(No Model.)

W. G. TILLOU.

NEEDLE FOR LEATHER SEWING MACHINES.

No. 318,833. Patented May 26, 1885.

Fig. 1

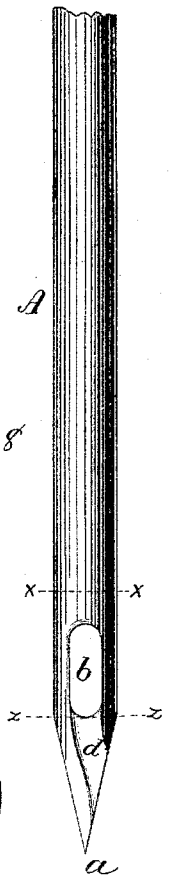

Fig. 2

Fig. 3

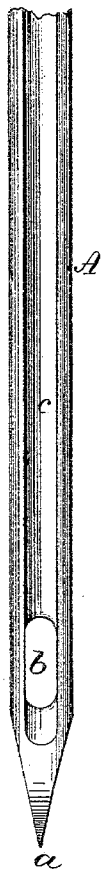

Fig. 4

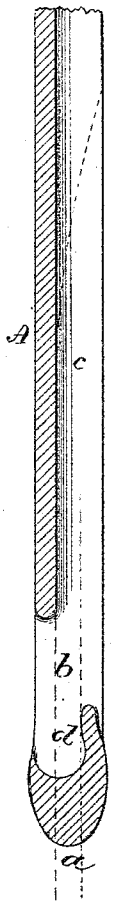

Fig. 8

Fig. 7

Fig. 5

Fig. 9

Fig. 6

Witnesses.
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NEEDLE FOR LEATHER-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 318,833, dated May 26, 1885.

Application filed October 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER G. TILLOU, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Needles for Leather-Sewing Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view of a needle, looking toward the eye on the side having the groove running from the eye downward; Fig. 2, a view at right angles to Fig. 1; Fig. 3, a reverse side of Fig. 1, showing the groove from the eye upward; Fig. 4, a vertical central section in the plane of the eye; Fig. 5, a transverse section on line *x x* of Fig. 1; Fig. 6, a transverse section on line *z z* of Fig. 1; Figs. 7, 8, and 9, modifications.

This invention relates to an improvement in needles for sewing-machines designed with special reference to sewing leather.

In machines sewing leather with waxed thread I find that the break of the thread is produced on the ascent of the needle and as the eye and portion of the needle below passes through the leather. The reason of this is that as the needle passes down through the leather it makes a hole the full size of the needle in advance of the thread—that is, in advance of the eye—and the body of the needle following holds that opening, and as on the descent there is very little, if any, tension upon the thread or movement of the thread through the eye, there is little liability to break the thread on the descent of the needle; but as the needle returns that part of the thread from the eye downward comes in hard contact with the leather, the leather gradually closing as the point of the needle rises, and brings a strain in the drawing up of the needle upon the thread at the eye. The thread being held by the leather causes the thread to break at the eye.

It is the object of my invention to obviate this difficulty in leather-sewing machines; and the invention consists in a needle having an eye near the point, with a longitudinal groove upon one side from the eye upward, and a groove upon the opposite side from the eye downward and turning from the plane of the eye around to the point in a spiral line, the depth of the two grooves being such with relation to each other that they form a tubular passage for the thread longitudinally through the needle and so that the thread drawn through the needle as the needle rises will run in a line substantially parallel with the axis of the needle and within the circumference of the needle, as more fully hereinafter described.

A represents the body of the needle, which is best made with a flat or awl point, *a*. Transversely through it, near the point, is the eye *b*, which is best made oblong, as shown, the width of the eye corresponding to the diameter of the thread, but the length considerably longer than the diameter. On one side of the needle, and from the eye *b* upward, is a longitudinal groove, *c*. This groove is in width substantially the width of the eye, (see Fig. 3,) but in depth more than half the diameter of the needle. Upon the opposite side, and from the eye downward, is a groove, *d*. This groove *d*, like the groove *c*, is in width equal to the width of the eye, and in depth more than half the diameter of the needle, and, starting from the eye, the groove *d* winds around onto the side of the point in a spiral line to the flat side of the point, as seen in Figs. 1 and 2, it being understood that the plane of the point is parallel with the plane of the eye. By this construction it will be observed that the groove *c* on the one side opens directly into the groove *d* on the opposite side, and so that as the needle rises from the work the thread will be drawn in substantially a direct line, and will stand entirely within the periphery of the needle without bend, as seen in broken lines, Fig. 4, and because of this peculiar draft of the thread, and its standing entirely within the periphery of the needle, there is no strain or cutting action produced by the leather upon the thread, and the difficulties heretofore experienced in breaking the thread as the needle rises through the work are avoided.

In the foregoing I have described the needle as having the groove on one side of substantially the same depth as that upon the opposite side—that is, both passing the longitudinal central line of the needle—and so that the thread stands in an axial line with the needle; but it is not essential that both grooves shall be of the same depth, and I find it advantageous to make the groove above the eye of less depth than the groove below the eye, as seen in Fig. 7. In this construction the needle is stronger than when cut of equal depth, as first described. In this construction the groove below the eye is made deeper than in the first illustration, and the groove above is made of less depth, so that I preserve the same tubular character of the needle; but in this case the axis of the tube is eccentric to the axis of the needle. One great advantage of this construction is that it enables me to flatten or cut away the needle upon the side opposite the groove above the eye, as seen in Figs. 8 and 9, reducing the needle on the flat side to such an extent that as the needle descends the thread will come within the periphery of the needle, it being understood that the diameter of the needle below the eye remains the same or is so much greater, as seen in Fig. 8, as to permit the thread in the descent of the needle to lie along-side of the needle without severe rubbing strain upon the leather.

I have represented the longitudinal groove on the one side as of an equal depth throughout; but the groove may decrease in depth from the eye upward, as indicated in broken lines, Fig. 4.

While I prefer to make the point of the needle flat, as shown, the point may be round, as indicated in broken lines, Fig. 2. I therefore do not wish to limit my invention to a needle having a flat or awl shaped point; but

What I do claim is—

1. The herein-described needle, having the eye transversely through it near the point, a longitudinal groove on one side from the eye upward, and a groove upon the opposite side from the eye downward, the last-mentioned groove of a depth more than half the diameter of the needle, and so as with the groove above to form a continuous direct tubular-like passage through the needle, the said last-mentioned groove running from the eye spirally to the point, substantially as described.

2. A needle having a flat or awl shaped point, constructed with an eye, *b*, transversely through it near the point and in a plane parallel with the point, the groove *c*, extending from the eye upward, and the groove *d*, upon the side opposite the groove *c*, extending downward and spirally around onto one of the flat sides of the point, the depth of the last-mentioned groove being more than one-half the diameter of the needle, and which, with the groove *d*, forms a continuous tubular-like passage longitudinally through the needle, substantially as described.

3. The herein-described needle, having the eye transversely through it near the point, a longitudinal groove on one side from the eye upward, and a groove upon the opposite side from the eye downward, the last-mentioned groove of a depth more than half the diameter of the needle, and so as with the groove above to form a continuous direct tubular-like passage through the needle, the said last-mentioned groove running from the eye spirally to the point, the side of the needle opposite the groove above the point flattened, substantially as described.

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Witnesses:
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