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ILLUSTRATED INSTRUCTION BOOK  
FOR THE  
**BICKFORD**

**FAMILY KNITTING MACHINE.**

*Published and Copyrighted by*  
**DANA BICKFORD,**  
Inventor and Patentee.

# GENERAL IND.

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**ILLUSTRATED**  
INSTRUCTION BOOK

FOR THE

ickford Family Knitting Machine.

*Dana Bickford*

PRINCIPAL OFFICE:

689 BROADWAY, NEW YORK.

Entered according to Act of Congress, by DANA BICKFORD, on January 1st, 1873, in the office of  
the Librarian of Congress, at Washington, D. C.

# INTRODUCTION.

I present you this book to explain to you my position, and give you the confidence in my business and machine that every one should have before recommending a thing to their friends; and if you will look it through carefully, you will see what claim I have upon your confidence and patronage. In investigating the Knitting Machine business over six years ago, I came to the conclusion that this branch of improvements had been left out entirely, and that it was my business to make a good labor-saving machine; and since that I have encountered all manner of difficulties and disappointments, but have been determined all the while to succeed in presenting every household with one of the most useful and complete pieces of mechanism in the world; something that would enable the weary housewife to have a few hours of rest and recreation, as well as the matrons and young ladies of leisure and fashion to have a never failing fountain of pleasure as well as solid enjoyment. And feeling that no lady would object to spend her leisure moments in constructing something beautiful as well as useful, if she had a neat, handy article to do it on; and knowing that articles entirely improvised and completed by some dear friend are more highly prized than the most expensive articles made by others, I have kept pushing on until I have brought my machine to that perfection that the public demand before they are willing to spend their own money and recommend their friends to do so. Since I commenced some others have attempted, by infringing upon my improvements, to put something they *call* Knitters, into competition with me; but parties will not have to hesitate long in deciding which to buy. All improvements, excepting the bare construction of a straight tube, belong to me, and are covered by numerous Letters Patent, etc. And finally, in my first machine I could only make a straight tubular web, and that had to be cut into work.

The Machine that I now present you is complete in every part, and far excels all others, and with our improved advantages for manufacturing, no family could invest two hundred dollars in any business or bank that would pay

to a very small family, as much interest as this machine would, costing only thirty dollars; and they could not procure for any money the amount of pleasure and enjoyment that one would give them.

It far excels in quietness of operation and ease of working, and requires far less skill to operate it than any other.

It is adapted to all kinds of plain as well as fancy knitting, and in fact it will knit anything or everything that the most ingenious lady can knit or crochet, from a watch cord to a bed or carriage blanket. (See circular.)

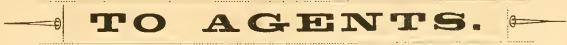
We now apply the take-up and weights to hold down the work while knitting the heel, toe, etc., making it the most complete machine in the world.

I will here state, for the guidance of the people in purchasing machines, and to prevent their being imposed upon by parties trying to produce articles without regard to my claims, I am the originator of the AUTOMATIC KNITTING MACHINE, in all its parts, as well as the work made upon it; also the Needle, itself, as the following Patents will show :

Sept. 10th, 1867.....	No. 68595.	July 6th, 1869.....	92147.
July 7th, 1868.....	" 79787.	Nov. 2d, 1869.....	96531.
July 21st, 1868.....	" 80121.	Sept. 17th, 1872.....	151386.
July 21st, 1868.....	" 80122.	Sept. 17th, 1872.....	131387.
Dec. 1st, 1868.....	" 84472.	Sept. 17th, 1872.....	131388.
Dec. 1st, 1868.....	" 84473.	Oct. 22d, 1872.....	132382.
July 6th, 1869.....	" 92166.		

Besides the above, I have a large number of applications pending in the U. S. Patent Office, and have already Patents for Great Britain, France, Belgium, Prussia, Austria, Saxony, Wurtemberg and Bavaria.

DANA BICKFORD.



# TO AGENTS.

*There is no field of labor that offers greater remuneration than the sale of the Family Knitting Machine, and there is no machine that possesses one-half the qualities that are so absolutely necessary for family use as the BICKFORD'S IMPROVED. Its simplicity and ease of management, together with its capacity for doing the great range of work, and its trifling cost, makes it a matter of economy for every family to have one, and will ultimately bring it into as general use as the Sewing Machine. The practical utility of the machine only needs to be demonstrated to the people to produce an unlimited demand.*

*Many Sewing Machine Agents, finding the increase of competition and the difficulty of selling high priced machines to militate against a flourishing business, are taking hold of the*

## ***BICKFORD FAMILY KNITTING MACHINE,***

*and meeting with the greatest success. Merchants, finding in Dana Bickford's invention a cheap, simple and practical Knitting Machine, find it profitable to purchase and keep on sale. The almost entire absence of competition does not require the "eternal vigilance" to sell this machine as in the case of sewing machines.*

**Agents wanted Everywhere. Good, Smart Men can make \$50 per week and Expenses. Send for Instructions and Circulars.**

Bickford Knitting Machine Company,

Large, fine  
Machine.

OFFICE AND SALESROOM,

DANA BICKFORD, President.

**No. 689 BROADWAY, N. Y.**

to a very small family, as much interest as this machine would, costing only thirty dollars; and they could not procure for any money the amount of pleasure and enjoyment that one would give them.

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**Bickford Knitting Machine Company,**

**OFFICE AND SALESROOM,**

**No. 689 BROADWAY, N. Y.**

**DANA BICKFORD, President.**

IT IS NOW MORE THAN FIFTY YEARS SINCE

**BOCCHERINI'S**

**Nature's Grand Restorative,**

Was Introduced to the Public.

In that length of time it has *earned a reputation*, to which it is richly entitled, of being the BEST remedy in use for the complaints for which it is recommended, viz:

Dissased Liver, Dyspepsia or Indigestion, Billious Colic, Costiveness, Sick Headache, Loss of Appetite, Coughs, Hoarseness, Shortness of Breath, Nervous Complaints, St. Vitas' Dance, Jaundice, Worms, Group, Fever & Ague, Asthma.

This Medicine is of a warming and invigorating nature, and is *never* known to *weaken* the patient, whereas it is well known that many other Cathartics have directly an opposite tendency. It has a most powerful influence, exceeded by no other medicine, in removing NERVOUS COMPLAINTS. It is pleasant in its operations, so much so, that it may be administered to the tender *infant* with *safety*.

It is not pretended that the above Medicine will cure ALL the diseases to which human nature is heir, as is said of many other Medicines, but it is confidently believed that it is the best remedy in use for the complaints named.

—:—

No. 689 BROADWAY, New York, *JUNE 22, 1872.*

DR. HOLMAN.—*Dear Sir:* I feel it to be my duty as well as pleasure, to give yourself and the public my opinion of your valuable medicine.

Some fourteen years since I was in the south and suffered a severe attack of "Low Country Fever," with which I was prostrated some six months. The Fever induced a Chronic Diarrhoea, which continued for years. Its effect in combination with the remedies administered by Physicians for these complaints, destroyed my digestion and induced Liver Complaint to such an extent that my physician and myself *despaired of my life*. Some ten years since, in seeking for help, I made the acquaintance of your valuable medicine, "Holman's Nature's Grand Restorative," which I commenced using, to the most happy effects, and to it I think I owe my recovery to comparative good health. I have used it on myself and to my family, and can say I can find nothing so useful as a family medicine, and so no consideration be without it. I hope you will not only benefit the public, but make a

great deal out of it.

DANA BICKFORD,

*President and General Business Superintendent of*  
BICKFORD KNITTING MACHINE CO.

**HOLMAN'S CHOLERA ELIXIR.**

It is EFFICIENT, SAFE, and so CHEAP, (50 CENTS PER BOTTLE,) as to be within the reach of every individual. Its success for the last few years in curing

**DIARRHŒA, DYSENTERY, CHOLERA MORBUS.**

And its wonderful effects in cases of

**ASIATIC CHOLERA.**

When that terrible scourge visited this country, not only *warranted*, to require the Proprietor to call the attention of the public to it.

**J. B. HOLMAN, Proprietor, METHUEN, Mass.,**

AND

689 BROADWAY, NEW YORK,

G. C. GOODWIN & CO., and M. S. BURR & CO., General Agents.

Any of the following articles may be readily produced on this Machine, and may be beautifully varied in an infinite variety of designs, in form, color or stitch.

Children's Carriage Mats.	Covers for Curtain Tassels.	Cushion Covers and	Purses.
Tufted Carriage Mats.	Toilet Mats.	Ottoman Covers in	Dusters.
Tufted Door Mats.	Lamp Mats.	Louped Trimmings.	Mittens.
Tufted Muffs and Collars.	Fringed Mittens.	Scarfs (great variety).	Gloves.
Fancy Stitch Muffs & Collars.	Linings for Garments.	Socks.	Wristlets.
Cradle Blankets.	Tablespreads.	Caps.	Fringes.
Traveling & Bed Blankets.	Bedspreads,	Hoods.	Cords.
Infants' Shirts.	Undershirts.		
	Suspenders.	Shawls.	Tuftings.
Carriage Afghans.	Gentlemen's,	Jackets.	Trimmings.
Childrens' Afghans.	Ladies' and Children's	Nublas.	Hose Socks.
Breakfast Capes.	Underwear	Drawers.	Stockings.
Smoking Caps.	Of every kind.	Skirts.	Capes.
Skating Caps.	Pianoforte Covers.	Sashes.	Slippers.
Watch Cords.	Sofa Tidles.	Leggins.	Tidles.
Curtain Cords.			

We give personal instructions free of charge, for doing all this large variety of beautiful work, at the salesroom of the Company, to any one buying a Machine.









# Fold-out Placeholder

This fold-out is being digitized, and will be inserted at  
future date.





## EXPLANATION OF FIG. 1.

A.....	Thumb-screw, to fasten machine to table.
B.....	Yarn-stand.
C.....	Pins for bobbins.
D.....	Yarn-carrier and Sliding-ring to which the carrier is attached.
E.....	Machine Handle.
F.....	Buckle.
G.....	Weights.
H.....	Revolving Cylinder.
I.....	Needle " "
J.....	Ring-clasp.
K.....	Cam for changing the length of stitch.
L.....	Indicator to show the distance moved.
M.....	Swing-cams and their thumb-screws.
N.....	Pins for Flat Web.
O.....	Set-up.
P.....	Looper.
Q.....	Bobbin-winder.
R.....	Take-up.

Referring to the engraving, Fig. 1, it will be seen that the machine, exclusive of needles and the toothed wheel, consists of only sixteen parts, as follows: (A), thumb-screw to fasten machine to table; (B) yarn-stand; (C) pins for bobbins; (D) yarn-carrier and sliding-ring to which carrier is attached; (E) machine handle; (F) buckle; (G) weights; (H) revolving cylinder; (I) needle cylinder; (J) ring-clasp; (K) cam and screw for changing stitch; (L) indicator,

to show distance moved; (M) swing-cams and their thumb-screws; (N) pins for knitting flat web; (O) set-up; (P) looper.

The three first and the three last enumerated, as well as the buckle (F) and the weight (G), are not moving parts, the latter being only eight in number. On the bottom of the revolving cylinder are formed teeth which mesh into a beveled gear turned by the crank (E). The yarn, being wound upon a bobbin, is placed on one of the pins, (C). It is passed over the yarn-stand (B), and thence through a hook in the top of a bent bar (D) called the "carrier." This carrier is fastened to the revolving cylinder (H), which carries the cams, and travels with it, carrying the yarn, and holding it in just the right position to be caught by the hook of each needle, as the latter is depressed by the action of the cams. To enable the reader to comprehend the action of these parts, we must first explain the stitch taken in the knitting of an ordinary stocking.

### CAMS OR LOCKS EMPLOYED FOR MOVING THE NEEDLES UP AND DOWN.

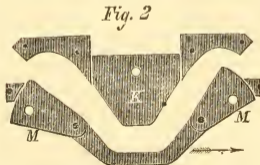


Fig. 2 shows the movable cam "K," by the regulation of which the stitches are made longer or shorter. The setting of this cam is done by the middle thumb-screw "K," (see Fig. 1,) the indicator point, "L," moving over a scale, showing the proper degree of lengthening and shortening the stitches. Thus, when the cam "K" is lowered, the stitches are made longer, as the needles are drawn down farther into the grooves of the cylinder, and require more yarn to form the stitches. And when the cam "K" is raised, the stitch is made shorter, as the needles are not drawn so far into the grooves of the cylinder, thereby using less yarn.

M, M, in Fig. 2, represents swing-cams; these are screwed on to the inside of the revolving cylinder H, Fig. 1, and as they are carried around by the revolving cylinder, the angular bent part or foot, R, (see Fig. 3.) of the needle passes through the curved space between the cams, Fig. 2; and as the needles are held from moving sidewise, by being placed in grooves formed in the needle cylinder I, Fig. 1, they are forced up and down as desired. Each row of loops is also sustained by means of the needles themselves, as the needle cylinder prevents their bending inward, and keeps them in a vertical position, as shown in Fig. 1.

*Always, in knitting Circular Web*, the forward swing (M) should be *up*, so to free the latches or raise them above the loops, that the needles, as they are drawn down by cam "K," may throw them off, thus forming new stitches. And the back swing-cam (M) should be *down*, so that the latches of the needles, coming up in position (after having been drawn down by cam "K"), may be held down until they are ready to be raised up by the forward swing-cam (M) again; this prevents them flying up and dropping stitches.

*In knitting a Flat Web or Heel*, both of the swing-cams "M, M," must be *up*, as the latch has to be freed or raised above the loops in knitting either way, for, as the carrier "D" is reversed to knit in the opposite direction, the needles must be driven up to free the latches before being drawn down by cam "K."

*If both swing-cams, "M, M," are down*, the machine will not knit either a cylindrical or a flat web, as there is nothing to raise the needles high enough to release the latches. In this position the work cannot be run off, should the machine be turned in either direction. Practice knitting both circular and flat web until you *thoroughly understand* the stitch-cam "K" and swing cams "M, M," before commencing any particular work.

FIG. 3, SHOWING THE OPERATION OF THE NEEDLE  
IN FORMING THE STITCH.

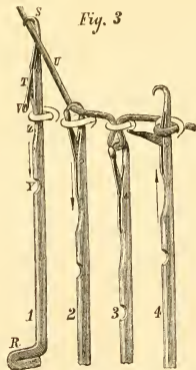


Fig. 3 represents four of the needles with the yarn looped thereon, as when the machine is at work. The needle employed is shown complete at No. 1. In the other numbers a portion of the lower part is broken away. The needle consists of a body, an angular bent portion or foot, R, a hook, S, and a latch, T. The latter is pivoted to the body of the needle at U, and works partly in a slot formed in the body. The latch has, moreover, a spoon-shaped end, shown at V, which, when the latch is closed, as shown in needle No. 2, meets and partly shuts over the point of the hook, S, so that the loop formed on the needle easily slips off when the latter makes its downward movement. The needle, as shown, is covered by two direct Patents, secured by Dana Bickford, the inventor of the machine, by which he obviates the necessity of using all former devices for holding the needles or opening and closing the latches to prevent splitting the larger sizes of yarn. One of these improvements is the depression or hollow shown at Z, Fig. 3. This allows the loop, when passing off the needle, to always pass under the point of the opened latch, so that the latter is closed by the loop itself, avoiding all strain upon the needle, or liability to break, from rigid parts getting out of adjustment. The deeper depression, Y, is also another improvement, the use of which will be explained when describing the process of narrowing, further on. Now let the reader suppose one line of stitches

already formed on these needles, as shown in the engraving, and the thread of yarn to be knit, so held that the needle marked will hook over it when the latter descends. The thread will be drawn down by the needle until the latch, T, meets the loop previously formed. This loop, sliding along the body of the needle, lifts the latch and closes it into the position shown in No. 2. The loop then slides off the needle as it continues to descend, and the thread, being drawn down through the former loop, forms a new loop, through which the needle will pass in rising, as shown in No. 4, opening the latch, and leaving the hook free to engage the yarn when the latter is brought under it again, and so on.

Now, it is obvious that if we supply mechanism that will bring the yarn under the hook at the proper moment, and also move the needles up and down successfully, and also provide a device for supporting each row of loops till the next row is formed, we shall have a machine that will knit a straight tube.

As soon as the reader understands how this is done, we shall be able to explain how widening and narrowing can be done, and how a variety of stitches can be made, or a flat web knit.



### TO WIND THE BOBBIN.

Fasten the bobbin winder "Q," to the end of a table. Screw the small clamp (found in the box) to one side of the table and place the swift upon it, put a skein of yarn upon the swift, (adjusting them to suit the length of it,) find the end and commence to wind, using the right hand to turn the handle, and the left to hold the yarn. Begin at the base or large end of bobbin, filling it in the form of a cone, always keeping an even slant. (See cut.) The hand that holds the yarn should continue to move back and forth with the yarn, up and down the cone, being careful that one course does not bind in another, but let them run up and down

smoothly so that the yarn, in knitting, will run off the top without elinging or causing tension.

Coarse or hard twisted yarn should be wound close, but fine or soft-twisted yarns or worsted should be wound loosely but smooth. Great care should be taken in winding them properly, as a poor or unevenly wound bobbin will make the machine run badly when everything else is right.

### TAKING OUT NEEDLES.

To take out the needles, first open the clasp J, then lift them out of the open space; if you wish to take out one or two when the work is on, put the loops on the adjoining needles.

### OILING THE MACHINE.

Oil the machine with prepared knitting machine or sewing machine oil. (See bottle sent with machine.)

The parts requiring to be oiled are the *cams*, butts of needles, and the bearings of crank or handle.

Open the clasp (J) and drop a little oil on each side of the cam, also a drop on the butts of say fifteen (15) needles, in different places around the machine.

In cleaning the machine, (which should be done frequently), remove the ring-clasp (J), take out the needles and remove the revolving cylinder "H," wipe off the old oil, dust and lint that collects around the cams and bed plates of the machine, and put a little fresh oil around the cams. Replace the revolving cylinder, then wipe each needle separately and dip the butt of every 12th or 15th needle in the oil before inserting it in the machine.

## CHANGING THE LENGTH OF STITCH.

The stitch can be made longer or shorter, so as to knit open or close work, by raising or lowering the *movable cam* "K" (see fig. 2). The indicator "I," moving over a scale shows the distance moved. Thus, *to make a long stitch*, loosen the thumb screw "K," and *lower* it until the stitch is long enough for the yarn to be used, being very careful to tighten the screw, after moving it, before turning the machine.

*To make a short stitch*, loosen the thumb-screw "K," and *raise* it enough to tighten the stitch as desired, or according to the yarn to be used, remembering to tighten the screw after moving it, as stated before. The closer the stitch the *more weight* is required to keep the loops down to the cylinder, so that the needles can pass up through them to form the next stitch.

If the yarn runs loose over the needles without making a perfect stitch, the cam screw "K" is probably loose, or the stitch is too short for the yarn used, requiring the cam "K" to be lowered.

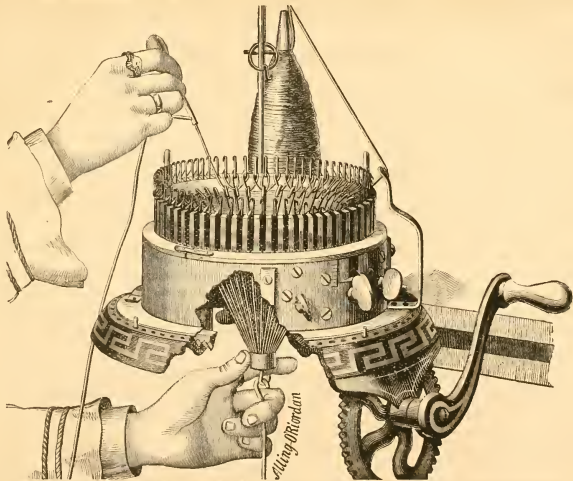
If the stitches cling to the needles as they are driven up to catch the yarn at the carrier D, the stitch is too short, or there is not weight enough, and you can see at once they will not knit, as the needle has to pass up through to bring the latch of the needle above the loop, so that, in drawing down after it has caught the yarn, it can close the latch over the hook and allow the loop to pass over the end to form the next row of stitches. You can use one, two, or three threads, being sure that the length of the stitch is sufficient to prevent the work from being too close. It is better to practice on some plain work until you understand the machine thoroughly, for if these rules are not followed the work will not prove satisfactory.

## TO SET UP THE WORK.

Bring the carrier (D) to the right hand side of the machine opposite the first pin for bobbin. Place the bobbins upon the pins (C), and put the yarn through the eye of yarn-stand (B), directly over the bobbin from which you wish to knit; put the yarn through the upper eye of carrier (D), bringing the end inside the cylinder; put the set-up in the centre of the machine, bringing the hooks even with the top of the cylinder; thread the yarn upward through the eye of the looper (see cut), drawing through about two yards, or enough to form the loops; use the left hand to hold the set-up in place, and the right to form the loops. This is done by bringing the looper on the right side of carrier (D), then putting the yarn over a hook of the set-up, and then up round a needle from right to left, which twists the yarn around the needle, and forms a loop; then around another hook and up round the next needle as before; continue looping the yarn round the hooks and needles until you have all above the cylinder filled; now attach the weight-hook to the end of the set-up, and suspend your weights from it (see cut); now turn your machine slowly to the right to bring up the remaining needles, and fill these also with stitches; drop the looper and end of yarn in the centre of set-up, and turn the handle slowly until every stitch is perfect, and you have adjusted your cam (K) to the size of yarn used and length of stitch required. This forms a selvedge edge at the top of your work—the shorter your loops the closer your selvedge.

In using the 72 needle cylinder, the thread should be doubled over every other hook of the set-up, and in using the 100 needle cylinder, it must be doubled on every hook as you have only 50 hooks and 100 needles, or you can start with a piece of knit work by passing it up through the cylinder and putting a loop over each needle, or as many as is necessary; put on the buckle "F," and weights "G," (see cut), and thread the carrier as described above; then proceed to knit.





Copyright Secured.

### TAKE-UP.

The take-up is to be used when knitting a heel, flat web, or in any place where it is required to knit backward and forward.

It is for taking up the slack yarn that is made while reversing the carrier or bringing it in position to knit in the opposite direction.

When used for the heel of stocking or sock, after the leg has been knit in a circular web, the stitch cam (K) should be lowered a little to make the stitch longer, as the friction of the take-up makes the stitch a little shorter.

To thread for use, draw the yarn down through the slot in the front arm of the yarn stand, (see cut) and attach to the take-up. In using coarse yarns the thread should be wound once around the back arm of the yarn-stand.

### THE SPRING TAKE-UP.

To use the *Spring* Take-up, put the yarn up over the centre arm of the yarn-stand, "B," pass it along down through the second slot, then up through the third slot, then up over the spring and down through the front eye. The take-up is regulated by the small screw in the back.

### FLAT WEB.

The object of the holes in the base of the machine is to insert the pins (found with the extra needles) for the purpose of gauging the width of work to be knit. For example, in using twelve needles (which, for convenience, should be placed in the back part of the machine), insert these pins, one on each side, far enough beyond the needles (say four holes or spaces) so that each stitch can be formed perfectly on either side of the web.

For knitting flat web, *both swing CAMS should be up*, and the take-up should be used.

Commence the work with the set-up or a piece of knit work (see direction) and knit across. As the carrier (D) strikes the pins, continue turning the machine until the sliding ring that the carrier (D) is attached to comes to a full stop, or the carrier is brought in front of the back swing cam. It is then in position to knit the other way. Knit back to the opposite side, being careful to reverse the carrier as before, and so continue knitting back and forth, being sure to make this change every time, or it will throw off the stitches on the backward course.

Any number of needles can be used, from one to the whole circle.

The full width of the machine can be knit by selecting some point for the selvedge (which, for convenience, can be in the front part of the machine), leave the carrier in the back part of the machine in front of the yarn-stand. Now raise up 20 needles on the right of the point selected, insert one pin five spaces to the right of the point, or opposite the sixth needle raised, and knit around to the pin; reverse the carrier and knit back to the yarn-stand; push down the twenty needles that were raised, and raise up twenty more on the left of the point selected, and move the pin five spaces to the left of the point: knit around to the pin again; reverse and knit back to the yarn-stand; push down the raised needles, and raise up twenty on the right side, and move the pin as before. Continue knitting back and forth, pushing down, raising up needles, and moving the pin as directed. In this way a much wider web can be knit, but it requires more time to do it, as enough needles must be raised, each time knitting across, for the cams to pass under and reverse the carrier without dropping stitches.

To knit flat webs together, first knit one web, and when you commence the next one take the first short loop of the selvedge of the lower right-hand corner of the web already knit and put it over the last needle in the row, or at the left hand side when the carrier stands to the right. Then knit across to the left, and back to the right again; throw over the next short loop of the selvedge, and continue to knit and pass over loops, till the web you are knitting is as long as the other.

To join these to another, pass them both up through the cylinder as before; in this manner you can knit strips of any width, or can connect narrow strips of different colors to form tidies and other fancy work.

### SEAMING.

To make two and one seamed work, take out every third needle.

To make three and one seamed work, take out every fourth needle.

To make four and one seamed work, take out every fifth needle.

### KNITTING UP STITCHES.

If, through mistake or carelessness, a stitch is dropped, it can be knit up so neatly that it is impossible to detect it after knitting a few rows. Take one of the needles and pass it down under the threads, or between the work and cylinder; catch the stitch and push the needle through it far enough to get the stitch beyond the latch; then, with the hook, lift the thread last raveled, or the one next the stitch, on to the latch of the needle, draw the needle up far enough to drop off the stitch first taken up; this leaves a new stitch on the needle; push the needle down through it again far enough to get the stitch beyond the latch; lift on to the latch of the needle the next thread, and proceed as before. A little practice enables one to do this perfectly.

### BALMORAL WORK.

To knit balmoral work, select the colored yarns to be used, winding each color on a separate bobbin, using them as you would balls in hand knitting, always changing on the same needle, which, for convenience, can be in the centre of the back part of the machine; then knit the number of times round desired with the first color, and place the bobbin of the color just finished in the inside of the web, being sure to take this yarn from the carrier. Then put the second color into the carrier, under the hook of the needle above-mentioned, thus ending and

commencing on the same needle. In this way any number of colors can be used, according to the taste of the operator.

### KNITTING A SOCK.

Put the machine in order for circular work, by having the front swing cam (M) up and the back swing cam (M) down, and arranging the stitch cam (K) for the size of yarn to be used. If you are not sure on this point, it is better to practice with the different sizes of yarn you would be most likely to use, as it is impossible to give an exact position for the indicator (L) on every style and size of yarn. The carrier (D) should be, when in position to knit, just as far ahead of the front swing cam (M) as it is possible to push it. If you wish the sock ribbed at the top, take out every third or fourth needle. Set the work up in the usual way, (see direction,) and knit around thirty-five times for the rib—then put in the needles previously taken out, and take the upper part of the adjoining stitch below, and put it over the needle just put in, to form a new stitch.

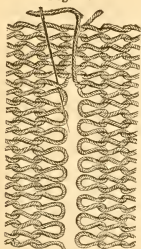
For a plain sock, knit around from seventy to ninety times, according to the size of yarn used and length required for the leg, leaving the carrier (D) on the back part of the machine, in front of the yarn-stand. Set the heel, which is done by raising up thirty-four needles, for the instep, in the front part of the machine, so the cams will pass under them, and thus prevent them from knitting.

Put in the pins (N N) one on either side, four spaces or holes from the needles you wish to knit—put up your back swing cam (M), then remove the set up and weights, putting on the buckle and weights, *drawing the work on the back, or heel*, through the buckle as tightly as possible; now turn the handle as far as you can, to the left, and raise up the last needle knit on that side; reverse and knit back to the right, and raise up the last needle knit on that side; reverse and knit back to the left, holding the work down firmly on the inside with

the left hand while knitting across, (for if the latch is not free, or raised above the stitch, it will not throw it off when the needle is drawn down, but will leave two threads or a loop-stitch upon the needle). Continue to knit across and to raise up needles, until you have all up but sixteen, or have raised up eleven needles on each side; and, as you raise up the eleventh needle on the right hand side, commence to widen out, by pushing down the last needle that you raised, or to eleventh, on the left hand side, opposite the carrier. Knit across and push down one on the other side, or the right hand side, as the carrier stands to the left. Knit across again, and push down one as before, (always on the opposite side from the carrier), and so continue to do until ten of the raised needles on each side are down. This leaves one raised needle on each side, which should be pushed down with the instep needles so as to prevent any holes in the corners of the heel. (It is very easy to tell which have been raised in knitting, as each one has a thread and stitch on it.) Put down the back swing cam (M), take out the pins (N N), and push down all the raised needles, (being sure that the latches are down).

For ordinary yarn, knit around seventy times for the foot, then it is ready for the toe. Now prepare machine the same as for heel, only raising up one half or thirty-six needles, instead of thirty-four. Put up the back swing cam (M), insert the pins (N N), and knit to the left as far as possible, (or far enough to reverse the carrier). Raise up the last needle that knit (allowing the thread to pass out around the needle raised). Knit back to the right, and raise up the last needle that knit on that side. Reverse and knit to the left again, raising up a needle as before. Continue to do this until you have raised up thirteen needles on each side, or have all up but ten needles. This brings the carrier (D) to the left hand side of the machine. Widen out by pushing down the last needle raised, or the one on the right hand side, opposite from the carrier. Knit across and push down one on the left hand side, as the carrier stands to the right. Knit across again, and push down one as before, (always on the opposite side from the carrier,) and so continue until *all* of the raised needles, or thirteen on each side, are down. Knit around once

Fig. 4.



or twice plain, to allow for any mishap which might occur in taking the sock from the machine, which is done by breaking the thread at carrier (D), and turning the handle, as in knitting. Join the top of the foot to the top of the toe with the mending stitch, (see cut) by raveling the extra rows knit, thread this into a worsted or darning needle, commence at the end where you left off raveling, take up one stitch on the top of the foot, and one from the toe, drawing the thread through, about the same tension as the knitting itself; now take the under half of the stitch on the foot that you had taken before, and the next stitch to it, (being careful to keep the stitch from twisting;) next take the under half of the stitch on the toe that you had taken before, and the next stitch to it, being very careful to hold the remaining stitches in place with the thumb, or they will ravel down while you are pulling the thread through the stitches; so continue, alternating from one side to the other, until the foot is joined. If done neatly it is impossible to detect where it is joined, or tell it from the knitting itself, and with very little practice it can be learned.

The square heel is knit as follows: Leave the carrier (D) on the back part of the machine and raise up thirty-four needles in the front for instep; put up the back swing cam ("M,") insert the pins ("N N,") as in the round heel, knit across, back and forth, thirty-eight times, run the heel off, and join the end with the mending stitch, or knit thirty-six times and join on the machine, which is done by running off eighteen stitches on each side, and leaving two in the centre; now pick up a stitch on either side next to the two needles, and put it on the needles; knit across once and pick up the next two stitches; knit across again and pick up two more; so continue until you have picked them all up, and have only the two stitches left; now pick up the long loops of the selvedge edge of the heel on the needles that the heel was on before, and push

down the raised needles. Take out the pins, put down the back cam, and proceed to knit the foot.

The toe can be narrowed by raising up half the needles, as in the round heel sock, and narrowing every time across, by removing the edge stitch (on the side opposite the carrier) to the next needle. Knit across and narrow the same way on that side; do this until you have six or seven stitches left; run these off the machine, and draw a thread through to prevent them from raveling while narrowing the other side, which is done by pushing down the needles raised, and knitting across, narrowing one stitch every revolution, as before.

Connect the first half to the one you are knitting, (see Flat Web,) or you can join the selvedge by hand; this makes a very nice toe, but the round toe is preferable.

To narrow a stocking or sock on a circular web, commence as directed for new work. If you wish it seamed at the top, take out every third or fourth needle, knitting about three inches, more or less, in length; then return them to their place again, taking the under part of the adjoining stitch and putting it over the needle which was just put in, to form a new stitch. Then knit on three or four inches plain. The stitch may be made loose over the calf of the leg, and gradually tightened to the ankle, shaping it nicely; or it may be narrowed down to the size desired by taking out needles. This is done by first taking out one exactly in front, putting the stitch over the next needle, then knit round six or seven times, and take out the third needles on both sides of the one first taken out; knit round six or seven times again and take out two more; so continue to knit and take out needles till the leg is narrowed to the size desired; you are then ready for the heel. For a common sock you will usually need to take out thirteen or fifteen needles; the number of times knitting between the needles taken out may be determined by the length you wish the leg of the sock to be, which is about one hundred times round for a common sock. Knit the heel and foot like the ordinary sock, or make a gored foot, (see Ladies' Stocking).

If a larger stocking or sock is wanted than can be knit on a circle, the top, or leg to the



ankle, can be knit in two webs, and joined together on machine, (see knitting flat webs together). If joined neatly, it can hardly be seen, when finished.

To knit double heels and toes use two threads.

Old heels and toes are quickly and nicely mended by knitting new ones on, saving much time and trouble.

The minute description of this process may give an impression that the manipulation is complicated. This is not the case, however. Any person of ordinary intelligence, in a single sitting of half an hour, can knit a sock perfectly.

## LADIES' STOCKINGS.

Before commencing a stocking you must be familiar with knitting flat as well as circular web. With ordinary two-thread Saxony yarn, use the fine, or 100 needle cylinder, leaving out one needle in the front part of the machine for the seam in the back of the stocking. Set up the work in the usual way, and knit around twenty times. Then knit three or four rows of fancy work (any stitch the taste may dictate), then knit 100 times for the leg before narrowing. Now open the ring clasp ("J"), and take out one needle next to the one already out, putting the stitch over the next needle. Raise up twenty needles on the right hand side of those taken out, (so that, in reversing, the cams can pass under them without knitting), put one pin in five spaces or needles, to the right of those taken out. Put up the back swing cam. Knit as far as you can to the left, (being sure that you have reversed the carrier, or that it is brought in position to knit the opposite way). Knit back, leaving the carrier in front of the yarn-stand, and push down the raised needles. Then raise up twenty on the left hand side, and move the pin five needles or spaces to the left. Knit around to the right, reverse, and knit back to the yarn-stand, pushing down and raising up needles, and moving the pin as before. Continue to do this until you have

knit back and forth eight times. Narrow again by taking out two needles, one on each side of those already out, putting the stitches over the next needles. Knit back and forth eight times again, (being very careful to leave the carrier opposite the yarn-stand each time before making the changes). Narrow two needles again, one on each side of those already out. Knit back and forth eight times again, (being very careful to leave the carrier opposite the yarn-stand each time before making the changes); continue to do this until you have narrowed, or taken out nineteen needles, knitting eight times between each narrowing. Now insert the two pins, as directed for flat web, and knit back and forth forty times for the ankle. Then drop off twenty-two stitches on each side, (run a thread through these stitches, if you like, to prevent them from raveling while knitting the foot,) move up the pins and knit across seventy-five times for the top of the foot. Knit the toe by raising up one needle on the side with the carrier. Knit across and raise up one on that side. Knit back and raise up one as before. So continue until you have all up but twelve needles. Commence and widen out by pushing down the last needle raised up or the one on the opposite side from the carrier. Knit across and push down one on that side. Knit across again and push down one as before. Continue knitting across and pushing down needles until all but one are down. When you push down the last needle, take the last short loop of the selvedge (on same side) on the top of the foot and put it over this needle. Knit across and put the last short loop of the selvedge on the other side over the end needle. Knit across and put it over on the other side. So continue to knit across and put over the short loops of the selvedge (always being sure to put them over the end needle that is opposite the carrier) until you have knit sixty-seven times, when you are ready to form the gore. To do this, put in two needles, one on each side, and put the under part of the adjoining stitches over them, to form new stitches. Put the loops of the selvedge of the top of the foot over these needles, and knit back and forth as before. Then put in two needles again, one on each side, putting the under part of the next stitch over them, and also the loop of the selvedge as before, and knit back and forth again. Continue

putting in needles until you have as many stitches as you dropped off from the ankle, or have made four new stitches on each side. You are now ready to knit the heel, by raising up one needle on the same side with the carrier. Knit across and raise up one on the other side. Knit across again and raise up one as before. Continue raising up needles until you have only eighteen down. Now widen out by pushing down the last needle raised up, or the one on the opposite side of the carrier. Knit across and push down one on the other side. Knit across again and push down one as before. Continue to do this until all of the raised needles are down. Knit across once or twice plain, and run it off. Sew up the leg by taking each short loop of the selvedge, and join the heel to the ankle with the mending stitch. (See Sock.)

The foot can be knit without joining on the machine, then sewed by hand afterwards.

It will make a much nicer looking seam in the back, if the narrowing is done on the third needle *in* from the selvedge, instead of taking the stitches from the edge of the selvedge, as is done in the ordinary way.

It also makes nicer looking heels and toes to push the needles (in widening) down on the *same side* with the carrier (instead of on the opposite side, as is given in directions for stockings), being very careful to lift the thread *in* around the needle pushed down, that it may knit on the backward course. More care must be used in knitting this way.

If you wish for an extra strong selvedge at the top of the stocking, use double thread in setting it up. If you wish the stocking to go above the knee, or to be very long, knit more times before commencing to narrow.

If you wish a quicker slope on the leg, knit less times between the narrowings. The same judgment should be used in knitting a stocking on the machine that would be used in knitting one by hand. Different sizes of yarn require more or less times knitting around. It would be very easy to tell how many rounds to knit, if you would knit one inch of length of the yarn to be used—counting the number of times required to make the inch; then find out how many

inches long the sock or stocking is to be, and multiply the number of times required to make one inch by the number of inches; also the foot in the same way.

### CHILDREN'S STOCKINGS.

To knit a stocking of three thread Saxony yarn, for a child ten years old, use the fine or one hundred needle cylinder; knit it flat web on eighty needles; set up the work in the usual way; knit across twenty times plain; then put in four rows of fancy work, and knit across one hundred times plain again; narrow by taking the stitch from each end needle, and putting it over the next; knit across six times, and narrow as before; continue to knit and narrow, knitting six times between, until you have narrowed ten needles on each side, or have sixty stitches left; knit twenty times across for ankle; then drop off sixteen stitches from each side for heel; knit across fifty times for the top of the foot, and narrow the toe by raising up ten needles on each side, which leaves eight down: widen out by pushing down the needles (see sock); then knit across forty-six times for the under part of the foot (joining it to the top by machine), when you are ready to form the gore; insert two needles on each side, and make an extra stitch every time knitting across, until you have made four new stitches, when you are ready for the heel; narrow it down to twelve needles, then widen out again; knit across once or twice plain, then run it off, and close it the same as the lady's stocking. This makes a very nice stocking, especially for little girls.

Seamed stockings should be knit on the fine cylinder, with every third or fourth needle out; knit on the circular web one hundred and twenty-five times around; then arrange the machine for flat web, and commence to narrow, raising up needles, and moving the pin (see lady's stocking), narrow nineteen needles, knitting five times between each narrowing; knit twenty times for ankle; drop off thirteen needles on each side, for heel; knit across fifty times for the top of the foot, then insert the needles taken out for the seams (so that the toe and bottom of foot may

be knit plain), and narrow the toe down to eight needles, and widen out again (by raising up and pushing down needles); knit across forty-six times for the bottom of the foot (joining it to the top by machine); knit the gore as described above, then knit the heel, and run it off. In joining the heel to the ankle, with the mending stitch, be sure and take two stitches on the needle from the heel-side every time you come to a seam or where the needle was taken out.

The leg of seamed stockings can be knit circular, and the foot knit on flat web; this shape does very well for boy's stockings.

After learning to knit the sizes given, you will see how to arrange the machine for any size required.

### LADIES' LEGGINS.

For Ladies' Leggings use the coarse cylinder. Set the work up in the usual way, having the stitch rather long: knit around one hundred times plain: now commence to narrow by taking out one needle in the back part of the machine opposite the yarn-stand, putting the stitch on the next needle: knit around seven times, and take out the third needle on both sides of the one first taken out: knit around seven times again, and take out the third needle, as before: continue to knit and take out needles, knitting seven times between, until you have out twenty-four or one-third of the needles: knit around twenty-five times for the ankle: run off one-half of the stitches, being the twenty-four in the front part of the machine; put up the back swing cam and insert the pins for flat-web, being particular to see that the carrier is in proper position to knit before proceeding with the instep—also change the weight, as a much lighter one is required for the flat-web. Knit back and forth four times, and narrow by taking the stitch from each end needle, and putting it over the next: knit across four times and narrow as before: knit across four times again and narrow: four times again, and narrow: knit four times and run it all off: finish with a knitting or crochet needle with the same worsted or yarn used, or some fancy color. Stripes can be knit in around the top, or a row of open work for an elastic or cord and tassel.

## CHILDREN'S LEGGINS.

Fig. 5.



putting the stitches over the next needles: knit around forty times, when you will be ready to

For Children's Leggins, use the coarse cylinder. Set the work up in the usual way, having every fourth needle out around the machine. Knit twenty-five times around plain: open the ring clasp and insert the needles that were taken out, putting the under part of the adjoining stitches over them, to form new stitches: knit around five times plain and stop, leaving the carrier on the back part of the machine opposite the yarn-stand; commence the knee by raising up one-half of the needles in the front part of the machine; put up the back swing cam, and insert the pins for flat-web; knit around to the left and raise up the last needle that knit: reverse and knit back to the right and raise up the last needle that knit on that side: knit back to the left and raise up the last needle again that knit on that side: reverse and knit back to the right and raise up as before: continue to knit and raise up needles until you have raised five needles on each side: then commence and widen out by pushing down the last needle raised, or the one on the side opposite from the carrier: knit across and push down as before; continue to knit across and push down needles until you have pushed down four on each side: now stop, leaving the carrier on the back part of the machine opposite the yarn-stand: push down the raised needles, put the back swing cam down, take out the pins, and knit fifty times around: now narrow the ankle by taking out every third needle around the machine,

knit the instep: do this by running off half or twenty-four stitches in front: raise up the back swing cam and insert the pins for flat web; proceed as in the instep for ladies' leggins: the larger the leggin required, the more times must be knit before narrowing the ankle. If a smaller one is required, knit it ribbed (two and one or three and one) all the way to the ankle, when every other needle should be taken out. If the knee is not desired, knit straight along (after inserting the needles that were taken out for the rib at the top,) sixty or more times, and narrow the ankle as described before. Leggins knit in stripes of two or more colors, are very pretty for children: or the centre striped and the top and ankle plain; instead of the instep a regular foot can be knit where the leggin is designed for a very small child, as it is much warmer and more comfortable in every way.

## WRISTLETS.

Wristlets can be knit single or double, of either silk or wool; also knit plain, or in any of the fancy stitches.

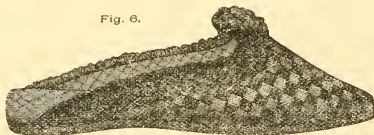
For a handsome, as well as serviceable pair of Gent's double Wristlets, use chinchilla and scarlet German zephyr. Knit them on the fine, or one hundred needle cylinder, with every other needle out, all the way around the machine. Knit eighty times around, plain: then put in one row of scarlet then two rows of chinchilla, then four rows of zig-zag stitch in scarlet, two rows of chinchilla, one row of scarlet, one of chinchilla, one of scarlet, then two of chinchilla, four rows of zig-zag stitch in scarlet, then twenty rows of chinchilla; turn this twenty rows inside, and turn the other end in far enough to meet it, and join with the mending stitch (see sock). Ladies' Wristlets can be knit double on the flat web, as forty needles are sufficient.

A handsome pair of Ladies' single Wristlets are knit as follows: Use the coarse cylinder, and knit them of pink and white German zephyr. Set it up flat web on forty needles;

commence with pink, and knit four rows across plain, then four rows of cable stitch, then two rows of plain; change for white, and knit two rows plain, then one row of braided stitch, then two rows plain; change for pink, and knit two rows plain, then four rows of cable stitch, two rows plain; change for white, and knit two rows plain, then one row of braided stitch, then two plain; change for pink, knit two rows plain, four rows cable stitch, then four rows plain; now knit in three rows of some other color, and commence the other one. Crochet the ends very loosely, and sew up the selvedge edges.

## BLOCK WORK.

Fig. 6.



To make block work, use two colors, say scarlet and white; take, for example, twenty-four needles; set up the work, and knit the first 4 stitches scarlet, the next 4 white, the next 4 scarlet, the next 4 white (slipping the white yarn in back of the needles when knitting with scarlet, and the scarlet in back of the needles when knitting

the white, which makes the work double). Knit across four times; knitting the scarlet always on the same needles, and the white always on the same. Now reverse the colors, and knit across four times again, using white where the scarlet was before, and scarlet where the white was; continue to do this, reversing the colors, being careful to knit only four times across each time before reversing, or the blocks will not be perfect.

Diamonds can be formed in the same way, by taking the same number of needles and knitting the first 5 stitches scarlet, the next stitch white, then 5 scarlet, then 1 white; 5 scarlet, 1 white, 5 scarlet and 1 white; knit across again, having the first 2 stitches white, then 3 scarlet,



3 white, 3 scarlet, 3 white, 3 scarlet, 3 white, 4 scarlet; knit back again, having the first 3 stitches scarlet, then 5 white, 1 scarlet, 5 white, 1 scarlet, 5 white, 1 scarlet and 3 white. Now commence to decrease the white in the same ratio as you increased it, and you will have diamonds of white all the way across. In this way any figures, letters, flowers, &c., can be knit into a garment by following a pattern, the same as would be done by hand.

Block work is not so fast knitting as plain work, but after a little practice one can get along quite rapidly.

Children's mittens knit, and spots put in of different color, are pretty; also leggins, with a row of blocks or diamonds in the centre.

Slippers, mittens, sacques, caps, &c., are very nice, knit in this way, and they are much warmer and more serviceable, being double.

The slipper represented by the cut is knit in block work—scarlet and white—and trimmed with ruching around the top.

## MITTENS.

For heavy yarn use the coarse cylinder, and if for a gentleman, use the whole circle. Set the work up in the usual way, putting in fancy stitches or ruching for gauntlet, then take out every third needle to make it smaller at the wrist. Knit six or eight rows; then insert the needles and knit the necessary length for the hand, (which is generally as many times around as there are needles in use); narrow and close the end like the toe of a stocking, or it can be narrowed off in two or more parts flat web (narrowing in the third needle from the selvedge) by narrowing (always on the side opposite from the carrier "D") one stitch every time across until there are only four stitches remaining. Then cut one stitch on the 22d row from the wrist, and ravel across the mitten one third of the stitches for the thumb, allowing three-fourths of these stitches for the inside of the hand. Take up the stitches on the top or part toward the

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wrist on as many needles, and knit as many times across as you have needles in use; then narrow down to nine needles, run it off (leaving yarn enough to sew it up) and draw the yarn through these nine stitches. Sew up the selvedge edges of the thumb, leaving enough loops to close with the under half of the stitches that were raveled across, thus forming a gore, and finishing up the thumb. For ladies' or children's mittens, they should be knit in a flat web and closed up. In this way you can knit in the gore by widening on each side of the selvedge; when you have widened enough stitches for the thumb, drop them off and proceed to knit the hand and narrow it off; now take up these stitches that you widened, and knit the thumb as before; close up the mittens, always being careful to mate them.

Example: For a child twelve years old, take forty-four needles (coarse cylinder), set up the work and knit across ten times; then put in five or six rows of fancy work (zig-zag or some other stitch), then three rows plain. Now take out every other needle and knit across eight times for wrist. Put in needles and knit fifty times for hand; raise up one half of the needles, (counting from the selvedge), narrow like toe of stocking, or on flat web down to four stitches, then do the same with the other half. Cut one stitch on the 21st row from the wrist down, and ravel thirteen stitches for thumb, (being careful to have ten of these stitches for the inside of the hand); take up the upper half of stitches, (or those toward the wrist), knit across twenty-two times, then narrow down to seven stitches; leave enough yarn to sew up thumb, run it off and draw the yarn through the seven stitches, and sew up as directed above.

Long wrists can be knit with either fancy stitches or ruching, or the whole mitten can be knit of ruching, which makes it look like the old-fashioned Fringe Mitten.

To knit double mittens use two threads. Striped or plaid double mittens are knit by using two threads, and knitting on a certain number of needles a certain number of times. For example: knit three stitches scarlet, and the next three white, three more scarlet and three more white, and so continue all the way around the machine, which will form stripes, or if you want

plaids or squares, (see block work), knit three stitches scarlet, three white, three scarlet and three white all the way around the machine; knit this three times, and then reverse the colors. If you want larger plaid, use more needles for each color, always remembering to knit around as many times as you have needles of each color, if you want perfect squares or plaids. Diamonds, monograms, etc., can be formed in the same way.

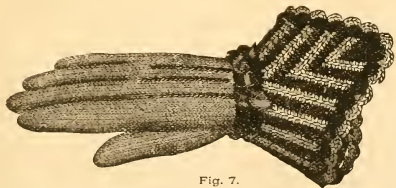


Fig. 7.

the thumb. In taking up the stitches for the fingers, use two more needles (one on each side) than there are stitches, and make stitches on them for the gore, by putting the upper part of the adjoining stitches below, on them. The back of the glove can be knit with some fancy stitch, or stripes of different colors can be knit in them.

The cut given represents a glove—the hand part is knit plain; the gauntlet is knit in two pieces and joined on the back where it is narrowed; it is knit of two colors in the zig-zag stitch; around the wrist and top of the gauntlet it is trimmed with a narrow strip of tufting of two colors, and a bow on the back.

## GLOVES.

*Gloves* are knit like the mittens as far as the wrist, when you commence widening on both sides of the selvedge for the thumb. Widen out one stitch each time across until you have enough for the thumb; run these widened stitches off and knit across ten or twelve times. Now divide the stitches for the fingers, and knit each one separately, and close like

## RUCHING OR TUFTED WORK.

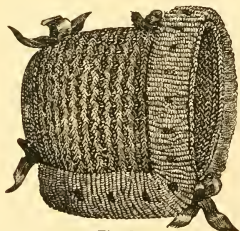


Fig. 8.

To knit Ruching or Tufted work, we have a number of different ways. Set up the work on from three to any number of needles, say, for example, ten; knit across, bringing the carrier (D) to the left hand side; take the yarn from the carrier and loop it over the first needle on the left hand side, then over your finger or tufter (sent for the purpose), then over the next needle and your finger or tufter again, and so continue till your yarn is back to the first needle at the right, where you begin to knit; now turn the carrier (D) round to the needles, holding the yarn in the left hand, so that the carrier (D) in passing through will take it, and knit across to bind in the loops. Be sure to hold down the finger or tufter that the loops are on, so that the needles can pass up through the loops, and knit them in. You can put your worsted or yarn over each needle two or three times, as you

wish, or you can knit in diamonds, squares, or monograms of different colors. You can make the loops as long or as short as you please, also use as many colors as will suit the taste.

These strips of Ruching or Tufted work can be used to trim cloaks, coats, dresses, or anything that you would use Astrachan or Fur for; or can be made into muffs, collars, wrists, caps, fringe mittens, etc. Carriage robes can be knit or made from these strips of Ruching, in fancy colors or plain; also carriage and door mats.

In knitting this work you can use one thread for the foundation, and others for the loops, if required, or use the one thread for both foundation and loops. Strips of this tufting, with fringe attached to the edge of it, make elegant trimmings for dresses, etc.

The Hood represented in cut is made of herring-bone stitch, and trimmed with Ruching made of white, with a scarlet square or block knit in it.

### FRINGE.

In knitting fringe you can use from two to thirty needles, according to the width of heading desired. Place the number of needles required for the heading, in the front part of the machine; put three or more needles in the back part, directly opposite; start up your work by using a piece of knit work, as before described, or by looping a thread over a needle, then down around the weight-hook, etc.; now put your yarn into the lower eye of carrier (D), and turn your machine to the right, (being very careful that the first needle forms a perfect stitch); continue in this way until you have as long a strip as you require. If you wish two or more colors, knit around so many times with one color, and then put on the next color; so proceed, being particular to knit each one a given number of times, if you wish it to look nice. Ravel out the stitches from the needles in the back part, and tie from two to six of these threads together, being careful to knot them close to the heading. If you wish fringe half this length, use needles both in front and back of the machine, and cut it in the middle. If a longer fringe is wanted, use more needles in the back part of the machine, and ravel them out when finished. In this way, fringe any length desired, can be knit. The weight-hook will generally be sufficient weight to hold it down; if, however, more is needed, put on the buckle "F." Be very careful to knot it close. You can knit fringe in a flat web, with fancy stitch for heading. After learning to knit flat web, you will readily see how you can do it.

### CORD.

In making cord, one, two, three, four or five needles can be used; one will make a chain, two a square stitch, three a perfectly round cord, four a square cord, and five round on one

side and flat on the other. Put the number of needles required, in the back part of the machine; start it up by looping the thread first over a needle, then down around the weight-hook, and up around the next needle, etc.; then put the yarn through the upper eye of carrier "D," being careful that the first needle forms a perfect stitch; turn the machine to the right with the right hand, and hold the yarn in the left hand, drawing it just enough to keep it straight between the carrier D and needles, so as to make the last stitch the same as the others, and also to draw the thread close as the machine passes round from the last needle to the first. If you wish it flat on the back side, you can leave the back loop a little longer, or knit directly backward and forward. This will be easily understood when you have your machine ready for use. This cord can be used for picture or curtain cords and made of different colors, or can be made into mats, etc. You can also knit around elastic and other cords, with silk or worsted, or around wire tubing, or anything of the kind. The take-up "R," can be used in taking up the slack yarn that occurs in going around the cylinder, but the hand will be found more reliable.

### CIRCULAR AND SQUARE MATS, TIDIES, TOILET SETS, &c.

can be made of any material, in either plain or fancy stitch, to suit the taste.

For a circular mat, of ordinary size, use twenty-five needles, and these needles should be placed in the back part of the machine. Put the machine in order for flat web, by raising both swing cams "M, M," and inserting the pins "N, N," one on either side, four spaces beyond the needles: set up the work in the usual way, using a very light weight; knit across several times, being careful that the last row brings the carrier D to the left hand side, where you begin to narrow; do this by raising the last needle knit, knit across to the right (being careful to hold the thread tight around the needle you have raised, so as to make a nice selvedge), then back to

the left, and raise up the last needle knit; then knit across to the right again and back to the left, and raise up the last needle knit. Continue to do this, holding the work down as in knitting a round heel (see heel), until you have raised four-fifths or twenty of the needles, the remaining five being left for fringe; this completes one division, and if you wish the mat of two colors, break the thread and tie on the other color close to the needles; now push down all the needles raised (being careful that the latches are down), and knit across to the left; raise up the last needle knit, and knit across to the right, then back to the left, and raise up the last needle knit again. Continue to do this until you have raised up twenty needles, as before, and change the color, being sure to tie it close to the needles; push down all the raised needles (being careful that the latches are down); then knit across and narrow as before. To complete the circle it requires six divisions, three of each color; after having completed these divisions, push down the raised needles and knit across plain once or twice to allow for any mishap you might have in taking the work from the machine, which is done by breaking the thread and turning the handle as in knitting. Join the last division to the first with the mending stitch (see the toe of the sock), leaving the five open for fringe; after joining the twenty stitches you should press the mat thoroughly, so as to make the fringe crimp nicely. If the time can be spared, it is better to lay them away for a day or two, after pressing, before raveling out the fringe, which is done by commencing at the open space, holding the right side of the mat toward you, and raveling toward the left; the longer the mat is left, after pressing, before raveling, the nicer the fringe will crimp.

These mats can be made with twelve divisions, by raising two needles at a time—or twenty-four by raising four needles at a time—but the mat with twelve divisions is the one most in favor. As many as sixty needles can be used, if required.

Handsome toilet sets can be made; one mat on 35, and two mats on 25 needles.

*Square Mats* can be made by having four divisions, and narrowing and widening all of the needles in each division, by raising up and pushing down needles (as in heels), being particular

to commence raising up needles on the second division as soon as the last needle is pushed down on the first one, or it will leave an open place in the centre of the mat. Each division can be made of a different color, if desired. For a fringe: when the needles are arranged for the mat, place two extra needles five spaces to the right of the others for fringe needles. Knit the mat and fringe at the same time, putting in fancy stitches around the edge of mat for a border, if desired; when finished, ravel out the two stitches made by the fringe needles, and knot it close to the heading (see fringe); or, a fringe can be knit flat web, with fancy heading, and knit to the mat (see knitting flat webs together). When the fringe for one side of mat has been knit, a square corner should be turned on the fringe (by raising up and pushing down needles), thus making the mat, when finished, perfectly square. Thus the fringe can be formed while knitting, as described, or it can be knit in flat web.

Table or lamp mats can be made of heavy cotton thread, making the fringe (see fringe) of some fancy colored zephyr or thread, and sewing it or crocheting it on the mat. By sewing it on it can be removed when the mat is washed.

Very handsome tidies can be knit by making several small mats on ten or twelve needles, using one for the centre and joining others around it: they can be knit together as they are made, or crocheted with fancy colors.

Any one knitting these mats and tidies, will find there is really no limit to the styles and kinds that can be produced.

## AFGHANS, BLANKETS, SPREADS, &c.

Afghans, &c., can be knit in a variety of ways, of any material and in either a plain or fancy stitch. They can be knit in a circular web, then laid flat and crocheted, sewed or knit together, or put together with a cord. When afghans are knit circular web, one half of the circle



can be knit in a fancy stitch, and taking this half for the right side when put together; in this way each stripe can be knit of a different color, also a different fancy stitch, which makes a very handsome afghan when put together neatly. They can also be knit flat web, in either stripes or blocks of plain or fancy stitches, and knit together on the machine, (see knitting flat web together). They can be finished with fringe, or narrow the end of each stripe to a point, and put on tassels. Bed and all kinds of blankets and spreads, piano and table covers, rugs, etc., are knit in a similar way.

### DUSTERS.

Dusters can be made of yarn or worsted, knit on a close stitch and pressed, then raveled out, the edge fastened to a handle, putting a piece of fancy work around the top for heading. They will be found superior to feather dusters, as they collect the dust much better; old yarns can be used up in this way; dish-cloths made of cotton in the same way will be found very convenient.

### TIDIES.

In knitting tidies a great deal depends upon the skill and taste of the operator, and there are so many different styles and ways of knitting them that it will be impossible to describe them all. One very handsome style is knit in the herring-bone stitch, of scarlet and white German zephyr, using twenty-one needles and changing the loops four times each way before reversing, (see herring-bone stitch). Knit eighteen points on each stripe and knit five stripes, two of white and three of scarlet, joining together on the machine by connecting the points; narrow the ends of each stripe to a point, and put on tassels.

*Another* is: take the same number of needles, knit two stripes with the diamond stitch, making five diamonds in each one, and knit three stripes of blue with the plain stitch; join

these together on machine (see knitting flat webs together), narrow the ends of each stripe to a point, and put on tassels. Tidies made of cotton in this way are very handsome and serviceable; any number of needles can be used; also knit as long as required.

*Another* is: use twenty needles, knit with green zephyr across thirty times, (which will make a square), then put in white, and knit across thirty times with that; put the green in again and knit as before; so continue to knit and change the colors until you have seven squares, three of white and four of green; then knit another stripe in the same manner, only reversing the colors, making three of green and four of white, and so on, making as many stripes as there are squares in a stripe; finish with a fringe or tassels. A tidy made this way, with a small diamond knit in each white square, is very pretty. An ingenious person can devise an almost infinite variety of styles and designs.

## SCARFS.

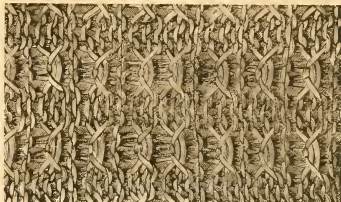
**GENT'S PLAIN SCARF** is knit circular on all the needles, then laid flat and finished with fringe or tassels. You can put different colors, as well as ornamental stitches, monograms, etc., in the ends, making them very pretty. Fancy scarfs can be knit of the herring-bone, diamond, zig-zag, spiral, or any of the other fancy stitches, and made up single or double. **THE SPRAY STITCH SCARF** is knit by putting the stitch over two needles instead of one, being careful that the yarn does not cling, and thereby form new stitches. This can be finished with tassels or fringe. **THE SHELL SCARF** is knit with two needles in and four out all around the machine; when done, turn wrong side out and finish with tassels. This is very pretty for children. **THE SCALLOPED SCARF** is very pretty knit on all the needles, by simply changing the length of stitch, knitting from two to eight or more courses on a short stitch, and five, six, or more on the very longest. If made of split zephyr on the fine cylinder, they make a very handsome scarf for ladies. You can also knit pretty scarfs with every other needle out, two in and two out, three in and three out, or any way suggested by the taste of the operator. Many of them look nice turned inside out, and can be finished with fringe or tassels.

## CABLE STITCH.



Take, for example, twenty-one needles. Commence by taking the stitches from every other needle and putting them over the next; then knit around once, forming loops on the empty needles; remove these loops to the next needles, being sure to put them all the same way. Knit around again, and remove the loops as before. Continue to knit and remove the loops (putting them always the same way); or, you can knit six rows cable stitch, and six plain, all the way around the machine, which makes very pretty work for undersleeves, or anything knit tubular. Only a light weight is necessary.

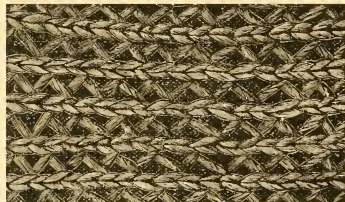
## LOCUST STITCH.



Take, for example, twenty-four needles. Commence the work on flat web, and knit across three or four times plain; then raise up two needles, and leave two down, all the way across the work; knit across twice. Now push down all the raised needles, and knit across once. Raise up the same needles as before, and knit twice across; push down the raised needles, and knit across once, as before. Continue to do this until the piece is the desired length.

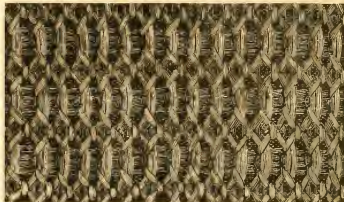
Be very careful that all the needles that are down form perfect work. A heavy weight is necessary.

## ZIG-ZAG STITCH.



Take, for example, twenty-one needles. Commence as before, by taking the stitches from every other needle and putting them over the next; knit around once, forming loops; remove these loops all to the right over the next needles; knit again and remove the loops all to the left; so continue to knit and remove the loops, first to the right, then to the left, and so on. This stitch is very pretty for cotton tidies, hoods, capes, etc. Only a light weight is necessary.

## FILIGREE STITCH.



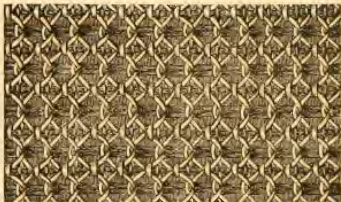
Take, for example, twenty needles. Commence the work as before, knitting plain a number of times. Now commence by raising up two needles and leave one down, then the next two, and leave the next one down, and so on, two up and one down, all the way across the work. Knit across twice, push down the raised needles, and knit across once. Raise up the same needles as before, knit across twice, and push down the needles, as before; knit across once, and again raise the same needles. So continue, being very careful that all the needles that are down form perfect work. A heavy weight is necessary.

## CHAIN STITCH.



Take, for example, twenty-one needles. Commence as before, by taking the stitches from every other needle and putting them over the next; knit around once, forming loops on the empty needles; remove the first loop to the right, the next to the left, and so on around the machine, which brings three threads around every other needle; knit across again and remove the first loop to the left, and the next to the right; continue to knit and remove the loops, reversing them every time, being careful to commence every time on the same needle. Also be careful that the needles that have three threads on them, form perfect work. Use sufficient weight to keep it down properly.

## LATTICE STITCH.



Take, for example, twenty needles. Commence as before, knitting four or five times across plain; then raise up every other needle, knit across twice, push down the raised needles, and knit across once; raise up the same needles as before, knit across twice, push down the needles, and knit across once; raise up needles again, knit across twice, and so on, being careful to raise the same needles each time, using sufficient weight to keep the work down, so that the needles knitting, will form perfect stitches.

This stitch, made on the fine cylinder, with every other needle out, is better for many uses.

## BRAIDED STITCH.



Take, for example, twenty-one needles. After knitting plain a few rows, to get the work well started, commence by taking the stitches from every other needle, and putting them over the next; then knit around once, forming loops on the needles from which the stitches were taken; then knit once more, binding the loops in; now remove the stitches again, and knit around as before; continue removing the stitches and knitting as described, being particular to reverse the stitches every time. In this way you can form diamonds, squares, monograms, or any letter or figure you wish.

## BIRD'S EYE STITCH.



Take, for example, twenty-one needles. Commence as before, knitting across four or five times, plain; raise up every other needle and knit across twice; push down these needles and raise up the other ones, and knit across twice again; push down these needles and raise up the others, and so continue to knit across and raise up needles, reversing the needles each time. Use a heavy weight.

## HONEYCOMB STITCH.



Take, for example, twenty-one needles. Commence as before, and knit across four or five times, plain; then raise up three needles and leave three down, all the way across the work; knit across three times, push down the needles that were raised, and raise up the other three; knit across three times, as before, push down the raised needles and raise up the other three; knit across three times again, and so continue to push down and raise up needles, knitting three times across each time. A heavy weight is necessary.

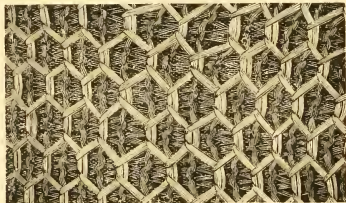
## DIAMOND STITCH.



Take, for example, fifteen needles, which, for convenience, can be placed in the back part of the machine; take the stitch from the centre or eighth needle, and put it over the next one to it on the left-hand side; knit across once, forming a loop on the empty needle; knit back, binding this loop in or forming a perfect stitch on it. Now (counting from right to left) remove the stitches from the seventh and ninth needles to the right; knit across, forming loops; then knit back, to bind them in. Now remove the stitches from the sixth, eighth and tenth needles to the left; knit across twice, as before; remove the fifth, seventh, ninth and eleventh stitches to the right; knit across twice, as before. Now decrease the diamond by removing the stitches from the sixth, eighth and tenth needles (counting from right to left), and put them to the left; knit across twice; then remove the stitches from the seventh and ninth needles and put them to the right. Now remove the centre or eighth needle to the left, knit across twice, and the diamond is complete. Only a light weight is necessary.

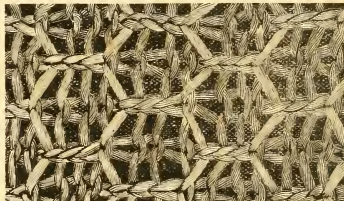


## BULL'S EYE STITCH.



Take, for example, twenty needles. Commence as before, knitting four or five times across, plain; raise up two needles and leave two down; knit across twice, push down the raised needles and raise up the other two; knit across twice again; push down these needles and raise up the other two, and so continue pushing down and raising up needles and knitting twice across. Use a heavy weight.

## PINEAPPLE STITCH.



Take, for example, twenty-one needles. Commence as directed before, by taking the stitches from every other needle and putting them over the next; knit around once, forming loops; then remove the first loop to the right, the next to the left, the next to the right, and the next to the left, and so continue all the way around the web; knit again and remove the loops as before; knit again and remove as before. Now knit and remove the first loop to the left, the next to the right, the next to the left, and the next to the right, as many times as before; continue placing them three times or more one way, then three or more times the other way, being careful that you commence to remove them on the same needle every time, and that the needles that have the three threads on them perform perfect work.



## HERRING-BONE STITCH.



Take, for example, twenty-one needles. Commence as before, by taking the stitches from every other needle, and putting them over the next; knit around once, forming loops over the empty needles; remove these loops all to the right, over the next needles; knit again, and remove the loops as before; do this three or more times to the right, then three or more times to the left, and so on.

You can knit a flat web, and form scallops on each edge, the size of scallops to be regulated by the number of times knitting and removing the loops before reversing them, four or five times makes a very pretty scallop. These scallops can be knit together by joining the points of the scallops, or can be fitted to each other so as to be impossible to tell where they are joined. In this way a breakfast cape, or shawl, etc., etc., can be knit, having the centre all one color, and the border different. Only light weight is necessary.

## LINK AND BAND WORK.



Place twenty needles in the back part of the machine, leaving one groove of the needle cylinder between each needle, (or with every other needle out). Prepare the machine for flat web; the take-up is not used because a very loose stitch is required. The material used should be double zephyr or a very coarse yarn; then knit six times across, plain, leaving the carrier "D" to the right; raise up one half of the needles to the left, and then knit across to the left; then raise up the five *last* needles to the right. Move up the pins on either side, to within five spaces of the needles to be used; knit across thirty-two times, (holding the work down with the hand while knitting), which brings the carrier "D" to the left; push down the five needles to the right, (move back the pin), and knit across to the right: now push down the ten needles to the left, (move back the pin,) and knit across six times, plain. We now have a strip of knit work in the centre, detached from the ground-work, and we wish to make another strip just above, on the left side of it: First, we raise up one half needles on the right. Knit across to the right and raise up the last five needles to the left. Move up the pins on either side again, and knit across thirty-two times; break the yarn and run these five stitches off, and pass this last strip of knit work through the one knit before, and pick up the stitches again on the same needles (being careful not to twist it); join the yarn, push down the needles as before,

and knit across six times, plain, (always remembering to move back the pins); so proceed until the work is finished. The links will curl by themselves, wrong side out. You can use as many needles as you like, and have the links much larger, if required.

The Link and Band work forms nice stripes for Afghans, Sofa Pillow Covers, &c., &c.; also makes a very handsome border (see cover of book) for mats, tidies, cushions, bed-spreads, &c., &c. The links can be joined in a variety of ways, to suit the taste of the operator.

## LADY'S OR GENTS' UNDER-VESTS.



Fig. 9.

Fig. 9 represents a Lady's or Gent's Under-Vest, knit of Saxony yarn, in two pieces (flat web,) and joined at the sides. The sleeves are also knit flat web and joined. Long sleeves could be knit, if required; also made in some fancy stitch. If made high in the neck, it must be left open down the front.

## INFANT'S SHIRT.

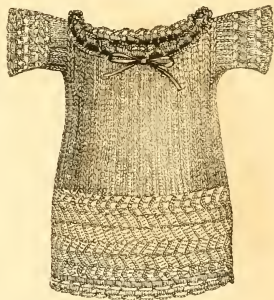


Fig. 10.

Fig. 10 represents an Infant's Shirt, made of split zephyr, with border of herring-bone stitch. The sleeves are made in flat web, and joined in at the shoulder. Long sleeves can be made, if necessary; also high in the neck.

## GORED SKIRT.



Fig. 11.

Fig. 11 represents a skirt knit of white Saxony yarn in the plain stitch, narrowed down and knit together by machine, (see knitting flat webs together). It is knit in four breadths; the front one is narrowed on both sides, the others plain. Stripes can be knit in (see Balmoral work), or strips of fancy work knit and sewed on. It is better to sew them on, as they can be easily removed when you wish to wash the skirt. The binding can be knit on to the skirt or a muslin one sewed on. In this way skirts of any size, and knit of any material, can be made in either plain or fancy stitch.

## BABY'S BOOT.



Fig. 12.

Fig. 12 represents an Infant's Boot or Shoe, knit of double zephyr, flat web, the foot gored like a child's stocking. The top is knit in zig-zag stitch, and turned down, with cord and tassel. The top is ornamented with three cords, braided together.

## LADY'S SOCK, OR OVER-SHOE.



Fig. 13.

Lady's Over-shoe, knit of brown zephyr, commenced at the back, flat web. Knit thirty or forty times, then narrow down to five needles, and widen out again by raising up and pushing down needles (see heel); then join at back, and knit the top or ankle in the honey-comb stitch, keeping the plain knitting side for the outside. The sole is knit of tufted work, and sewed on with the tufts inside, which makes it very warm and comfortable. In this way, inner soles for boots and shoes can be knit; also, Ladies' and Gent's Slippers with knit soles.

## LADY'S CORSET.



Fig. 14.

Fig. 14 represents a Lady's Corset, knit of scarlet zephyr, in the plain stitch, and narrowed and widened on the side, to shape it. The straps for the shoulders are knit in flat web; then make a row of braided stitches up the back, to form eyelets for the lacings.

## SUSPENDERS.

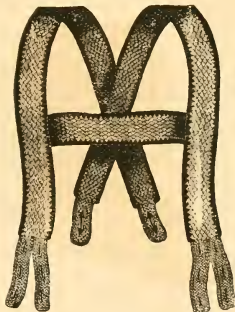


Fig. 15.

Fig. 15 represents a pair of Suspenders, knit flat web, of German zephyr, in the bird's-eye stitch. If more elasticity is needed than you get from this stitch, make it double width, and close it in the circle, or knit in a strip of rubber cord.

## CHILD'S SACQUE.



Fig. 16.



Fig. 17.

Figs. 16 & 17 represent the front and back of a Child's Sacque with hood, knit of double zephyr, and ornamented with cord and a strip made in herring-bone stitch; also, cord and tassels. It is knit flat web, and is narrowed and widened on the shoulder; also, the side seams and back. Sleeves also knit flat web. Sacques can be knit of any color, and in any pattern desired. Infants' Sacques knit of split zephyr, and on the fine cylinder, are very pretty.



## LADY'S JACKET.



Fig. 18..



Fig. 19.

Figs. 18 & 19 represent the front and back of a jacket knit in the bird's-eye stitch, of chinchilla worsted, and trimmed with tufting made of white with black spots (sheared), in imitation of ermine fur. It is narrowed and widened to shape, and closed under the arms, on the shoulders, and down the back. The vest in front is knit of scarlet, and trimmed with ruching and cord.

## CHILDREN'S HOODS.

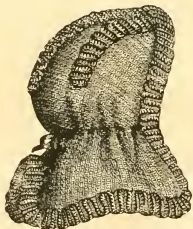


Fig. 20.

Fig. 20 represents a Hood made of German worsted, knit the zig-zag stitch on fine cylinder, trimmed with a strip of tufting all around and over the top; a row of eyelets around for cord and tassels; it is knit in flat web, and narrowed and widened on the back (like heel).

## CHILD'S DRESS.



Fig. 21.

Fig. 21 represents a Child's Dress. The yoke, belt and bottom of skirt is made of blue and black worsted, in fancy stitch; the balance, plain blue. The skirt is knit in five breadths; the front one is gored or narrowed on both sides—the two side ones on one side and the two back plain. It is ornamented with cord and narrow ruching; the skirt is knit together (see knitting first webs together). These knitted dresses are very warm and serviceable. Can be made plain or of some fancy stitch.

## CHANGING CYLINDERS.

We have a number of different cylinders, both coarse and fine. To change one cylinder for the other, first take out the needles as before directed, lift off the cam or revolving cylinder H, and unscrew the yarn stand B; then turn the machine upside down, take out the two screws that hold the cylinder I in place and remove it; take the screws from the other cylinder and place the bed-plate of the machine upon it, being careful to have the screw-holes in the same places in which the others were, and see that the cylinder fits closely to the shoulder all around; put in the screws and the other set of needles in place of those removed, and it is ready for use.

## HINTS TO BEGINNERS.

*Be very particular, in winding the bobbin, to follow the directions closely.*

In setting up the work *be sure* that the carrier "D" is as represented in the cut, or is just ahead of the front swing-cam "M." *Do not overlook* this point, as the yarn will not be properly carried to the needles, thus causing them to drop stitches.

Before starting the work see that all the *latches* of the needles are down.

See that the yarn is in the *upper* eye of carrier "D," as the lower eye is used *only* when knitting fringe; and if, through mistake or carelessness, the yarn gets in the lower eye, it will cause the machine to drop stitches, because it carries the yarn too low.

*Be sure* that the stitch is the proper length for the yarn or material used.

Be sure that the yarn is placed in the eye of yarn-stand "B," directly over the bobbin from which you wish to knit.

*Do not* use the take-up in knitting circular web or fancy stitches.

In knitting the heel, if the machine comes to a stop, and cannot be moved, you will pro-

bably find that one of the *raised needles* has got pushed down a little, by accident or otherwise, and interferes with the passing of the *cams*; raise the needle and proceed to knit.

If a mistake is made while knitting, and it is necessary to ravel the work back, it is very easily done by first raising up out of action, all the needles that do not need to be raveled; then remove the weights, and, taking the yarn from the carrier "D," pull it back over the hook of each needle, causing the underneath stitch to drop back over the same needle again. After a little practice, any one can ravel back as far they wish, without dropping a stitch.

### MATERIALS, &c.

We have on hand a large assortment of common and fancy yarns, worsteds, etc., which we furnish our customers very low.

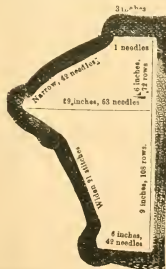
Knitting machine oil, prepared expressly for the Bickford Machine, for sale at ten cents per bottle, or one dollar per dozen.

Machine needles at sixty cents per dozen. When needles are ordered by mail, the price and return postage should accompany the order, always being particular to state what size needle is wanted.

All pieces or parts of the machine can be replaced at very little expense, by sending the broken part to our Office, thus avoiding the necessity of sending the whole machine.

## RULE FOR MEASUREMENT.

As it is impossible to give the exact number of times to knit, and number of needles to use in forming different sizes of garments, we give you a form of measurement, which if understood and followed closely, will enable you to fit any article or garment desired. In the first place, take the measure the same as a tailor or a dressmaker would, by getting the number of inches in length, width, etc., and put them down in plain figures. Set up the work on a few needles with the yarn to be used, (if coarse, use the coarse cylinder, if fine, the fine cylinder) being particular to have the stitch the exact length you wish it in the garment, and knit an inch or two in length, run it off and with a rule measure one inch in length and one in breadth, then count the stitches each way in that inch. Thus if it takes 7 needles to make one inch in width, and 12 times knitting across to make one inch in length, and your article is 8 inches wide and 20 inches long, you must use 56 needles and knit across 240 times.



The example given is half of the back of a Ladies' Jacket. (See page 55). It is 6 inches wide at the waist (and using the coarse cylinder with heavy German-town yarn,) there are 7 needles to the inch, hence you must use 42 needles with which to commence. Being 9 inches wide at the shoulder, it will require 63 needles at that point, and as it is 9 inches in length from the waist to the shoulder, and takes 12 rows of knitting to form one inch, it will require 108 rows of knitting to reach from the waist to the shoulder, and must be widened out 21 needles in knitting, or about one in every fifth row to make the desired width at this point. And being 3 inches, requiring 21 needles in width at the neck, and 6 inches in length from shoulder to neck, it takes 72 rows of knitting, and to be narrowed 42 stitches to complete it. The other half must be knit in the same way, only taking care to widen and narrow on the opposite side, and joined together by the machine. (See knitting flat webs together).

The above rule applies to every material, and to either plain or fancy stitch.

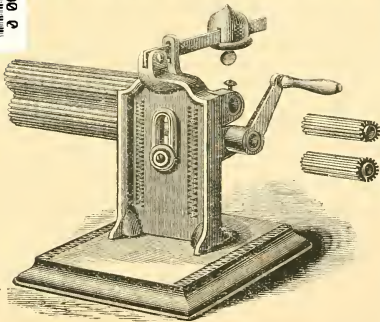


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