



# UNITED STATES PATENT OFFICE.

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LIP TURNER.

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This invention relates to lip turners and is particularly directed to a lip turner adapted to operate upon marginally split inner soles such as that disclosed in our copending application, filed November 24, 1924, Serial Number 752,021, for inner soles for stitched down shoes.

In forming inner soles of the type disclosed in our copending application, it is necessary to turn a very thin lip which has been slit from the body portion of the sole and in turning thin lips of leather or similar material extreme difficulty has been experienced, and with the formerly constructed machines, this operation has been impossible.

Objects of this invention are to provide a lip turning machine adapted to deflect and turn the lip of a marginally slit strip of leather or similar material, to provide a machine which will rapidly separate the relatively thin lip from the body portion of the material, and which will fold the lip over against the body portion and firmly press it into position in a rigid and efficacious manner.

Further objects are to provide an extremely simple compact machine for folding the lip of marginally slit inner soles, in which the machine aids in the feeding of the inner sole, and in which yielding means are provided for holding the inner sole in position while it is being fed, and for pressing the lip downwardly into place.

An embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is an elevation of the machine partly in section.

Figure 2 is a transverse sectional view on the line 2—2 of Figure 1.

Figure 3 is a fragmentary view of the lower portion of the rotating members with the sleeve and sole shown in section showing the folding arm in one position during its rotation.

Figure 4 is a corresponding view showing the arm in another position.

The machine comprises an upright standard 1 extending from a base plate 2. This standard is provided with bearings for the rotary shaft and sleeve. In the form shown three bearings 3, 4 and 5 are illustrated, although, obviously, the exact details of construction may be varied. The bearings 4 and 5 slidably and rotatably carry a sleeve

6 which is provided with a driving pulley 7 at its upper end and with a collar 8 intermediate the bearings 4 and 5. A helical spring 9 loosely surrounds the sleeve and bears at one end against the collar 8 and at the other end against the bearing 4. A shaft 10 extends the entire length of the machine and passes through the bearing 3 and through the sleeve 6. It is provided with a driving pulley 11 at its upper end and with a collar 12 intermediate the bearings 3 and 4. A spring 13 loosely surrounds the shaft and bears at one end against the collar 12 and at its other end against the bearing 3.

The lower end of the shaft 10 is provided with a circular disk 14 and the lower end of the sleeve 6 is provided with a radial folding arm 15.

Any suitable means, not shown, may be provided for raising the shaft 10 and the sleeve 6 during the positioning of the work.

In using the machine the marginally slit sole 16 is positioned upon the base plate 2 and the disk 14 is positioned between the lip 17 and the projecting portion 18 of the body of the sole. The spring 13 forces the shaft downwardly and holds the marginal portion 18 of the sole in close contact with the base plate 2. It is to be particularly noted that the shaft 10 and the sleeve 6 are rotated in opposite directions, as shown by the arrows in Figure 2. The disk 14 rotates in a manner to aid the feeding of the sole, as illustrated in Figure 2, and the radial arm 15 sweeps around in a reverse direction and folds the lip 17 over tightly against the body portion, as shown clearly in Figure 4. The radial arm merely slides off the undeflected forward portion of the work when in the opposite position from that shown in Figure 2.

It is to be noted that the springs 9 and 13 hold the disk 14 and the arm 15 closely against the work and compensate for any irregularities in the work.

This machine can operate at a very rapid rate and the work can be quickly fed through the machine with assurance that the very thin lip 17 will be accurately folded into position, as shown in Figure 4.

It will further be seen that an extremely simple and substantial type of machine has been provided which, although of simple construction, nevertheless effectively per-

forms the relatively difficult operation of separating and folding the thin lip over against the body portion.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

We claim:

10 1. A machine for turning the lip of split material comprising positively rotated means for separating the lip from the body of the material, and other independently, positive-  
15 against said body, said last mentioned means being rotated at a higher speed than said first mentioned means.

20 2. A machine for turning the lip of split material comprising rotary means for separating the lip from the body of the material and reversely rotating means for folding said lip over against said body portion.

25 3. A machine for turning the lip of marginally split leather comprising a rotary shaft, a disk carried by said shaft and adapted to deflect the lip from the body portion of the leather, and a reversely rotating sleeve mounted upon said shaft and yieldingly  
30 pressed towards said leather, and having a radially projecting arm adapted to engage the deflected lip and fold it over against said body portion.

35 4. A lip turning machine for marginally split soles comprising a rotary shaft terminating in a disk adapted to deflect the

lip from the body portion of the sole, resilient means holding said disk yieldingly against said body portion, a sleeve loosely mounted upon said shaft and rotating in the opposite direction from said shaft, said  
40 sleeve being yieldingly pressed downwardly towards said disk, and a radial arm carried by the lower end of said sleeve and adapted to fold the deflected lip over against said body portion.

45 5. A machine for turning the lip of a marginally split leather member comprising a standard having a base plate against which the body portion of said leather rests, a vertical shaft carried by said standard and  
50 terminating in a circular disk at its lower end adapted to enter the slit and deflect the lip upwardly, yielding means for pressing the disk against said body portion and holding said body portion against said base plate.  
55 a reversely rotating sleeve loosely mounted upon said shaft, resilient means urging said sleeve downwardly towards said disk, and a radial arm carried by the lower end of said sleeve and adapted to engage the upturned  
60 lip and fold it over against said body portion, said rotating disk aiding in the feeding of the leather.

In testimony that we claim the foregoing we have hereunto set our hands at Wausau,  
65 in the county of Marathon and State of Wisconsin.

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