

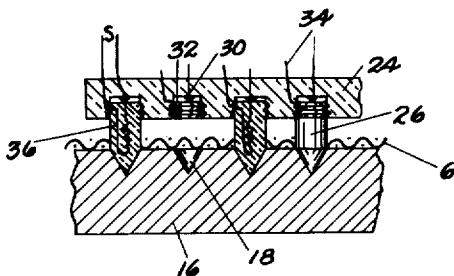
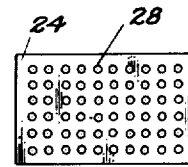
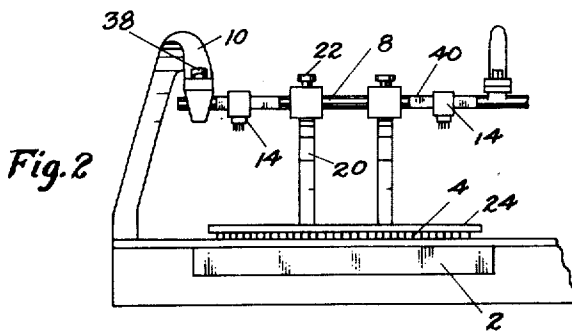
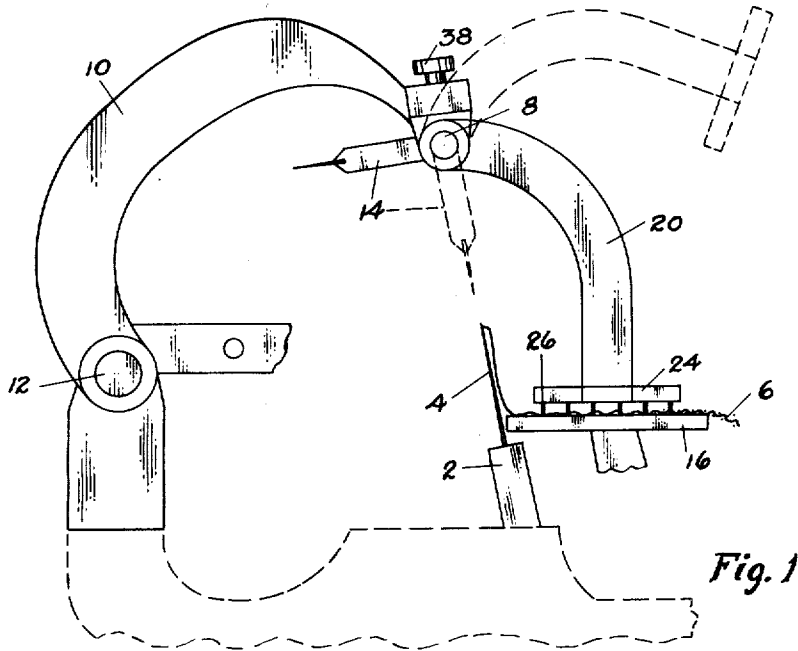
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2,597,726

MEANS FOR MARKING KNITTED FABRICS

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MEANS FOR MARKING KNITTED FABRICS

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The invention relates to the manufacture of knitted fabrics, and more especially to the marking of such fabrics.

It is known to make patterns in knitted fabrics formed of thermosensitive threads, such as nylon, by passing heated penetrating members through the meshes of the fabric, thus spreading the meshes which are set by the heat in a permanently open or spread condition. However, this operation has heretofore been performed by hand, forming patterns in stockings, for example, one at a time, after the stockings are completed and removed from the knitting machine. This requires extra handling of the stocking, and additional labor. Furthermore, the centering of the marking on the stocking is difficult, so that uniformity of the product is hard to achieve.

The primary object of the present invention is to provide an attachment for a knitting machine which makes it possible to overcome these disadvantages in marking knitted fabrics.

Another object of the invention is to provide an arrangement which will mark the fabric while it is still in process on the machine, so that the labor involved in separate handling of the fabric is eliminated and the uncertainty of proper centering of the marking is avoided.

A further object of the invention is to provide an arrangement which allows a large number of different patterns to be formed with the same equipment and parts.

Still another object of the invention is to provide a device which is supported in its movement by one of the movable parts of a conventional flat knitting machine.

Further objects and advantages of the invention will appear more fully from the following description, especially when taken in conjunction with the accompanying drawings which form a part thereof.

In the drawings:

Fig. 1 shows in side elevation a form of the invention;

Fig. 2 is a view of a part of the machine from the right hand side of Fig. 1;

Fig. 3 is a bottom plan view of the carrier; and

Fig. 4 is a cross-section on an enlarged scale through a part of the carrier and table.

The invention is shown herein in combination with a flat knitting machine which is of the type disclosed in the patent to Roesener, Number 2,132,496, although this is only for purposes of illustration as other flat knitting machines are equally adaptable. This machine has a needle bar 2 carrying needles 4 for knitting the fabric

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6. It also has a narrowing shaft or bar 8 mounted in narrowing arms 10 mounted to rock about the axis of shaft 12. The rod 8 carries narrowing combs 14, with suitable means, not shown herein, for properly positioning these combs.

Of course, in practice, such a machine has a considerable number of sections arranged side by side, so as to knit a number of webs, such as stockings, simultaneously.

According to the present invention, there is provided on the machine, in front of the needle bar 2, a table 16 over which the fabric web passes after it has been formed by the needles 4. This table is provided, opposite each section of the machine, with one or more recesses 18 (Fig. 4), which in the form shown are conical. The number and arrangement of these recesses correspond to the pattern to be formed in the stocking, or to the possible variations of such pattern.

Mounted on the bar 8 are arms 20, whose angular position on the bar is fixed by set screws 22. These arms carry a plate 24 in such a position that when arms 10 are in their lowered position, shown in Fig. 1, this plate is spaced slightly above the table 16. Plate 24 is a support for one or more penetrating members 26, heated in some suitable manner. In the preferred form shown herein, the plate 24, which is of insulating material, has a substantial number of sockets 28 (Fig. 3) arranged in columns and rows. These sockets are like small conventional electric sockets, having in the bottom contact buttons 30 and on the side walls threaded metallic members 32, connected by wires 34 to a suitable source of current. Members 26 are formed of a refractory insulating material, and have a high resistance heating wire 36 embedded therein. The terminals of this wire are arranged to make contact with parts 30, 32 when the penetrating members 26 are threaded in the sockets. The lower ends of members 26 are sharply pointed.

The angular position of bar 8 in arms 10 can be selectively fixed by set screws 38. Narrowing combs 14 are preferably slidable along squared portions 40 of the bar, so as to occupy a fixed angular position on the bar while being shiftable along it.

In the use of this device, when the fabric is being narrowed, the shaft 8 is set in the broken line position shown in Fig. 1. The narrowing combs 14 are then manipulated in the conventional manner to form the stocking or the like.

When the part of the stocking to be marked comes to a position over recesses 18, the bar 8 is turned to the solid line position shown in

Fig. 1. This can be done by loosening set screws 38 and turning the bar. The bar is then caused to descend, in any suitable manner. Whatever points or penetrating members 26 are set in sockets 28 will then pass through and spread the meshes of the fabric. The plate 24 is kept in this position long enough for the heat of the needles to set the meshes in open position, and is then raised and knitting is resumed. A clearly defined pattern, which may include letters, numbers, ornamental designs or other shapes is thus imposed on the fabric.

While the use of the plate 24 and the points threaded in it allows the formation of a variety of patterns with a single plate, it is clear that such arrangement is not essential if only a single pattern is desired from a plate, in which event fixed points might be used.

While I have described herein one embodiment of my invention, I wish it to be understood that I do not intend to limit myself thereby except within the scope of the claims hereto or hereinafter appended.

I claim:

1. In combination with a flat knitting machine having a plurality of needles and a narrowing bar mounted for movement towards and from the needles, at least one penetrating member carried by said bar in a position to engage and penetrate a thermosensitive fabric after it has been formed by said needles, and means to heat said member, whereby when said member engages said thermosensitive fabric it spreads the mesh thereof and sets such spread mesh in open condition.

2. In a device as claimed in claim 1, said heating means being electrical.

3. In a device as claimed in claim 1, a table in front of said needles on which the fabric rests, said table having a recess therein engageable by said member.

4. In a device as claimed in claim 3, said member being adjustable angularly with respect to the axis of said bar.

5. In a device as claimed in claim 4, narrowing points mounted on said bar and adjustable around the axis thereof.

6. In a device as claimed in claim 1, said member being adjustable angularly with respect to the axis of said bar.

7. In a device as claimed in claim 6, narrowing points mounted on said bar and adjustable around the axis thereof.

8. In a device as claimed in claim 1, said bar being adjustable angularly around its axis, and said member having a fixed angular position with respect to the bar.

9. In a device as claimed in claim 8, a table in front of said needles on which the fabric rests, said table having a recess therein engageable by said member.

10. In a device as claimed in claim 9, narrowing points mounted on said bar and having a fixed angular position with respect thereto different from the position of said member.

11. In a device as claimed in claim 10, a table in front of said needles on which the fabric rests, said table having a recess therein engageable by said member.

12. In combination with a flat knitting machine having a plurality of needles and a narrowing bar mounted for movement towards and

from the needles, a part carried by said bar in a position to move to a position adjacent a thermosensitive fabric after it has been formed by said needles, said part having means to carry a plurality of penetrating members in the form of a pattern in such positions thereon as to engage the thermosensitive fabric when said part moves adjacent thereto, and having means to supply energy to said members to heat them, whereby when said members engage said thermosensitive fabric they spread the selected meshes thereof and set such meshes in open condition.

13. In a device as claimed in claim 12, said part being adjustable angularly with respect to the axis of said bar.

14. In a device as claimed in claim 13, narrowing points mounted on said bar and adjustable around the axis thereof.

15. In a device as claimed in claim 14, said part having a plurality of electrical sockets therein constituting such carrying means, and said energy supplying means comprising means to supply current to said sockets.

16. In a device as claimed in claim 12, said part having a plurality of electrical sockets therein constituting such carrying means, and said energy supply means comprising means to supply current to said sockets.

17. In a device as claimed in claim 16, a table in front of said needles on which the fabric rests, said table having recesses therein opposite said sockets.

18. In combination with a flat knitting machine having a plurality of needles, a table in front of said needles on which a thermosensitive fabric rests, at least one penetrating member, means mounting said member on the machine for movement towards and from the table, and means to heat said member, whereby when said member engages said thermosensitive fabric it spreads the mesh thereof and sets such spread mesh in open condition.

19. In a device as claimed in claim 18, said table having a recess therein engageable by said member.

20. In combination with a flat knitting machine having a plurality of needles, a table in front of said needles on which a thermosensitive fabric rests, a part mounted on the machine for movement towards and from the table, said part having means to carry a plurality of penetrating members in the form of a pattern in such positions thereon as to engage the thermosensitive fabric when said part moves adjacent thereto, and having means to supply energy to said members to heat them, whereby when said members engage said thermosensitive fabric they spread the selected meshes thereof and set such meshes in open condition.

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