March 2, 1937. B. E. ELTGROTH 2,072,668

HAND KNITTING DEVICE

Filed July 8, 1936

Fig. 1.

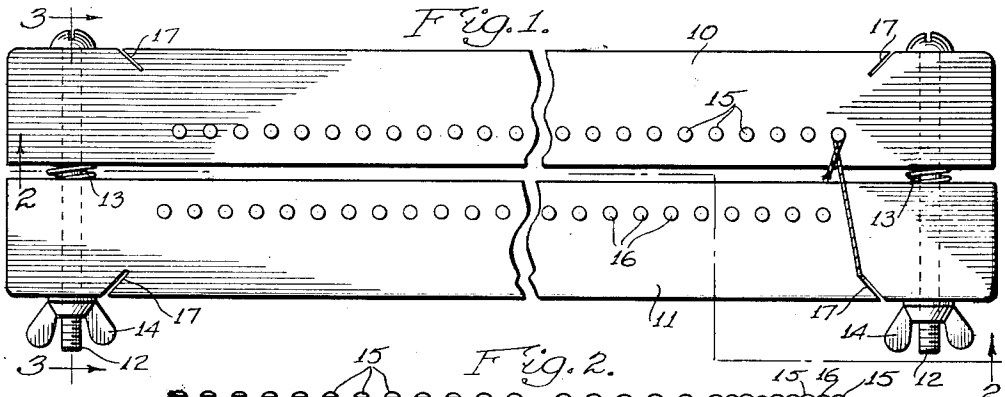



Fig. 2.

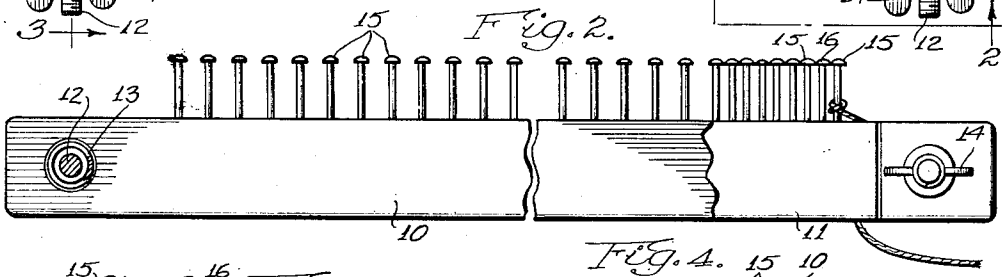



Fig. 3.

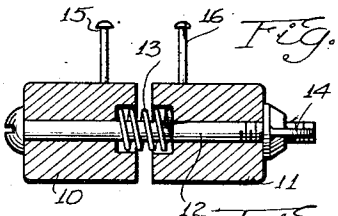



Fig. 4.

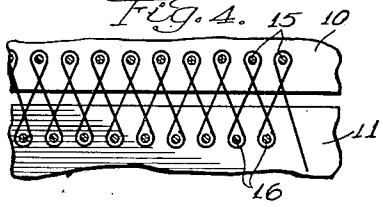



Fig. 5.

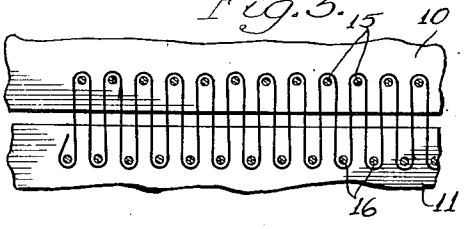



Fig. 6.

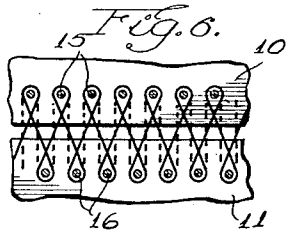



Fig. 7.

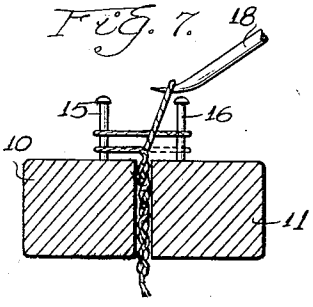



Fig. 8.

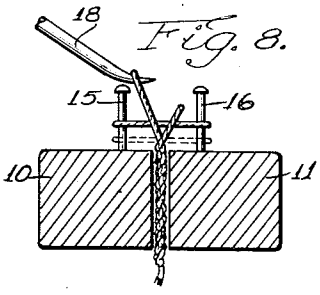
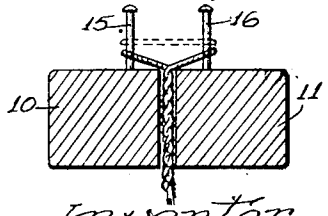



Fig. 9.




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# UNITED STATES PATENT OFFICE

2,072,668

## HAND KNITTING DEVICE

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Application July 8, 1936, Serial No. 89,505

6 Claims. (Cl. 66—4)

This invention pertains to hand knitting devices, and more particularly to that type of such devices wherein a frame having a slot or opening is equipped with upstanding pins on opposite sides of the slot or opening, and the yarn is looped back and forth in one direction of the frame around the pins of the opposing rows to form a lower layer or web, and is again looped back and forth in the opposite direction of the frame to form a second layer or web on top of the first, and the loops of the first or lower layer are then, by a suitable pick or hook, raised over the tops of the pins and allowed to drop onto the loops of the second layer, and so forth; the fabric, as it is thus built, being drawn down through the slot or opening of the frame.

Among the objects of the invention are, to provide an improved frame structure for carrying the pins whereby the slot or opening between the two rows of pins may be varied in width to suit coarse or fine yarns and also to produce a fabric of relatively close or open texture, as desired, to provide a device by the use of which a flat knitted fabric of varying widths to conform to different portions of the human body, such as bust, waist and hips may be readily made, and, generally, to provide a very simple, inexpensive, and improved tool for hand knitting of the type described.

An approved embodiment of the invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a top plan view of the device, broken out between its ends.

Fig. 2 is a side elevation, partly in vertical longitudinal section on the offset line 2—2 of Fig. 1.

Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary top plan view, showing the manner of forming the lower layer or web.

Fig. 5 is a view similar to Fig. 4, showing one manner of applying the upper layer or web.

Fig. 6 is a view similar to Figs. 4 and 5, showing in dotted lines the upper layer or web of Fig. 5 superposed on the lower layer or web of Fig. 4.

Figs. 7, 8 and 9 are progressive vertical transverse sections, Fig. 7 showing a loop of the lower web on one side raised over its pin, Fig. 8 showing a lop of the lower web on the opposite side raised over its pin, and Fig. 9 showing the two raised loops and the fabric body drawn downwardly, ready for the application of the next layer or web (shown by dotted lines).

Referring to the drawing, 10 and 11 designate a pair of bars, of rectangular cross section, preferably of wood, through the ends of which are formed registering holes to receive threaded bolts 12. As shown in Fig. 3, the inner opposed faces of the bars are countersunk around the holes to house thrust springs 13 encircling the bolts, and each bolt is equipped on its threaded end with a wing nut 14. By this construction the springs 13 normally force the two bars apart, and the width of the slot between the two bars can manifestly be varied as desired by merely adjusting the nuts 14.

On the upper surface of the bar 10, a short distance from its inner edge, is a row of equally spaced headed pins 15; and similarly located on the bar 11 is a similar row of headed pins 16, the pins of each row being staggered relatively to the pins of the other row, as clearly shown in Fig. 1. The pins of both rows are preferably headed, as shown in Figs. 3, 7, 8 and 9.

In the outer side of each bar, a short distance inwardly from its outer end, is formed a vertical kerf 17, the purpose or function of which is to grip the yarn and prevent any possible unraveling of the fabric.

Associated with the device for the knitting operation is the usual pointed needle or pick 18 (Figs. 7 and 8) by which the loops of the lower layer or web are raised above and over their pins and allowed to drop onto the upper layer or web.

In the use of the device, in one end of the yarn is formed a slip knot which is passed down over one of the end pins as indicated in Figs. 1 and 2. The yarn is then passed back and forth and looped around pins of the two rows from one end of the device to the other in the manner indicated in Fig. 4, forming what I have termed the lower layer or web. It is then carried back and looped around the pins in a manner shown for example in Fig. 5, forming the upper layer or web superposed on the lower layer or web, as indicated in Fig. 6. This second looping of the yarn around the two rows of pins may be done in a variety of ways other than that shown in Fig. 5 to produce fabrics having different types of stitches. With the pick 18 the knitter then passes down one row of pins such as the pins 16, raising the loops over the pins and allowing them to drop as shown in Fig. 7. This operation is then repeated on the loops of the opposite row of pins, as shown in Fig. 8. The knitted web thus started is drawn downwardly through the slot between the two bars, as indicated in Fig. 9, and the above described

cycle is repeated until a knitted web of the desired length has been formed.

The device is readily adaptable to the knitting of flat fabrics of varying width portions. For instance, in knitting the front or rear half of a sweater, the full length of the device may be used to knit the relatively wide hip portion, and as the fabric progresses into the narrower waist portion, the yarn is passed back and forth around a progressively smaller number of the rows of pins, and as the fabric progresses into the bust portion the yarn is passed around an increasing number of pins. Two flat fabrics having thus been knitted may be stitched together at their edges, thus forming the complete body of a garment.

The described connections of the two bars at their ends form a valuable feature of the device in that it enables the spacing of the two rows of pins, and the slot between them, to be varied as desired. When using a relatively heavy and coarse yarn, the wing nuts will be backed off slightly to widen the slot; and when using a light or fine yarn, the wing nuts will be advanced to narrow the slot. The springs 13 at all times hold the two bars in spaced relation, care being taken to advance or retract both of the nuts to the same extent when adjusting the device.

I have herein shown and described a physical embodiment of the invention which in practice has been found to satisfactorily effectuate the stated purposes and objects thereof, but manifestly structural changes may be resorted to within the principle of the invention and without sacrificing any of the advantages thereof, and hence I do not limit the invention to the specific form shown, but reserve all such variations and modifications as fall within the spirit and purview of the claims.

I claim:

1. A knitting device of the class described, comprising a pair of laterally spaced bars, longitudinal rows of upstanding pins on the tops of said bars, means connecting said bars at their ends permitting adjustment of the width of the space between said bars, and spring means maintaining said bars in adjusted position.

2. A knitting device of the class described, comprising a pair of laterally spaced bars, longitudinal rows of upstanding pins on the tops of said bars, means connecting said bars at their ends permitting adjustment of the width of the space between said bars, and thrust springs between the inner opposed sides of said bars normally forcing them apart.

3. A knitting device of the class described, comprising a pair of laterally spaced straight bars having registering transverse holes in their ends, tie bolts extending through said holes, longitudinal rows of upstanding pins in the tops of said bars, and thrust springs between the inner opposed sides of said bars.

4. A knitting device of the class described, comprising a pair of laterally spaced straight bars having registering transverse holes in their ends, tie bolts extending through said holes, longitudinal rows of upstanding pins in the tops of said bars, and coil springs encircling said bolts between the inner opposed sides of said bars and normally forcing the latter apart.

5. A knitting device of the class described, comprising a pair of laterally spaced straight rectangular bars having registering transverse holes in their ends, said holes being countersunk in the inner opposed sides of said bars, tie bolts extending through said holes, longitudinal rows of upstanding pins in the tops of said bars, and thrust springs seated in the countersinks of said holes and encircling said bolts.

6. A knitting device of the class described, comprising a pair of laterally spaced straight bars, longitudinal rows of upstanding pins on the tops of said bars, the pins of one row being staggered relatively to the pins of the other row, means connecting and spacing said bars at their ends, and yarn gripping kerfs in the outer sides of said bars.

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