASP RING	
515A	Clasp ring complete ...	0 12 6
515C	Spring	0 0 6
515D	,, screw	0 0 6
	YARN CROSS	
516A	Column	0 7 6
517A	Yarn cross only	0 0 6
517B	Tension wire holder ...	0 0 6
517C	Holder screw	0 0 6
517D	Yarn cross screw	0 0 6
519A	Yarn lock	0 2 6
520A	Tension wire	0 1 0

No.	Name	Price £ s. d.
521B	Cylinder }	Prices quoted on
521A	Dial }	request.
512C	Cylinder screw	
	ACCESSORIES	
531A	Set-up	0 10 6
532A	Buckle	0 2 6
533A	Small winder	2 0 0
533B	Winder Belt	0 2 6
534D	Swift collar	0 5 6
534A	Wooden umbrella swift ...	5 5 0
534B	Swift holder and Screw ...	0 2 6
535A	Small bobbin	2 0 0
536A	Weight holder	0 0 6
537A	Weight	1 1 0
538A	Heel Wire	0 1 9
539A	Oil can	0 1 0
341/3	Spanner	0 0 6
542A	Work hook	0 2 6
	Needles, all kinds Cylinder and Dial, per doz	0 4 0
	per 100	1 0 0
543A	Stands, Enamelled in Green Lt., Grey or Black ...	5 5 0
	Stainless Machine Oil (Bottle)	0 2 0

Leatherette Machine Covers, Hose Shapes and Needles, etc. also supplied for Golden Fleece, Auto and other makes of machines.

INSTRUCTIONS

NOTICE.—This instruction book contains all that is necessary for the learner to know, and if carefully followed it will be found simple to understand. Do not expect to make perfect work from the first; this will only come by practice and by following carefully the instructions given, and by thoroughly grasping each one point before proceeding to the next.

(1) Get acquainted with the names and positions of all the parts, and read the instructions for fixing the machine (page 9), and the learner's first lesson (page 10).

(2) Wind yarn (page 12), cast on (page 13), make a welt (page 15), and knit a plain sock.

(3) Knit a plain sock with ribbed top (page 36).

(4) Knit a ribbed sock complete (page 36).

(5) A lady's ribbed and plain stocking (pages 41 and 37).

To unpack and fix the Machine

CAUTION.—Read this at the beginning of the book and for illustration and names of the parts see Specification List.

After removing the lid, take out all the loose parts, such as swift, column, winder, etc. Now take out all the side screws from the box and the machine can be lifted out with the board. Loosen the thumb-screws (No. 501B) below the base and the machine will be free from the board. Slip the machine close on to a firm table and secure with fingers and thumb the thumb-screws (501B).

FIXING MACHINE.—Refer to list illustration. Screw column (516A) in the hole on the base at back of machine. Place the yarn-cross (517A) on the column as shown with the one arm immediately over the machine, secure it with the side screws and the machine is ready for use.

OILING MACHINES

CAUTION.—Never employ domestic oils, such as castor, olive, colza or similar kinds, as they clog the working parts and make the machine heavy to turn.

The machine should be oiled a little each day it is used, and then only with the best machine oil such as can be obtained from us in bottles at one shilling each.

The following working parts should be oiled occasionally and slightly:—

Driving shaft (a) where it passes through the bracket; (b) at the two holes in the bracket.
Cog ring, round its outer and inner edges (close to the shell).
Cylinder, in the grooves at the tops, by the needles.
Shell, between the shell and cylinder after removing the belt.
Ribber spindle, where it passes through the ribber arm.
Cam plate and dial grooves, on the butts of the ribber needles when in the grooves, and on the face of the dial close to the cam plate.

The machine should be kept clean and not allowed to become clogged with fluff and dirt, as collected fluff and dirt will not react favourably to oiling and the machine will be stiff to operate even though oiled with good oil. If the machine does happen to get clogged up it will be necessary to remove cylinder shell and cog ring and clean all parts, but this need only be done at rare intervals, as a little fluff will not affect the action.

LEARNER'S FIRST LESSON

Giving a description of the principal parts of the plain machine.

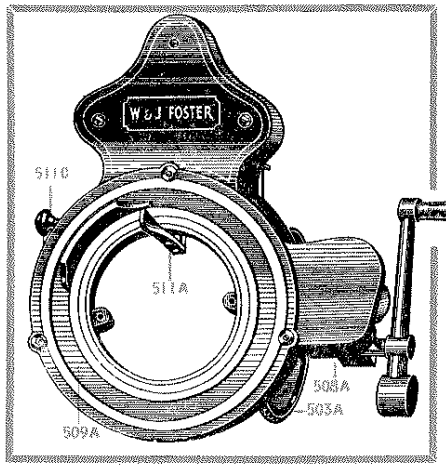


Fig. 3

Fig. 3 shows the base of the "V.A." knitting machine with the gear ring (509A) and ribber post (511A) in position.

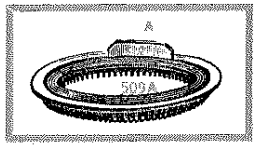


Fig. 4

The gear-ring (Fig. 4) works in the base, having on its underside cogs which fit in the cogs of the driving wheel (503A). The projecting part (a) to which the yarn-guide is secured drives the cam shell.

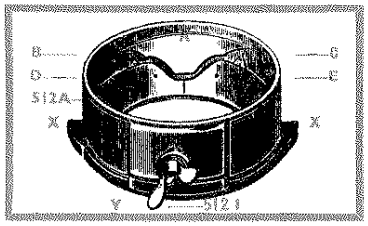


Fig. 5

The cam shell (Fig. 5) contains the steel cams, A, B, C, which raise and lower the cylinder or plain needles; it rests upon the base and is kept in position by the cylinder round which it revolves. The stitch cam A is adjustable by means of the wing nut (512F) on the outside of the cam shell. Between this wing nut and the shell is a pointer (512E) which indicates upon the index plate (512L) the position of the stitch cam (A). The lowest point (6) makes the longest stitch or loosest tension, and the highest point (1) makes the shortest stitch or highest tension. The large wing nut (512I) is for securing the ribber arm (513A) to the cam shell. The two lugs (X) on opposite sides are for driving the cam shell; the one on the left drives forward and the one on the right drives backward. Round the inside of the cam shell is a ledge on which the feet of the needles rest, when not being raised or lowered by the cams A, B or C. Cams B and C raise the needle, cam A depresses the needle and the cover plates (D and E) of cams B and C raise the needles on to the ledge again after cam A has depressed them.

Particular notice should here be taken of the way in which the needles are operated by these cams. Supposing that the cam shell is travelling in a forward direction round the cylinder which has one needle in it, the needle foot is resting at its normal height upon the ledge, the first cam which comes in contact is cam B (upthrow cam). This raises it slightly, and the needle next comes in contact with cam A, which depresses it below the normal level of the required length of stitch. Cover plate E raises it again on to the ledge where the needle rests until the cams have passed once round the cylinder. In this forward movement upthrow cam C is not brought into use, being sunk behind and below the cover plate E. but in the backward movement upthrow cam C acts instead of B, which in this movement sinks below cover plate D. These cams B and C are raised above the cover plates D and E by the projecting piece A (Fig. 4) of the gear-ring, which operates them by two pins which pass through to the outside of the cam shell.

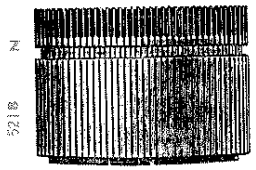


Fig. 6

The cylinder (Fig. 6) which fits inside the cam shell and is secured to the base by two screws (521C), has grooves cut in it all the way round, in which the needles work; they are held in position by a belt (515A) which fits in the groove (Z) running round the cylinder.

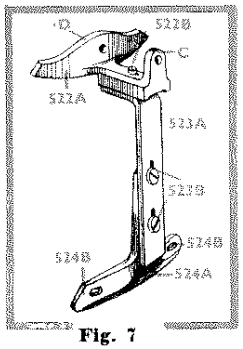


Fig. 7

Fig. 7, the combination yarn-guide and latch-opener (522A), is secured to an upright (523A) by two screws (523B), the screw holes are slotted so that the yarn-guide can be raised or lowered to the required position to suit the needles. The bracket is screwed to the gear-ring at A (Fig. 4). Screw (522B) is to adjust the yarn-guide towards or away from the needles. The yarn is threaded from the back, first through hole (C) then through hole (D).

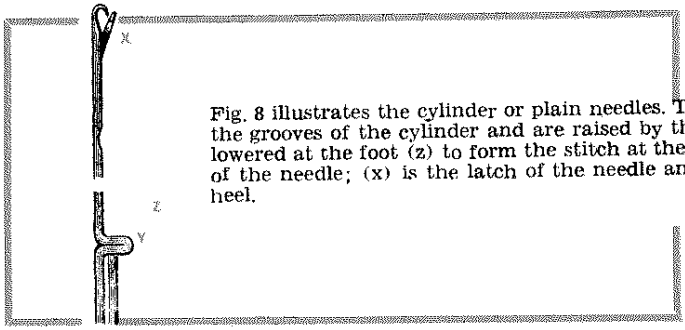


Fig. 8

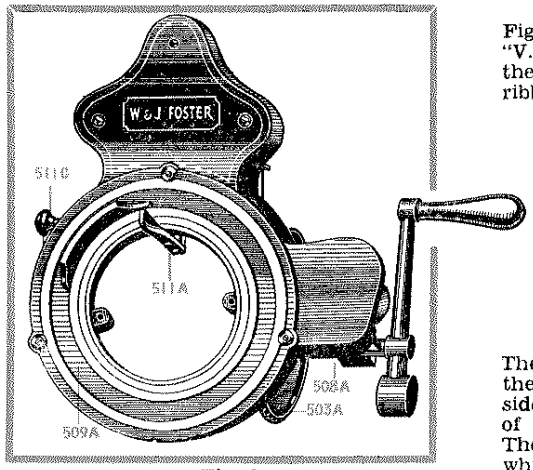
Fig. 8 illustrates the cylinder or plain needles. These fit into the grooves of the cylinder and are raised by the cams and lowered at the foot (z) to form the stitch at the top or hook of the needle; (x) is the latch of the needle and (y) is the heel.

Fig. 9

The belt (Fig. 9) is placed round the cylinder in the groove Z (Fig. 6) and prevents the needles from coming against the yarn guide and being broken or bent.

LEARNER'S FIRST LESSON

Giving a description of the principal parts of the plain machine.



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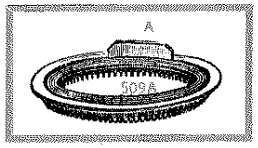

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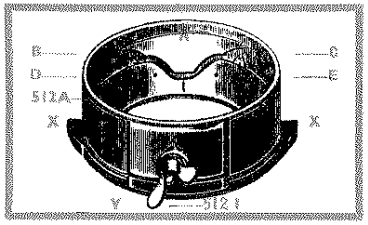


Fig. 5

The cam shell (Fig. 5) contains the steel cams, A, B, C, which raise and lower the cylinder or plain needles; it rests upon the base and is kept in position by the cylinder round which it revolves. The stitch cam A is adjustable by means of the wing nut (512F) on the outside of the cam shell. Between this wing nut and the shell is a pointer (512E) which indicates upon the index plate (512L) the position of the stitch cam (A). The lowest point (6) makes the longest stitch or loosest tension, and the highest point (1) makes the shortest stitch or highest tension. The large wing nut (512I) is for securing the ribber arm (513A) to the cam shell. The two lugs (X) on opposite sides are for driving the cam shell; the one on the left drives forward and the one on the right drives backward. Round the inside of the cam shell is a ledge on which the feet of the needles rest, when not being raised or lowered by the cams A, B or C. Cams B and C raise the needle, cam A depresses the needle and the cover plates (D and E) of cams B and C raise the needles on to the ledge again after cam A has depressed them.

Particular notice should here be taken of the way in which the needles are operated by these cams. Supposing that the cam shell is travelling in a forward direction round the cylinder which has one needle in it, the needle foot is resting at its normal height upon the ledge, the first cam which comes in contact is cam B (upthrow cam). This raises it slightly, and the needle next comes in contact with cam A, which depresses it below the normal level of the required length of stitch. Cover plate E raises it again on to the ledge where the needle rests until the cams have passed once round the cylinder. In this forward movement upthrow cam C is not brought into use, being sunk behind and below the cover plate E. but in the backward movement upthrow cam C acts instead of B, which in this movement sinks below cover plate D. These cams B and C are raised above the cover plates D and E by the projecting piece A (Fig. 4) of the gear-ring, which operates them by two pins which pass through to the outside of the cam shell.

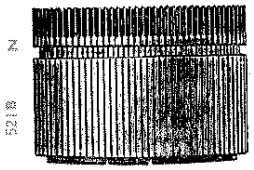


Fig. 6

The cylinder (Fig. 6) which fits inside the cam shell and is secured to the base by two screws (521C), has grooves cut in it all the way round, in which the needles work; they are held in position by a belt (515A) which fits in the groove (Z) running round the cylinder.

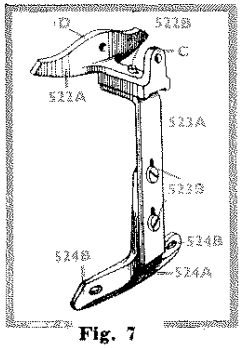


Fig. 7

Fig. 7, the combination yarn-guide and latch-opener (522A), is secured to an upright (523A) by two screws (523B), the screw holes are slotted so that the yarn-guide can be raised or lowered to the required position to suit the needles. The bracket is screwed to the gear-ring at A (Fig. 4). Screw (522B) is to adjust the yarn-guide towards or away from the needles. The yarn is threaded from the back, first through hole (C) then through hole (D).

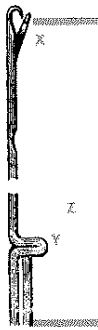


Fig. 8

Fig. 8 illustrates the cylinder or plain needles. These fit into the grooves of the cylinder and are raised by the cams and lowered at the foot (z) to form the stitch at the top or hook of the needle; (x) is the latch of the needle and (y) is the heel.

Fig. 9

The belt (Fig. 9) is placed round the cylinder in the groove Z (Fig. 6) and prevents the needles from coming against the yarn guide and being broken or bent.

ACTION OF THE MACHINE

In knitting plain work the handle (504A) is moved round towards the back from the top; this operates the driving wheel (503A) which in turn moves round the gear-ring (509A), and coming in contact with the lug (X) of the cam shell (512A) drives the cam shell round. For the direction in which to turn the handle see illustration Fig. 3. Here the handle is at the top and is to be pressed down towards the back. This is called the Forward movement; the reverse way is called the Backward movement. It will be well to make a few turns of the handle with the needles in the machine and the belt on, but without work upon the needles to see the action. It will be seen that the needle first rises somewhat at cam B (Fig. 5); this is so that the last stitch knitted will pass below the latch. The hook of the needle is now depressed by cam A (Fig. 5), and at the same time receives the new wool, and as the needle passes below the top of the cylinder, the latch (X, Fig. 8) is closed by the old stitch, which passes over to the inside of the cylinder. To learn which cams give the different movements to the needles, read the paragraph on the cam shell (page 10) while making the few turns of the handle.

How to wind the Yarn

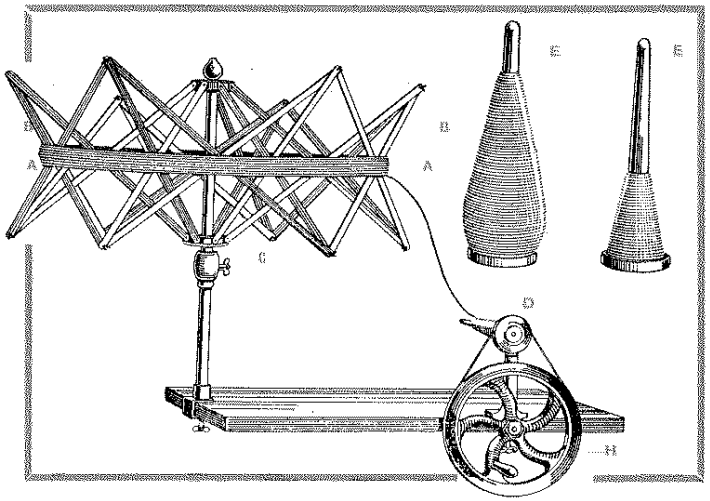


Fig. 10

Care should be taken in winding the yarn, or the machine will not work freely and easily.

Fix the winder and swift on to a table in the manner shown (Fig. 10) and the bobbin (D) on to the winder spindle, take the hank of yarn (A) and place it over the swift (B), raise somewhat the barrel (C) so that the yarn will not fall off the swift, but not to bind the yarn tightly. Now piece the yarn to the bobbin (D) and with the right hand turn the wheel (H), and with the left hand guide the yarn. Wind first the lower end of the bobbin cone shaped, and gradually fill it towards the top, taking care to keep the cone shape throughout, so that the upper part of the bobbin may never

have more yarn upon it than the lower part (see E). Do not wind the yarn too tightly upon the bobbin, nor yet too loosely. Hard and coarse yarns will work easier if, in winding, a roll of wax be held in the left hand, and the yarn allowed to pass through it to the bobbin. The weaver's knot (Fig. 11) is the best knot to use for piecing the yarn. Large knots should be avoided.

Fig. 11

Reference Notes will be found at the bottom of each page.

A PLAIN SOCK

(without the use of the Ribbing Attachment)

To cast on

Do not interfere with any screws or parts unless directed to do so.

Place a needle with its latch open, that is, pointing downwards, in each cylinder groove. Set the cylinder pointer (512E) at about 3 for 4-ply fingering wool (note 1). Turn the handle of machine forward (note 2) till the yarn-guide is at the **Back** (note 3) of cylinder. Place a bobbin of wool on the table immediately below one of the rear holes in the yarn cross (517A). Pass the yarn upwards through the holes then through the hole in the yarn cross immediately above the column, under the yarn lock and down through the centre hole to the yarn-guide. Now pass the yarn through C and D of the yarn-guide (Fig. 12). Draw into the cylinder about 1½ yards of loose yarn. Take this in the right hand, and with the left pass the set up (513A, Fig. 12) from below into the cylinder, with the hooks just below the level of the cylinder top (Fig. 12). With the right hand take hold of the loose yarn near to the yarn guide (that is, about 1½ yards from its end A, and pass it

1.—Learners should knit with a loose tension at first until some practice has been had in the making of socks, as the tighter the tension the more difficult is the manipulation of the needles. The tension should never be higher than 3 except for very fine wools.

2.—For the direction in which to turn the handle see Fig. 3; here the handle is at the top and is to be pressed down towards the back. This direction is called the **forward** movement; the reverse is the **backward** movement.

3.—Definition of Right, Left, Front, Back:—**Right:** On the Right side of the cylinder you will find one of the tricks (which divides the grooves) filed off at the top; this trick is the right half mark, and will in the following be called Right. **Left:** Likewise on the Left side of the cylinder there is a trick filed off at its top, and will in the following be called Left. **Front:** The word Front signifies the cylinder trick which is midway between the Left and Right (really the trick nearest the operator). Front half is that part of the cylinder which is nearest the operator, and extends from Left to Right half marks. **Back:** The word Back signifies the cylinder trick which is furthest from the operator and midway between Right and Left. Back half is that part of the cylinder which is farthest from the operator, and extends from Right to Left half marks.

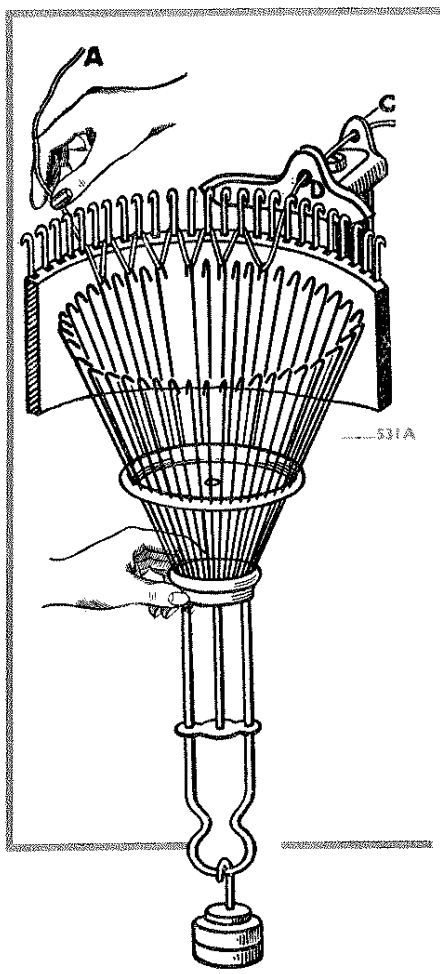


Fig. 12

alternatively round a hook of the set up and a needle in the manner and in the directions shown in Fig. 12). It is not necessary to pass the yarn round every needle, but every second needle, and from the needle to **the nearest hook** of the set-up (the hooks of the set-up may have more than one loop upon them). Continue in this way round the machine until you come to the depressed needles. All this time the left hand has been holding the set-up from below, now hang a weight holder (536A) with one weight (537A) upon the set-up. Turn the handle **Forward** (see note 2), that is, in the same direction as the needles have been looped (note 5) till the yarn-guide is at the **Front** (see note 3). The looping can be continued until each alternate needle has a loop upon it and the circle is completed. Continue the looping for two or three needles beyond the circle and break off the remaining yarn leaving the end (A) in the cylinder. See that all the needle latches are open, hold down the set-up with the left hand and knit six times round (note 6) stopping with the yarn-guide at Front of machine (note 7).

5.—**The Loop** is that portion of the yarn which hangs over the needles.

6.—If one or more needles do not form a new stitch each time round, and leave the yarn loose on the needle hooks, or two loops on one needle, the probable cause is insufficient weight or too tight a tension. First add another weight to the set-up, and loosen the tension one spot (take care to screw up the thumb nut again after altering the tension). Each needle will form is own separate stitch, but if by accident when looping the yarn has been passed over two needles, these two needles will be making one stitch instead of two. To remedy this fault raise one of the two needles as high as possible out of action (see note 8) until once round has been knitted, now depress that needle into action again and it will make its own separate stitch. Dropped stitches can be picked up after the sock has been taken from the machine.

7.—For practice it is advisable that the learner should repeat the starting of the work up to this point several times, and to take the work off the needles break the yarn immediately in front of the yarn-guide, and holding the set-up in the left hand, turn the handle twice round.

Forming of the Welt

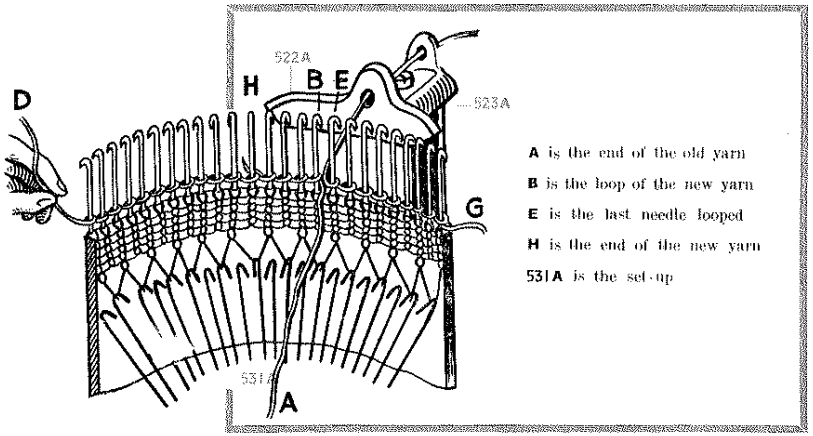


Fig. 13 (see also Fig. 14)

First raise out of action the back half of the needles (note 8). Turn the handle forward until the yarn-guide stands at the **Back,** now raise out of action the **Front** half of needles. Up to this point old or waste yarn may be used, as the sock is to be made. Draw from the bobbin through the yarn-guide to the inside of cylinder about a yard of the new yarn. Break off the old yarn at the knot and allow it to lie in the set-up. Take two inches of the new yarn at its end and double it so as to form a loop. Hold its loop between the thumb and forefinger of the right hand. Place the loop over the needle which formed the last stitch knitted. Keep this loop (B, Fig. 14) in its place by a finger of the left hand, pressing it against the cylinder; then take the yarn (which for the distance of a few needles will be double) across the back of the next needle Forward (note 9), round its side to the front, across the **Front** and through to the back between it and the needle on which the first loop was made, now across its **Back** again to the next needle forward (the yarn will be double for a few needles by reason of the loop) and across its back and round it in the same way as the last needle, and so on (see Figs. 13 and 14). Proceed in this manner, wrapping the yarn round each needle and finishing with the needle next the one on which the loop was first placed (see Fig. 14, E). Now draw the loose yarn back through yarn-guide to the bobbin. Turn the handle **backwards** until the yarn-guide stands at the **Front** of the machine. Commencing with the one on which the loop was placed, put down in action the **Back** half of the needles. See that the latches of all needles are open. Commence knitting with the needle

8.—To raise the needles out of action lift them in their grooves as high as possible, that is, until the needle feet touch the under side of the belt. The raising of any needle can only be performed when it is not in touch with the cams.

9.—Forwards means the direction in which the yarn-guide travels when knitting round.

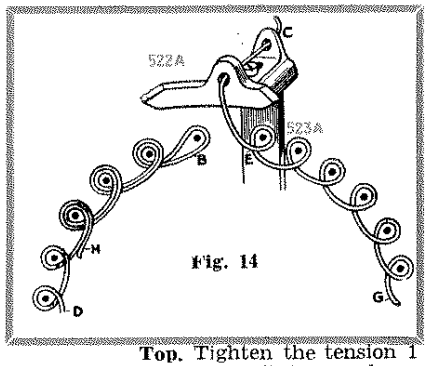


Fig. 14

on which the loop was placed (B), draw back to the bobbin any loose yarn from the yarn-guide until the yarn passes directly from the last needle looped (E) through the yarn-guide, take care that the yarn is fed into the hook of each successive needle and turn forwards until the yarn-guide stands at the **Back.** At the same time hold down the set-up with the left hand (see note 10), put down the **Front** half of the needles **and turn the handle forward until the yarn-guide stands at the Front.** (See note 11).

Top. Tighten the tension 1 spot and set the counter to zero (see note 12), knit 40 rounds.

Leg. Loosen the tension 1 spot, set counter to zero, knit 50 rounds.

Ankle. Tighten the tension 1 spot, set the counter, knit 40 rounds, and stop with the yarn-guide at Front.

Heel—Narrowing. This is the part of the heel section B.C.E. of Fig. 15 page 18).

The heel and toe are usually knitted with an extra ply of yarn to thicken and strengthen these parts. Place the bobbin of splicing yarn below the other hole at the back of the yarncross, pass the end through this hole and tie it to the other yarn; it will now be drawn through the remaining holes into the work.

Raise out of action the **Back** half of needles (see notes 7 and 8). Hook the yarn on to the take-up between the yarn-lock and the front eye of the yarn-cross (note 13). Knit forward till the yarn-guide stands at back. Lift out of action the first working needle on the right side, (that is, the needle which knitted the last stitch). Knit backwards across the needles in action, stopping with the yarn-guide at **Back** (see note 14). Lift up the left end needle and knit **Forwards** across the needles, stopping with yarn-guide at **Back.** Lift up the next right hand end needle and knit **Backwards** across the needles, stopping with yarn-guide at the back on the left side, and lift the next left hand needle. Knit **Forwards** to the **Back,** raise the next right hand needle. Insert the heel wire with weight holder (see note 15), and continue knitting across and raising one needle each time until only 14 or 16 remain in action. The last needle to be raised will be at the **Left**; now knit **Forward** to the right, leaving yarn-guide at **Back.**

If, owing to the length of the knitting, the weights touch the ground, the set-up must be removed, and the buckle (532A) put on in its place. When knitting, there must always be enough weight on to keep down the work.

10.—After the yarn has been wound round the needles in the manner described, there are two loops upon each needle, so that the first round of knitting will be harder to turn and will require more force.

11.—The instructions up to this point should be repeated many times for practice.

12.—The counter (508A) is on the handle-bracket and counts the number of rounds knitted in circular web. The counter must be started at zero and will travel one point for each round knitted. Turn button for quick return to zero when a fresh count is needed.

13.—The take-up is the tension wire (520A) on the yarn cross (517A). It is used when working the yarn-guide back and forward and takes up the loose yarn between the guide and the last stitch. The yarn lock pinches and holds the yarn to the yarn cross at each taking up thus preventing the yarn coming from the bobbin, and as the yarn is left loose at the bobbin, the tension of the wire takes up the loose yarn from the needles. The tension wire can also be used to knit a tight stitch, and when knitting a piece of flat web. The tension wire is adjustable by the screw in holder (517B) to give more or less tension as required by various yarns

14.—It is not necessary always to go right to the back, but a sufficient distance beyond the last stitch knitted that the cams are clear of the needles.

Heel—Widening. This is the portion of the heel B.E.F. of Fig. 15 (page 18). The yarn guide stands at the **Back** on the **Right** side; now depress the last needle raised on that side, but do not depress too far down or the yarn will close the latch. (See that the latch of the needle is open, or the stitch will be dropped). Knit backwards across needles in action and stop with the cams clear of the needles; depress the corresponding end needle of the **Left** side. Knit forward across the needles in action and repeat, depressing one needle each time across and at the same side on which the yarn-guide stands. Continue this until all needles which were raised for the first half of the heel have been depressed (that is, up to the half mark on each side), but with the last needle on each side put the yarn not only round that needle but also round the next needle to it (note 16), the first needle of the back half. Depress only the one needle as usual and knit backwards, place the yarn round the two corresponding needles at left, depress the one needle and knit forward, stopping with the yarn guide **at Front.** Lift the yarn out of take-up, put down the **Back** half of needles. break off the splicing yarn.

Foot. Set the counter to zero. (Notice that all the needle latches of **Back** half are open). Knit forward about 70 rounds and stop with the yarn guide at **Front.**

Toe—Narrowing. This represents H. to K. of Fig. 15. Use the splicing yarn also in the toe, and proceed as directed for Heel Narrowing until only 14 needles are left in action.

Toe—Widening. This represents K. to L. of Fig. 15. Proceed as directed for heel-widening, except that when you come to the last needle on each side put the yarn round that needle only, instead of the two needles as was done in the heel. After the last needle on the **Left** has been depressed, stop with the yarn guide at the **Front.** Depress the **Back** half of needles, take the yarn out of take-up, break off the splicing. Knit four rounds (note 17), break the yarn at the needles, remove the weights, hold down the fabric with left hand and turn handle for one or two rounds, when work will leave the needles, take off the buckle.

To join the Toe. Place a damp cloth upon the toe and press it with a hot iron, sew up with the mending stitch.

15.—After knitting some rows of the heel or toe it will be found that, owing to some needles having knitted more stitches than others, the weight does not pull down the work evenly; to overcome this difficulty, the heel-wire (the bent wire with two hooks) is used.

(a) Hook the heel-wire into the fabric 7 or 8 rows below the top of the cylinder, and hang on to it the other weight stand with one weight. The hooks of the heel-wire should be extended and hooked in the fabric below (about the fourth needle in the work on either side of the heel). The heel-wire can be moved higher up (about every fourth time across) and as the number of needles in action decreases, the points should be brought closer together.

(b) Sometimes when knitting the heel, learners will find that the end needle has not formed its stitch. This is owing to there being insufficient weight on that particular part to keep down the work. This fault must be expected by beginners, and will be best overcome by practice. The left hand can greatly assist the weights by holding down from below the corners of the work when knitting. If a stitch or more has been missed the belt must be opened, the needle taken out, and the stitch caught up, after which the needle can be put back into the machine, the belt closed, and the needle raised. (See page 26, how to pick up dropped stitches).

(c) Another possible cause of faulty work at the corners of the heel or toe is—if the yarn take-up is not drawing back all the loose yarn between the yarn guide and the last needle in work. The reason may be that the weight on the take-up is not low enough, or that the yarn-grip is not acting right, but is allowing the take-up to draw yarn from the bobbin instead of from the needles.

16.—The reason for putting the yarn behind the two needles each side of the half-mark is to prevent a hole being left at the corners of the heel (B of Fig. 15). The yarn is not put behind the two needles at the end of the toe widening.

17.—The four rounds do not form part of the sock, but are afterwards ravelled out for stitching the toe.

Mending Stitch. Take the end of the yarn and ravel off the four extra rows knitted. Do not break off the ravelled yarn, but thread it with a darning needle and sew the toe across. (See Fig. 16). Take the first and second loops at the corner of the opening (both of the same side), pass the needle right through them; then in the same way pass the needle through the first and second loops on the opposite side, now return to the one side, take the second and third loops, pass the needle through them (in at the second and out through the third); proceed to the other side and do the same, that is, taking one new loop each time, first passing the needle in the centre of last loop and out of the new loop. With a little practice the joining when finished will present the same appearance as the other stitches, and the seam cannot be detected. **The stitches of the seam must not be drawn tighter than those of the knitting.**

To finish the Sock. Separate the casting-on rows from the sock at the welt. Take hold of the end of the casting-on yarn which was placed inside before commencing the welt and draw it until the yarn breaks, when the casting-on rows can be separated from the sock and will leave a clean and elastic welt. Another way is to cut the casting-on rows away from the sock just below the welt, and then to pick out the loose bits of yarn close up to the welt.

To improve the appearance of the sock, place it upon a wooden hosiery shape (note 18), lay it upon an ironing table, and with a damp cloth upon the sock, pass a hot iron over it. Leave the sock upon the shape a few minutes.

Illustration of the Sock

As it leaves the machine after being knitted according to foregoing instructions.

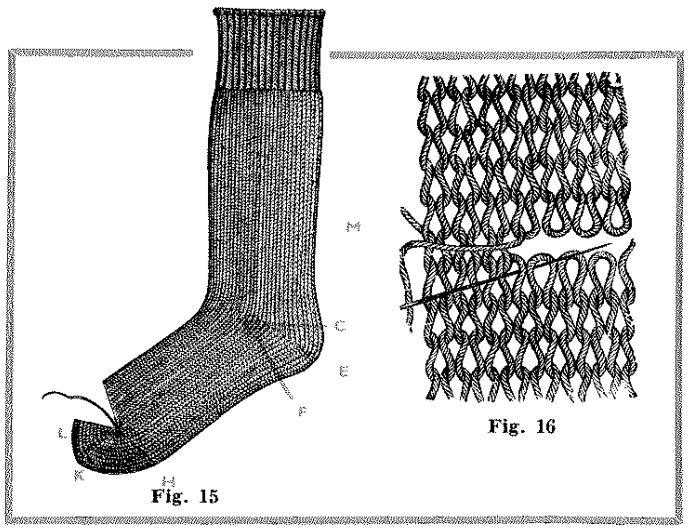


Fig. 15

Fig. 16

Fig. 15 shows the sock before the toe has been joined.

Fig. 16 shows the mending stitch used for joining the toe.

18.—See Accessory List.

Heel, Foot and Finished Toe

SCOTCH FASHION (AS HAND-KNIT) (Fig. 17).

Knit on 84 cylinder (for other cylinders see note 19). This Scotch heel can be substituted for the ordinary heel in the several instructions on the foregoing pages.

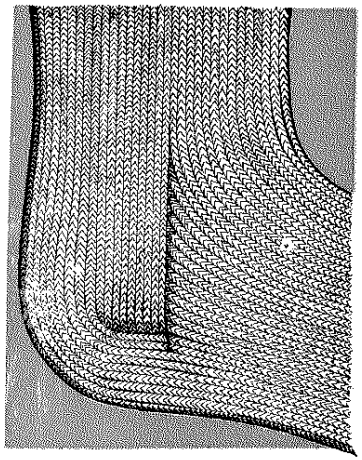
Heel.—Take off belt, transfer loops (see note 23, page 36), from the **Front** half of dial needles (that is from the marked cylinder post on the **Left** side to the marked post on **Right** side) on to cylinder needles, and put cylinder needles into corresponding cylinder grooves. Advance yarn-guide to **Front.** Take a spare cylinder needle and pull out of the dial into a hanging position the **Back** half of the dial needles, loosen the wing nut of ribber and take the ribber off machine, put on belt. Place the dial needles inside the sock, to prevent them coming into contact with the yarn-gude when knitting backwards and forwards.

Heel, Plain Work. Raise fully out of action the **Back** half of cylinder needles, hook the yarn in the take-up at the front of the yarn-grip. Knit forward and stop yarn-guide at **Back.** Now begin to knit backward and forward 28 rows, and send the yarn-guide to **Back** each row across, keeping the fabric pulled down at **Front** only. After a few rows the work will begin to rise about the cylinder needles, then insert the heel-wire and attach heel-weight to keep it down (see notes 14 and 15, pages 16 and 17). **Right** side of work to be kept firmly down with left hand whilst knitting. Stop yarn-guide about **Left** side, take off belt, take off heel-wire and weight.

At the **Right** side lift 14 needles out of cylinder with the loops at feet, and place them inside of sock in a hanging position, knit to the **Right** side; at the **Left** side lift out 14 needles and place them inside the sock in the same way, put on belt, put heel-wire with weight, into work at **Front.**

Lift the first inside hanging needle of the **Right** group of needles, that is the needle next to those in action, and pass it under the thread and transfer its loop on to the **Right** end needle of the 14 that are in action in **Front** of cylinder; do same with the first hanging needle of **Left** group, and transfer its loop on to the **Left** end needle of the 14 in action **Front** of cylinder; then knit backwards one row across. Repeat the same operation and transfer in same order one loop from the **Right** and one from **Left** group of hanging needles on to end **Right** and **Left** group of the 14 in **Front** of cylinder, knit across. Continue this operation until all the hanging needle loops are transferred, stop with yarn-guide at the **Left.**

19.—The Scotch heel is always made upon half the needles of a cylinder, and so 42 needles would be employed if the cylinder has 84 grooves. The half of the cylinder needles is divided into three equal parts, thus:—42 being the half, 14 needles would be a third of 42. Now, if the cylinder has more or less needles than 84, the operator should observe the following:—If a 60 cylinder read 10 instead of 14 needles here given; if a 72 cylinder read 12 needles instead of 14; if a 96 cylinder read 16 needles instead of 14; if a 108 cylinder read 18 needles instead of 14. For the Scotch toe the variation is just the same.



Take off the belt, take 14 cylinder needles, that are not in use, and with their hooks pick up at **Right** side 14 loops of flat web knitted for heel, and put these needles back into the cylinder grooves that you recently took them from. At **Back** depress the raised needles into action, taking care not to knit past first dial needle at the right half cylinder mark. Knit across to the **Right** side, and stop yarn-guide there. With other 14 cylinder needles, that are not in use, pick up 14 selvedge loops at **Left** side and insert needles in cylinder, lift yarn off take-up, tie a thread of odd wool round the cylinder in the belt groove, and put the hooks of dial needles that are hanging inside the cylinder in between the thread and cylinder grooves, and thus arranged the feet of dial needles will point outwards and the stems upwards and so be clear of the ribber.

Fig. 17

Foot. Now put on ribber, and see that dial is adjusted to cylinder, as directed on page 29. Unfasten the thread round cylinder and taking care not to push them in too far lest latches shut, push the dial needles into the dial grooves. Knit very carefully, five rows in all, and see that latches do not close in the first row, or ribbing loops will drop; stop yarn-guide at **Back.**

Foot—to Narrow. Counting from the extreme **Right** and **Left** dial needles, transfer the loop from the fourth cylinder needle on to a dial needle at each side, push dial needles into dial, put on belt, keep work well pulled down with the heel-wire, and at **Back** knit 70 rows and stop yarn-guide at **Front,** take off belt. Transfer all the dial loops on to cylinder needles and take off ribber, put on belt and knit to **Back.**

Toe, Plain Work. (Seamless). Raise fully out of action the **Front** half of cylinder needles, and advance yarn-guide to **Front.** Put the yarn on take-up, raise fully out of action the **Left** end needle, knit across, turning handle backward, and stop yarn-guide at **Front,** raise **Right** end needle and knit across to **Front,** raise another needle at **Left** side and with the left hand under the cylinder, keep the work well down from the **Back,** continue knitting backwards and forwards as if you were knitting the first part of the heel and always raise the last needle that knitted each row, until there are only 14 needles left in action, knit to the **Left,** across these 14 needles and stop with yarn-guide at **FRONT.** About two inches from the last needle that knitted break the yarn. Take off all the heavy weights, leaving on only the heel wire and weight stand, take off belt. Throw out the **Back** half of the plain needles into a hanging position and outside the sock or stocking, with the loops at the needle feet and let them hang between the sock and cylinder; turn yarn-guide to **Back** of machine and depress the **Front** half of needles into action.

Take in at **Right** side thus: Transfer third loop on to 4th needle in cylinder and first loop on to the second needle, fill up empty third groove by bringing end needle forward. Lift up first inside hanging needle and put it into cylinder next the end one. Now thread the yarn-guide and guide yarn to knit into end needle at the **Right,** leaving an end about two inches, knit across to the

Left and stop with yarn-guide at **Back.** Take in at the **Left** side, same as at **Right** side, and leave the thread of yarn at **Back** of the end needle; knit forward to the **Right** and repeat the taking in and in knitting across this time knit in the end of yarn that was left. Continue taking in every row same side as yarn is at, until you have only 14 needles in action and 14 hanging ones; when knitting last row, knit in end of yarn at **Left** side: taking care not to cross them, transfer the 14 loops from the hanging needles on to the 14 in cylinder; have very little weight on.

Toe, to Close End. First see that the loops are below the latches, take **Right** end cylinder needle and using it in the same manner as an ordinary crochet needle, put the yarn into its hook, then put the needle down so that the two loops will pass off it, and thus form a new loop with the yarn in its hook, now transfer the new loop to next needle. Keep repeating this till all the needles are out but one. Take off heel-weight, break yarn, and give last loop two crochets, instead of one for finish; draw the ends of the yarn in and out the fabric once or twice, and cut off unused ends. Press the sock well after finishing off the top.

Scalloped top for Socks, Stockings, etc.

Plain tension at 5, Ribber tension at 3, for 3 or 4-ply Fingering.

Arrange needles in cylinder in groups of 3, with one empty groove after each group. Set up the machine and form a Welt as directed on page 15. Knit $1\frac{3}{4}$ rounds in addition to the one round after making the Welt, that is, $2\frac{3}{4}$ rounds in all, stop with the yarn-guide at **Front,** put on the ribber without any needles in dial, and adjust the dial so that its grooves are over cylinder grooves, as directed on page 29.

Take a dial needle and pick up with its hook the threads, including the welting thread which lies across the empty cylinder groove nearest the **Right** half mark, place the dial needle into the corresponding dial groove. Continue forwards, picking up the threads and placing needles into dial over the other empty grooves, but after placing into dial a few needles, see that the threads are in the hooks of dial needles and the latches are open; then knit forwards a few needles so as to allow more needles to be placed into the dial, and in that way complete the picking up. Now knit the number of rounds required for the top of sock or stocking.

NOTE.—The scallop may be varied by knitting more or less rounds after the welting round. The scallop may also be made with all the needles in the cylinder and needles in every second dial groove, in which case the dial must be adjusted so that its grooves are over the cylinder posts and the threads over every fourth cylinder post must be picked up.

High Heel for Sock or Stocking

The object of this is to provide for thickening the back of the heel (above C. to M. of Fig. 15, page 18) for the hard wear at that point, also to give the heel a better shape.

Refer to **Leg** (page 37), and continue from "stop yarn-guide at **Right** hand side." Knit to **Back,** take off belt, transfer loops from **Front** half of dial needles to cylinder needles, knit to **Front,** transfer loops from **Back** half of dial needles to cylinder needles and take off ribber (or instead, transfer loops of back half of dial needles to cylinder needles and take off ribber, take out ribber driving pin only and leave ribber on machine), thread yarn bracket with the thickening yarn, and tie it to the other yarn at about

the middle of the yarn bracket, put both yarns into hook of take-up, loosen tension one point, put on belt, raise out of action **Back** half of cylinder needles and also next to them on each side, the first, second and third needles of the **Front** half, from the marked posts (that is, raise 3 extra needles of **Front** half on **Right** side and 3 on **Left** side, knit Forwards to Back, depress extra third needle on **Right** side of **Front** half, that is the raised needle next to those in action), and put yarn at back of it, knit Backwards to **Back,** depress the corresponding needle on the **Left** side, put yarn at back of it knit Forward to **Back,** depress that extra second needle on **Right** and put yarn at back, knit Backwards to **Back,** depress the corresponding needle at **Left** and put yarn at back, knit Forwards to **Back,** depress the first extra needle at **Right,** put yarn at back of it and also at the back of the raised needle next to it (first needle of **Back** half), knit Backwards to **Back,** depress the first extra needle at **Left,** put yarn at back of it and also at the back of the raised needle next to it (first needle of **Back** half), knit Forwards and stop yarn-guide at **Front.** Now continue Heel Narrowing (page 16), commencing after:— "Hook the yarn on to the take-up between the yarn-grip and the front eye of the yarn bracket."

Knitting with two yarns

To Thicken Heels, Toes, etc.
See Caution below.
It is necessary when knitting with two yarns to loosen the stitch 1 or 2 degrees, to prevent the fabric being too close.
Take an extra bobbin of single or two-fold yarn of the same colour as you are knitting with. Place the bobbin on the table below the vacant hole in the yarn bracket. Pass the end of the yarn through the yarn-guide as usual, tie it on to the other yarn at the needles, hook it on to the take-up. When the part to be thickened has been knitted, break off the splicing yarn at the needles.

CAUTION.—Do not knit with too tight a stitch or tension. A looser tension should be used for dark or heavy yarns than for light coloured and fine yarns.

Plain Sock or Stocking

To Shape the Leg and Foot with Ribber on machine.
Set up the machine and form the Welt for a plain sock, knit the top, put on ribber, adjust dial grooves to work over cylinder grooves, use only one dial needle, which place into dial groove exactly in the centre at **Front** of machine, transfer the one plain loop to dial needle. This one dial needle will make a seam stitch down the leg of the sock. After knitting the leg, take out dial needle and transfer loop to plain needle in the usual way. After the heel is formed put on dial needle in groove of dial at **Right** half mark and one at left half mark. This will reduce the width and make the foot a better shape. After completing the foot, transfer dial loops to plain needles and remove ribber.
The shaping of the leg and foot may be varied in several ways by using two dial needles instead of one, etc.

To unravel plain Knitting

Without removing Fabric from Machine.
This unravelling is sometimes necessary when there is faulty work and also when re-footing.
During the unravelling the ribber should be removed and the rib-stitches allowed to hang free. After the unravelling the rib stitches are taken up by the ribber needles, the ribber replaced and the ribber needles re-inserted in their grooves.

Remove all weights and support the fabric with the left hand under the cylinder, then knit once across if a Flat Web, or once around if a Circular Web; this should bring all the loops above the latches and into the hooks of the needles; take hold of the yarn between the yarn-guide and the needles and pull it gently, moving the hands slightly up and down on a level with the tops of the needles and thus cause the previous row of stitches to pass over the hooks of the needles. With a little practice you can ravel back as far as desirable without losing a stitch. After completing the unravelling, draw slack yarn back to bobbin. In tubular work, if there be any difficulty in passing the needles which are below the top of the cylinder, place the hands upon the shell only and move it a little to the right or left.

To finish with a selvedge

If ribber is on the machine, transfer all ribbing loops to plain needles and remove ribber.

Knit once round and stop yarn-guide at **Front,** commence at **Right** to raise all the needles out of action; advance yarn-guide until at **Back,** take off belt, remove all weights, weight-holder and set-up or buckle; then break the yarn, leaving an end about 1½ yards in length, take out the needle which knitted the last stitch, leave the loop just below the latch and catch the yarn into the hook like crocheting, draw the needle so that loop passes off the needle and leaves yarn in the form of a loop upon the needle (this loop must be long enough to reach the top of the next needle), then transfer this loop on to the next needle and draw the yarn to tighten the loop to its usual size; there will then be two loops on that next needle, now take out that needle and place yarn in the hook as before and draw a loop through the two loops which are upon it and place the new loop made upon the next needle. Repeat this all round, or across if flat web, drawing the yarn completely through the last single loop to make it secure. Break off the spare yarn to within an inch of the last loop and then knit the end into the fabric by hand. This selvedge will be exactly like the usual closing by hand.

Flat Web

(The Ribber is not used for Flat Web).

Observations.

1. For Flat Web it is an advantage to have about four dozen extra plain needles for the parts which require increasing or widening. In absence of extra needles and where needles are removed from partially completed work, pass a thread of yarn through the loops to prevent stitches unravelling.

2. Flat Web is knitted upon a cylinder by the Forward and Backward movement of the yarn-guide. For example, we will suppose that needles are placed into all the grooves of **Front** half of cylinder the yarn-guide would then be made to travel to and fro, far enough to allow the end needles to make their stitches each time across. The yarn-guide would probably be taken some 20 grooves beyond each end needle before it has made its stitches each time across. That length of 20 grooves represents the space occupied by the cams in the shell. The yarn take-up being used as when knitting the heel or toe, now, if it is desired to make a Flat Web with all the needles in the cylinder the movement would be Backward and Forward just the same, but it would be necessary, each row across, to raise 20 needles out of action, first one side of **Back** half mark and then 20 on the other side as follows:—

Flat Web with 20 Needles (or more)

Out of Cylinder.

Rough Selvedge for Flat Web must be commenced at one or the other end of the needles—that is to say, a section of the cylinder should have needles in the grooves sufficient for the required width of the Flat Web and those needles must be placed together in **Front,** leaving the **Back** grooves empty. The looping of the needles is done exactly the same as in casting on for Circular Work. Only the hooks of set-up opposite that section of needles are used, but any one of those hooks may be used more than once. Proceed as follows:—

Turn handle slowly Forwards and stop when yarn-guide is about opposite the sixth empty groove from the first needle in action on the **Left.** Thread the yarn-guide with the odd yarn as directed in setting up for Circular Work, draw off about a yard of yarn through yarn-guide, pass yarn direct from yarn-guide outside the end or first needle at **Left,** under hook in set-up, then round the first needle, under hook in set-up, round the third needle, back to set-up, so continue missing a needle each time. (See Fig. 12, page 14). When the last needle is reached pass yarn round it and back to a hook of set-up, just as with the others, even though the needle before it has been looped, secure the yarn by twisting it round a hook in the set-up twice or thrice. Attach holder and weights to set-up. Pick up yarn in front of the yarn-grip and put it in hook of take-up, draw slack yarn back to bobbin. See that latches of needles are open, then knit Forwards, sending yarn-guide beyond the end needle at **Right** until that needle has made stitch (that is, rises out of its groove and is level with the others), knit Backwards until the end needle at **Left** has made stitch, continue knitting Forwards and Backwards as many times as required; four rows will be sufficient if a Welt is to be commenced, in that case knit the last row Backwards and send yarn-guide to the **Back,** and stop. The object of sending yarn-guide to the Back is to take the cams out of the way and so allow the needles to be raised out of action.

Welt for Flat Web, with 20 Needles, or more, out of the Cylinder. All needles to be raised out of action, break yarn at the bobbin, remove bobbin and put in its place (on the table and under the hole in yarn bracket) a bobbin of new yarn to be used for the work, join and then take hold of yarn at the needles and draw it until new yarn is through yarn-guide, break new yarn at the knot and lay casting on end inside set-up. Draw off yarn through yarn-guide as may be required for Welt. Take the end of the new yarn and make a loop, do not tie a knot, commence at the **Left** end needle to set Welt the same way as directed on page 15. When last needle at the **Right** is reached, see that yarn is twisted round it in the usual way and then passes at the back and round the outside direct to the yarn-guide. See that latches are open, hold slack yarn away from needles, then turn handle Forwards until yarn-guide is about 20 grooves **beyond** the end needle at **Right.** Place yarn from front of yarn-grip into hook of take-up, depress all needles into action, turn handle Backwards until yarn-guide is opposite end needle at **Right** side, draw slack yarn back to bobbin and knit Backwards and Forwards, sending yarn-guide to the **Back** each time, so that end needles may make their stitches knit as many rows as may be required for work in hand.

Flat Web with Needles all in (or nearly all)

Of the CYLINDER GROOVES.

Cast on as for Circular Web (see page 15), knit 4 rows **round,** stop yarn-guide almost at **Back** so as to bring the cams within the quarter lot of needles from **Right** half mark to **Back.** Commencing at the needle directly at **Back,** raise out of action quarter of the needles, that would be to **Left** half mark, then raise **Front** half of needles, send yarn-guide Forwards to **Front,** raise quarter lot of needles **Back** to **Right.**

Welt for Flat Webb, with all, or nearly all, the needles in cylinder, proceed as directed on page 24, commencing with the needle first raised, at **Back.** When the last needle is reached the yarn should be twisted round that needle as usual and passed between that last needle and the needle on which the Welt was commenced, direct to yarn-guide; hold yarn away from needles and send yarn-guide Backwards and stop almost opposite that last needle, depress needles from **Back** to **Right** and **Right** to **Left** half mark and thus leave the quarter lot of needles raised from **Left** to **Back,** put yarn on take-up, draw slack yarn back and see that it passes **direct** from needles through yarn-guide to bobbin ,see that all latches are open, assist to hold work down with left hand and watch that yarn feeds into the end needle. Knit Backwards almost to **Left,** depress quarter lot of needles from **Left** to **Back** and raise quarter lot of needles from **Back** to **Right,** knit **Backwards** to **Right,** knit Forwards almost to **Right,** depress needles **Right** to **Back,** raise needles **Back** to **Left,** knit Forwards to **Left,** knit Backwards almost to **Left** and continue in like manner, depressing and raising needles and knitting, for as many rows as are required.

To run work off machine, break yarn at needles and turn handle **round** once or twice. Press with hot iron upon damp cloth, cut away casting on rounds, unravel and finish with Button Hole Stitch.

Widening and narrowing flat web

Widening. A flat web may be widened on one or both sides. Take off belt, take a spare needle and catch into its hook a loop from the last stitch made at back of the end needle and place the increasing needle into the next empty groove.

Or, the end needle, with the loop on it, may be transferred to the next empty groove and a spare needle placed in the groove from which the end needle was taken, but first catch on the spare needle a loop from the stitch of next right or left needle. Knit one row, or more, between each increase.

Narrowing. A flat web may be narrowed by removing a needle on one or both sides. Take off belt, take out end needle and put the loop over the adjoining needle.

Or, you may remove the fourth needle and place its loop over the fifth needle, then transfer the first three needles forward one groove and so fill up the empty groove and have all needles together in one continuous line. Knit one row, or more, between each narrowing.

To pick up dropped plain stitches

On the Machine.

Take off the belt, lift the weights off, take out the needle where the stitch was dropped, hold the fabric up until the dropped stitch is high enough to allow you to catch it in the hook of the needle (from behind the fabric, that is, between the cylinder and the fabric). Where the stitch has dropped are cross threads, each representing what should be a stitch. These stitches must be formed on the needle by hand; push the needle through the stitch on which it is hooked until the stitch passes behind the latch, now catch the first cross thread in the hook and draw towards you until the old stitch has passed off the needle; continue this with all the cross stitches up to the top; replace the needle in its groove and with latch open, put on the belt, attach weights and continue knitting.

Dropped stitches in plain work may be due to one of several causes, for which see (Faults and Remedies, page 63).

To knit a plain sock

WITH IMITATION RIBBED TOP (without Ribbing Attachment).

Set the indicator or tension at about 5.
Set the needles 3 in, 1 out, all the way round the cylinder, put on belt. Set up the work and form the welt as directed on pages 15, 16, 17. Knit 40 rounds, remove the belt, put needles in all the empty grooves, first passing hook of needle being inserted through the last stitch but one knitted upon the needle adjoining, turn the handle **Forward** until each empty groove has received its needle, now replace belt, loosen the indicator one spot; knit **Forward** 50 rounds; tighten the indicator one spot and knit 50 rounds more; stop with the yarn-guide at **Front.** The Heel, Foot and Toe are now made exactly as for a plain sock (see pages 19 to 21).

EXPLANATION OF THE RIBBING ATTACHMENT

See Figs. 18, 19 and 20 (pages 27 and 28).

The Ribbing Attachment consists of the arm (513A), stud (513B), nut (513G), collar (513D), cam plate (514A), dial (521A), driving pin (513H), and the dial needles.

The Ribber Arm on which the remaining parts of the Ribbing Attachment are secured is fastened to the cam shell (512A) by the wing nut (512I), and is thus carried round by it.

The dial in which are the ribbing needles has just half as many grooves as the cylinder, it is secured to the ribber arm by the stud (513B) and nut (513G). The dial (521A), stud (513B), collar (513D), nut (513G), and needles do not revolve with the other parts of the Ribbing Attachment, but are held in position by the lug (L) on the underside of the dial and by the ribber post (511A). The dial height regulating collar (513D) has eight slots, which are numbered; it is used to raise and lower the dial. When the spring (513E) is in slot No. 1, the dial is at its lowest position and when it is in slot No. 8, the dial is at its highest position.

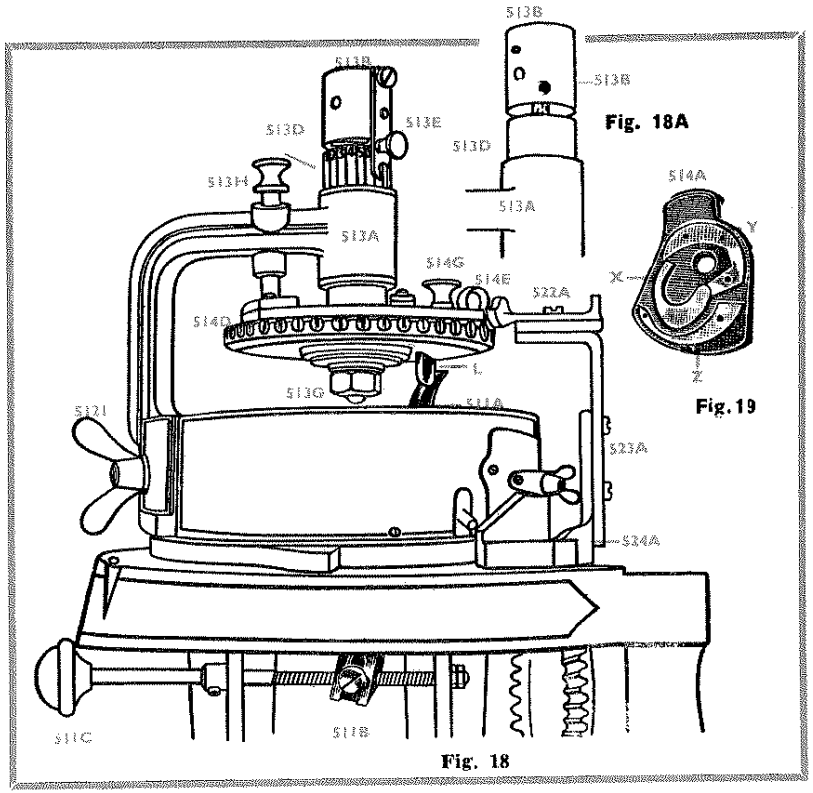


Fig. 18A

Fig. 19

Fig. 18

Fig. 18 shows the ribbing attachment in position on the machine with the dial lug (L) pressing against the dial adjusting post (511A), the ribber arm resting in position on the cam shell and secured by the wing nut (512I).

Fig. 19 shows the ribbing cams on the cam plate (514A).

Cam (X) is the out-throw cam which throws out the needle; it can be drawn behind the guide cam (Y) by out-throw cam lever (514E) on the top of the cam plate (514A). When the lever (514E) is pressed back with a knob towards the back of the cam plate, cam (X) is within the guide cam (Y) and the ribber needles will not be pressed outward; when lever (514E) (Fig. 18) is to the front with the knob against the stop-pin (514K) on the cam plate, the cam (X) is out as shown at Fig. 19, and will operate the needles.

Cam (Z) is the stitch cam which draws back the needles after they have been pressed forward by cam (X), the wide end of cam (Z) is adjustable by the thumb screw (514G) on the cam plate (Fig. 18) to regulate the length of the ribbing stitch; the pointed end of cam (Z) is secured by a screw.

Cam (Y) is the guide cam which keeps the needles at one level when not being operated by cams (X) and (Z); this cam is fixed.

The Cam Plate (514A) to which the ribber cams are fastened (Fig. 19) revolves round the bolt (513C) above the dial and the needles are operated by the cams on its under side. On the top of the cam plate are the —

Ribber Stitch Indicator to regulate the length of the ribber stitch; it is numbered 0 to 4 and is adjustable by a screw (514G) and pointer (514F); the nearer the pointer is to 4, the looser the ribbing stitch and the nearer to 0 the tighter the ribbing stitch. Care must be taken not to get the pointer too far forwards towards 0 or the ribber stitch will not be formed.

The Out-throw Cam Lever (Welting) (514E) is used for forming a welt in 1 and 1 rib, by putting out of action the ribber needles. When the lever is pressed back (read description of Fig. 19) the ribber needles are out of action, when pressed forward with the knob against the small stop-pin on the cam plate, the ribber needles are in action.

The Driving Pin (513H) passes first through the ribber arm and then into the hole (514D) on the small plate at the back of the cam plate and by this pin the cam plate is moved round.

The Ribber Post (511A, Fig. 18) for adjusting the dial, is connected with the turn-screw (511C) by the block (511B); its upper end can be moved from side to side by twisting the turn-screw (511C) from or towards you; it is used to adjust the ribbing needles to their correct position in relation to the cylinder needles, that is, so that the dial grooves shall be over the cylinder grooves or over the cylinder posts as may be required for different rib stitches. On the under side of the dial is a lug (L, Fig. 18) which must always press against the ribber post **from its right side.**

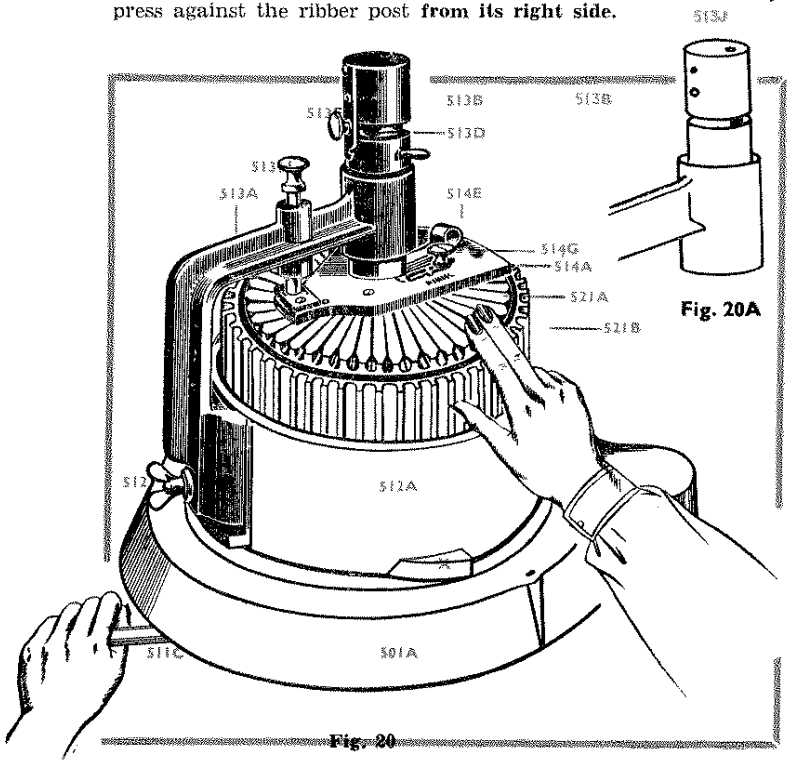


Fig. 20

Fig. 20A

Fig. 20 shows the manner of adjusting the dial to suit the cylinder after the ribbing attachment has been fixed and before the ribber needles have been inserted into their grooves. Turn the dial round in the direction indicated by the arrow until the dial lug (L) touches the ribber post (511A) and keep the lug against the post by slightly pressing the dial with the fingers of the right hand and with the left hand twist the turn-screw (511C) to the back or front until the dial grooves are over the cylinder grooves or posts as may be required for the stitch to be knitted (see note 19). The ribber post should be left as near its central position as possible and not over towards the extreme left or right.

The Dial Height Regulation. On latest Model (Fig. 20A) the dial can be raised or lowered by means of the screw (513J), to raise the dial turn the screw clockwise and to lower the dial turn the screw anti-clockwise. When working thick wool the dial must be higher than when working fine wool; it should be just high enough to allow the work to pass freely between cylinder and dial. When the dial is raised the yarn-guide (522A) (Fig. 7) must also be raised, or the dial needles will foul the underside of the yarn-guide and damage their hooks.

PLAIN TENSION.

To Loosen Plain Stitch. Loosen the wing nut on the shell that holds the tension pointer in its position, press pointer downwards (the further down the looser the stitch), then screw up tightly the wing nut to hold pointer.

To Tighten Plain Stitch. Loosen the wing nut on the shell that holds the tension pointer in its position, push pointer upwards (the higher it is put the closer and tighter the stitch), then screw up wing nut tightly to hold pointer.

OBSERVATIONS.

1. Work with a looser tension for dark coloured or hard yarns, than would be used for light coloured or soft yarns.

2. In the ordinary way it would be better to commence with a loose tension say at 3 or 4—which can be tightened as may be found necessary. Never put the tension higher than 2, excepting for fine yarns or fine cylinders.

3. A tight stitch requires more weight to keep the fabric down and in order to prevent it rising above the needles.

RIBBER TENSION.

For medium yarns, as 3 and 4 ply fingering, the tension should be at about 3; 1 represents the tightest stitch, but the pointer is seldom put tighter than 1½ for the finest silk, etc.

To Tighten Ribbing Stitch. Loosen the thumb-screw which holds the pointer on cam plate and draw the pointer forward towards the outside of dial 1 spot; screw tightly the thumb-screw to hold pointer in the new position.

To Loosen Ribbing Stitch. Loosen the thumb-screw which holds the pointer on cam plate and push the pointer backward towards the centre of dial 1 spot; screw thumb-nut tightly to hold pointer in the new position.

TENSIONS TO USE—ROUNDS TO ONE INCH OF FABRIC

Hosiery Lengths by Measurement, etc.

The machines with 4½ inch diameter, 60, 72, 84 and 108 cylinders are more largely used than machines with a number of other cylinders and the following general information is given with respect to the tensions to be used for a particular yarn and the number of rounds obtained therefrom per inch of fabric.

None of these 60, 72 or 84 cylinders are suitable for knitting fine yarns (that is thin yarns); the 4½ inch diameter cylinders, 60, 72 and 84, are adapted for knitting medium yarns. Coarse or heavy yarns should be knitted on the 60 and 72, but not on the 84. The 108 cylinder is suitable for fine yarns only.

Tensions to Use. For medium yarns, never put tension pointers at the highest, such as from 1½ up to 1. This tight tension is for use with thin or fine yarns upon fine cylinders; thus, for 108 cylinder the pointer would be about 2 or 2½.

For medium yarns such as:—

3 Ply Fingering (or similar)	put	plain tension	pointer at about	3
		ribber ,,	,,	2½
4 Ply Fingering (or similar)	put	plain ,,	,,	4
		ribber ,,	,,	3
5 Ply Fingering (or similar)	put	plain ,,	,,	5
		ribber ,,	,,	3½

For Coarse or Heavy Yarns, such as Wheeling (Alloa) put both tension pointers on their loosest (using 4½ inch 60 or 72 cylinders).

These tensions are merely approximate and must not be taken as absolutely correct. The colour of the yarn used does in itself cause a difference. For instance, a looser tension is required for hard or dark dyed yarns such as blacks, browns, scarlets, etc., than is used for soft or light colours (such as light grey, salmon, pink, white, etc.). These latter are the best to practice with, being easier to knit. Always wax dark or hard yarns while winding (see page 12).

Always screw up wing nut tightly with the finger and thumb after shifting either of the tension pointers. This remark applies to all wing nuts on the machine.

Rows to One Inch of Fabric. If in doubt at any time how to place tension pointers for any particular yarn you may wish to knit, put the pointer at the loosest and knit a few inches of fabric; then make tension a little tighter (observing position of the pointers when fixed), and knit another few inches. If it can still bear being knitted closer, tighten tension a little more (again observing and remembering the position of the pointers when fixed); knit another few inches and run the fabric off machine. Examine and decide which is the best tension and fix pointer accordingly. At the same time the knitter should examine the piece of fabric and compare the plain stitch with the ribbing stitch. See if they are as tight or as loose as one another and if not set the pointers to meet any variation.

In that small piece of knitting you can count the rows that there are in one inch of the different tensions. To remember the number of rows to the inch that a certain tension gives in a certain yarn, may be useful from time to time—note the facts for future reference.

With a tension pointer at about 2½ on a 4½ inch 120 cylinder:—

2 Ply Fingering gives about 17 rows to 1 inch.

With a medium tension on a 4½ inch diameter 84 cylinder:—

3 Ply Fingering gives about 14 rows to 1 inch.

4 Ply Fingering gives about 12 rows to 1 inch.

5 Ply Fingering gives about 10 rows to 1 inch.

With a loose tension on a 4½ inch diameter 60 cylinder:—

Heavy Wheeling (Alloa) gives about 8 rows to 1 inch.

Hosiery by Measurement:—

Stocking for a lady (medium sized) 33 in. in leg, including heel.

Stocking for a lady (medium sized) 9½ in. in foot, including heel and toe.

Sock, man's (medium sized) 14½ in. in leg, including heel.

Sock, man's (medium sized) 11 in. in foot, including heel and toe.

Shrinkage of woollen hosiery in the washing is very common. As a rule, the softer the yarn (as merino or cashmere) the greater is the shrinkage. So that when knitting, allowance for the probable shrinkage should be made. The fact should be borne in mind that hosiery which fits the foot very closely like a glove does not wear so long as that which fits loosely (not very loose) for the reason that the former is stretched upon the foot and kept in one regular position and the several parts which are subject to constant friction soon wear through. Whereas, with hosiery which is a loose fit (that is to say, full large when new), there is a shifting of position and the friction is spread over a varying surface.
New hosery should be washed before being worn, as this thickens it and keeps it in shape.

INSTRUCTIONS FOR WASHING.

Squeeze gently in lukewarm suds prepared with good quality soap flakes. Rinse thoroughly in three changes of lukewarm water and pass through a rubber wringer to remove as much water as possible. Ease gently into shape before placing to dry in a warm airy atmosphere, but not on a hot-water cistern or in front of a fire.

TABULATED GUIDE (for sizes).

Before making use of this table read "Tensions to Use, etc." (pages 30 to 31).

Yarns. Those given below are a few of the kinds mostly in use, although other kinds can also be knitted on the same cylinders, if of about the same thickness. Do not use too coarse yarn upon a fine cylinder, nor too fine yarn upon a coarse cylinder.

Top. (See remarks after Leg).

Leg. Where the top rows are not stated, the undermentioned figures for the leg count from the very top to the beginning of the shaping, the rib being the same from the commencement. But, if preferred, a band-like top (such as 1 plain and 1 rib) can equally well be done without in any way altering the number of rows here stated for the leg. A 1 and 1 rib top is not suitable for heavy and thick yarns.

Shaping or Intake Rows. These cannot conveniently be stated below, for the total number depends on the particular rib in leg and also on the particular cylinder used. After the long rows, knit and count the shaping rows, to the beginning of the ankle.

The undermentioned figures apply to 4½ inch cylinders and are merely approximate:—

Description of Yarns	Grooves in Cyl. 4½ diam.	Grade of Needles (Cylinder)	Sizes of Hosiery	Children's Stockings			Youth's or Men's Socks			Youth's or Men's Stockings			Women's Stockings		
				Leg to Shaping	Ankle	Foot	Top	Leg	Foot	Leg to Shaping	Ankle	Foot	Leg to Shaping	Ankle	Foot
Heavy or thick as 3-ply Wheeling (Alloa), etc.	60	(Coarse) G.L.26L.H.	Small				95	45	110	45	45			
			Medium				105	50	120	50	50	110	50	50
			Large				110	60	130	55	60			
3, 4 or 5-ply Fingering, or 5-ply Merino, etc.	60	(Medium) G.L.26	Small	90	85	40									
			Medium	110	40	34									
			Large	110	40	40									
Heavy or thick as 2-ply Wheeling (Alloa), etc.	72	(Coarse) G.L.26L.H.	Small				40	65	50	120	45	50			
			Medium				40	70	60	125	50	60			
			Large				40	75	65	130	55	65			
3, 4 or 5-ply Fingering or 5-ply Merino, etc.	72	(Medium) G.L.26	Small	110	40	45	45	70	65				140	50	60
			Medium	120	45	50	50	75	70				150	55	65
			Large	130	50	55	50	80	75				150	60	70
3 or 4-ply Fingering, 5-ply Merino, etc.	72	(Medium) G.L.26	Small	130	50	55									
			Medium	140	50	55									
			Large	150	55	60									
3-ply Fingering or 5-ply Merino etc.	84	(Medium) G.L.26	Small				50	80	70	160	50	70	160	50	60
			Medium				55	90	80	180	60	80	170	55	70
			Large				60	100	90	190	70	90	180	60	80
4 or 5-ply Fingering 5-ply Merino, etc.	84	(Medium) G.L.26	Small				45	70	60	150	55	60	150	50	55
			Medium				59	80	70	160	60	70	160	55	70
			Large				50	90	80	170	65	75	170	60	65

TO RE-FOOT HOSIERY

Remarks.

1. If there are too many stitches (loops) in a Plain sock or stocking for the needles in cylinder, thus 84 stitches and only 60 needles cylinder, arrange that the extra loops shall be about equally distributed round the cylinder, but not placed on the needles until the unravelling is done. After unravelling the rows from the tops of the needles, the extra loops can be placed on the needles, so that in some places there would be two loops on one needle. Then proceed as directed on page 33.
2. If there are too many stitches (loops) in a Ribbed sock or stocking for the cylinder, the extra ribbed loops must be distributed over the cylinder and worked into plain stitches. But do not place the extra, or any ribbed, loops upon one cylinder needle until the unravelling has been done on the cylinder.
3. If there are less stitches (loops) in a Plain sock than there are needles in the cylinder, say 60 stitches and 84 needles cylinder, keep all the needles in the cylinder and place the loops on the needles, missing a needle here and there, so that the loops are equally placed over the whole of the cylinder. Now unravel the rows from the tops of the needles. Afterwards make loops for the empty needles. This is done by picking up with a needle the **cross** stitch which is under the loop on **nearest** needle and placing it on

the next empty needle, or take out the empty needle, pick up the loop and replace the needle in the groove. Then proceed as directed on page 33 below.
4. If there are less stitches (loops) in a Plain sock than needles in cylinder after the unravelling on the cylinder has been done pick up ribbing loops from the side of the plain stitches and so form extra ribs to meet the requirements of the cylinder.

Re-footing plain Sock or Stocking

Commenced at the Top.

(Read Remarks 1 and 3 above).

First Method.

After the foot is cut off just above the heel, unravel a few rows to get the loops clear, break yarn, leaving a short end, then see that the needles are in all the cylinder grooves and that the latches are open, put on belt, drive machine slowly and stop yarn-guide at **Front.** Place the sock inside the cylinder with the unravelled end uppermost and near the tops of the needles. If a stocking, arrange that the back, or shaping, is placed **Front.** Commence at the **Right** half mark and with a spare needle pick up and transfer loops on to hooks of needles, but be very careful not to let the loops go below the latches of the needles, as this would cause the work to run off the machine. After having transferred the loops on to the **Back** half of needles, support the fabric from underneath the machine with the left hand, so as to prevent loops going below latches when turning handle, advance yarn-guide to **Back.** Now transfer in like manner the **Front** half of loops to needles. When all the loops are on the needles do not attach weight, but support fabric with left hand, now unravel about two rows to ensure that the loops are clear upon the needles, if the loops are clear, the unravelling is not necessary. This is done by taking the short end of the yarn, already unravelled and drawing it out at the tops of the needles, but it will be necessary, in order to unravel the yarn from the needles behind the yarn-guide, to move the shell only forwards and backwards slightly, but do not move the yarn-guide. When the loops are all clear, stop unravelling on the first needle next to the needle on which you commenced to transfer loops at **Right** half mark.

Now raise **Front** half of needles out of action, still support work and advance yarn-guide to **Front,** attach buckle, or tie a piece of string round work, to form a sling and hang it to weight-holder and weights to keep work down. With the unravelled yarn, thread yarn-guide and yarn-bracket backwards, that is, in the contrary direction described on page 13, for casting on and join the end to new yarn, a bobbin of which should be already on the table under one hole of yarn-bracket. See latches are open, advance yarn-guide until it is opposite the first needle in action at the **Right** side, draw slack yarn back to bobbin, knit Forwards to **Back** and watch that the yarn feeds into the hook of the first needle in action. Depress **Front** half of needles and knit the number of rows required, knit Heel, etc., as directed for a sock or stocking.

Re-footing plain Sock or Stocking

Commenced at the Top.

Second Method.

Cut off foot just above heel and unravel one or two rows to get the loops clear. Take the cylinder needles out of machine and insert them into the loops down to the feet, feet to be outside of work. If a stocking, arrange that the back or shaping is placed in **Front,**

yarn-guide to be at **Back.** Put the sock or stocking inside cylinder from the top, holding all the needles in the right hand and at **Left** begin with the needle next unravelled yarn and insert **Front** half of needles. Now, with the unravelled yarn thread yarn-guide and yarn-bracket Backwards, that is, in the contrary direction described on page 13, for casting on and join to the new yarn at bobbin. See that all latches of needles are open. Hold fabric down with the left hand. Draw slack yarn back to bobbin, advance yarn-guide to **Left** and watch that the yarn feeds into the hook of the first needle in action. Hold fabric down with left hand and advance yarn-guide to **Front** and stop. Now turn the remaining needles inside sock or stocking and after doing so, finish the inserting of needles into cylinder. Put on belt, attach to the fabric buckle and weights see that all latches of needles are open and knit the required rows.
Knit Heel, Foot and Toe in same manner as if knitting a complete sock or stocking.

Re-footing Ribbed Sock or Stocking

Commenced at Top.
(Read Remarks 2 and 4, pages 32 and 33, Re-footing Plain Sock).
First Method.
Place needles in all the cylinder grooves and put on belt. Proceed in much the same way as for "Re-footing Plain Sock." excepting that after cutting the sock and unravelling one or two rows, the plain loops only of a ribbed sock must first be put on the plain, or cylinder needles, leaving the ribbing loops free and a cylinder needle free in front of each ribbing loop. Commence at **Right** half mark and place plain loops on the needles and see that the loops are in the hooks of the needles; do not attach weights, but support sock, unravel two rows on the needles stopping at the needle next to the **Right** half mark. Then pick up each ribbing loop, knit it up with a spare plain needle if it should be unknitted beyond the plain loop and place the rib loop on the empty cylinder needle left for it. Keep the loops in the hooks of needles and if necessary, support the sock with the left hand, turn the handle and stop when yarn-guide is at **Back.** Commencing at the needle next to the one on which the last stitch was unravelled, raise **Front** half of needles fully out of action, hold slack yarn away from needles, turn handle slowly Forwards until yarn-guide is at **Front**; with the unravelled yarn, thread yarn-guide and yarn-bracket from the sock, that is, in the contrary direction to that when commencing new work, tie yarn to bobbin of new yarn, attach buckle and weights as directed for "Re-footing Plain Sock," and put on ribber, adjust dial for the required rib (see page 29), take off belt, insert needles into dial as may be required. The ribbing loops can be seen by simply pressing the needles slightly from the cylinder. Lift out the first cylinder needle in action at **Right** side with the ribbing loop upon it and transfer that loop to dial needle, see that loop passes into the hook of the dial needle. See that latches of needles are open, then hold slack yarn away from needles and turn handle until yarn-guide is opposite the first needle in action at **Right** side, continue to transfer ribbing loops, pull back slack yarn to bobbin and advance yarn-guide step by step, until yarn-guide is at **Back** of machine, depress **Front** half of needles and continue transferring ribbing loops and knitting, until all the ribbing loops are transferred, knit the number of rows required. Knit Heel, Foot and Toe, as for a "Ribbed Sock."

Re-footing Ribbed Sock or Stocking

Second Method.
Proceed in much the same way as "Re-footing a Plain Sock." second method, excepting that after having inserted into cylinder the **Front** half of needles, put on belt and lift out of action the needles just inserted in cylinder. Advance yarn-guide to **Front,** now turn the remaining needles inside sock, open belt at **Back** and insert these needles into cylinder and shut belt. Attach to the fabric, buckle and weights. Raise the remaining needles out of action. Advance yarn-guide to **Back.** With the unravelled yarn, thread yarn-guide and yarn-bracket backwards, that is, in the contrary direction described on page 13, for "Casting on" and join to the new yarn at bobbin. Depress **Front** half of cylinder needles, put on ribber and adjust dial, as directed on page 29, to suit the required rib in sock or stocking, take off belt. Commence at **Left** and transfer the ribbing loops that are on the cylinder needles on to dial needles and put them into grooves in dial. After transferring the loops from the **Front** half of needles, draw slack yarn back to bobbin, see that all latches are open, advance yarn-guide to **Front** and watch that the yarn feeds into the hook of the first needle in action. Depress the **Back** half of cylinder needles and transfer the remainder of ribbing loops, put on belt and knit the required rows.

Knit Heel Foot and Toe in same manner as if knitting a complete sock or stocking.

Hosiery, Garments, Useful Articles, and Fancy Stitches

NOTES.

1. **Cylinder to Use.** The following instructions are drafted for the 4½ inch diameter cylinder, 84 needles and for 4 or 5-ply fingering yarn, unless stated otherwise. If the knitter wishes to work a cylinder with more or less needles, suitable yarn should be used and the instruction (so far as the number of rows, etc., are concerned) must be varied accordingly.

2. **Extra Needles.** It is a great advantage to have an extra set of cylinder needles when knitting large garments, as with them time is saved. In the absence of extra needles and when told "to lift needles out with their loops upon them and place them inside cylinder," you must remove those needles from the loops of the partly completed work, one by one and as you do so draw a spare thread of yarn through each loop to prevent the fabric unravelling.

VARIATION OF FANCY PATTERNS. The fancy patterns given in this book do not exhaust the possibilities of the Machine by any means, but much is left to the ingenious knitter, who will be able to work out many other designs. It may be an aid to the knitter to know that all the fancy patterns can be made more open and for some articles more attractive by leaving out every second or third needle and removing the loops across the open spaces.

The fancy patterns may be knitted all round the cylinder as for Circular Web, or across as for Flat Web.

Many of the rules laid down in hand-knitting books may be adapted to the machine. Attractive fancy articles are knitted more quickly and evenly on the Machine than by hand.

1

A PLAIN SOCK WITH RIBBED TOP

Machine of 4½ in. diameter, 72/36 or 84/42 cylinders and dials; 4 ply merino or fingering wool; approximate cylinder tension 4½, ribber tension at 3. **Top** (of 1 plain 1 rib) 50 rounds; **Leg** (plain) 50 rounds; **Ankle** (plain) 40 rounds; **Foot** (plain) 65 to 70 rounds.

Set up the machine and cast on as described on pages 13 and 14, but with a needle in each second groove only, proceed as far as "Knit 6 times round, stopping with the yarn-guide at **Front** of machine," and now with the yarn-guide at the **Front** of the machine, fix on the ribbing attachment without any needles in the dial (see Figs. 18 and 20) pages (27 and 28). Take hold of the head of the ribber arm with the right hand, place the slotted end over the large screw (512F) on the cam shell, press it down as low as possible and square on the ledge (Y, Fig. 5) of the cam shell, screw up the wing nut (512F) to hold the ribber arm firmly to the shell; now place the fingers of the right hand on the dial and press it forward until the lug on its under side touches the ribber post (see instructions below Fig. 20). Adjust the dial so that its groove will be immediately over the centre of the cylinder grooves (Note 20). Place a needle with open latch in each dial groove (Note 21). Move forwards the handle until each groove has been filled. The needles are now set for 1 and 1 rib, that is, 1 cylinder needle 1 dial needle all round; make three or four rounds to make sure that each dial needle is forming its stitch. Adjust the dial to the right height from the cylinder to suit the yarn used (see note on dial height regulating collar, page 29). Stop with the yarn-guide at **Front,** press back as far as possible the welting cam lever, knit 2½ or 3 rounds (note 22), press outward the welting cam lever, set the counter to zero. Knit carefully the first round still assisting the weights with the left hand; make 50 rounds for the top. Stop with the yarn-guide at **Back.** Remove the belt. Transfer the loop from every dial needle to a cylinder needle (note 23), and place the cylinder needle in the empty cylinder groove opposite. Replace the belt. Remove the ribbing attachment by the wing nut (512F); see that the latches of all cylinder needles are open; set the counter; knit 50 rounds for the leg.

For the Ankle Heel, Foot, Toe, etc., see pages 16, 17 and 18.

2

RIBBED SOCK COMPLETE

Machine of 4½ in. diameter, 84 cylinder, 4 ply fingering wool.

	Approx. Cylinder Tension	Approx. Ribber Tension
Top: 50 rounds, 1 plain, 1 rib	4	3
Leg: 70 rounds, 3 plain, 1 rib	5	3
Foot: 70 rounds, top 3 plain, 1 rib; bottom plain	4	3

Splice the heel and toe and loosen cylinder tension half a spot (say 5½).

20.—Care should be taken when adjusting the dial to keep it pressed against the post otherwise it cannot be properly adjusted and may cause the ribber needles to rub against the cylinder needles and cut the yarn or push against the cylinder needles and damage them.

21.—Notice that the out-throw cam lever is pressed out against the screw, that is, in the position to operate the dial needles.

22.—The ribber needles are now out of action and to assist the weights to draw down the work, the left hand may be used to press downwards on the set-up.

23.—To transfer a loop from a dial to a cylinder needle, put the hook of the cylinder needle in the hook of the dial needle, draw out the dial needle until its loop is behind the latch, lift the dial needle from its groove and pass the loop over on to the cylinder needle, place the cylinder needle in its corresponding cylinder groove. The dial needle behind the cams cannot be drawn out until the yarn-guide has been moved further round.

Commence as for "A Plain Sock with Ribbed Top," and after knitting 50 rounds for the top, stop with the yarn-guide at **Back.** Remove the belt. Transfer every second dial stitch to a cylinder needle all the way round to make 3 plain and 1 rib, replace the belt, see that all cylinder needle latches are open. Loosen the plain tension one spot, set the counter to zero. Knit 70 rounds and stop with the yarn-guide at right-hand side. (See note 3, page 13).

Heel. Remove the belt, transfer the loops from front half of dial needles on to cylinder needles commencing at the **Left** half mark advancing forward to **Right** half mark, that is, until the front half of dial needles have been removed; put on the belt, knit to front, take out ribber driving pin.

Heel-Narrowing: Proceed as directed for heel-narrowing on page 16.

Heel-Widening: Proceed as directed for heel-widening on page 17.

Insert driving pin.

Foot. In order that the foot shall not be too wide, put an extra dial needle in the dial at each side beyond the half mark to continue the same form of rib, transfer the corresponding loop of the cylinder needle to each of those two needles; leave those two cylinder grooves empty as usual. Put on the belt; set the counter to zero; see that all cylinder needle latches are open; knit about 70 rounds for the foot.

Toe-Narrowing: H. to K. of Fig. 15. Proceed as directed for toe-narrowing, page 17.

Toe-Widening: Proceed as directed for Toe-Widening, page 17 (note 17).

3

A LADY'S RIBBED STOCKING (SHAPED)

MADE FROM MEDIUM QUALITY YARN, 4-16s.

Observe. The following instructions are not given in detail except where operations have to be made which have not occurred in the instructions on the previous pages; it is expected that the learner has practised well the making of Gentlemen's Ribbed Socks (pages 36 and 37).

	Approx. Cylinder tension	Approx. Ribber tension	Fingering 4-ply No. of Rounds	Merino 4-ply No. of Rounds
Leg, 4 and 1 Rib	4	3	150	175
Narrow Leg, 5 rounds between Ankle 3 and 1 Rib	3½	3	50	55
For heel, loosen cylinder tension 1 spot	4½	3	—	—
Foot (top 3 and 1 rib, bottom plain)	3½	3	65	70

Knit toe with tensions as for heel.

24.—It is not necessary to take each separate sock from the machine; a number can be knitted in one long length. After knitting the four extra rows for "Mending Stitch," break off the yarn at bobbin and join ordinary cotton or odd yarn. Knit two or three rounds, remove the belt, place a ribber needle in each ribber groove and transfer the loop from the nearest cylinder needle to it. The needles will now be set 1 plain 1 rib all round. Knit three or four rounds to see that each needle is forming its stitch properly; piece up the new yarn, knit one complete round, form the welt and continue a second sock. When the required number of socks has been knitted, break the yarn at the needles; run work off the machine, place damp cloth upon and press with a hot iron the toe of each sock where it is to be stitched. Cut through just below the welt of each sock and ravel off the odd rows; sew up the toe with the mending stitch as directed on page 18.

Cast on and form the welt as directed for a plain sock, pages 13 to 18. Stop at "turn the handle forward until the yarn-guide stands at **Front**"; put on the ribber (as directed on pages 26 to 29); adjust the dial so that the dial grooves are immediately over the cylinder posts (note 25).

Leg. Commence at the **Right** half mark and advance towards the back, placing a dial needle in every second groove of the dial and picking up with each dial needle a loop from the plain stitch of the last round knitted on the adjoining cylinder needle (not from the loop now on the cylinder needle but the one formed before it and now cast off the needle). When every second dial groove has received its needle the machine is set 4 plain 1 rib. Set the counter to zero. Tighten the tension 1 spot and knit 150 rounds (as per above table). Stop with the yarn-guide at back.

The top of the leg may be made with a "scalloped top" (instructions page 21), or with a "1 and 1 top," as for a "ribbed sock" (page 36), instead of the above method.

Leg Shaping (first method). If the weights touch the floor remove the set-up and attach the buckle well up to the work; hang weights to the buckle; take off the belt; tighten the plain tension about 1 spot. Now decide which dial needle is nearest the **Front** (reckoning the half marks as Right and Left), take out the second cylinder needle at the **Left** side of that **Front** dial needle and transfer its loops on to the third cylinder needle and remove the first cylinder needle into the empty (second) groove. Knit five rounds; adjust the dial **Forwards** so that the dial needles will almost work over the cylinder grooves; counting the needles actually in the cylinder at **Left** of the **Front** dial needle, take out and transfer the loop from the fifth to the sixth cylinder needle, remove the fourth needle into the empty (fifth) groove; now at the **Right** side, take the third cylinder needle from the **Front** empty cylinder groove and transfer the loop on to the second cylinder needle; remove the fourth needle into the empty (third) groove; knit five rows; repeat the decreasing in like manner **on both sides** and then knitting five rows, until the needles are all changed to 3 plain and 1 rib. Next adjust the dial **Forwards** so that the dial needles will work over the empty grooves in cylinder; put on the belt; knit 50 rounds for the ankle and stop with yarn-guide at Back; complete heel, foot and toe as for a Ribbed Sock (see page **36**).

Leg Shaping (second method). Remove the belt; tighten plain tension 1 spot; then take centre cylinder needle Front and transfer the loop on to the nearest dial needle; adjust dial **Forwards** so that dial needles will **almost** work over cylinder grooves; knit six rounds; then take the fourth needle each side of the needle just removed, and transfer each loop on to the nearest dial needle; knit six rounds; continue in like manner, decreasing one needle each side and knitting six rows, until all needles are changed to 3 plain and 1 rib; then adjust dial **Forwards** so that the dial needles work over the empty grooves in the cylinder. Knit 50 rounds for the ankle and stop with yarn-guide at **Back**; complete heel, foot and toe in same way as for a Ribbed Sock (page 36).

25.—The cylinder post is the rib between each groove of the cylinder.

For making the above with heel and toe as Hand-knit, see pages 19 and 20.

For scalloped top, see page 21.

4

ANOTHER METHOD

OF FORMING A 4 AND 1 OR 3 AND 1 RIB WELT, FOR THICK YARNS

Socks or stockings with a 3 and 1 or 4 and 1 rib top, made from wheeling or thick yarns, may be commenced in the following manner and the welt will be found quite firm and even:—

With all needles in the cylinder or 3 in and 1 out, according to whether for 4 and 1, or 3 and 1 top, raise out of action those needles which are within the cams behind the yarn-guide. To do this turn yarn-guide slowly to Back, then raise 20 needles from **Right** half mark towards the **Back**; hold them up and advance the yarn-guide until the cams are under those raised needles; then depress all needles which can be depressed each side of the cams. Now thread the yarn bracket and yarn-guide and draw within the cylinder 1½ yards of the yarn; tie the end of the yarn on to a hook of set-up; place set-up inside cylinder, with that hook opposite the first needle in action at **Back**. Hooks of set-up to be just below top edge of cylinder; then loop the yarn round the first needle from left to right, as shown at A in Fig. 21.

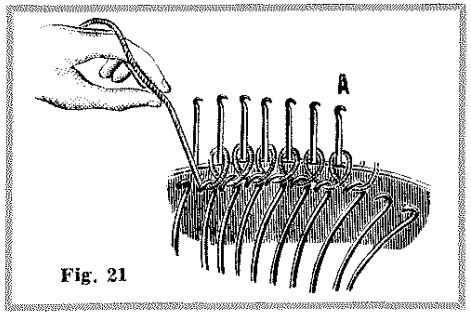


Fig. 21

Continue working Forwards and looping yarn round hooks of set-up (a hook of set-up may be used for the loops of two or more needles if it should be abreast of them), and round each needle until all the needles are looped. When the last needle has been looped, the yarn should pass under the hook of set-up, as usual and thence between the first needle in action and the raised needle next to it, direct the yarn-guide as shown by Fig. 14, page 16. Draw slack yarn back to bobbin; hang weight-holder and weights on set-up; knit forward to **Left** half mark and depress the raised needles. Now knit a Plain Sock, commencing from "Top" page 16 or to "Knit a Ribbed Sock" adjust the ribber, placing a needle in each alternate dial groove, set the counter to 100, adjust the cylinder tension to 6 and knit 40 rounds for the top.

5

RIBBED SOCK OF THICK YARN

(3 and 1 Rib Top).

5 and 6 Ply Fingering, Alloa Wheeling, or similar yarns.
4½ inch diameter machine, 60/30 or 72/36 needle cylinder and dial, cylinder tension loose.

REMARKS.

1. Needles G.L.26 L.H. (Cylinder) and G.11 L.H. (Dial) are best suited for knitting heavy yarns.
2. When knitting circular work with heavy yarns as above, do not thread the yarn through the eyelet in front of the column on the yarn bracket, except when making heel or toe.

Commence and form the Welt and Top as directed on page 15 and then proceed in the manner as for a Ribbed Sock, page 36, but with a 3 and 1 rib top instead of a 1 and 1 rib.

Top of 3 and 1 rib (tight)	40 rounds
Leg of 3 and 1 rib (loose)	65 rounds
Foot, top 3 and 1 rib, bottom plain	60 rounds

6

MEN'S FULL-SIZED RIBBED STOCKING

4 or 5 PLY FINGERING

Knitted upon 4½ inch diameter 84 cylinder machine.

Knit in precisely the same way as for a "Stocking—Lady's Ribbed and Shaped" (page 37), but the number of rounds are to be as follows: Plain tension to be at about 5, ribber tension at 3½, for the leg; then tighten cylinder tension half a spot for the shaping, and half a spot more for the ankle.

Leg, 4 and 1 rib	180 rounds
Shaping to 3 and 1 rib	50 rounds
Ankle, 3 and 1 rib	55 rounds
Foot, top 3 and 1 rib, bottom plain	70 rounds

7

MEN'S GOLF STOCKING

FULL-SIZED WITH TURN DOWN TOP (of thick yarns).

Knit upon 4½ inch diameter 60 or 72 cylinder and dial to match. Before commencing read the remarks (1 and 2) on "Ribbed Sock of Thick Yarns" (page 39). Knit with a loose tension.

Turned down Top, 4 and 1 rib ..	45 rounds
Leg. 4 and 1 rib	80 rounds
Shape to 3 and 1 rib	35 rounds on a 60 cylinder. 45 rounds on a 72 cylinder
Ankle, 3 and 1 Rib	50 rounds
Foot, top 3 and 1 rib, bottom plain	60 rounds

Turned Down Top. For this kind of top set up the machine and form the welt as directed on pages 15 and 16, stopping after "and turn the handle forward until the yarn-guide stands at the front." Now put on the ribber and adjust the dial so that the grooves are over the cylinder posts.

Commence at **Right** and place a dial needle in every second dial groove, picking up with each dial needle a loop from the plain stitch of the last row knitted (not the loop on the cylinder needle); knit 45 rounds of 4 plain and 1 rib; take off the belt; transfer ribbing loops on to plain needles, take off the ribber; break yarn just before yarn-guide; remove weights and set-up. Take the fabric along with the needles out of the cylinder with the loops at the foot of the needles; turn the fabric outside in; send the yarn-guide to **Back** and insert needles again first into **Front** half of cylinder; join yarn to first needle in action at **Left** side; hold fabric down and knit to **Front;** insert the remaining needles into **Back** of cylinder; attach buckle and weights; put on ribber and if necessary, adjust dial, to make 4 plain and 1 rib again. Knit 80 rounds for the leg and shape as directed on page 38. Knit 50 rounds for the ankle and complete heel, foot and toe as instructed for "Ribbed Sock," pages 36 and 37.

8

PLAIN SOCK WITH IMITATION RIBBED TOP (Fig. 22)

(Made without Ribbing Attachment). 4-ply Fingering Wool; 84 cylinder.

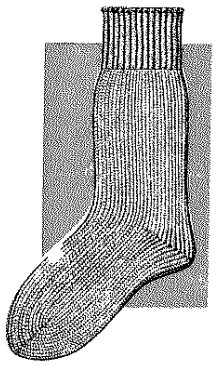


Fig. 22

Set the needles one in one out all the way round the cylinder. Put on the belt, set up the machine; set tension at 3½. Knit 98 rounds to form top of sock. **Leg.** Take off the belt, put needles in all the empty grooves; turn the handle forward until each empty groove has received its needle; now replace the belt; set tension at 4; knit 78 rounds for the leg. Stop with the yarn-guide at front. The heel, foot and toe are now made exactly in the same manner as for a plain sock as per instructions given on pages 16-18. To finish top of sock place a damp cloth over the top of sock and press with hot iron. Unravel one or two rows, turn the sock inside out, thread a darning needle with the unravelled wool and join the stitches at the top of sock to the loops of the extra needles, put in machine to knit the leg of sock. This will leave the top of sock double. Finish the toe off in the same manner as usual for a plain sock.

9

LADY'S STOCKING (Fig. 23)

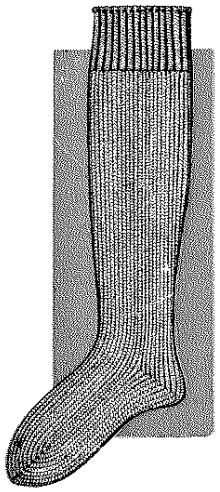


Fig. 23

with Imitation Ribbed Top.

(Made with Ribbing Attachment).

Made from 4-ply fingering wool. Set needles one in, one out all round cylinder; put on belt, set up the machine; set tension at 3½; knit 90 rounds for top stocking. Take off the belt, put needles in all the empty grooves, turn the handle forward until each empty groove has received its needle. Now replace the belt; set tension at 5. Knit 80 rounds. Tighten tension to 4½ and knit 40 rounds; tighten tension to 4, knit 50 rounds. Stop with the yarn-guide at front. Knit heel as usual in a plain sock. For foot set tension at 4; knit 50 rounds; knit toe as in a man's plain sock. Finish off the top of stocking in the same manner as for the man's plain sock as above.

10

PLAIN SOCK OR STOCKING FOR A CHILD

Use Plain Machine only with 4½ inch diameter 84 needles cylinder and knit as for flat web

Cylinders with more or less needles may be used, but the instructions must be varied accordingly.

Plain tension at about "6" for 3, 4 or 5-ply Fingering yarn.

OBSERVE.—Small ribbed socks, etc., can be made seamless on the 4½ inch diameter 60 cylinder with dial to match. But if medium yarns are to be used on any of the other 4½ inch diameter cylinders (72, 84, etc.), the smaller size of socks, or stockings, for children would be made with seams and after a little practice, can be very readily knitted by the instructions below. The same can be oversewn as usual or finished by a fancy stitch.

Toe—Imitation Rib. Turn handle slowly Forwards and stop when yarn-guide is mid-way of **Left** and **Back.** Place in **Front** of cylinder, working **Right** and **Left,** 45 needles in groups of three with an empty groove after each group, for an imitation ribbed top. More or less groups may be arranged, if larger or smaller socks are required. Set up machine and form Welt for Flat Web as directed on page 24. Be careful to have the yarn on take-up and always watch the end needles to see they make stitches. Knit Backwards and Forwards ten times in all, to make 20 rows (but see that the last row is always knitted Forwards) and stop yarn-guide between **Left** and **Back.**

Leg. Take off belt, then take a spare needle, catch into its hook a loop from the side of the stitch last made by the needle next an empty groove and place needle into that empty groove, in the same way catch loops and place needles into all the other empty grooves, including the empty groove beyond the end needle at **Right** and so make 60 needles in one line without an empty groove between them, put on belt, see latches are open, knit 20 rows for a sock, or 70 rows for a stocking and stop yarn-guide mid-way of **Left** and **Back,** take off belt.

To Shape, or Decrease the Leg. Take out the second needle on the **Right** side and transfer the loop to the third needle, next to it, lift the first needle into the empty second needle groove then take the second needle on the **Left** side and decrease on that side in the same way, knit five rows, continue the decreasing and knitting as above, on both sides, until four needles have been taken out each side, put on belt, then knit without decreasing 20 rows for the ankle and stop yarn-guide between **Left** and **Back,** take off belt.

Foot.—Top of. Take out, with the loops upon them, the 13 needles at the end on the opposite side to needles last knitted, which would be at **Left** side if the last rows was knitted Forwards, tie them together and place them inside cylinder, knit across the remaining needles, take out 13 needles at the end on the other side, tie together and place inside cylinder. This will leave 26 needles in action at the **Front** of machine, on these knit 30 rows, stop yarn-guide at **Back.** To keep the work down at the corners use Heel-Wire and Weight. Read note 15, page 17.

Top of Toe—Narrowing. Take the second needle on each side and transfer the loops on to the third needles, put the first needles into the empty second needle grooves, in the same manner as decreasing for the leg, knit two rows, continue the narrowing and knitting in like manner, until there are ten needles only in action, then, without narrowing, knit two or three extra rows and break yarn at the needles, take off weights, hold fabric down with left hand, turn handle to run loops off the ten needles, take out of machine the ten empty needles, leave yarn-guide at **Back.**

(If desired, the Scotch or Hand-knitted Heel, or Toe, can be worked from this point. Follow only the instructions for "Heel Plain Work" and "Toe Plain Work,"—pages 19 and 20).

Heel. Take the two lots of 13 needles which were hanging inside cylinder and place them in one continuous line in the **Front** of cylinder, see that the needles do not cross one another, put on belt, tie on yarn to end needle, attach to the fabric heel-wire with weight, knit heel in the usual way, as for "Plain Sock," decreasing to 10 and then increasing to 26 needles.

Bottom of Foot. Knit 30 rows, stop yarn-guide at **Back.**

Bottom of Toe. Take off belt and proceed as instructed above for "Top of Toe."

Finish. Place damp cloth upon the fabric, press with hot irons, sew up back of leg and sides of foot, unravel the extra rows on each half of toe and close halves with "Mending Stitch" (see page 18).

NOTE.—The above can be altered in working and the instructions given below for "Stocking—plain shaped" can be followed from "Foot—top of," excepting that the number of rows would vary.

11

STOCKING—PLAIN SHAPED (COMMENCE AT TOP)

Employ medium yarns.

4½ Inch Cylinder. Approximate Number of rows: Leg, 180 rows. Leg, Shaping, 30 rows or more. Ankle, 50 rows. Foot, top, 75 rows. Foot, bottom, 65 rows. Tension to be at 6.

Set up machine and make Welt and knit Forwards to **Left** half mark, as directed on pages 24 to 25.

Leg—Top. Tighten tension half a degree, set the counter to 100 and knit Forwards 150 to 180 rows for the top portion of the leg, stop yarn-guide at **Left** half mark. If the weights touch the ground, remove set-up and put on buckle with weights attached and lift the buckle as the work advances.

Leg—Shaping. See note 26. Commence with the needle middle of the **Front** half, that is, one of the two needles directly in **Front,** and raise out of action the quarter lot of needles to **Right** half mark, so as to avoid their making stitches. Advance yarn-guide slowly Forwards to the **Right** until last needle in **Front** next to those raised out of action has made its stitch and risen to its place, then stop. Care must be taken not to send the yarn-guide beyond the raised needles each time.

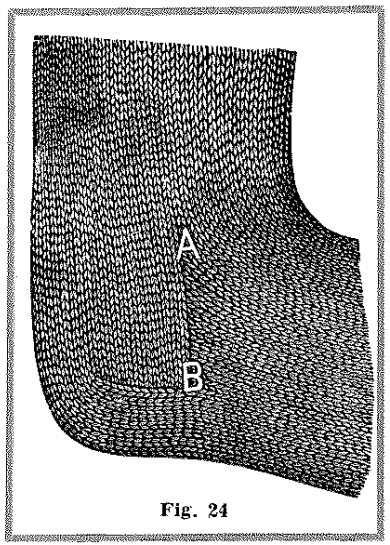


Fig. 24

Decreasing—1st Row. Take off belt, take the needle next to the one which made the last stitch and lift it out of cylinder and transfer loop on the next needle in action on its left. Then transfer into the empty groove the first needle on its right, that is, the one needle next the raised needles, leaving its loop upon it, the empty groove is thus between those needles in action on the **Left** and the needles raised out of action to the **Right,** put on belt, see that the latches are open, put yarn on take-up, knit Backwards until yarn-guide is at **Back,** depress all the needles out of action **Front** to **Right** and commencing with needle next to **Front** empty groove, raise the quarter lot of needles **Front** to **Left.** Take off belt. Now, take out second needle on the **Right** side of the **Front** empty groove, then transfer loop on to third needle and place the first needle into the empty second needle groove so leaving all empty grooves together in **Front,** put on belt, see latches are open, knit Backwards until yarn-guide opposite half mark on the **Left** side so that all the needles up to the empty grooves at **Front** shall have made stitches and risen level with those in action.

2nd Row. Knit Forwards until yarn-guide is at **Back,** depress needles on **Left Front,** and raise others on **Right Front,** knit Forwards until yarn-guide is at **Right** half mark.

3rd Row. Knit Backwards until yarn-guide is at **Back,** depress **Right Front** needles and raise **Left Front** needles as before, knit Backwards until yarn-guide is at **Left** half mark.

4th Row. Knit Forwards to **Back,** depress **Left Front** needles and raise **Right Front** needles as before, knit Forwards until yarn-guide is at **Right** half mark.

5th Row. Knit Backwards to **Back,** depress needles on **Right Front,** and raise needles on **Left Front,** knit Backwards to **Left** half mark.

Decreasing Row. Take off belt, decrease again by transferring loop from second to third needle in action on **Right** and place first needle with loop on it in the empty second needle groove, next to needles in action, put on belt. Knit Forwards to **Back,** depress **Left Front** and raise **Right Front** needles, take off belt. Decrease on **Left** as before and then knit Forwards to **Right** half mark.

26.—If only a slight shaping is required, instead of following the directions from this point to the end of the section, you may tighten the plain tension one degree; knit round about 15 rows; tighten tension one degree more and knit round another 15 rows to complete the shaping; then knit round 50 rows for the ankle and complete heel, foot and toe, as directed for "Plain Sock."

Now knit 4 rows without decreasing, as 2nd, 3rd, 4th and 5th rows mentioned above, then decrease and knit in like manner, until there are about 6 needles on each side taken out, thus leaving 12 empty grooves in **Front.**

Ankle. Knit without decreasing. Backwards and Forwards about 50 rows for the ankle and continue raising and depressing, as before, each time across the needles in action up to the **Right** or **Left** half mark.

The last row must be formed by knitting Backwards and then stop when yarn-guide is at **Back.**

Parting Needles. Part needles into three lots, thus: Supposing it is an 84 cylinder in use and that 12 needles have been taken out for the decreasing, there will be left 72 needles, which divide as follows: 18 on **Right** side, 18 on **Left** side and 36 at **Back.** Take off belt, lift out of cylinder the 18 needles at **Right** with the loops drawn down to the feet and tie into one lot and place inside cylinder, lift out of cylinder the 18 needles at **Left** and tie into one lot and place inside cylinder, put on belt, knit Backwards to **Front,** to complete the row.

Foot—Top of. Knit forwards and Backwards about 75 rows on the 36 needles, take off weights and attach heel-wire with weight to keep work down and raise it as work advances (see notes 15, page 17), break yarn at yarn-guide. Take off weights and in place of them apply the left hand to hold fabric down, then turn handle and work will leave the 36 needles, stop yarn-guide at **Front,** take off belt, remove the 36 needles from cylinder, turn yarn-guide to **Back.**

Heel. Take the two lots of 18 needles, with the loops upon them and place them together in the same order as they were before, in one continuous line, without any empty grooves between in **Front** of cylinder, thus making 36 needles for working the heel; see that each needle is in its correct position and not crossing another needle, put on belt and see that all needles are depressed ready for action. Thread yarn-guide and twist, not tie, yarn round first needle on **Left,** see that the latches are open, put yarn on take-up, attach heel-wire with weight (for "Gored Heel" see note 27), knit Forwards and Backwards five rows, taking care to see that first and second needles on Left and Right receive yarn from yarn-guide, otherwise the stitches will run off.

Heel—Narrowing. Lift fully up out of action the **Right** end needle, knit Backwards to **Back,** raise **Left** end needle, knit Forwards to **Back;** so continue, raising a needle on one side and a needle on the other side and knitting after each raising, until there are only 14 needles in action at **Front,** attach heel-wire with weight to keep work down; the last needle to be raised will be at **Left,** then knit Forwards at **Back.**

27.—To knit a heel with a gore, as in Fig. 24, proceed from this point as follows:—

Knit Forwards and Backwards 25 rows, taking care to see that first and second needles on Left and Right receive yarn from yarn-guide, otherwise stitch will run off.

Heel—Narrowing—(Continue as directed on page 16).

Heel—Widening—(Continue as directed on page 17).

Foot—Bottom of.—Stop yarn-guide at Front and take off belt; take 13 cylinder needles and with their hooks pick up 13 loops of selvedge at Right side and insert needles (with selvedge loop on each) into cylinder. Knit Forwards until yarn-guide is at Back; with other 13 needles repeat the above at Left side. Narrow on each side of the yarn-guide every row across, by transferring loop from third to fourth needles and moving the two end needles forward one groove, until only 40 needles remain. Then knit for bottom of foot 65 rows (including those rows that were knitted for the gore).

Toe.—(Continue as directed on page 17).

Heel—Widening. Depress the last needle raised on **Right,** put yarn behind it so that is passes out direct to yarn-guide from between the needle just depressed and the next raised needle, knit Backwards to **Back,** depress the last needle raised on **Left,** put yarn behind it, knit Forwards to **Back;** so continue, depressing the next raised needle to those in action, putting yarn behind it and knitting each time until all the needles are depressed.

Foot—Bottom of. Knit without raising needles. Backwards and Forwards, 65 rows, on the 36 needles.

Toe. Knit toe, narrow and widen as instructed for heel above, then knit 5 or 6 rows extra for joining, break yarn at needles, take off weights and hold fabric down by left hand, then turn handle, when work will leave the needles. Place damp cloth on the seams and press with hot iron. Oversew seams and finish toe with "Mending Stitch" (see page 18).

12

BOY'S JERSEY

Machine with 84 needles cylinder. If a 96 cylinder is used, 8 rows must be knitted for the shoulder each side, but instead of picking up and placing two loops over each empty needle and the end needle next to them, pick up and place loops on the empty needles alone and not on the end needles.

Body. Medium tension. Place 65 needles in **Back** part of cylinder, leaving the empty grooves in **Front.** Set up machine and form welt (page15), and knit to and fro the required length (about 260 rows), this forming the front right half of the jersey. Now for the front right half of neck, lift out of cylinder 20 needles at **Left** with loops drawn to needle feet; tie together and place inside cylinder; then for the shoulder knit 6 rows on the 45 needles; raise the 45 needles out of action. Insert 20 spare needles in space of those just removed; put the set-up inside cylinder and set up and knit 2 rows across on the 20 needles, depress the 45 needles and knit on the 65 needles about 260 rows as before; finish with a selvedge (page 23) and thus complete the back right half of jersey.

Knit another piece the same size, but for the neck lift out of cylinder the 20 needles at the **Right** and insert the 20 fresh needles at **Right.** When both pieces are finished, sew them neatly together and make a hem round the bottom.

Collar. Turn jersey inside out; see that 20 needles are in the loops of each of the four sections for the collar; place the 40 needles of one half of jersey into the **Front** and the 40 needles of the other half into the **Back** of cylinder, leaving equal numbers of empty grooves at **Right** and **Left** (2 each side); now place empty needles into the empty grooves **Right** and **Left;** then with a spare needle pick up loops from the 6 selvedge rows knitted for the shoulder and place two loops on each of the empty needles and 1 loop on each of the end needles next to them. Put on ribber; adjust dial for 2 plain and 1 rib; place ribbing needles into dial but first pick up on each a loop from the plain stitch last knitted; put tension at its loosest; knit 30 rounds; re-transfer rib loops to plain needles and take off ribber; finish with a selvedge.

Sleeves. Place alternate cylinder needles round the machine and put on ribber; place in all the ribber needles and form a 1 and 1 rib welt (as for a man's sock, page 15); knit 40 rounds, transfer rib stitches to cylinder needles and remove the ribber; knit about 130 rounds plain and finish with a selvedge. The sleeves should be about 15 inches long.

13

BABY'S BOOTS

Knitted in Flat Web as for "Plain Sock for a Child" (page 42) in a fancy pattern such as the Honey-comb.

Commence with 5 rows of small looped ruching; trim to taste.

14

KNEE CAP (Fig. 25)

Use 3, 4 or 5-ply fingering yarn.

Place all needles in cylinder, set-up and form welt (see pages 15 and 16); put on the ribber and adjust dial to cylinder for 4 plain and 1 rib.

Place ribbing needles into every 2nd groove in dial, first picking up with each a loop from the last stitch made (at back of every 4th cylinder needle), but do not take out the cylinder needles or remove the loops from them; knit 60 rounds and stop with yarn-guide **Front;** take off belt and transfer the ribbing loops at **Back** half to cylinder needles; knit Forwards and stop yarn-guide **Back;** transfer remainder of ribbing loops and remove ribber; put on belt, now raise 11 needles directly in **Front** and at **Right** side of these raised needles, raise 9 others next to them (to allow yarn-guide to pass freely without knitting, as for Flat Web); put yarn in the take-up; knit Forwards to the **Front** until end needle on the **Left** has made stitch, that is see that yarn-guide passes far enough to the **Front** each time so that end needles in action make stitches and rise level with the others in action; then raise that end needle for the decreasing and knit Backwards to **Back;** depress the 9 needles on **Right** and raise 8 on the **Left** of the 11 needles (the number of needles to be raised each side will be less each time of decreasing); knit Backwards to **Front,** raise end needle on **Right** for decreasing and knit Forwards to **Back;** depress the 8 needles on the **Left** and raise 8 on the **Right;** knit to **Front** and continue in like manner decreasing one needle each row until there are 17 needles only in action at **Back;** attach heel-wire with weight-holder and one weight to keep the fabric down.

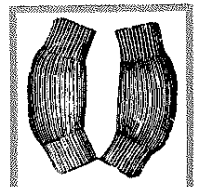


Fig. 25

After raising the last needle, which will be on **Right,** knit Forward and stop with yarn-guide at **Back.** Lift yarn out of take-up.

Now put down into action all the needles and knit round to the **Front;** put on ribber; take out every 4th cylinder needle and transfer loop on to a ribbing needle (to make 3 plain and 1 rib) knit 60 rounds and stop with yarn-guide at **Front;** transfer all the ribbing loops back on to cylinder needles; take off the ribber, raise all the needles out of action and finish with a selvedge as directed on page 23, or knit 4 extra rounds; then break yarn at needles; turn handle to run fabric off needles and finish with a selvedge.

15

CHILD'S BERET

Knitted in one piece, with a Tassel.

Loosen tension. Turn handle slowly until yarn-guide is at **Right**; commence at **Right** half mark and set a selvedge **on all the needles** much the same as the casting-on, page 13; knit 50 rows and stop yarn-guide **Right**; lift off weights and carefully remove set-up so as not to draw out the loops.

Next form the brim thus: Double the fabric by turning the end with the set-up loops inside and lifting it until the loops are level with the tops of the needles. Now be careful to have the first set-up loop opposite the needle at **Right** half mark; then transfer to the hook of that **Right** needle the first loop formed on that set-up loop. Continue to transfer to hooks of all the needles the first loop formed on the remaining set-up loops as far as to the depressed needles. Unravel the set-up loops of the part transferred up to the **Left** half mark; advance yarn-guide to **Back.** Complete the transfer of the first loops as before and then complete the unravelling. Break the unravelled yarn at about an inch from the needles and work that inch into the fabric either by a spare needle, or by placing it round the needles in cylinder. There will now be two loops on each needle. Grasp the fabric from underneath the cylinder by the left hand and hold it well down; knit 50 rows; tighten the tension half a spot; knit 50 rows; then break yarn at needles and still hold fabric down; then turn handle and run work off machine. Press with hot iron with damp cloth between; unravel 3 rows; thread a darning needle with the unravelled yarn; double it and pass same through all the loops together the contrary direction to the unravelling; draw the loops together to close the top; turn cap inside out; pass from inside the first knob only of tassel (see page 50 for tassel) through hole at top; draw the loops closely round and sew tassel to cap.

16

CUFFS

These can be knitted as in Circular Web, plain or ribbed, with or without one of the fancy patterns. Commence with a welt and finish with a selvedge.

17

MITTENS

First Method. Knit the tops ribbed, or in some fancy pattern; then knit plain the necessary length; narrow the end and close up like the toe of a stocking; then cut crosswise the mitten 18 stitches for the thumb; allowing the greater number of the stitches for

the inside of the hand. Take up all the loops and knit across till long enough to narrow; then narrow four times, knitting twice between; draw the yarn through the remaining loops and close up with a needle taking up the loops on the hand part, with the selvedge loops on the sides of the thumb and thus form the gore for finishing the thumb.

Second Method. Knit Flat Web thus:—Set up on 50 needles and form a welt; knit 15 rows with one of the Diagonals or some fancy pattern; then knit across 40 rows of plain and widen every fourth row on both sides, which will increase the needles to 70 in action; stop yarn-guide at **Back;** raise out of action all but 10 needles; knit one half of the thumb 30 rows long, then narrow 6 times on the inside, that is, the side nearest the needles out of action, break yarn and run work off machine and remove the remaining needles in action; depress 10 needles on opposite side and knit the other half of the thumb in the same manner; depress the 50 remaining needles; knit without narrowing 35 rows; raise out of action half of the remaining needles and with the others round off, as in forming half of the toe of a sock. Narrow the other half in the same way and sew up.

19

HOOD

Knit plain, or a fancy pattern, in strips of varying lengths. Crochet or sew together and work a fancy edging by hand.

A child's hood can be made of ruching in any pleasing design and finished with trimming in colours to suit the taste.

20

COSY FOR TEAPOT

Set work upon 56 needles and knit four triangles similar to those in the Mat in section (see page 52) and close by hand with a spare needle. Or to make the two-sided Cosy, knit 2 pieces of fancy work cut to shape and finish with a cord.

21

FISHERMAN'S CAP

Knitted in two pieces, with a Tassel.

First Method. Yarn-guide at **Back.** Place 54 needles in **Front** part of cylinder, leaving grooves empty at **Back.** Form a selvedge like casting-on but on every needle; put yarn on take-up, knit Backwards and Forwards 20 rows and turn up the hem (as directed in "Child's Beret"), knit 90 rows; then decrease the second needle

on both sides by transferring its loop on to third needle and moving the first needle into the second needle groove, each side every 5th row, until 24 needles remain in cylinder, then decrease every 2nd row until all the needles are out of the cylinder. Knit another piece in the same manner and join together neatly. Finish with tassel.

This Cap has a pretty effect if the border, crown and tassel are of different colours.

22

TASSEL

Wind yarn round board, according to the length and thickness of tassel required; then cut yarn through in one place and afterwards tie in centre tightly; double or bring the ends together and bind a thread of yarn through the doubled centre and so form a knob; then wind yarn to form a second knob, close to the other. Cut ends of tassel to make them even with one another.

23

BED SOCKS

Use light soft Yarn.
Knit Circular Web and as an ordinary plain sock (page 22) or in a fancy pattern such as Lace or Honey-comb.

24

SCARF (with striped border) (Fig. 26)

without using Ribbing Attachment.

Use the 84/4½ inch cylinder, 4-ply Fingering Wool.

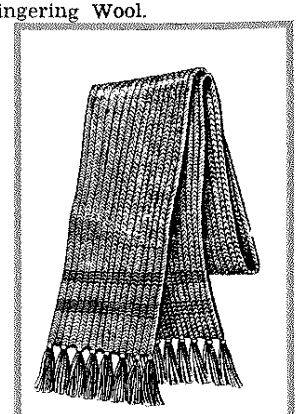


Fig. 26

Needles in all the cylinder grooves. Knit at loosest tension, about 5½. Set up the machine and knit 20 rounds in white. Piece on green wool and knit 7 rounds. Piece on white wool and knit 7 rounds. Piece on green wool and knit 7 rounds; piece on the white wool, make scarf to measure about 50 inches long. Repeat the border; knit 22 rounds in white at the finish; break yarn and take work from the machine.

To Finish. Place a damp cloth over the ends of scarf and press with hot iron. Unravel one or two rows of the last knitted, thread a darning needle with the unravelled wool, pass the needle through the first stitch on front and the first stitch on back at right hand corner, care being taken not to pull the yarn too tight, then pass the needle through the second stitch at the back and again through the first stitch at the front, next through the second stitch at the front and the second stitch at the back. Continue the above, the needle passing through each stitch twice until the last stitch is reached, when fasten and break the wool.

Fringe end of the scarf.

25

MUFFLERS

Mufflers are knitted very rapidly in Flat or Tubular Web and in a great variety of styles and sizes. They can also be knitted with any of the fancy patterns and a careful arrangement of the patterns, monograms, etc., at or near the ends, will have a very pleasing effect.

All the needles may be used, or every second one; or 2 in and 2 out; 3 in and 3 out; 2 in and 4 out; or any way suggested by the taste of the operator. Sometimes the Muffler may be turned inside out and the ends finished with fringe or tassels. Those knitted with 2 needles in and 4 out, all round the cylinder, then turned inside out, are very pretty.

A very good arrangement for a Muffler is to knit it plain and having completed the length required, take out every second, third or fourth needle with its loop and place it inside the cylinder; then break the yarn and run work off the remaining needles and ravel out the loops of each of those remaining needles for the whole length of the fabric and thus make a handsome open network. Turn fabric inside out, secure the loops of the hanging needles and close the ends with a tassel, etc.

Another fancy pattern can be made by knitting the fabric in courses, say, six rows with the loosest tension and six rows with the tension as tight as can be worked. Or, a good effect can be obtained from courses of plain knitting and one or more, of the fancy patterns.

26

LAMP OR BUREAU MAT

Knit cord (see para. 29) about a yard each of two different coloured yarns, say magenta and white; fasten one end of each to the centre of a piece of canvas cut in the form of a circle; wind the two pieces of cord round side by side in the form of a spiral; sew them to the canvas; the circle should be covered to within ¼ of an inch of the circumference, which space is left for the border. For the border use a strip of the single or double fringes, ruching, imitation moss, or shell pattern.

In place of two different colours you may use shaded yarn, but knit two yards.

27

CHAIR AND SETTEE COVERS, BLANKETS, SPREADS, ETC.

Furniture Covers can be knitted Circular or Flat Web in strips laid flat and crocheted, sewn or put together with knitted cord. The strips of Flat Web can be knitted together on the machine or by hand.

The strips may be knitted partly plain and partly with a fancy pattern; or one strip may be plain and the next a fancy pattern; or they may be made in squares or diamonds of various fancy patterns and sewn or crocheted together. Finish with a fringe, or narrow the end of each strip and finish with balls or tassels.

All kinds of blankets, spreads and table covers, rugs, etc., are knitted in a similar way. (See Fancy Patterns).

MAT IN SECTIONS (Fig. 27)

Mat with Six Sections.—Place needles in cylinder equal to half of the diameter of the mat required. Set up for Flat Web but on every needle; put yarn on take-up; knit to and fro, raising a needle on the **Left** side each row across until only 3 or 4 needles remain; stop with yarn-guide at **Right**; now depress all the needles; change the yarn for that of another colour and knit another section in the same manner. Repeat the operation until there are 6 such triangular sections; unravel the rough edge of the first section; then break yarn and run work off machine; close by Mending Stitch (page 18) that first section to the last one, leaving the 3 or 4 outside loops still unclosed. Place damp cloth upon the mat and press with a hot iron; cut and ravel out the 3 or 4 outside rows to form a fringe, or trim with a ruching.

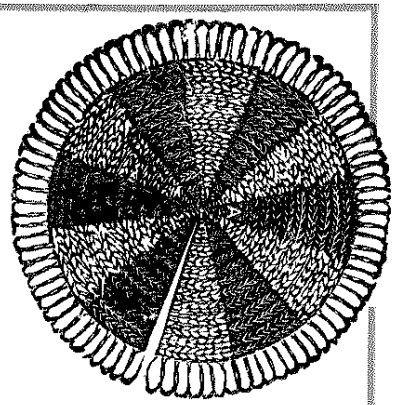


Fig. 27

For Mats of 12 or 24 sections, raise 2 or 4 needles each time.

The shell, and some of the other fancy patterns, make pretty Mats. White cotton knitted in this way makes a neat Toilet Mat.

29

CORD

In making cord, 1, 2, 3, 4 or 5 needles can be used; 1 will make a chain; 2 a square; 3 a round; 4 a square; 5 round on one side and flat on the other. Put the needles required in the **Front.** Set work using hook or weight-holder as a set-up; put yarn on take-up and knit round as in Circular Web. If two or more different coloured yarns or silks are used, the cord will be very pretty.

This Cord can be used as trimming for a variety of articles.

30

FRINGE WITH A SINGLE HEADING

Set work at **Front** of cylinder, as for Flat Web; place a single needle out of action at the **Back,** or at the **Right,** according to the length of fringe required; knit to and fro, lifting the yarn over the single needle each time and depressing it so that it will feed into the 1st needle on the **Right.**

By using silk and knitting any one of the fancy patterns an attractive fringe can be made.

31

IMITATION MOSS

Use moss green or brown wool. Knit a Flat Web the required width, on about 12 needles. Wet the Web and press with a warm iron; ravel out all except 2 or 3 rows of stitches on one side of the strip. This will give a beautiful imitation of moss suitable for the borders of lamp mats, etc.

32 (a)

DIAGONAL PATTERN—RIGHT

Set work as usual, knit across twice; lift out of action all but six needles on the **Left** side; knit once across the six needles; lift out of action the extreme **Left** needle; knit across the five remaining needles; depress the needle next on the **Right;** knit again and thus continue to advance towards the **Right,** one needle every second row.

32 (b)

DIAGONAL PATTERN—LEFT

This is knitted like the right diagonal, excepting that the work is commenced on the **Right** side and advances towards the **Left.**

By knitting the right diagonal and then knitting across 2 rows with another colour before commencing with the left diagonal, the effect is more striking.

33

CROSS-BAR (SINGLE)
or imitation ribbed pattern

Place needles in cylinder in groups of 3 with an empty groove after each group; set work in the usual way; knit twice round, or across; lift out of action every alternate group of 3 needles; knit once round or across; depress the sets that are out of action and lift up the alternate groups and thus continue to knit with alternate groups of needles each time round, or across.

The stitch may be varied by using alternative groups of 2 needles or 4 needles instead of 3.

34

CROSS-BAR (DOUBLE)
or imitation ribbed pattern

This is knitted like the single cross-bar, excepting that the needles are raised and depressed after knitting 2 rows each time of raising and depressing needles.

35

CROCHET PATTERN

Place needles in **Front** of cylinder in groups of 3, with 2 empty grooves after each group; set work as usual; raise out of action all but 3 needles at the end on the **Left;** knit once across the 3 needles; raise the **Left** end needle; knit once across the 2 needles; depress the needle next to the 3; knit back again; raise the end needle in action and thus continue to advance towards the **Right,** 1 needle every second row. Having reached the **Right** end needle reverse the process and raise that end needle on the **Right** and depress towards the **Left,** advancing by one needle each second row, continue to knit in the same way for the length required.

If a scalloped edging is required, continue to advance across each side until only 2 needles are left in action, before returning the contrary way.

The pattern may be varied by arranging the needles in groups of 2, with 2 empty grooves after each group, or 2 in and 4 out, etc.

36

BALMORAL OR STRIPED PATTERN

Use yarns of different colours, winding each on a separate bobbin.

Knit the required number of rows from one bobbin and stop with the yarn-guide at **Back;** break the yarn at one regular place—say between the bobbin and the yarn-bracket; join on the different coloured yarn, knit a similar number of rows; break yarn; so continue, always stopping with the yarn-guide at **Back;** and breaking yarn at the place stated, as this will ensure that the joins of the different yarns are in one regular place.

37

SPIRAL PATTERN

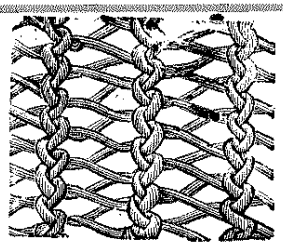


Fig. 28

Set work as usual and knit a few rows; transfer loop of every second needle on to the next needle forwards; replace empty needle in its groove; knit two rows; then transfer the loops of these next needles back to the second needles; knit two rows; repeat the transfer first one way and then the other, knitting after each transfer. When you have the length required knit a few plain rows, without any transferring. (Fig. 28).

The Spiral Pattern may be varied thus:—Transfer every second loop to the next needle; knit two rows; then transfer the loop of every second needle partly to the next needle, that is, the second needle loop will be round the two needles; knit two rows and repeat. (See Fig. 29).

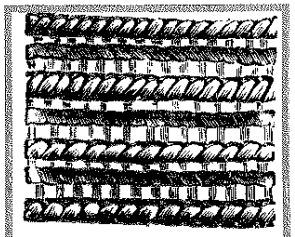


Fig. 29

38

PATTERNS FOR FANCY TOPS

Cable Pattern. Set up machine 4 and 1 rib; knit 15 rounds on medium tension; 1 round on loosest tension on machine; then twist the needles between each rib; the two on the **Left** to replace the 2 on the **Right;** and 2 on the **Right** to replace 2 on the **Left.** Tighten tension and knit 5 rows. Repeat pattern as many times as desired.

Circular Cords. Set up machine; knit 5 rows rib; change to plain, divide needles into equal parts, say 61, knit 5 rounds and draw up thread from 3 rows below needles and place it upon needles immediately above it. Take up two threads and put on needles side by side; this will give 12 needles with two threads (in 6 places round the machine); knit one round and take threads from 3 rows as before or next 2 needles to those last used. It is best to work towards the right.

Large Diamonds. Set up and form welt, put on ribber and form 4 and 1; then knit 5 rounds rib; change all ribbers to cylinder needles, take off ribber, knit 3 plain rounds, 3 of a contrasting colour and 1 round of same coloured wool as at first used and stop yarn-guide at **Front** of machine, raise out of action all but 12 needles; put yarn on take-up; raise one needle and knit Backwards across the 11 needles remaining down; raise another and knit Forwards; always raising end needle at the same side of machine as unknitted yarn; continue raising needles, one each row; until all are out of action; depress 18 needles on **Right** side of machine, beginning next the stitch last knitted; work across the needle depressed from **Left** to **Right;** and raise out of action 6 needles on **Left** of machine. Proceed to knit second half-diamond in the same way as first; continue these all round machine; 5 for 60 cylinder and 7 for 84 cylinder; change colour of yarn; depress 7 needles from **Left** to **Right;** not including the stitch last knitted; knit across from **Left** to **Right***; and raise out of action all but two needles on **Right** side of machine; depress one needle on **Right** side of machine and put yarn behind it; knit a row backwards and depress another needle on **Left;** knit another row Forwards; continue until 12 needles are down; then raise one needle each row until all are raised, depress 13 needles, not including one last knitted and make second diamond; beginning again at * until all diamonds are knitted; change colour of yarn and knit last row of half diamonds, depress 7 needles on **Right** side of machine; knit across from **Left** to **Right** ** and raise out of action all but 2 needles on **Right** side of machine; depress one needle on **Right** side of machine and knit Backwards; continue depressing needles until 12 are down; depress 7 more on **Right** and knit across; raise all but 2 and begin again from ** when circle is completed knit about 10 rounds and run work from machine.

Small Diamonds. These are made in same manner as the large ones, but using 6 needles instead of 12.

Half Diamonds. Knit in the same way as for whole diamonds; make a suitable pattern for a Fancy Top.

Knopp Top for Golf Hose. Set as for 1/1 rib, with tension at $4\frac{1}{4}$, make 11 rounds, change tension to $4\frac{3}{4}$, set needles as for 2/1 rib, make 1 round, then move the lever on the cam cap to the half-way position, make 3 rounds, move the lever back again, knit 3 more rounds and this will complete I knopp. Repeat as required, then take out appropriate cylinder needles and proceed to knit 1/1 rib.

FANCY FABRIC PATTERNS

PINEAPPLE (Fig. 30)

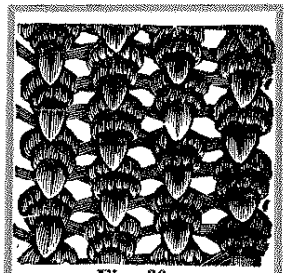


Fig. 30

Set up as usual and knit a few rows; transfer the loop of every 2nd needle on to the next needle (as instructed in the first paragraph for "Lasso Pattern"), knit 1 row to form half loops; then transfer the loop of the 2nd needle on to the 1st needle and the 4th on the 5th, 8th on the 7th, 10th on the 11th and continue in like manner across, putting the loop of one 2nd needle to the **Right** and one to the **Left;** knit 1 row, or 2 rows; repeat the transfer and knit 3 times in all. Now reverse the transfer and put loop of the 2nd needle on the 3rd, 6th on the 5th, 8th on the 9th, 12th on the 11th and so on; knit once across; repeat this three times in all. Continue placing loops as above 3 times one way and 3 times the other way, being careful that you start on the same needle every time.

PLAIT OR BASKET

The effect of the plait pattern is very striking if blocks are prepared in different coloured yarns (or coarse cottons). It is suitable for Hosiery and Fancy Articles, also for the tops of Golf or T. o. T. Hose.

Set up for Circular or Flat Web the number of needles required; knit 3 or more rows, round or across; stop with yarn-guide at **Front;** take off belt; then commencing at **Right** take out alternate groups of 3 needles and let them hang upon their own loops inside Cylinder (this will leave 3 needles in action and 3 out); knit 3 times round or across; replace the hanging needles; knit 3 times across; now leave the hanging needles in the cylinder and take out the other groups of three needles. Knit 3 rows and continue as above.

The knitter will see that this pattern is capable of many variations, thus: the same group of 2 needles may be removed each time, or 2 rows may be knitted upon 1 group and 4 on the other, or 3 needles can be treated in the same way.

OPEN WORK (Fig. 31)

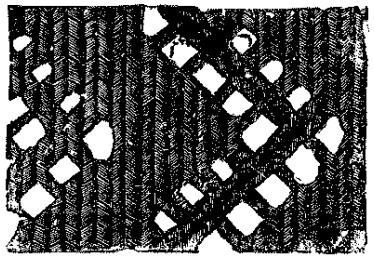


Fig. 31

Set work as usual and knit a few rows; transfer the loop of every 2nd needle on to the next needle Forwards and replace the empty needle in its groove; do this all the way round, or across, or as far as the pattern is required; knit 3 rows or more; repeat the transfer and knitting for the length required.

INSERTION (Fig. 32)

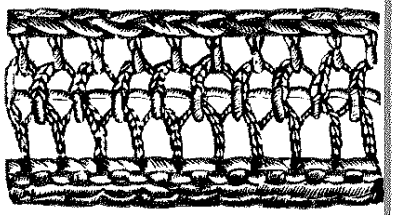


Fig. 32

Set work and knit round, or across several times. Lift all the needles excepting one out of Action; knit four times across this 1 needle (holding the work down on the needle with the hand under cylinder); lift this one needle out of action and depress the next needle to the **Right**, knit four times across it and lift it out of action; then depress the next one, and so on, completely round, or across, knit a row plain and repeat the above, after which continue the plain or fancy knitting.

HERRING BONE (Fig. 33)

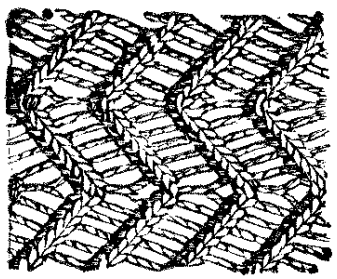


Fig. 33

Set work as usual and knit a few rows; transfer loop of every second needle on to the next needle Forwards and place empty needle in its groove; knit 1 or 2 rows; repeat three or four times in all; then transfer Backwards, etc., three or four times in all. Continue in like manner to transfer three or four times each way and knitting after each transfer until the fabric is the length required.

LACE

Set work either with needles in all the grooves, or every second one out, according to the openness of the fabric desired; raise every 3rd needle out of action; knit three times round or across; depress the needles and knit once. Raise the same needles and knit three times as before and so on, raising and depressing needles until the required length is knitted.

The lace pattern may be varied thus:—Raise out of action every 2nd needle; knit 2 rows depress all raised needles; knit 1 row; then raise the other needles; knit 2 rows; depress all needles; knit 1 row; now again raise every 2nd needle, etc., as before.

LASSO

Place needles in **Front** of cylinder and set work for Flat Web; knit a few rows. Commence at **Right** and transfer the loop of every 2nd needle to the next needle (that is put the 2nd needle on the 1st, the 4th on the 3rd, and so on); replace the empty needles; knit 2 rows to form loops on the empty needles.

Then transfer the loop of the 2nd needle on to the 1st, the 4th and 6th on to the 5th needle, 8th and 10th on to the 9th needle; continue in like manner transferring the 2nd loop to the **Right** and one to the **Left**; knit 2 rows. Now transfer the loops again, but in the opposite direction, that is, put the 2nd and 4th on the 3rd needle, the 6th and 8th on the 7th needle and so on; knit 2 rows; repeat the transfer of the loops (reversing the direction every time and being careful to start each time on the same needle) and knitting for the length required.

This pattern may be varied as follows:—Transfer loops of the 2nd and 4th needles to 3rd needle, 8th and 10th needles to 9th needle and so continue across, transferring to every 6th needle the loops of the next needle each side of it and thus leaving groups of 3 needles untouched. Knit 2 rows; then transfer loops of the 3rd and 5th needles to the 4th needle, 9th and 11th needles to the 10th, and continue across; knit 2 rows.

DIAGONAL CROSS-BAR (Fig. 34)

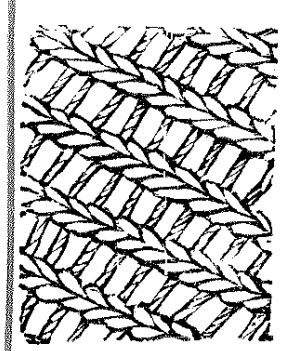


Fig. 34

Set work as usual and knit a few rows; transfer the loop of every 2nd needle to the next needle Forwards and replace empty needle; knit 1 row; repeat the transfer and knitting 1 row, for the length.

HONEYCOMB

Put needles into every 2nd groove of the cylinder leaving one groove empty next to each needle; set up and knit 1 row; raise every other needle out of action; knit 2 rows; depress the needles that are out of action and raise the others; knit 2 rows; continue depressing one set and raising the other set of alternate needles and knitting 2 rows each time.

The above yarn can be varied by knitting 3 rows and if greater effect is desired use different coloured yarns.

This pattern can be worked in Circular Web for Hosiery, etc., or in Flat Web for Fancy Articles, when the several strips can be joined by hand or by the machine.

INSTRUCTIONS
for the use of "DUPLEX" PARTS

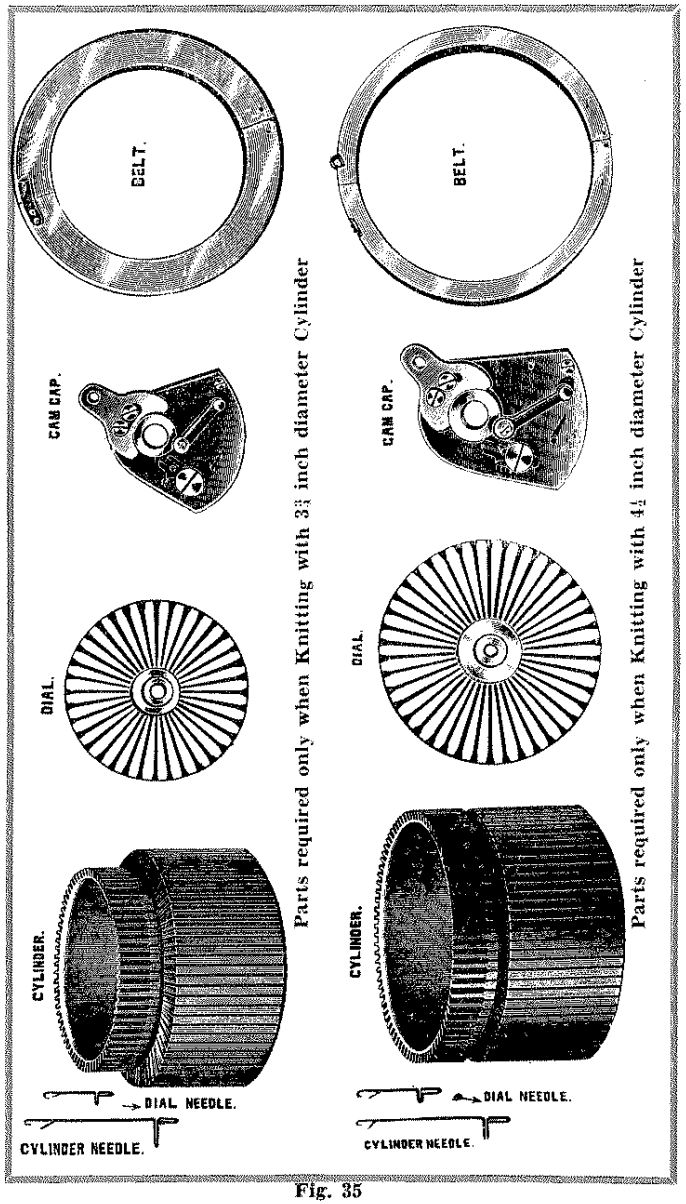


Fig. 35

Instructions for the use of "Duplex" Parts

The "Duplex" is an arrangement of the machine by which cylinders of 3¾ inches diameter may be used in the ordinary machine of 4½ inches diameter. By this arrangement the smaller size stockings up to 10 years and the baby's socks can be knitted seamless and ribbed.

The "Duplex" machine is usually sent out with 1 cylinder and dial, 4½ inches diameter and 84 grooves; and with 1 cylinder and dial, 3¾ inches diameter and 72 grooves.

The instructions for knitting various articles apply equally to the "Duplex" as to the "Ordinary" machine and all that the learner here requires is a knowledge of how to change from 4½ inch to 3¾ inch cylinder and dial.

TO CHANGE FROM 4½ in. to 3¾ in. CYLINDER AND DIAL

Remove all the needles from the machine and place them away, as "Duplex" needles are required for the 3¾ inch cylinder and dial, the needles are different and must not be mixed. Remove the ribber arm by unscrewing wing-nut (512I), Fig. 18. Now unscrew the nut (513G), Fig. 18 (page 27), and remove the dial, then the cam-plate, now place the 3¾ inch cam-plate, then the 3¾ inch dial on the bolt and screw up tight the nut (513G).

Remove the 4½ inch cylinder by means of the two screws below the machine (521C) of Fig. 1.

Clean all parts of the machine.

Now place in the machine the 3¾ inch cylinder and secure with the two screws from below.

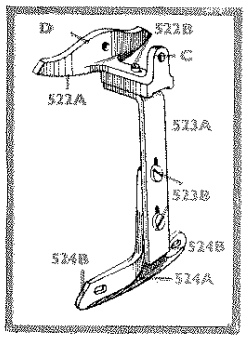


Fig. 36 (see also Fig. 7)

Adjust the yarn-guide by means of the screw (522B), Fig. 36 (see illustration), to the extreme inner position of the slot, that is as near to the cylinder as possible, but not too close or damage will occur. There should be approximately 1/16 inch clearance between the cylinder needles and the face of the feeder.

Use the "Duplex" cylinder needles (long foot), and the "Duplex" dial needles (short dial needles).

Regulate the height of the dial as directed on page 29. Regulate also the height of the yarn-guide, by means of the screws (523B), Fig. 36, so as just to clear the needles. If necessary oil the machine and proceed to set up as with the 4½ inch cylinder.

BOYS', GIRLS' and CHILDREN'S STOCKINGS AND SOCKS

Made on the 72/3¾ inch diameter "Duplex" Cylinder.

SIZE 5 (11 years) 22 inch leg. 8 inch Foot. Made from 4-Ply 16's Uneedit Hosiery Twist Wool.

	Approx. Ribber tension 1½	Approx. Cylinder tension	Rounds
1 and 1 Rib Top	... ...	3½	45
4 and 1 Rib Leg	... ...	4	100
Knit 4 rounds between each narrowing 3 and 1 Rib Ankle	... ...	3½	50
Splice Heel with Cylinder Tension at	... ...	4½ and narrow down to	13 Needles
Foot (top 3 and 1 Rib, bottom plain)	... ...	3½	55 Rounds
Splice Toe with Cylinder Tension at	... ...	4½ and narrow down to	13 Needles

SIZE 3 (7 years) 18 inch leg. 7 inch Foot. Made from 4-Ply 16's Uneedit Hosiery Twist Wool.

	Approx. Ribber tension 1½	Approx. Cylinder tension	Rounds
1 and 1 Rib Top	... ...	3½	40
4 and 1 Rib Leg	... ...	4	75
Knit 4 Rounds between each narrowing 3 and 1 Rib Ankle	... ...	3½	40
Splice Heel with Cylinder Tension at	... ...	4½ and narrow down to	13 Needles
Foot (top 3 and 1 Rib, bottom plain)	... ...	3½	45 Rounds
Splice Toe with Cylinder Tension at	... ...	4½ and narrow down to	13 Needles

SIZE 1 (3 years) 14 inch leg. 6 inch Foot. Made from 3-Ply Fingering.

	Approx. Ribber tension 1¼	Approx. Cylinder tension	Rounds
1 and 1 Rib Top	... ...	2	35
4 and 1 Rib Leg	... ...	3	60
Knit 4 Rounds between each narrowing 3 and 1 Rib Ankle	... ...	2½	30
Splice Heel with Cylinder Tension at	... ...	3½ and narrow down to	13 Needles
Foot (top 3 and 1 Rib, bottom plain)	... ...	2¼	38
Splice Toe with Cylinder Tension at	... ...	3½ and narrow down to	13 Needles

CHILD'S ¾ SOCK (3 years) 10 inch Leg. 6 inch Foot. Made from Super Scotch Fingering 3-Ply.

	Approx. Ribber tension 1½	Approx. Cylinder tension		Rounds
1 and 1 Rib Top	... ...	3	... ...	30
3 and 1 Rib Leg	... ...	3	... ...	60
Splice Heel with Cylinder Tension at	... ...	4	and narrow down to	13 Needles
Foot (top 3 and 1 Rib, bottom plain)	... ...	3	... ...	40 Rounds
Splice Toe with Cylinder Tension at	... ...	4	and narrow down to	13 Needles

BABY'S SOCK 8½ inch Leg. 5½ inch Foot. Made from 3-Ply Fingering.

	Approx. Ribber tension 1¼	Approx. Cylinder tension		Rounds
1 and 1 Rib Top	... ...	1¼	... ...	30
3 and 1 Rib Leg	... ...	2¼	... ...	65
Splice Heel with Cylinder Tension at	... ...	3½	and narrow down to	11 Needles
Foot (top 3 and 1 Rib, bottom plain)	... ...	2¼	... ...	30 Rounds
Splice Toe with Cylinder Tension at	... ...	3½	and narrow down to	11 Needles

How to arrange needles for certain ribs

Form of Rib	Cylinder Needles	Dial Needles
1 and 1 rib ..	In each 2nd groove ..	In every groove (to work over cylinder grooves).
2 and 1 rib ..	In every groove ..	In every groove (to work over cylinder posts).
3 and 1 rib ..	Every 4th groove empty ..	In each 2nd groove (to work over cylinder grooves).
4 and 1 rib ..	In every groove ..	In each 2nd groove (to work over cylinder posts).

Some dials will allow of other forms of ribbed fabric, such as 5 and 1, 6 and 1, 7 and 1, 11 and 1. Thus a 72 cylinder and 36 dial will produce 6 plain to 1 rib, by placing needles in every third dial groove to work over the cylinder posts; the same cylinder will produce 5 plain to 1 rib, by placing needles in every third dial groove to work over cylinder grooves.

2 plain and 2 ribbed can also be knitted but this requires a special dial for the different cylinders.

FAULTS, IRREGULARITIES AND DIFFICULTIES

IN WORKING MACHINE AND REMEDIES FOR SAME

TO KNITTERS.—First read the "FAULTS" (in dark type) marked Fault A, B, C, D, E, F, G, H, I and ascertain which refers to your difficulty, next read the numbered "CAUSE" under the section and apply the remedy below.

FAULT A.

If the yarn gathers and lies loosely outside the needles when knitting circular web.

Cause 1.—Too tight a stitch (tension).

Remedy 1.—Loosen stitch by lowering plain tension pointer and screw up its wing nut firmly. If ribber is used, loosen its stitch also and screw up thumb nut firmly.

It is best for the inexperienced to commence working machine with a loose tension, say at 5 on shell, 3 on cam plate. If 5-ply or thick yarn be used, put both tensions at loosest.

Cause 2.—Insufficient weight.

Remedy 2.—Apply more weight, or pull fabric down with the left hand under machine.

Cause 3.—Too coarse a yarn for the cylinder.

Remedy 3.—See recommendations given for the kinds of yarns suitable for the different cylinders.

Cause 4.—Dial lug pinching the fabric on to the edge of the dial regulator post inside cylinder.

Remedy 4.—Pull down more firmly the fabric at that side by the post and see that the ribber post is kept vertical.

FAULT B.

If the yarns gathers in loops loosely outside the end needles in action when making heel, toe, or flat web, the fault may be due to the yarn not passing direct (straight) from needles to yarn-guide; that is, the yarn lies loosely between the needles and yarn-guide.

Cause 5.—The cause of this is, that take-up does not draw back excess yarn, or yarn-grip does not act, or the weight is too high on the take-up.

Remedy 5.—See that the take-up has yarn in its hook (from front of yarn-grip), so that, at each row across, the yarn drawn off in excess of the needles in action, is entirely drawn back. See that the yarn-grip pinches the yarn on to the yarn-bracket and so prevents the yarn coming from bobbin, whilst excess is taken up.

Cause 6.—Fabric not having been held down properly at the end needles in action.

Remedy 6.—Use heel-wire with weight as directed by Note 15(a) on page 17, or pull fabric down at the end needle with the hand. It is a good plan to pull, and press fabric away from yarn-guide as it travels across each time.

FAULT C.

If the driving-handle is hard to turn.

Cause 7.—The work is not held down sufficiently, or only on one side.

Remedy 7.—With the left hand, pull down the fabric when knitting and see that the work is held down evenly.

Cause 8.—Stitch (or tension) is too tight, or yarn is too harsh (see also Cause 1).

Remedy 8.—Loosen stitch and screw up pointer's wing nut firmly and soften yarn by passing it through a wax block, when winding on to bobbin (see page 12).

Dark yarns require more weight than light or soft yarns.
Dark yarns are usually harsh through the gritty dies employed in them.

Cause 9.—Yarn is sticking on the bobbin.

Remedy 9.—Re-wind the yarn, as directed on page 12 and so that it leaves the bobbin freely.

Cause 10.—There are two loops on each needle when knitting the first row of the Welt.

In the ordinary way each needle has only one loop upon it.

Remedy 10.—The Welt requires more power to drive machine.

Cause 11.—Wing nut of either plain or ribbing tension is not screwed up tightly and so stitch cam has shifted.

Remedy 11.—Shift the pointer to the required tension and screw up wing-nut firmly to hold pointer in its place.

Cause 12.—Machine is dry in its working parts.

Remedy 12.—Apply a drop of good machinery oil to parts subjected to friction. (See "Oiling," page 9).

Cause 13.—Machine in long use is clogged with dust and fluff off the yarn, or from using unsuitable oil. Inferior machine oils, also castor, salad, olive, colza and other domestic oils, if used upon the machine, get like glue after a short time and usually cause much trouble.

Remedy 13.—If unsuitable oils have been used, the working parts should be cleansed. Take out screws which hold cylinder, lift out cylinder and clean needle grooves, lift off shell and clean cams and needle way, clean cog-ring, also the ledges on base of the machine, where cog-ring works, unscrew nut under dial ,take off dial and cam plate, clean dial and cams of ribber, oil all parts with pure machine oil. "Foster" Machine Oil has been specially prepared for the purpose.

Cause 14.—The cams in shell are hacked, or worn, or some other parts damaged by long wear.

Remedy 14.—Have cams re-ground or replaced, as also all worn parts.

Cause 15.—Some small obstruction, such as the latch or foot of a needle has got fixed in the cams, or between the posts of the cylinder. This very seldom happens and is usually seen at once as needle fails to act.

Remedy 15.—Examine the needles; if any are without latches or feet, and much force is required to revolve shell, take out cylinder and remove the obstruction; replace the cylinder.

Cause 16.—The plain needles are worn out through long use and therefore do not pass the cams or cylinder posts smoothly. Worn needles have the feet deeply cut and cause damage to cylinder posts.

Remedy 16.—Supply sound needles in place of worn ones. If machine has been long in use, new needles would not at first work smoothly with worn cams.

N.B.—When ordering needles, send sample.

Cause 17.—The cams in shell are bearing against the cylinder through the screws which hold them not having been fully screwed up after cleaning, etc., or the cylinder is not in its correct position, is loose and so rises on one side and at each revolution presses on the shell. This will also cause the fabric to be in holes if ribber is in use, because the fabric is pinched between cylinder and dial, or it may cause shell and cog-ring to rise out of their places and thus put machine out of gear.

Remedy 17.—See that the cams are in position with their backs against the shell. Then screw up fully, but not too firmly, one or both screws of each cam. Test if cylinder is in position and properly secured to the foundation.

Cause 18.—Dial needles are cutting the loops on the cylinder needles, or pushing out the cylinder needles because the dial was not adjusted to suit the cylinder needles and therefore the dial needles are rubbing against the cylinder needles.

Remedy 18.—Follow instructions for "adjusting dial," page 28, and observe that at the same moment you adjust dial post you must place your fingers on Right side of dial and push dial Forwards, that is, from Right to Back.

Cause 19.—Ribber-arm and dial do not work truly, but rise on one side of each revolution because the arm itself is not fully down on the ledge of the shell.

Remedy 19.—First see that the dial is close against the cam-plate and cam-plate close against the ribber-arm, that is to say, the dial and cam-plate must not be away from the ribber-arm, but close to it and held there by the nut underneath the dial, see "Ribber," pages 26 to 29. Then see that the ribber-arm is close down on the ledge and held firmly to the shell by its wing-nut.

FAULT D.

If Handle of Machine cannot be moved round.

Cause 20.—One, or more, of the plain needles have not been lifted fully out of action when raising them. Needles can only be kept raised where there is one or more rows of knitting upon them.

Remedy 20.—Lift needles as far as possible, so that the feet escape the cams. The needles should be raised until the feet touch under side of belt.

Cause 21.—One, or more, of the posts in cylinder is hacked through by bad needles and so needles stick against that roughness and stop the action of the machine.

Remedy 21.—Get the cylinder repaired if not too much damaged; if much damaged or worn, get a new one.

FAULT E.

Holes in the Fabric arise from —

Cause 22.—Latches of needles not being open.

Remedy 22.—Always see latches are open after setting work, or after transferring loops.

Cause 23.—Bent latches of needles.

Remedy 23.—Straighten bent latches with finger and thumb so that they open and close freely and fully upon the stem and hook.
(The needles need not be taken out of cylinder when straightening the latches).

Cause 24.—Dial needles cutting the plain stitches.

Remedy 24.—See "Faults and Remedies," C. 18.

Cause 25.—Ribber-arm not working truly.

Remedy 25.—See "Faults and Remedies," C. 19.

Cause 26.—Yarn-guide being loose.

Remedy 26.—See that screws are holding quite securely yarn-guide to gear-ring.

Cause 27.—Latch-opener being too high above the ribbing needles.

Remedy 27.—Lower the latch-opener so that its under side just passes over and clears the hooks of the ribbing needles.

Cause 28.—Cylinder not fully down on base.

Remedy 28.—See "Faults and Remedies," C. 17.

FAULT F.

Irregular stitches, or crossed stitches, are formed by two or three loops collecting on a needle before it Knits—that is, a needle makes a stitch now and again only, whereas it should make a stitch every time yarn-guide passes it. Such faulty stitches are caused by —

Cause 29.—Bent latches of needles.

Remedy 29.—See "Faults and Remedies," E. 23.

Cause 30.—The fabric rising about the needle.

Remedy 30.—See "Faults and Remedies," A. 1, 2, 3, 4.

Cause 31.—Too tight a tension, or stitch for the yarn used.

Remedy 31.—See "Faults and Remedies," A. 1, 3.

FAULT G.

Cylinder Needles slip Stitches.

Cause 32.—Latchopener and yarn-guide are too far away from the needles.

Remedy 32.—Adjust the latch-opener towards the needles by the screw (523B) which holds it to the upright (523A).

FAULT H.

Dial Needles slip Stitches.

Cause 33.—Latch-opener and yarn-guide are too high.

Remedy 33.—Lower slightly the yarn-guide by the two screws which hold it to the bracket on the gear-ring.

Cause 34.—Dial driving pin is not in the hole on the dial plate.
Remedy 34.—Adjust the driving pin to the hole of the cam-plate.

FAULT I.

Bent Hooks on Dial Needles.

Cause 35.—The dial is adjusted too high above the cylinder.

It should only be high enough just to allow of the work passing comfortably between it and the cylinder.

Remedy 35.—Lower the dial by means of the Dial Height Regulator (see page 29).

Cause 36.—The yarn-guide is too low.

Remedy 36.—Raise the yarn-guide by the two screws which bind it to the bracket on the gear-ring.

Instructions for Knitting Socks with Coloured Diamond Inserts (Fig. 37)

Made on 84/4½ Victoria Knitting Machine.

After the sock top and the required length of leg has been knit, stop with the yarn-guide at the left hand side of the machine and raise out of action all the needles on the right side of the machine, including the two centre needles at front and rear. There will then be 44 needles out of action. Next put the yarn in take-up and now move the yarn guide to the right by turning the handle in a clockwise direction, lift up out of action the last two needles (one each side) and knit across the remainder in an anti-clockwise direction. Keep lifting needles as instructed and knitting backwards and forwards until all needles are out of action. Push down into action 40 needles at right (20 each way from half way mark). Lead the yarn in at the first of these needles and lift up one each side and knit across the remainder. Keep lifting the two outside needles and knitting across until all needles are once again out of action. Stop with the yarn-guide at the right, tie on contrast colour, draw through until the new yarn is in the centre of sock, lead the yarn in between the two rear centre needles and push these two needles down into action. (X) Knit across these two needles, push down one needle each side of the two, wrap yarn round the preceding needle and knit across the 4 now in action. Keep pushing down the outside needles wrapping the yarn and knitting backwards and forwards until there are the 42 rear needles in work up to the half-way marks on each side. Now lift up the last two needles knitted (1 each side) and knit across the remainder, lift up one each side again and knit across, repeating until all needles are again out of action. Now tie on the second contrast wool, drawing the new yarn into the centre, depress the two front centre needles and knit across these two.

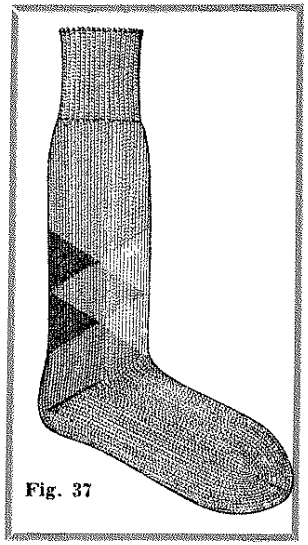


Fig. 37

Now repeat on the front as for the rear from (X) until all needles are again out of action. Next tie on ground colour yarn, draw the yarn into the centre of the sock and with yarn-guide at the left, depress the two needles 1 each side of the right half-way mark. Knit across these two needles, depressing 1 each side of these two, wrap the yarn and knit across the 4 needles, repeating until all the right side needles are in action. Now lift up out of action all these needles and with yarn-guide at right depress the two left needles, 1 each side of the left half-way mark. Lead in the yarn and knit these two needles. Depress 1 each side of these two and knit, repeating until all the left side needles are in action. On the last row stop with the yarn-guide at left, depress all the right side needles, remove yarn from the take up wire and knit the required length of leg before putting in the heel. This gives two Diamonds. round the leg, repeat if more are required.

ARGYLL PATTERN (Fig. 38)

Overchecking may be carried out by one of three methods:—

(a) Divide each diamond into four sections when knitting and introduce a contrast yarn to selected needles on a plaiting basis, prior to the diamond yarn by hand, keeping short lengths inside the tube for the purpose. (b) Work the diamond in four sections, divided by the "overchecked" needles which have the contrast yarn wrapped and the needles operated singly. (c) The third method is probably the quickest and is certainly the most effective as it causes the overchecking to stand out from the rest quite prominently. It is applied by a blunt needle as an after-operation in the manner shown in Fig. 38, working from the rib top diagonally down to the heel and instep. A slightly fuller yarn makes the overchecking more effective and covers the understitch completely, an operative with a little experience over-checking an article in a surprisingly short time.

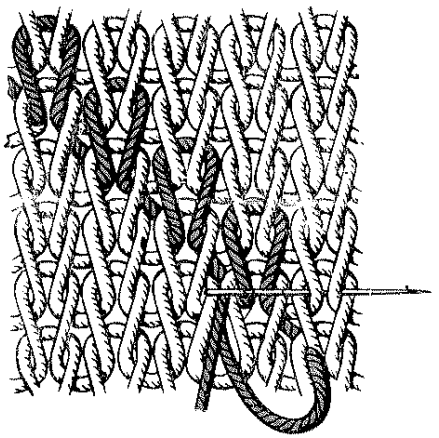


Fig. 38

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