Sept. 10, 1929. H. HAVESON 1,727,769

RUN REPAIR NEEDLE

Filed May 29, 1926

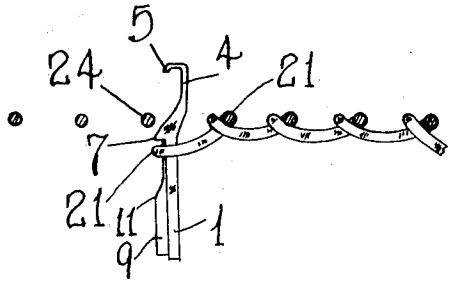


Fig. 1.

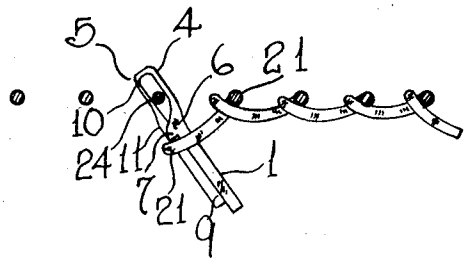


Fig. 2.

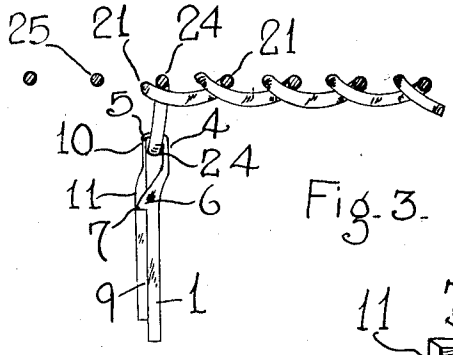


Fig. 3.

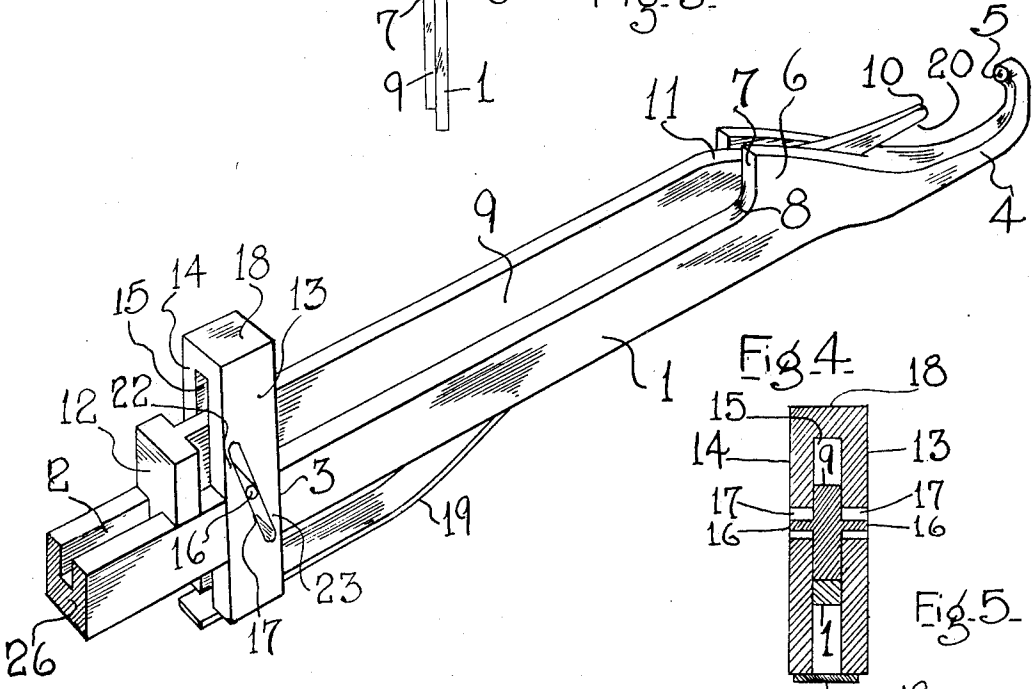


Fig. 4.

Fig. 5.

INVENTOR

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UNITED STATES PATENT OFFICE.

HERMAN HAVESON, OF TRENTON, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FINCH CORPORATION, A CORPORATION OF DELAWARE.

RUN-REPAIR NEEDLE.

Application filed May 29, 1926. Serial No. 112,606.

My invention has for its primary object the repairing of so called runs in hosiery by means of a sliding latch needle, as distinguished from the use of a pivoted latch needle for the same purpose.

While my needle comes under the general class of sliding latch needles, yet it is not the ordinary sliding latch needle, but a special species of that general class, the special species being my invention.

Another object of my invention is to provide means upon the shank of the needle to positively retain the last formed loop while the sliding latch is being moved forward, relatively to the shank, to engage yarn to form a subsequent loop.

Another object of this invention is to provide means on the latch which will co-act with the positive loop retaining means upon the shank to release the said retained loop from the said positive retaining means when the latch has engaged yarn to form a subsequent loop.

Another object of my invention is to provide means whereby the latch is yieldingly held in its forward position, that is, in contact with the point of the needle hook.

I have disclosed a single embodiment of my invention herein as is illustrated by the following figures wherein like reference characters refer to like parts:

Fig. 1 is a section along a sinker wale of a stocking adjacent to the needle wale wherein a run has occurred and wherein a needle, in accordance with my invention, is shown in side view.

Figs. 2 and 3 are views similar to Fig. 1, showing successive steps in the repairing operation.

Fig. 4 is a perspective view of the sliding latch needle illustrating my invention, the extension of the shank thereof being broken off and shown in section.

Fig. 5 is a sectional view taken through the piece 18 and showing the parts in position of Fig. 4.

Considering Fig. 4, 1 represents the shank portion of a certain sectional shape, herein best, though not necessarily, shown as having a rectangular cross-section. A longitudinal groove 2 extends the length of shank 1 up to the hook portion 4, which has the usual shape and which has the slight hollow or circular depression 5 therein at the point of hook 4. Just below the hook 4, the needle is slightly widened as at 6 to form a bulge or shoulder 7 at right angles to the body shank 1. The juncture of 7 and the body 1 is rounded as at 8. The previously mentioned groove 2 extends through the shoulder 6, cleaving the said shoulder into two upstanding portions.

Sliding in the groove 2 is the latch 9 having the point 10 and the abutment 12. Point 10 is adapted when moved forward to engage and aline with the hollow 5 of the hook 4. The point 10 tapers up from its end to the main body of shank 9 gradually, reaching the full body height at 11. The distance between 10 and 11 is such that when 10 registers with hollow 5 the full height 11 will be in position alongside the shoulder 7 so that a continuous unbroken surface will be formed as is seen in Fig. 3. The under side of the point of latch 9 is not shaped at all, as is seen at 20, it forms a single plane with the bottom of latch 9 and slides in the groove 2. The gradual sloping from 10 to 11 is such that when 9 is in the retracted position of Fig. 1, or even part way advanced, it will leave between itself and the shoulder 7 a notch, within which the yarn 21 is caught as in Fig. 1. The notch is still partly formed and plainly seen in Fig. 4. Formed integrally therewith through the shank 9 is a pin 16, the function of which will be presently described.

The operating means is at the rear of the needle and consists of a U shaped piece 18 having the side walls 13 and 14 and the central slot 15. It is shown inverted in Fig. 4. Formed in each side wall 13 and 14 are slots 17 sloping as shown, the top of the slot 17 nearest the open end of the U shaped piece 18 being closest to the needle hook end. Two wedge shaped portions 22 and 23 are thus formed in the side piece 13, two similar wedge shaped portions (not shown) are formed in the other shoulder 14. The pin

16 of the shank 9 extends through both the slots thus formed in pieces 13 and 14.

The shank 1 has vertical grooves cut in each side as at 3, forming a structure within which the piece 18 slides vertically upon proper force being applied to it.

Also the slot 15 in the piece 18 allows the latch 9 to slide freely in its own longitudinal movement in the shank 1.

Thus it is seen that when one applies force to the top of 18 that the wedge shaped piece 23 will, with 18, slide vertically downward relative to shank 1 and will force the latch 9 through the intermediary of the pin 16 to slide in the groove 2 rearwardly relative to the shank 1 and at right angles relative to the piece 18. The length of the slot 17 is such that the point 10 will be withdrawn and stopped between or intermediate the portions 6.

Upon the force being removed a spring 19 fastened to the underside of shank 1 will force the piece 18 upwardly and cause the wedge shaped piece 22 to force the latch forward until the point 10 rents within the hollow 5. The operation is similar to that performed in moving the latch rearwardly and need not be again described. When the point 10 rests in the hollow 5 the top of the slope at 11 forms an unbroken plane with the top of the portion 6.

It is of course understood that the means shown for actuating the latch is only one type of means that may be used for this purpose. As is evident, any means which will impart a movement to the latch, in the direction of its length and relative to the shank, may be used to actuate the said latch. With such use, the latch movements must be properly timed and this is so regardless of the particular type of actuating means employed.

Method of use.

The last loop 21 of Fig. 1 is impaled upon shank 1 and beneath shoulder 7, being held there by said shoulder, since the latch is withdrawn leaving the open notch. The latch is now allowed to move forward, at the same time being pointed to the left of the yarn 24, while at the same time shoulder 7 still holds loop 21. When point 10 is definitely around yarn 24, the latch 9 is allowed to move forward (action of spring 19) and yarn 24 is caught inside the hook 4 when point 10 registers with hollow 5. At the same time the forward action of latch 9 has brought the full height 11 of said latch beneath the loop of yarn 21, thus supporting 21 on top of the portion 6, and since this forms a single unbroken plane the loop 21 may slide forward down the slope between 11 and 10 and over the shoulder 7 and thus by moving the needle downward the loop of yarn 24 will be drawn through the old loop 21.

The needle is shown as being tilted to get the point of the latch to the left of the next yarn 24, the fabric being shown as stationary. Relative motion is all that is required, so the needle may remain stationary (with respect to general tilting motion) and the fabric moved by any suitable means, so that the latch point operatively engages the yarn in the run, upon relative knitting movements only of the latch and the shank, as distinguished from a tilting movement of the same.

Next the same operation is repeated, the loop 24 being caught beneath the shoulder 7 and the yarn 25 being caught within the hook 4 and then drawn through the formed loop 24 to form a new loop of yarn 25.

This operation is repeated forming a new loop of each yarn in each course until the entire run has been repaired.

The dangers of the pivoted latch needle are thus avoided, that is, the old loop is positively caught and there is no chance for faulty repair work with average skill attendant upon the operator.

The shank 1, shown broken off at 26 is adapted to have a handle secured thereto for the convenience of operation.

While I have shown one embodiment of my invention only, I wish it to be understood that I am not limited to this embodiment in the method of repairing runs but may use any modification of a sliding latch needle which will present the essential features as claimed in the following appended claims.

In normal repairing the run fabric is spread or stretched over any suitable holder or framework to facilitate repairing.

It is within the scope of my invention to use needles of different diameters, that is, being of varying cross-sectional areas, so as to provide means of repairing runs according to the length of the original stitch. To clarify, if the original stitch were small, I would use a fine gauge needle sufficiently fine to draw stitches of the same length as the original. With different length stitches, I would use a needle guage of the corresponding diameter.

What I claim and desire to secure to me by Letters Patent is:—

1. The method of using a sliding latch needle comprising a shank and a sliding latch thereon, in run repairing, which consists in retaining the last formed loop of the said run on the shank while the yarn of the next course of the run is being enclosed by the sliding latch and in then utilizing the latch to release the retained loop when the latch has enclosed the yarn.

2. The method of using a sliding latch needle, comprising a shank and a latch slid-

ing thereon, in run repairing which consists in positively retaining the last formed loop of the run on the shank while the yarn of the next course of the run is being enclosed by the sliding latch and in then utilizing the latch to release the positively retained loop when the latch has enclosed the yarn.

3. A sliding latch needle comprising a shank and hook portion and a latch portion in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed relation; and having means to repair runs in knitted fabrics, including means for drawing a length of yarn forming part of the run into loop formation and drawing the same through a previously formed loop, and means on the latch portion for casting off the previously formed loop over the newly drawn loop.

4. A sliding latch needle comprising a shank and hook portion and a latch portion in sliding relation to the shank toward and away from the hook to co-act with the same in open and closed relation; and having means to repair runs in knitted fabrics, including means for drawing a length of yarn forming part of the run into loop formation and drawing the same through a previously formed loop retained on the needle and means on the latch portion for casting off the previously formed loop over the newly drawn loop.

5. A sliding latch needle comprising a shank and hook portion and a latch portion in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed relation; and having means to repair runs in knitted fabrics including means to retain a loop during the time that a length of yarn forming part of the run is being drawn into loop formation, prior to drawing the same through the retained loop and prior to casting off the retained loop over the newly drawn loop.

6. The combination claimed in claim 5, wherein the means to retain the loop is means positively retaining the loop prior to drawing the new loop and casting off the retained loop over the newly drawn loop.

7. A sliding latch needle comprising a shank and hook portion and a latch portion in sliding relation to the shank toward and away from the hook to co-act with the same in open and closed relation and having means to repair runs in knitted fabrics including means to retain a loop during the time that a length of yarn forming part of the run is being drawn into loop formation and means to release the said retained loop as the newly drawn loop is being drawn through the retained loop to cast-off the retained loop over the newly drawn loop.

8. The combination claimed in claim 7 wherein the means to retain a loop is means positively retaining the loop prior to drawing the new loop and casting off the retained loop over the newly drawn loop.

9. The combination of claim 5 wherein the means retaining the loop comprises means on the shank of the needle.

10. The combination of claim 7 wherein the means retaining the loop comprises means on the shank and the means for releasing the retained loop comprises means on the latch co-acting with the means on the shank.

11. The combination of claim 5 wherein the means for retaining the loop comprises a shoulder cut in the shank at a point adjacent the hook member.

12. The combination of claim 7 wherein the means for retaining the loop comprises a shoulder on the shank formed adjacent the hook member and the means for releasing the loop comprises a sloping shape to the latch member to co-act with the shoulder means.

13. A sliding latch needle for run repairing comprising a shank and hook portion and a latch portion in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed relation, and means to retain a loop on the needle back of the hook at predetermined times with restricted longitudinal movement relative to at least one of said portions.

14. A sliding latch needle for run repairing comprising a shank and hook portion and a latch portion in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed relation, and means including one of said portions to retain a loop back of the hook at predetermined times with restricted longitudinal movement relative to said portion.

15. A sliding latch needle for run repairing comprising a shank and hook portion and a latch portion in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed relation, and means including the latch to retain a loop back of the hook at predetermined times with restricted longitudinal movement relative to said portion.

16. A needle for repairing runs or ravels in fabrics having a shank member terminating in a hook portion and a sliding latch member, said shank member sloping upwardly from the hook portion and then downwardly to form a shoulder.

17. A needle for repairing runs or ravels in fabrics having a shank member terminating in a hook portion and a sliding latch member, said shank member sloping upwardly from the hook portion and then abruptly

downwardly to form a substantially vertical shoulder.

18. A needle for repairing runs or ravels in fabrics having a shank member terminating in a hook portion and a sliding latch member, said shank member having an abrupt shoulder and said latch member having an inclined upper surface co-acting with said shoulder in open and closed positions of the latch member.

19. A sliding latch needle comprising a shank and hook portion and a latch member in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed positions, and having means to repair runs in knitted fabrics, said means including a shoulder adapted to retain a loop during the time that a length of yarn forming part of the run is being drawn to loop formation, prior to drawing the same through the retained loop and prior to casting off the retained loop over the newly drawn loop.

20. A sliding latch needle comprising a shank and hook portion and a latch member in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed positions, and having means to repair runs in knitted fabrics including means comprising a shoulder to positively retain a loop during the time that a length of yarn forming part of the run is being drawn to loop formation, prior to casting off the retained loop over the newly drawn loop.

21. A sliding latch needle comprising a shank and hook portion and a latch member in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed positions, and having means to repair runs in knitted fabrics including means comprising an abrupt shoulder upon said shank portion to retain a loop during the time that a length of yarn forming part of the run is being drawn to loop formation, and means upon the latch member co-acting with the abrupt shoulder upon said shank portion to release the said retained loop as the newly drawn loop is being drawn through the retained loop to cast off the retained loop over the newly drawn loop.

22. A sliding latch needle comprising a shank and hook portion and a latch member in sliding relation to the shank portion toward and away from the hook to co-act with the same in open and closed positions, and having means to repair runs in knitted fabrics including means comprising a shoulder upon said shank portion to positively retain a loop during the time that a length of yarn forming part of the run is being drawn to loop formation, and means upon the latch member co-acting with the shoulder upon said shank portion to release the said retained loop as the newly drawn loop is being drawn through the retained loop to cast off the retained loop over the newly drawn loop.

23. The method of repairing runs or ravels in fabrics with the use of a needle comprising a shank member containing a shoulder and terminating in a hook portion and a sliding latch member having an inclined upper surface co-acting with said shoulder in open and closed positions of the latch with reference to said hook portion, by inserting said needle through a loop formed in the run or ravel, sliding the latch away from the hook to open position and continuing the movement of the needle on through the fabric until the loop has slid back from the hook portion and is positively retained upon the shank member by said shoulder, then reversing the movement of the needle through the loop catching the next forward thread in the hook and sliding the latch toward the hook to closed position, lifting the retained loop over said shoulder by the inclined upper surface of the latch and casting it off over the hook portion, the thread caught in the hook thereupon forming a new loop taking the place of the first described loop, then reinserting the needle into the fabric as before and repeating the operation until the run or ravel has been repaired.

In witness whereof, I have hereunto set my hand at Trenton, New Jersey, this 14th day of May A. D. 1926.

HERMAN HAVESON.