(No Model.)

C. E. WHEELER.

SEWING MACHINE.

No. 446,398. Patented Feb. 10, 1891.

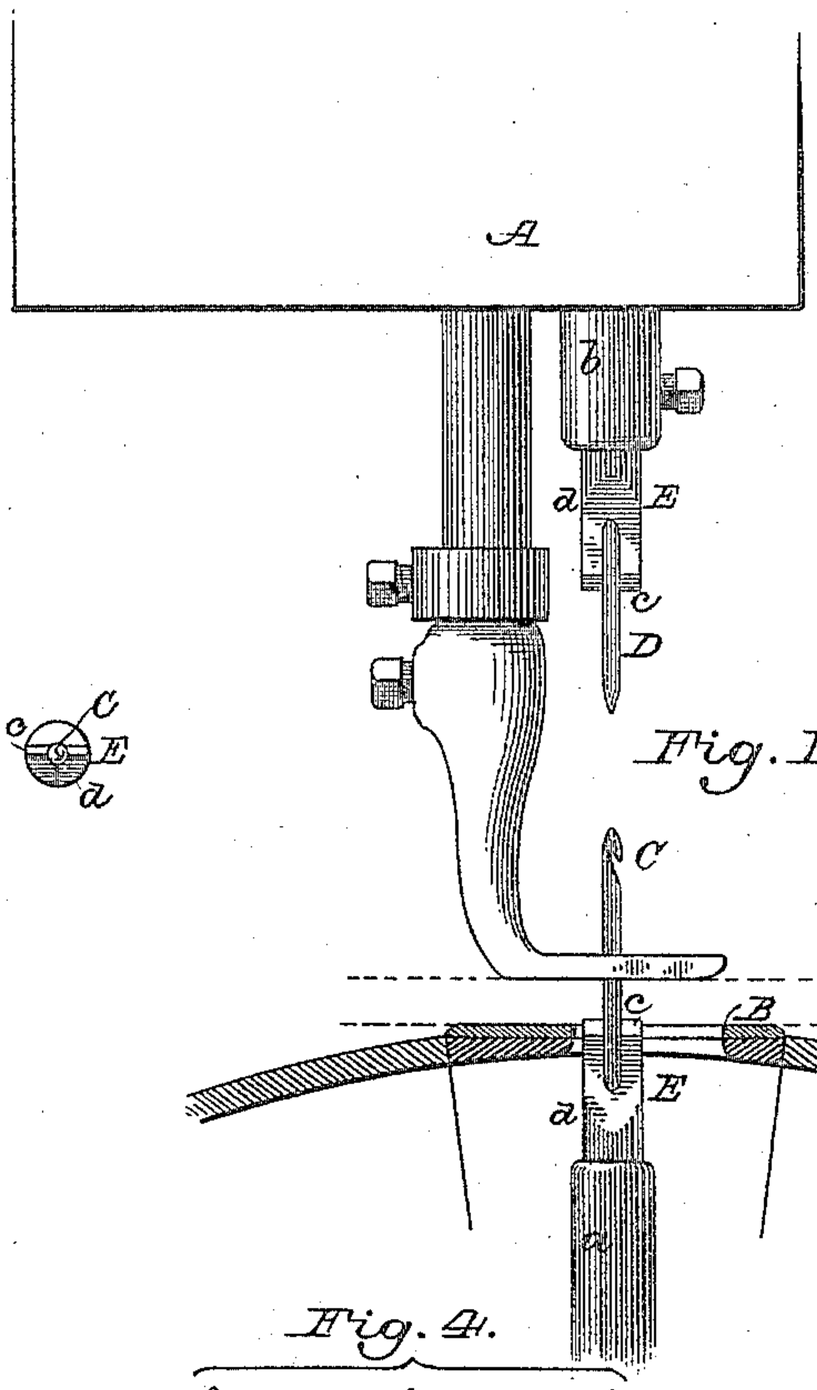

Fig. 1.

Fig. 2.

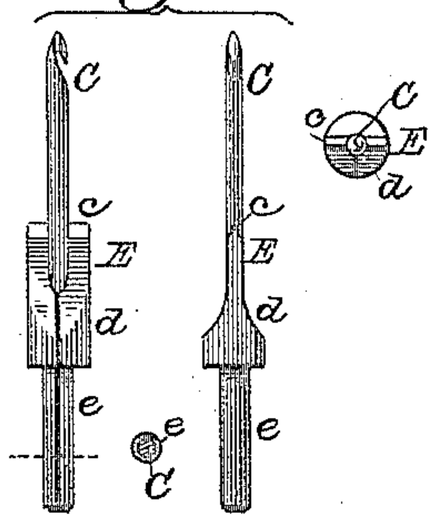

Fig. 3.

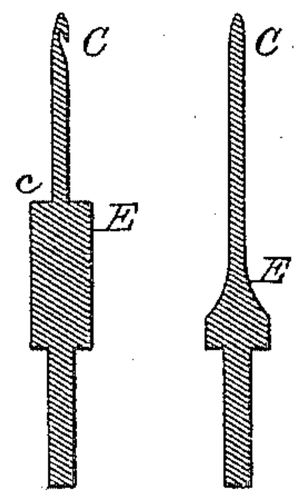

Fig. 4.

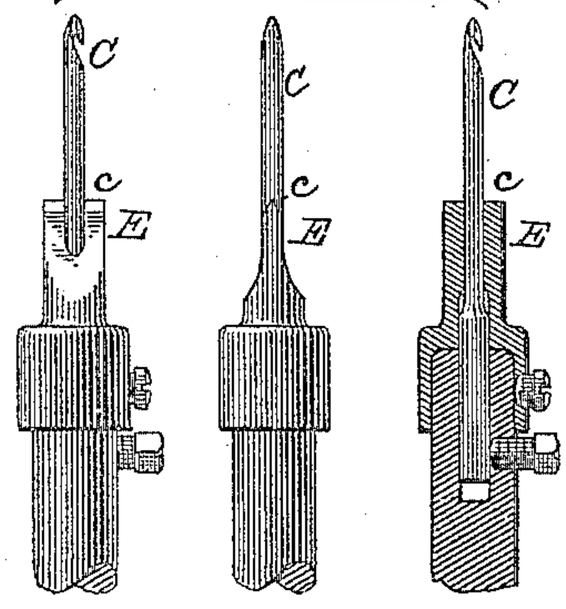

Fig. 5.

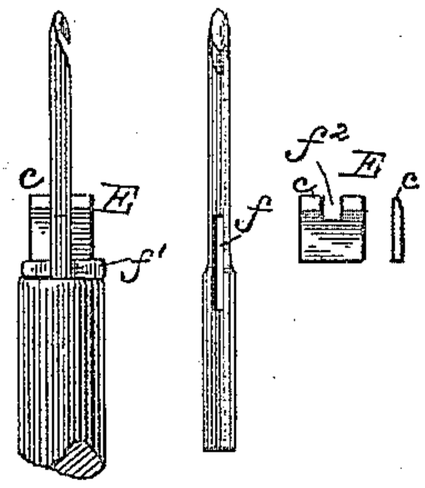

Fig. 6.

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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 446,398, dated February 10, 1891.

Application filed June 13, 1885. Serial No. 168,606. (No model.)

To all whom it may concern:

Be it known that I, CEPHAS E. WHEELER, of Hopkinton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Channeling Mechanism for Sewing-Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

My said improvements are applicable generally to such machines as are or may be employed in stitching such heavy fabrics as leather, and into which it is desirable to embed the thread at one or both sides of the fabric, and therefore said improvements are specially applicable to wax-thread sewing-machines.

In stitching soles to boots and shoes an angular channel is usually formed in the leather for receiving the line of stitches, and then completely hiding it by flatly folding down the flap of the channel and securing it with paste or cement. My improvements may be employed to good advantage in connection with or after the operation of ordinary channeling devices, and thereby enable a better outside finish to be obtained, because the thread will be more thoroughly embedded in the channel and enable the flap to fully return to its original position. It has also been common heretofore to make a draw cut in leather to correspond with the stitch-line and also with a hand-knife or chisel to make stabbing cuts in which to embed the thread at one or both sides of the fabric.

Now in accordance with my invention I employ a reciprocating rigidly-carried scoring-tool which is operated on the stitch-line and has its edge coincident with the center of the feed-line and also coincident with the axis of the needle. This scoring-tool can be relied upon either for progressively making an actual cut or a V-shaped depression or channel, according to the character of the edge of the tool, as well as to the degree of force with which it is driven into the leather. When no awl is employed, said scoring-tool is necessarily mounted upon the needle-bar and in close proximity to the shank of the needle and may or may not be integral with the needle. If an awl be employed and it and the needle are both located above or below the work-plate, said scoring-tool may be mounted on either the awl-bar or the needle-bar, although the latter is preferable. If the awl and the needle be oppositely located, one above and the other below the work-plate, then the bar for each may be provided with a scoring-tool for enabling the thread to be well embedded in the fabric at both sides thereof; or when it is desired to be thus embedded at one side only, then but one scoring-tool would be used, and it would be located on the needle-bar or on the awl-bar according to the circumstances of each case.

It will be well to here state that I am aware that it is not new to employ a cutting-tool with a reciprocating needle-bar in a sewing-machine, such having long been used for trimming the fabric at one side of the stitch-line and making an edge corresponding in contour with or parallel to said line. That said prior combination of a cutting-tool, with a needle-bar, is radically unlike my combinations of needle-bar and scoring-tool will be readily apparent on observing that the two combinations are not interchangeable for performing the same service, and that the trimming or cutting tool must operate at the one side of a stitch-line and opposite stitches already formed, while my scoring-tool must operate as a prolongation of the center of the stitch-line and in advance of formed stitches; and, further, my combination pertains to controlling the relations of the thread to the leather, while said prior combination has nothing whatever to do with the stitching operation.

I am also aware that in sewing-machines adapted to stitch button-holes a cutting-blade has been mounted upon a needle-bar by means of a sliding stock backed up by a spring, for progressively cutting a slit in fabric during the operation of stitching one side of a button-hole and organized so as to be prevented from cutting during alternate strokes of the needle and wholly prevented from cutting while the opposite side of the button-hole is being stitched. Although said cutting-blade has its edge coincident with the axis of the needle, it is unfitted for my purposes, not only

because of its capacity for yielding when forced into contact with leather, which is not only more or less resilient, but also varied in density.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 illustrates so much of a wax-thread sewing-machine as is deemed necessary for illustrating my improvements as applied both to an awl-bar and to a needle-bar. Fig. 2 in several views illustrates one form of my scoring-tool as constructed for use with either a hook-needle, as shown, or with an awl. Fig. 3 in section illustrates the scoring-tool as when constructed integrally with an awl or a needle. Fig. 4 in several views illustrates the scoring-tool modified in its construction and adapted for use either on a needle-bar or an awl-bar. Fig. 5 in several views illustrates another form of scoring-tool adapted for use in connection with a slotted awl or a needle. Fig. 6 illustrates a modification of the scoring-tool adapted to operate only at one side of an awl or a needle.

Referring to Fig. 1, it is to be understood that the machine-head A and work-plate B may be indefinitely varied in their character without departure from my invention, and also that although I have here shown a hook-needle C below the work-plate and an awl D above they might as well have been reversed in position or both located at the same side of the plate, or the awl dispensed with, or an eye-pointed needle under proper conditions employed in lieu of the hook-needle, it being obvious that none of these well-known features of construction and arrangement pertains to my invention.

The scoring-tool E is the novel feature regardless of its specific construction or whether it is mounted on the needle-bar *a* or the awl-bar *b*, or on both of them in the same machine.

Broadly stated, my invention consists in the combination, with a needle, of a positively-operated, reciprocating, and unyielding scoring-tool having its scoring-edge *c* coincident with the axis of the needle and with the center of the feed-line or stitch-line, whereby a score will be formed in the fabric, into which the thread at either or both surfaces may be drawn, and either made substantially flush with said surfaces or embedded therein to any desired extent.

In Fig. 1 both the awl-bar and the needle-bar have a scoring-tool E rigidly mounted thereon, and this is constructed in a desirable form, as is more particularly illustrated in Fig. 2. In this case the scoring-tool has a head *d* and a shank *e*, both tubular and split longitudinally, so that when an awl or a needle is placed therein and the shank inserted into an awl-bar or a needle-bar one clamping-screw will firmly confine both in an operative position. The scoring-edge *c* is truly diametrical to its shank, and it is therefore exactly coincident with the axis of the needle or the awl with which it is used, and when mounted on a bar said tool is carefully adjusted, so as to present its edge exactly central on the feed or stitch line.

In some cases it is desirable, as hereinbefore indicated, that the scoring-edge be sharp enough to make a true incision in the leather. In other cases it will serve as well if it be not sharp enough to actually cut, but in lieu thereof capable of making a clean V-shaped depression, which, being promptly occupied by thread under heavy tension, will enable the thread to be fairly well housed. It will be seen that even if the scoring-tool be employed only on the awl-bar its edge will nevertheless be coincident with the center of the feed-line and be in operative combination with the needle, because the awl is in itself no part of the stitching mechanism, and the sole function of the scoring-tool is to provide for embedding the stitch-line thread in the leather.

Referring next to Fig. 3, it will be seen that the scoring-tool E and the needle are integral, and the same construction is applicable to awls, although I prefer the separate construction, because then any one scoring-tool may be used either with an awl or a needle.

In Fig. 4 the scoring-tool E is shown to have a tubular shank; but it is larger than is shown in Fig. 2, so that instead of being inside the needle-bar or the awl-bar the bar slips into the tool-shank, which is rigidly secured thereto by a clamp-screw, the needle or the awl being secured by its own clamp-screw.

In Fig. 5 the scoring-tool E is shown to be in the form of a thin steel plate adapted to be inserted endwise into a slot *f* in an awl or a needle and then secured therein by a key *f'*; or this latter may be dispensed with by omitting the central recess f^2 (shown in the scoring-tool) and having the central portion of said tool somewhat thicker and wider than at one or both ends, so that it may be forced into the slot *f* and firmly secured thereon by friction.

It is sometimes desirable to have the scoring-tool operate only on one side of the needle or the awl, in which case said scoring-tool E may be constructed as shown in Fig. 6, having a one-sided scoring-edge *c*. With special care in controlling the thread a scoring-tool substantially as shown in Fig. 6 may be employed, in connection with an eye-pointed needle, with fair results, especially if the needle be carefully mounted in its bar and the shank of the tool be vertically grooved, as indicated in dotted lines, so as to better accommodate the thread during the downward movement of the needle.

It will be seen that the scoring-tool when once properly adjusted for a certain line of work must always penetrate to a certain point in the leather, because said tool is rigidly carried and positively operated, and hence it will make a score of uniform depth and width, regardless of the variable character of the leather as to density.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a sewing-machine, the combination of a needle and a positively-operated reciprocating and rigidly-carried scoring-tool having a scoring-edge which is coincident with the axis of the needle and with the center of the feed-line, substantially as described, whereby while the machine is stitching the fabric will be progressively scored on the stitch-line for enabling the thread to be embedded or housed on the stitch-line, as set forth.

2. In a sewing-machine, the combination, with a reciprocating needle-bar and its needle, of a scoring-tool also mounted on and rigidly carried by said bar and having a scoring-edge which is coincident with the axis of the needle and with the center of the feed-line, substantially as described.

3. The combination of a needle-bar, a sewing-machine needle, and a scoring-tool rigidly mounted on said bar and having a tubular shank for the reception of the shank of the needle, the edge of the scoring-tool being in line with the axis of the needle, substantially as described.

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Witnesses:
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