

March 1, 1938:

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2,109,651

DEVICE FOR USE IN KNITTING ELASTIC TOP FULL FASHIONED HOSIERY

Filed Dec. 26, 1934

Fig. 1

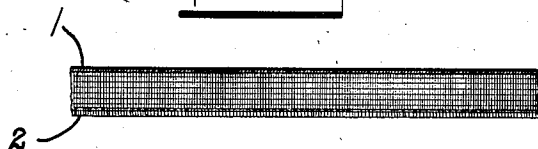


Fig. 2

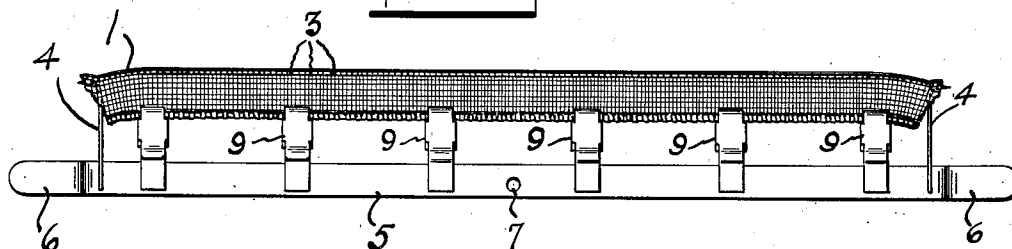
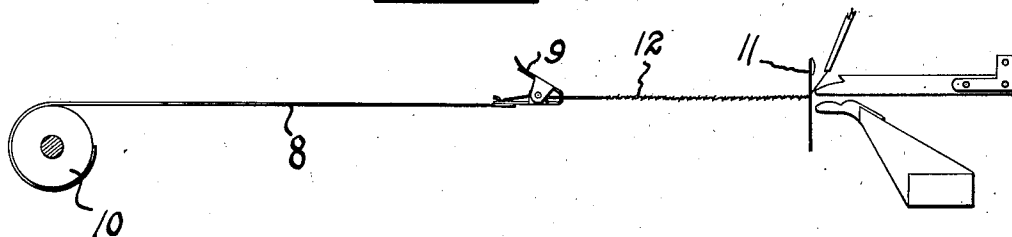


Fig. 3



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## UNITED STATES PATENT OFFICE

2,109,651

DEVICE FOR USE IN KNITTING ELASTIC  
TOP FULL FASHIONED HOSIERY

Arthur Rinehart, Hawthorne, and Louis H. Mendelsohn, Paterson, N. J., assignors, by direct and mesne assignments, of one-half to Excello Hosiery Mills, Hawthorne, N. J., a corporation of New Jersey, and one-half to Gotham Silk Hosiery Company, Inc., New York, N. Y., a corporation of Delaware

Application December 26, 1934, Serial No. 759,184

5 Claims. (Cl. 66—147)

The invention relates to improvements in the method of manufacturing full fashioned knitted hosiery having elastic knitted or woven tops and also to a device for use in practicing said method.

5 One of the objects of the invention is to provide a novel and efficient method of manufacturing full fashioned knitted hosiery whereby an elastic preformed top or welt, made of a knitted or woven fabric, is joined to the knitted fabric  
10 of the leg portion of the hosiery during the knitting operations of the machine without the elastic properties of the welt fabric interfering with or affecting the proper operation of the knitting needles or associated knitting mechanism.

15 A further object of the invention is to provide a method of manufacturing full fashioned elastic top hosiery whereby the fabric of said elastic top is knitted onto the fabric of the leg portion of the hosiery while being held under tension  
20 and in a stretched condition.

A further object of the invention is to provide a method of manufacturing full fashioned elastic top knitted stockings which consists in extending a preformed strip of elastic knitted or  
25 woven fabric provided with a selvage edge having openings or loops therein in a stretched condition equal to the width of the bank of needles of a knitting section, and while said strip is being thus maintained in said stretched and extended  
30 condition, topping the openings or loops in the selvage edge thereof, onto the knitting needles of the knitting section, then knitting the fabric of the leg portion of the stocking and so that the first courses thereof will be interlooped  
35 with the openings or loops of the selvage edge of the elastic strip of fabric, and then completing the knitting of the leg portion of the stocking while said elastic top strip of fabric is being maintained in its extended and stretched condition.  
40

A further object of the invention is to provide a device for maintaining the preformed elastic welt or top strip of fabric in a stretched condition and under tension during the transfer or  
45 topping of said fabric onto the knitting needles of the machine and during the knitting of the leg portion of the stocking.

Referring to the drawing:

50 Figure 1 is a top plan view of a strip of elastic top or welt fabric which is suitable to be employed in carrying out the method of our invention;

Fig. 2 is a top plan view of a device of our invention which may be employed in practicing  
55 our method and which shows a strip of the elas-

tic welt fabric held thereby in an extended and stretched condition; and

Fig. 3 is a diagrammatic view of certain of the pertinent parts of the knitting machine and indicating the manner in which the device illustrated  
5 in Fig. 2 grips and maintains the elastic welt fabric in an extended and stretched condition during the knitting operation of the knitting machine.

Prior to the present invention it has been customary to manufacture full fashioned knitted stockings provided with elastic tops or welts substantially in the following manner.

A preformed strip of elastic knitted or woven fabric, which is made so that it is provided with  
15 a selvage edge containing a line of openings or loops therein, is caused to be stretched by hand and the line of selvage openings or loops are then topped onto the points of a transfer bar. The stretched elastic welt fabric, thus topped on  
20 the transfer bar, is then transferred to the knitting needles of the machine in the usual manner and the transfer bar removed. The knitting of the leg portion of the stocking then proceeds in the usual way.  
25

It has been found in practice that when the elastic welt fabric is topped onto the knitting  
30 needles in this manner, the elastic fabric strip tends to contract to its original and normal width after the transfer bar is removed and this contraction quite frequently results in such a strain being put on the knitting needles that they are thrown out of alignment or break, and are thus prevented from functioning properly during the  
35 knitting operations in forming the leg portion of the stocking. Also the extra strain put on the needles by the contraction of the elastic fabric has been found to result in a breaking or a distortion of the positions of the sinkers and dividers of the knitting mechanism and to prevent  
40 proper operation of these parts.

The method of the present invention not only overcomes the above mentioned difficulties encountered in connection with the manufacture of  
45 elastic top stockings, but provides a means of quickly and accurately topping the selvage edge of the elastic fabric strip onto the knitting needles without the use of a transfer bar. Furthermore it enables the knitting of the entire leg  
50 portion while the elastic top or welt portion is being maintained in a stretched condition. Therefore the knitting of the leg portion may be accomplished without the elasticity of the top or welt interfering with the knitting in any way.  
55

In practicing the method of our invention a preformed elastic welt fabric strip, such as is well known in the art, may be utilized for the top or welt portion of the stocking. Such strip of fabric may be a woven fabric such as is illustrated in Fig. 1 and may for example be composed of a plurality of rubber containing warps which alternate transversely of the body of the strip with fibrous warps. The strip of fabric is also formed with elastic selvage warps 1 and 2.

The selvage 1 may be formed with a line of openings 3 along the same, or there may be provided a supplemental selvage warp which is spaced from the adjacent body selvage leaving open spaces which will constitute a readily perceptible line of openings along the edge of the strip. While we have mentioned and have indicated in the drawing a certain type of construction of woven fabric which is suitable to be employed in connection with our invention, it is to be understood that the invention is not to be limited to this particular type of construction and any other elastic fabric, either knitted or woven, which is provided with a selvage edge having suitable openings or loops therein which might be topped on the needles of a full fashioned knitting machine may be employed.

The strip of elastic fabric is stretched or extended by hand to a width equivalent to the width of the needles of a knitting section of the knitting machine and so that the ends thereof may be engaged with the hooks 4 secured to the end portions of a flat metal strip 5 illustrated in Fig. 2. Said metal strip 5 extends the full width of a knitting section of the machine and has its end portions 6 formed so that they will readily slide along the bridges of the knitting section as the knitting of the stocking progresses. The metal strip is also provided with an opening 7 in the center thereof in which the usual take-up strap 8 of the machine may be hooked or secured. Also secured to the metal strip are a plurality of spaced clamps 9 which may be of any suitable construction and which are capable of clamping and holding one of the edges of the elastic fabric strip when it is stretched between the hooks 4. The take-up strap 8, as is well known, is adapted to extend around and to be wound on the take-up roller 10 as the knitting of the leg portion of the stocking fabric progresses.

When the elastic fabric strip has been stretched and secured to the metal strip 5 it will be obvious that the line of openings in the selvage edge 1 will be maintained in a smooth stretched condition and under a tension so that they will be easily perceptible to the operator of the machine and so that he can readily and directly top the elastic fabric onto the knitting needles 11 indicated in Fig. 3. Also it will be observed that when the selvage edge of the elastic strip of fabric has been topped onto the knitting needles, the strip continues to be maintained in a stretched condition by the hooks 4 and clamps 9 of the metal bar 5 and there is no pull or strain placed upon the knitting needles by reason of a contraction of the elastic fabric.

After the elastic welt strip has been applied to the knitting needles, the machine is operated in the usual manner and the knitting of the leg portion of the stocking, indicated at 12 in Fig. 3, progresses until said leg portion has been completed. Throughout the knitting operation the elastic welt fabric strip is maintained in a stretched and extended condition so that there will be no contraction thereof which would be

likely to interfere with the normal knitting process.

When the knitting of the leg portion of the stocking is completed the elastic fabric is then disengaged from the metal strip 5 and permitted to return to its original unstretched state.

It will be seen from the above description that we have provided a novel and simple method of making elastic top full fashioned stockings which not only permits the joining of a preformed strip of elastic fabric to the plain knitted fabric of the stocking without danger of injury to the knitting needles or other knitting mechanism during the knitting process, but we have also provided a method of topping an elastic fabric onto the knitting needles of a full fashioned knitting machine without the use of a transfer bar.

What we claim is:

1. A device for applying an elastic strip of welt fabric having a selvage edge formed with a topping line of openings therein to the knitting needles of a full fashioned knitting machine which consists of a bar having thereon means for holding said elastic strip of fabric in a stretched condition of an equal length to the length of a section of said knitting needles, and so that said topping line of openings will be maintained in an extended condition, and means for grasping the other edge of said strip so that it is maintained in a stretched condition.

2. A device for applying an elastic strip of welt fabric formed with a selvage edge having a topping line of openings therein, to the knitting needles of a full fashioned knitting machine, which consists of a bar of substantially the same length of a knitting section of the machine, means mounted at each end of said bar for holding the elastic strip of fabric in a lengthwise stretched condition of an equal length to that of a section of knitting needles and so that the topping line of openings is maintained in a stretched extended condition, a plurality of means secured to said bar for clamping the other edge portion of the elastic strip of fabric when it is in its extended condition, and means on said bar for securing the same to the take-up strap of the knitting section.

3. A device for applying an elastic strip of welt fabric, formed with a selvage edge having a topping line of openings therein, to the knitting needles of a full fashioned knitting machine which consists of a bar substantially the length of a knitting section of the machine, and formed with end portions adapted to slide along the bridges of the section, means mounted on each end of the bar for securing the elastic welt fabric in a lengthwise stretched condition of an equal length to that of a section of knitting needles and so that the topping line of openings is maintained in a stretched extended condition, a plurality of means mounted along said bar for clamping the other side of the side edge portions of the elastic strip of fabric when it is being maintained in its stretched condition, and means on said bar for securing the same to the take-up strap of the knitting machine.

4. A stretcher bar for topping elastic welts and the like upon the needles of a knitting machine, consisting of a flat bar having means to engage the ends and an edge portion of the welt to hold the other welt edge in free stretched topping position thereon and during subsequent knitting.

5. In combination with the fabric take-off mechanism of a full-fashioned knitting machine,

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5 a stretcher bar for holding a separately formed elastic welt in elongated position for topping upon the needles and knitting interengaging loops therewith, consisting of a flat bar having means to hold said elastic welt in supported stretched engagement thereon with a free top-

ping edge in spread tautened position adjacent one edge of the bar and means on the bar adapted to be engaged by said take-off mechanism.

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