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R. A. LINEHAM ET AL

2,097,495

SEWING MACHINE NEEDLE

Filed June 2, 1936

Fig. 1

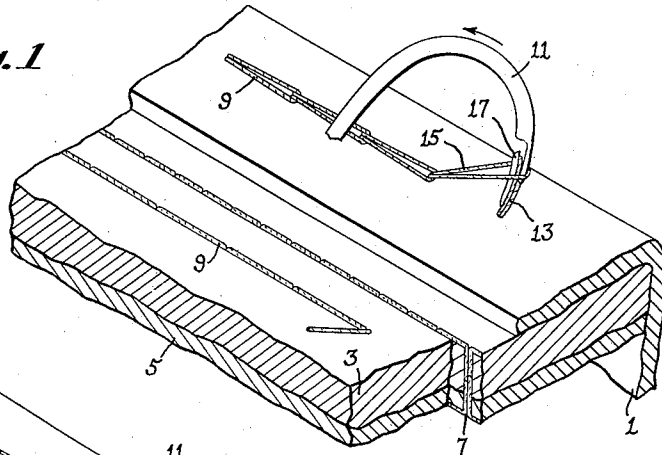


Fig. 2

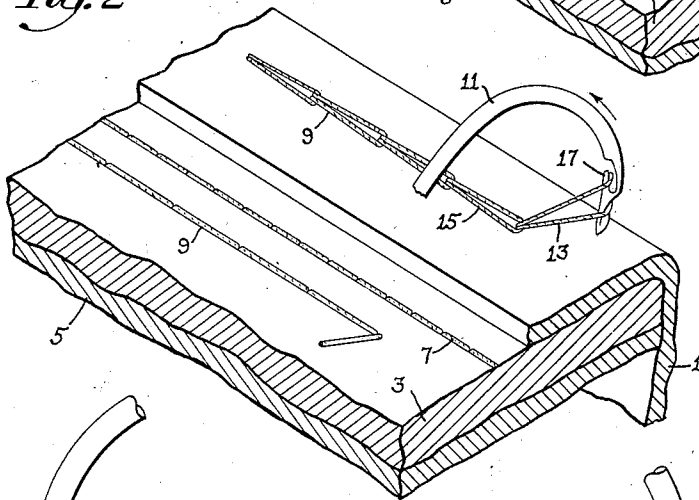


Fig. 3

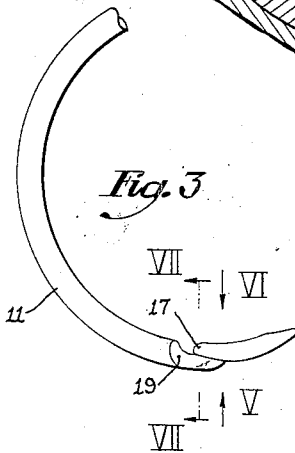


Fig. 4

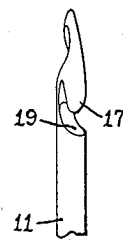
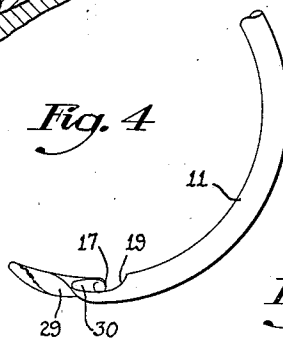


Fig. 5

Fig. 6

Fig. 7

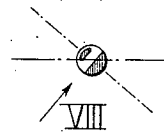
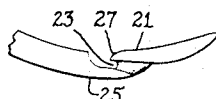


Fig. 8



Witness

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UNITED STATES PATENT OFFICE

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SEWING MACHINE NEEDLE

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3 Claims. (Cl. 112-222)

This invention relates to sewing machines or needles therefor and is particularly, but by no means exclusively concerned with machines and needles for sewing together the uppers and soles of so-called slipper turnshoes sewn without a last therein.

In the making of slipper turnshoes by sewing together an upper and a sole by usual chainstitch curved hooked needle sewing machines, such for instance as disclosed in patent to Ricks No. 1,923,586, dated August 22, 1933, it is customary to turn the upper inside out, place a sole therein, turn the margin of the upper over the edge of the sole until it lies over on the margin thereof, sew the margin of the upper and sole together by the machine and then turn the shoe inside out so that the margin of the upper lies on the surface of the sole which faces the inside of the shoe.

The soles of slipper turnshoes, made in this manner, may be of different character. They may be composed wholly of leather or felt, or may be a combination of leather and felt, in which latter case a thin leather sole and a comparatively thick felt sole are usually sewn together, before the sole and upper are assembled together, by a lockstitch seam extending round the margin of the sole near the edge thereof.

In sewing an upper to a combination sole by a curved hooked needle chain stitch sewing machine, difficulty is often experienced by reason of the threads of the lockstitch seam which secures the two portions of the sole together, or the preceding loop of the chain stitch being formed, being caught by the barb of the needle and broken as the needle withdraws from the work. The principal object of the present invention is to eliminate this difficulty in the sewing of an upper and a combination sole of a slipper turned shoe by a curved hooked needle chain stitch sewing machine.

With the above and other objects in view, as may hereinafter appear, a feature of the present invention contemplates the provision of a curved hooked needle for use in a chain stitch sewing machine having its barb on the side of the needle away from which the work is to be fed, and on the inner side or concavely curved portion of the needle. Preferably the barb will be so positioned as to be directed at an angle of approximately 40 degrees towards the axis of curvature of the needle. Also preferably the barb will be provided with a surface curving at the needle throat inwardly towards the center of the needle stem.

A needle constructed as above described may be said to have its barb positioned, when the barb

is directly below the center of the curve of the needle, on one side of the needle looking onto and along the point of the needle, and above a horizontal plane passing through the center of the stem of the needle below the barb at right angles to the plane in which the curved center of the needle stem lies.

The features of invention above referred to, and other features hereinafter described and claimed, will be apparent from the following description of a preferred form of curved hooked needle and of its manner of use in a chain stitch shoe sewing machine.

In the accompanying drawing Figures 1 and 2 are perspective views, to an enlarged scale, illustrating diagrammatically two positions of the needle during the sewing together of an upper and a combination sole by a chainstitch seam; Figures 3 and 4 are side elevations of opposite sides of part of the said preferred form of needle to an enlarged scale; Figure 5 is a view looking in the direction of the arrow V in Figure 3 of the hooked end of the needle; Figure 6 is a similar view looking in the direction of the arrow VI in Figure 3; Figure 7 is a section on the line VII-VII in Figure 3; and Figure 8 is an elevation of the end of the needle when viewed in the direction of the arrow VIII in Figure 7.

In Figures 1 and 2 part of an upper 1 and part of a combination sole composed of a layer of felt 3 and a layer of leather 5 are shown. A lockstitch seam shown at 7 joins the two parts 3 and 5 of the combination sole together. Part of a chainstitch seam joining the upper and sole together is shown at 9, 9.

In Figure 1 the needle 11 is moving in the direction of the arrow and, is drawing a loop 13 of needle thread through the work and through a loop 15 passing round the needle which the needle has just previously drawn through the work. It will be observed that at this time the loop 15 extends upwardly and rearwardly from the hole in the work from which it extends. The barb 17 of the needle has just passed through the loop 15 and is so positioned round the stem of the needle that it passes freely through the loop 15.

In Figure 2, the needle has moved further back in the direction of the arrow and has moved to the right in readiness to pass through and then feed the work. The loop 15 has slipped off the needle and been drawn down on to the work by the action of the needle as it moves rearwardly and to the right.

It will be observed that the barb 17 of the needle is positioned, as shown in Figures 3 and 4 at the

left hand side of the needle and towards the inside of the needle when viewed from in front of the needle point. As shown in Figure 7, the point of the barb lies on a line extending upwardly and to the left from the center of the needle stem at an angle of substantially forty degrees. This position of the barb has been found to be such that the barb not only avoids engagement with the threads of the lockstitch seam 7, but also passes readily through the loop 15. The space between the point of the barb 17 and the shoulder 19 is comparatively small and the outer surface 21 (Figure 8) of the barb is about the same radius as the stem of the needle so that the shoulder 19 as the needle advances through the work is shrouded by the barb and is thus prevented from engaging the threads of the lockstitch seam 7. The thread receiving recess 23 (Figure 8) of usual size is formed in the needle as close as possible, consistent with strength, to the outer face 25 of the needle, and the outer face 21 of the barb is curved, as shown at 27 (Figure 8) so that, as the needle retires through the work, the curved part of the face 27, if it engages a thread of the lockstitch seam, pushes this thread away from the barb and prevents the barb from catching the thread.

The needle is provided with grooves 29, 30 of substantially usual form in which the needle thread lies as shown in Figures 1 and 2.

The said preferred form of curved hooked needle has a radius of about half-an-inch and will be sharply pointed if the needle is to be used for sewing uppers to felt or combination soles and will be chisel shaped if the sole is composed wholly of leather.

With the barb of the preferred form of needle arranged as hereinbefore described, the barb is unlikely to catch the lockstitch seam as it retires since the threads of the latter seam extend substantially vertically through the sole and lie along the upper and lower faces of the sole while the barb is so positioned round the stem of the needle that, as the needle retires through the

work, the barb avoids engagement with the threads of the lockstitch seam.

When the said preferred form of needle retires through the work and draws a loop of thread through the work and through a loop of thread then passing round the needle, this latter loop which extends from the hole in the work just previously formed by the needle round the needle is drawn somewhat away from the work by the needle as it moves rearwardly, and this loop takes up such a position that the barb of the needle positioned on the needle as above described passes readily through it as the needle retires.

It will be understood that the use of a needle with its barb positioned as above described and of the said radius is not restricted to use in machines for sewing together an upper and a combination sole.

The nature and scope of the invention having been indicated, what is claimed is:

1. A curved hooked needle for use in chain-stitch shoe sewing machines comprising a stem curved in the arc of a circle and provided with a barb located on the side of the needle away from which the work is to be fed and directed towards the axis of curvature of the needle stem.

2. A curved hooked needle for use in chain-stitch shoe sewing machines comprising a stem curved in the arc of a circle and provided with a barb located on the side of the needle away from which the work is to be fed, and directed at an angle of substantially forty degrees towards the axis of curvature of the needle stem.

3. A curved hooked needle for use in chain-stitch shoe sewing machines comprising a stem curved in the arc of a circle and provided with a barb located on the side of the needle away from which the work is to be fed and on the concavely curved portion of the needle stem, said barb having a surface curving inwardly towards the center of the needle stem as the surface approaches the throat of the needle.

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