This invention herein to be described relates to sole-sewing machines and more particularly to machines of the kind having an arcuate-shaped needle, oscillatable in the direction of the arc and an awl of similar shape and oscillatable around the same axis, which awl is considerably shorter and somewhat thicker and thus more resistant to bending than the needle.

In our prior Patent No. 2,262,883, November 18, 1941, there is disclosed a new and useful improvement, characterized in like manner. An improved construction is therein disclosed particularly for use in the resoling of worn-out footwear with existing stitchholes. The awl and needle are so mounted that both tools will pierce the work from above. The needle and awl are displaced laterally with respect to one another along their axis of oscillation and, on completion of a working operation by one of the tools, the two tool holders are moved along their axis of oscillation simultaneously to a distance equal to the distance of the tools from one another, whereby the other tool is brought into the plane of oscillation of the first. Operating means for oscillating the two tools are provided and includes an operating lever for the two tools which is adapted, during the oscillatory movement to effect alternate oscillation of the tool holders, being coupled to one holder and uncoupled from the other and vice versa.

One object of our present invention relates to improvements in our prior sole-sewing machine and is, to provide a new and useful operating lever provided with a toothed segment for the two tools, each tool holder having a toothed segment which are adapted, by lateral movement, to mesh in reliable manner alternately within the segment on the lever.

In order that the invention may be fully understood, we shall now describe one embodiment thereof, by way of example, by reference to the accompanying drawing, in which:

Fig. 1 is a side view, partly in section on the line A—B of Fig. 3, showing the needle and awl holders and pertaining parts of a sole-sewing machine embodying the invention and further showing the parts in one working position with the awl piercing the work or sole and the needle retracted;

Fig. 2 is a similar view to Fig. 1, but showing the parts in another working position with the needle penetrating the work or sole and the awl retracted;

Fig. 3 is a plan view of the mechanism with the parts in the position shown in Fig. 1.

Referring to the drawing:

The awl c and the needle b are each clamped in a holder or carrier consisting of two clamping jaws. The awl holder c has a toothed segment 1 on its rear edge and is fixedly mounted on a rock-shaft or spindle d the axis of which forms the axis of oscillation of the awl holder. The needle holder e has a toothed segment 2 on its rear edge and is freely mounted, closely adjacent the awl holder, on the hub 3 of said awl holder.

The rock-shaft d is rotatably and longitudinally displaceably mounted in the bearing f (Fig. 3) and in the hub 4 of the work-presser g, which hub is itself rotatably but not displaceably mounted in the bearing h. A screw 5 having an eye 6, is screwed into the rock-shaft d and a lever m is pivoted at its upper end to the eye 6 by means of a pin v. The lever m is formed as a rocking-lever although for the sake of simplicity, it has not been shown in the drawing. The toothed segment 1 on the awl holder c and the toothed segment 2 on the needle holder e alternately mesh with the toothed segment 3 of the common operating lever 9 oscillatably mounted on the stub shaft 7 of machine-frame 8. By these means the oscillation of the awl and needle in both directions and one after the other is effected in a reliable manner. The free end of the oscillating lever 9 is provided with a connecting rod 10 which is connected to a pin 12 engaging in the groove of a cam 13 for actuating the oscillating lever 9. The needle holder e has an opening 14 in which is engageable a stop-bolt 16 mounted in the bearing f. By this means the needle holder e is held in retracted position so that it cannot move the needle by frictional engagement of the awl holder c when the segments 6 and 1 are in mesh and the segment 6 is out of mesh with the segment 3.

In the position shown in Figs. 1 and 3, the awl a, the point of which passes through the hole n in the stitch-plate or work-support o, has penetrated the presser foot p of the work-presser g and punctured the work or sole q lying on the work-support o, whilst the point b' of the needle b, which is displaced with regard to the awl a along the rock-shaft d by an amount x (see Fig. 3) lies substantially above the presser foot p (see Fig. 1). Directly after the awl holder c has been swung back into the position shown in Fig. 2 the rock-shaft d, together with the parts a, c, 1 and b, c, 2 is moved by the lever m through the distance y towards the bearing h. The stop-bolt 15 is now free from the needle holder opening 14 and the needle holder e, 3 with the needle b
has taken up a position in the plane of oscillation, the needle $b$ upon oscillation passing through the hole $n$ in the stitch-plate or work-support $o$, the awl $a$ entering a groove formed in the inner face of the work-presser $q$ and at a distance equal to $x$ from the original position of the said awl $a$. The small clamping jaw of the awl holder $e$ facing the work-presser $g$ lies in line with, but behind, the said presser $g$. The needle holder $e$ is then swung into the position shown in Fig. 2 and immediately withdrawn, the needle $b$ passing through the hole formed in the work or sole $q$ by the awl $a$ and through the hole $n$ of the stitch-plate $o$, thereby forming a stitch.

Immediately after the removal of the needle $b$ from the work or sole $q$, the work-presser $g$ is lifted somewhat by a member engaging the lever $l$ and the work or sole $q$, thus freed, is displaced in a known manner through a distance equal to a stitch-length in the direction from $h$ towards $f$. After the work-presser has again been lowered, so that it once more holds the work or sole, the shaft $d$ is moved back, that is to say, towards the bearing $f$, through the distance $y$ by the lever $m$, so that all the parts $a$, $c$, $l$ and $b$, $e$, $3$ again take up the position shown in Fig. 3. The awl holder $c$, $l$ then, immediately, again swings into the position of Fig. 1, the awl $a$ once more piercing a hole in the work or sole $q$. The above described sequence of operations is then repeated. The screw $t$ threads into and out of the shaft $d$ during oscillation thereof.

The oscillations of the awl holder $c$, $l$ and needle holder $c$, $3$ are controlled by longitudinal movement of the rock-shaft $d$, which movement is effected by means of rocking-lever $m$. This lever effects alternately the meshing and unmeshing of the toothed segments $l$ or $3$ of the holders $c$ or $e$ with the toothed segment on the oscillatably mounted operating lever $3$. The opening $14$ on the needle holder $15$ again engages on the stop-bolt $15$ mounted in the bearing $f$, to hold the needle holder $e$ in retracted position.

We claim:

1. In a shoe sole sewing machine, a pair of laterally spaced tool holders oscillatable on a common axis, a work support having a tool receiving opening, means for moving said holders simultaneously along said axis to bring the tool holders alternately into operative position in a plane of oscillation passing through said opening, a toothed segment on each of said tool holders, and an oscillatory operating lever pivoted to oscillate in a fixed plane and having a toothed segment for alternate drive connection with the tool holder segments and whereon each of the segments of the tool holders alternately meshes when the respective tool holder is moved into operative position.

2. In a shoe sole sewing machine, a pair of laterally spaced tool holders oscillatable on a common axis, a work support having a tool receiving opening, means for moving said holders simultaneously along said axis to bring the tool holders alternately into operative position in a plane of oscillation passing through said opening, a toothed segment on each of said tool holders, an oscillatory operating lever pivoted to oscillate in a fixed plane and having a toothed segment whereon each of the segments of the tool holders alternately meshes when the respective tool holder is moved into operative position, and means to restrain one of said tool holders from operation upon the other tool holder being in operative position.

3. In a shoe sole sewing machine, a pair of laterally spaced tool holders oscillatable on a common axis, a work support having a tool receiving opening, means for moving said holders simultaneously along said axis to bring the tool holders alternately into operative position in a plane of oscillation passing through said opening, a toothed segment on each of said tool holders, and an oscillatory operating lever pivoted to oscillate in a fixed plane and having a toothed segment for alternate drive connection with the tool holder segments and wherewith each of the segments of the tool holders when the respective tool holder is moved into operative position, one of said tool holders being adapted to carry an arcuate awl and the other being adapted to carry an arcuate needle, said awl and needle being positioned to pass through the opening in the work support upon the respective tool holder being in operative position.

4. In a shoe sole sewing machine, a pair of laterally spaced tool holders oscillatable on a common axis, a work support having a tool receiving opening, means for moving said holders simultaneously along said axis to bring the tool holders alternately into operative position in a plane of oscillation passing through said opening, a toothed segment on each of said tool holders, an oscillatory operating lever pivoted to oscillate in a fixed plane and having a toothed segment whereon each of the segments of the tool holders alternately meshes when the respective tool holder is moved into operative position, one of said tool holders being adapted to carry an arcuate awl and the other being adapted to carry an arcuate needle, said awl and needle being positioned to pass through the opening in the work support upon the respective tool holder being in operative position, and means to restrain the needle carrying tool holder from oscillation upon the awl carrying tool holder being in operative position.

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