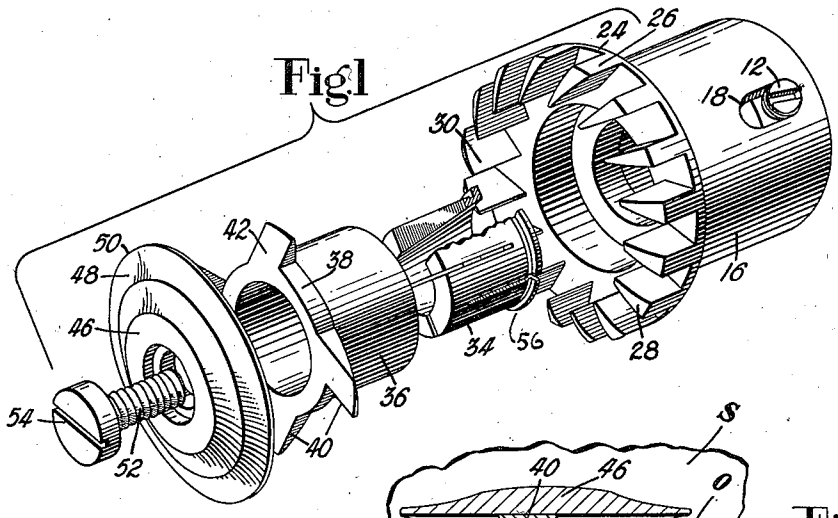
Jan. 5, 1943. J. L. JONES 2,307,136

DEVICE FOR OPERATING UPON SHOES

Filed July 1, 1941

Fig.1



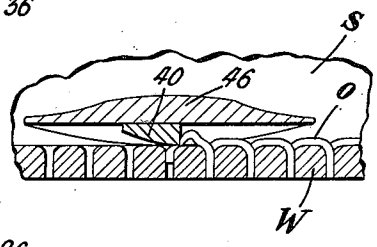
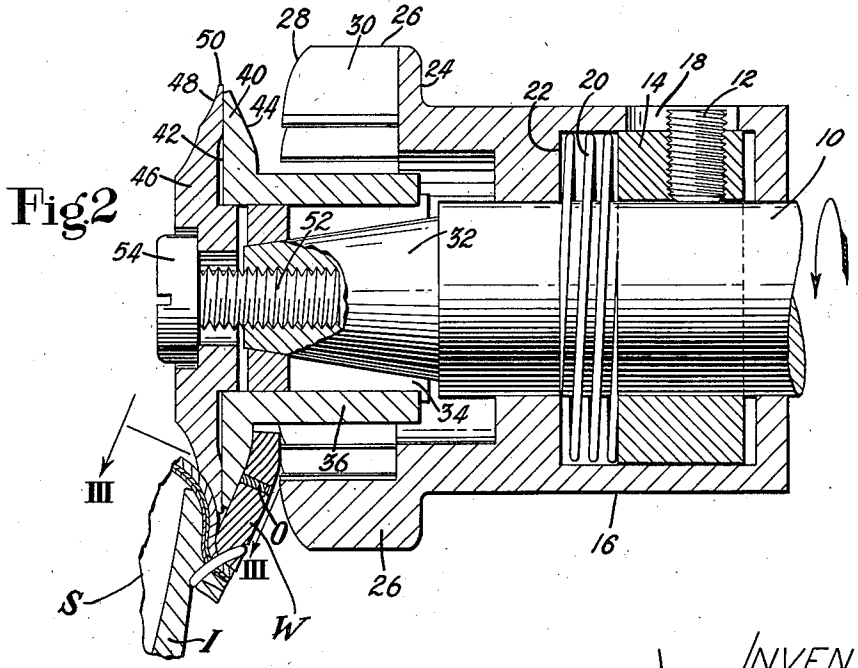


Fig.3

Fig.2



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DEVICE FOR OPERATING UPON SHOES

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9 Claims. (Cl. 12—17)

This invention relates to devices for operating upon shoes and is herein illustrated and described as embodied in a device suitable for performing repair operations upon the welts of shoes from which the outsoles have been removed. In removing the outsole from a shoe, the outseam is cut through, leaving a line of stitches in the welt. It is desirable to remove these stitches before applying a new outsole because the old stitches, if left in, give the resoled shoe an unsightly appearance and often cause breakage of the needles of the stitching machine. It is desirable also to roughen the under surface of the welt to prepare it for the application of cement.

It is an object of the present invention to provide a device whereby these operations may conveniently be carried out. In accordance with a feature of the invention, the illustrative device consists of a stitch removing tool engageable with the upper surface of the welt and a roughing tool simultaneously engageable with the under surface of the welt. As shown herein, both tools are conveniently mounted upon a rotary spindle. The tools are so arranged that the welt may be presented between them, and a spring is provided to urge the roughing tool against the under surface of the welt and thereby to press the upper surface of the welt against the stitch removing tool. In the illustrated device, a guard is provided to protect the upper of the shoe from the stitch removing tool.

These and other features of the invention will be described as embodied in an illustrative device and pointed out in the appended claims.

Referring now to the accompanying drawing,

Fig. 1 is an exploded perspective view of an illustrative device;

Fig. 2 is a longitudinal section through the device, illustrating the manner of its operation upon a welt; and

Fig. 3 is a sectional view taken through the lines III—III of Fig. 2.

The illustrated device is adapted to be mounted upon the end portion of a spindle 10. Secured upon the spindle 10 by a set screw 12 is a collar 14. Slidably mounted upon the spindle 10 is a sleeve 16 having an annular interior space surrounding the spindle 10 to accommodate the collar 14. A longitudinal slot 18, formed in the wall of the sleeve 16 and engaged by the outer end of the set screw 12, permits axial movement of the sleeve 16 along the spindle while preventing relative rotary movement. The above-mentioned annular space within the sleeve 16 is long enough not only to accommodate the collar 14 but also to receive a coiled compression spring 20 surrounding the spindle and interposed between the collar 14 and an interior shoulder 22 formed upon the sleeve. The spring 20 urges the sleeve 16 toward the left, as viewed in Figs. 1 and 2, as far as permitted by the right-hand end of the slot 18. Upon the left-hand end of the sleeve 16 is formed an outwardly extending flange 24. Integral with the flange 24 are a plurality of annularly arranged teeth 26 which extend in a direction parallel to the axis of the sleeve 16. These teeth have rounded end surfaces 28 and plane side surfaces 30. The side surfaces 30 extend in planes which are parallel to the axis of the sleeve, but which are offset from being radial. The sleeve 16 together with the teeth 26 is a part of a well-known type of edge trimming tool.

The spindle 10 terminates in a tapered portion 32 over which is fitted a split expansible bushing 34. The interior of the bushing 34 is tapered to fit over the tapered portion 32 of the spindle, while the exterior of the bushing is substantially cylindrical. Fitted upon the bushing 34 is a sleeve 36 having an outwardly extending flange 38 at its left-hand end. Integral with the flange 38 are four outwardly extending teeth 40. The sleeve 36, the flange 38 and the teeth 40, all terminate in a common radial plane which provides a flat outer end surface 42. The inner surfaces of the teeth 40 are tapered, as indicated by the reference numeral 44, to provide blunt peripheral edges to the teeth. The teeth 40 extend in a direction which is neither tangential nor radial, but which is more nearly tangential than radial. Engaging the flat end surface 42 is a guard disk 46 for protecting the upper of the shoe from the teeth 40. This guard disk is of a diameter slightly greater than the maximum diameter to which the teeth 40 extend, and it has a flat, annular inner surface for engaging the outer surface 42 of the teeth. The outer surface of the guard disk has a smooth concave portion 48, which may contact with the upper of a shoe without causing damage and which tapers to a blunt peripheral edge 50. Threaded axially into the end of the spindle 10 is a screw 52 having a head 54 which bears against an annular shoulder upon the guard disk to clamp the guard disk against the flat end face 42 of the sleeve 36. The right-hand end of the sleeve 36 bears against an outwardly extending flange 56 of the tapered bushing 34. Tightening of the screw 52 will thus urge the bushing 34 to the right, causing it to expand and thereby to grip the sleeve 36 internally. The sleeve 36, the guard disk and

the bushing are thus clamped securely upon the spindle 10.

In the operation of the device, a shoe S, fragmentarily shown in Fig. 2, and having an insole I and a welt W, is presented with the upper surface of the welt against the inclined surfaces 44 of the teeth 40 and with the under surface of the welt in engagement with the teeth 26. The outsole of the shoe has already been removed but the outseam stitches O still remain in the welt. As the spindle rotates in the direction shown by the arrow in Fig. 2 (i. e. clockwise as seen in Fig. 1), the teeth 40 will pull out the stitches O in a manner best illustrated in Fig. 3 while the teeth 26 effect a roughing action upon the under surface of the welt. The roughing teeth 26 furthermore cooperate with the stitch removing teeth 40 by imparting to the welt a vibratory movement, urging the welt against the stitch removing teeth with rapid pulsations and thereby increasing the effectiveness of the operation. The stitch removing teeth, in addition to their primary function, serve also to clean the upper surface of the welt, and such cleaning is facilitated by the above-mentioned beating action. It has been found, furthermore, that the device operates to straighten out the welt which usually, after the outsole has been removed, is left in a crumpled condition.

When the welt is introduced between the stitch removing and roughing tools, the spring 20 yields and causes the roughing tool to bear against the under surface of the welt, while at the same time pressing the upper surface of the welt against the stitch removing teeth. The normal position of the roughing tool is determined by the engagement of the right-hand end of the slot 18 with the set screw 12 and may be varied for purposes of adjustment by loosening the screw and moving it to the right or left before tightening, thereby enabling the roughing tool to be set at the most effective distance from the stitch removing tool. If a minimum degree of spring pressure is desired, the collar 14 is secured far enough to the right to provide a normal space between the teeth 26 and the teeth 40 which is only slightly greater than the thickness of the welt to be operated upon. If a greater degree of spring pressure is desired, the collar 14 may be adjusted further to the left, allowing of course for reasonable clearance between the teeth 26 and the teeth 40.

Having described my invention, what I claim as new and desire to secure by Letter Patent of the United States is:

1. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a stitch removing tool engageable with the upper surface of the welt, and a roughing tool simultaneously engageable with the under surface of the welt.

2. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a stitch removing tool engageable with the upper surface of the welt of a shoe, a roughing tool simultaneously engageable with the under surface of the welt, a common support for said tools, one of said tools being mounted on said support for movement toward and from the other tool, and a spring acting upon said movably mounted tool to cause that tool to press the welt against the other tool.

3. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a rotary spindle, a stitch removing tool secured upon said spindle for engagement with the upper surface of the welt, a roughing tool simultaneously engageable with the under surface of the welt, means for holding said roughing tool against rotary movement relatively to said spindle, said holding means being constructed and arranged to permit said roughing tool a limited degree of movement axially of the spindle, and a spring for urging said roughing tool axially of the spindle against the welt to press the welt against the stitch removing tool.

4. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a rotary spindle, a stitch removing tool in the form of a tooth member engageable with the upper surface of the welt, a roughing tool in the form of a toothed member simultaneously engageable with the under surface of the welt, said tools being mounted on said spindle to rotate therewith, and means for urging one of said tools axially of said spindle toward the other tool to cause the welt to be gripped between the two tools.

5. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a stitch removing tool engageable with the upper surface of the welt, a roughing tool engageable with the under surface of the welt, and a guard for protecting the upper of the shoe from said stitch removing tool.

6. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a rotary spindle, a stitch removing tool in the form of a toothed member secured upon said spindle and engageable with the upper surface of the welt, a guard disk secured to the spindle in proximity to the stitch removing tool for protecting the upper of the shoe, a roughing tool engageable with the under surface of the welt and mounted on said spindle for non-rotary axial movement relatively to the spindle, and a spring for urging said roughing tool axially of the spindle against the welt to press the welt against the stitch removing tool.

7. A device for operating on the welt of a shoe from which the outsole has been removed, comprising a stitch removing tool engageable with the upper surface of the welt, a roughing tool engageable with the under surface of the welt, means for causing one of said tools to exert pressure against the welt and to press the welt against the other tool, and means for adjustably securing said pressure causing means in a position to cause a desired degree of pressure to be exerted upon the welt by said tools.

8. A device for roughing the welt of a shoe from which the outsole has been removed, comprising a rotary spindle, a sleeve on said spindle, said sleeve having annularly arranged teeth for roughing the under surface of the welt, and means on said spindle for maintaining pressure between the welt and said sleeve.

9. A device for roughing the welt of a shoe from which the outsole has been removed, comprising a rotary spindle, a sleeve on said spindle having a plurality of annularly arranged teeth extending in a direction parallel to the axis of the sleeve for roughing the under surface of the welt, a spring on the spindle acting on the sleeve to press said teeth against the welt, and means on the spindle engageable with the upper surface of the welt for holding the welt against the force of said spring.

JOHN L. JONES.