

J. B. HADAWAY & J. V. ALLEN.
 MACHINE FOR OPERATING ON THE SOLE EDGES OF BOOTS AND SHOES.
 APPLICATION FILED MAR. 7, 1910.

1,026,033.

Patented May 14, 1912.

4 SHEETS—SHEET 1.

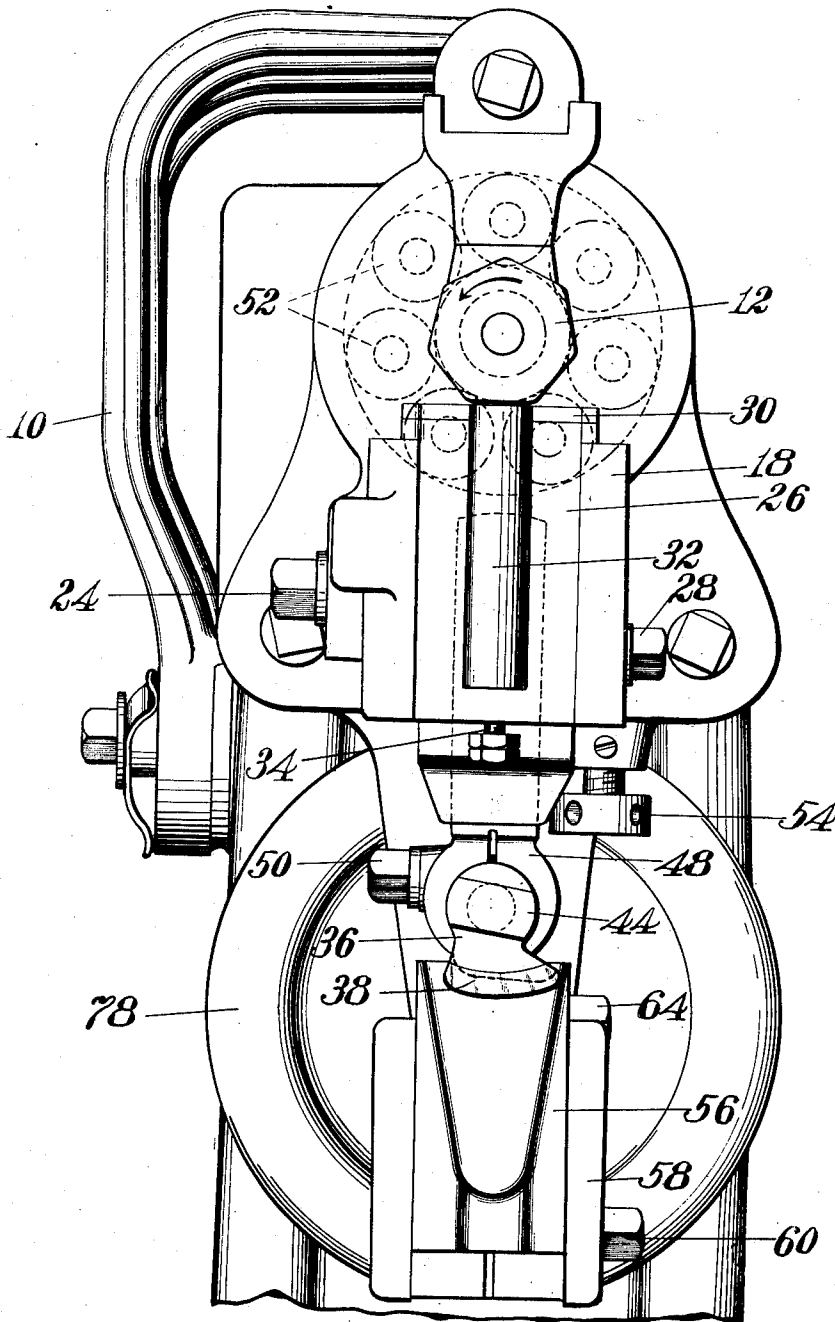


Fig. 1.

WITNESSES

Elizabeth C. Coupe
 Edith C. Hollbrook

INVENTORS

John B. Hadaway
 John V. Allen
 By their Attorney,
 Nelson H. Howard

J. B. HADAWAY & J. V. ALLEN.
MACHINE FOR OPERATING ON THE SOLE EDGES OF BOOTS AND SHOES.
APPLICATION FILED MAR. 7, 1910.

1,026,033.

Patented May 14, 1912.

4 SHEETS-SHEET 2.

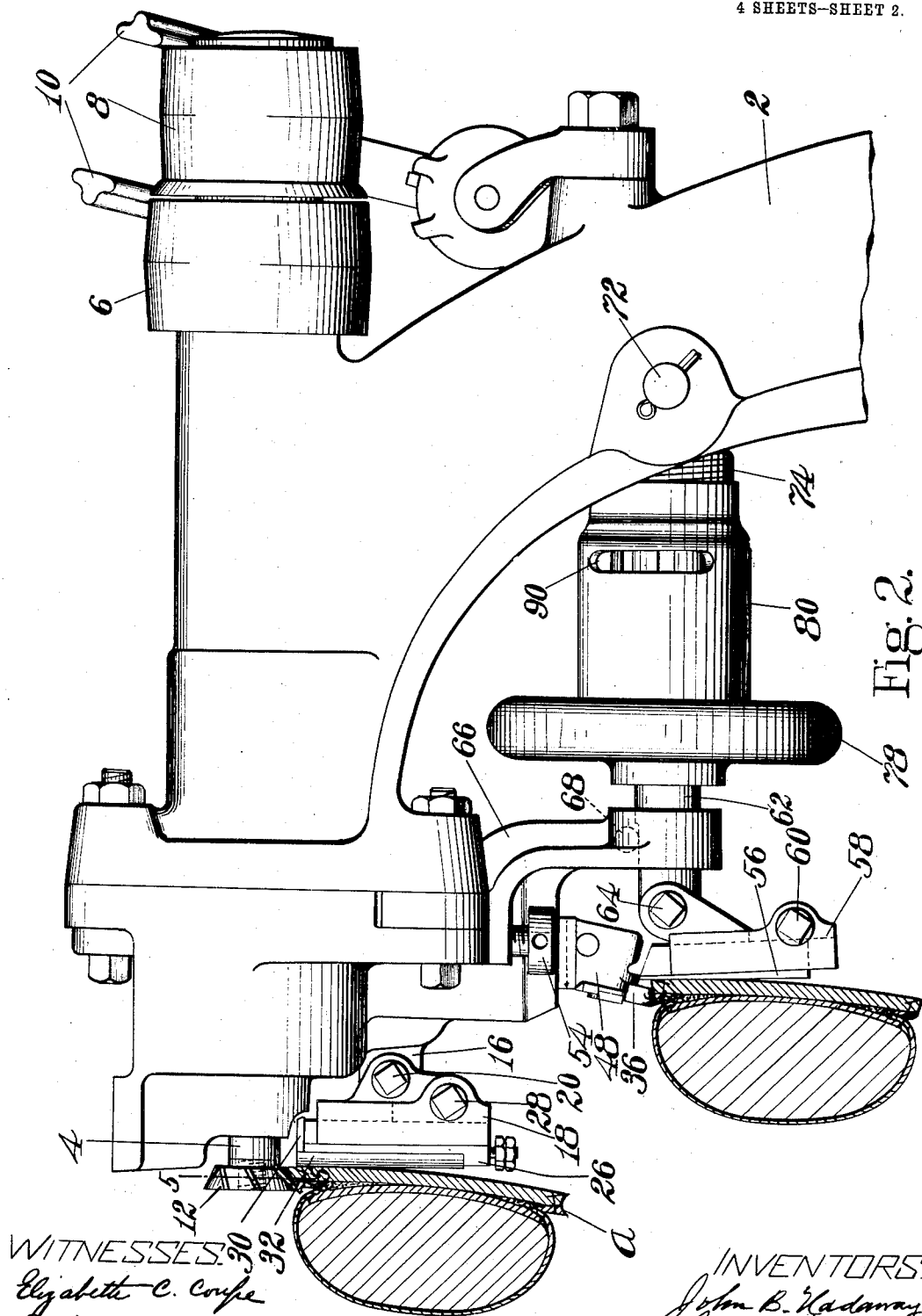


Fig. 2.

WITNESSES:
Elizabeth C. Coupe
Edith C. Hollbrook

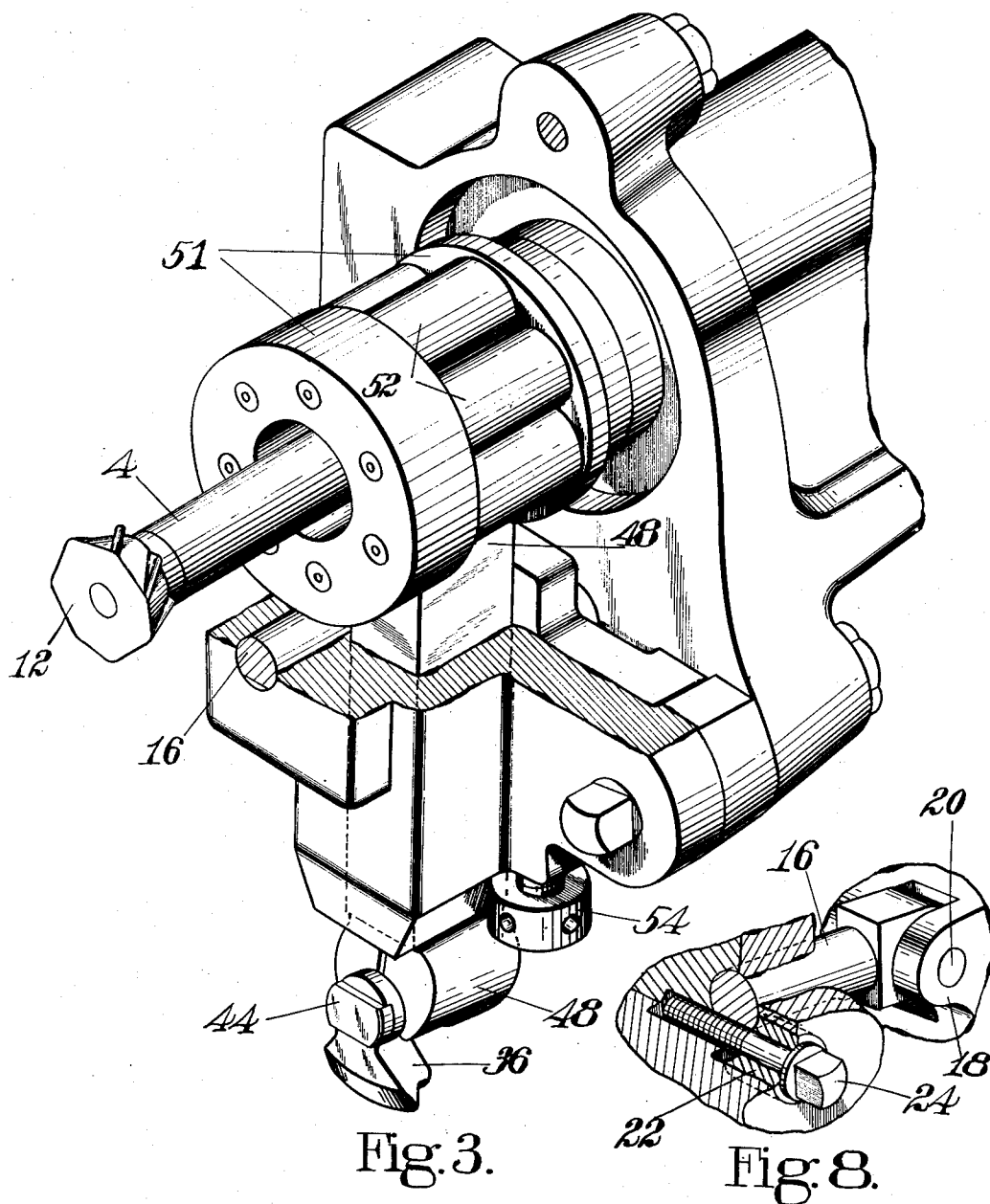
INVENTORS:
John B. Hadaway
John V. Allen
By Their Attorney,
Nelson H. Howard

J. B. HADAWAY & J. V. ALLEN.
 MACHINE FOR OPERATING ON THE SOLE EDGES OF BOOTS AND SHOES.
 APPLICATION FILED MAR. 7, 1910.

1,026,033.

Patented May 14, 1912.

4 SHEETS—SHEET 3.



WITNESSES.

Elizabeth C. Coyle
 Edith C. Hollbrook

INVENTORS

John B. Hadaway
 John V. Allen
 Benjamin H. Howard
 Nelson W. Howard

J. B. HADAWAY & J. V. ALLEN.
 MACHINE FOR OPERATING ON THE SOLE EDGES OF BOOTS AND SHOES.
 APPLICATION FILED MAR. 7, 1910.

1,026,033.

Patented May 14, 1912.

4 SHEETS-SHEET 4.

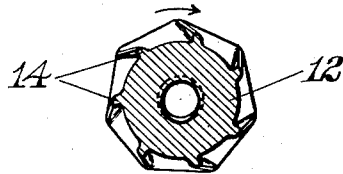


Fig. 5.

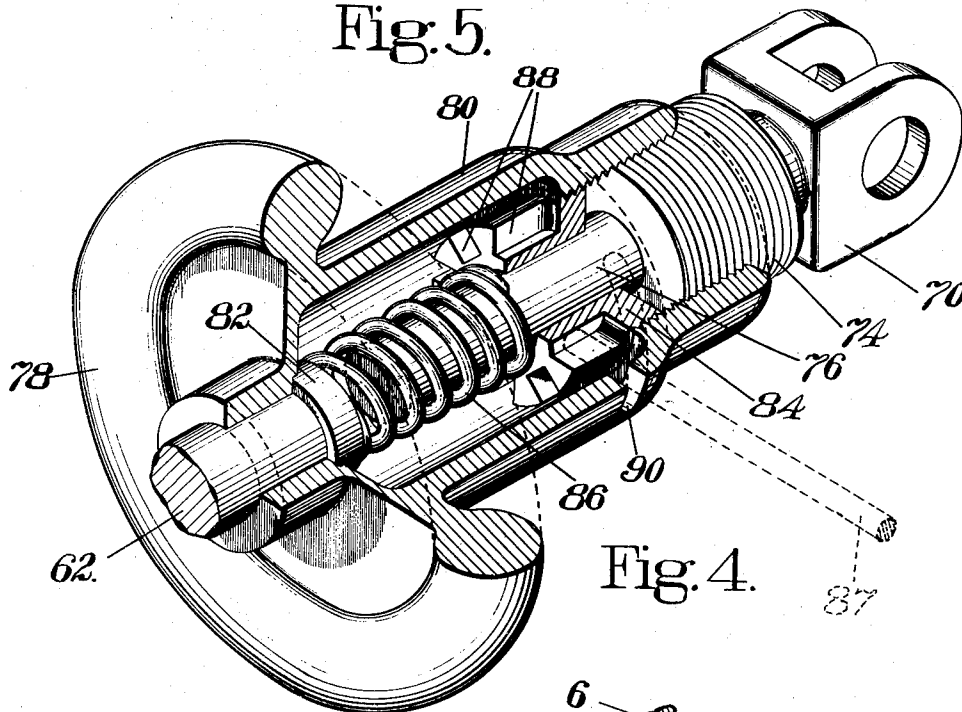


Fig. 4.

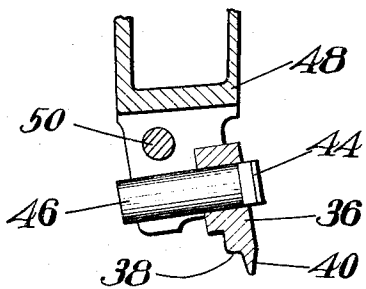


Fig. 6.

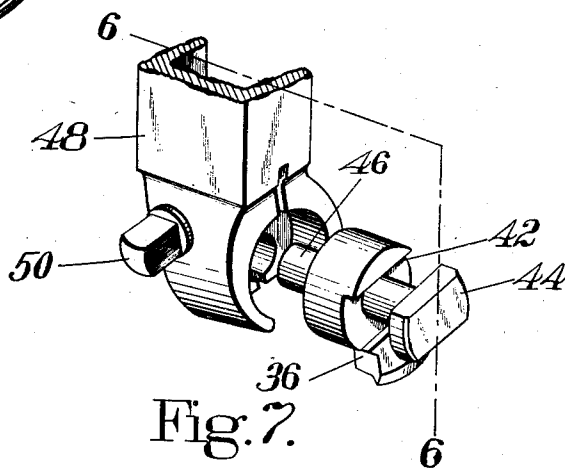


Fig. 7.

WITNESSES.

Elizabeth C. Coupe
Elvith C. Hollbrook

INVENTORS

John B. Hadaway
John V. Allen
 By their Attorney,
Nelson W. Howard

UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF SWAMPSCOTT, AND JOHN V. ALLEN, OF SOUTH WEYMOUTH, MASSACHUSETTS, ASSIGNORS TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR OPERATING ON THE SOLE EDGES OF BOOTS AND SHOES.

1,026,033.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed March 7, 1910. Serial No. 547,842.

To all whom it may concern:

Be it known that we, JOHN B. HADAWAY and JOHN V. ALLEN, citizens of the United States, residing at Swampscott, in the county of Essex and Commonwealth of Massachusetts, and South Weymouth, in the county of Norfolk and Commonwealth of Massachusetts, respectively, have invented certain Improvements in Machines for Operating on the Sole Edges of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for use in the manufacture of boots and shoes and particularly to a machine for operating on the marginal portion of the sole of a boot or shoe.

In manufacturing welt shoes according to the usual practice the welt is secured to the upper and insole by a line of stitches, known as the inseam, and thereafter the outsole is attached to the welt by another line of stitches, frequently termed the outseam, passing through the marginal portions of the welt and outsole. The stitches of the outseam lying upon the upper surface of the welt present an appearance which is objectionable in some grades of work, particularly in certain styles of women's shoes, and some manufacturers therefore have concealed the outseam by roughly trimming the sole edge so as to leave a lip protruding from the edge of the welt and then turning this lip backwardly over the outseam with a hand tool of suitable shape and rubbing it down close to the upper surface of the welt. The shoe later was given its final trimming and the turned over portion of the welt was then wheeled or finished in any other desired manner.

The general object of the present invention is to provide a machine for concealing the stitches of the outseam in a manner similar to that previously practised by hand.

The machine embodying the invention in its preferred form includes means for operating on the marginal portion of the welt of a shoe to force some of the stock backwardly and upwardly toward the upper,

and additional means associated therewith for acting on the stock so forced backwardly to crowd it in close to the upper and to smooth it down snugly over the stitches of the outseam. The means first mentioned comprises a rotary tool of novel form, having the general shape of the frustum of a cone but provided on its lateral surface with a plurality of inclined ribs which decrease in height toward the forward end of the tool. This tool operates upon the welt to upset it and carry portions of the stock backwardly over the outseam. The second means comprises another tool also of novel construction and a rotary hammer mechanism for operating said tool. The tool has an operating face shaped to engage the edge of the top of the welt and acts upon the stock previously upset by the rotary tool to force it still further back toward the upper to crowd it down close to the stitches of the outseam and to smooth off the upper surface of the welt.

The invention further provides novel work supports for each of the tools above described to aid the workmen in presenting the shoe properly to the operation of the tools. The work supports shown are arranged for adjustment vertically, longitudinally and axially with reference to their respective tools and the work support for the pounding tool is arranged also to have a yielding movement with relation to said tool.

The above and further features of the invention including certain details of construction and combinations and arrangements of parts will be understood clearly from the accompanying description of one embodiment of the invention.

It is conceived that it may be desirable to turn back the marginal portion of the sole edge of a shoe having no welt in the same manner that it is here proposed to operate upon the welt. Since a machine constructed according to this invention obviously is adapted for work of this character the term "welt" as used in this specification and in the appended claims is intended, where consistent with the context, to include the correspondingly located portion of a shoe having no welt.

In the accompanying drawings, Figure 1 is a front elevation of the head of a machine

embodying the present invention; Fig. 2 is a side elevation of the machine; Fig. 3 is a perspective view of the operating mechanisms for the tools; Fig. 4 is a perspective view of the adjusting mechanism of the work support for the pounding tool, certain of the parts being broken away to show the inclosed devices; Fig. 5 is an end view of the rotary tool with the hub of the tool shown in section; Fig. 6 is a vertical sectional view of the pounding tool; Fig. 7 is an exploded view of the pounding tool, its holder and the device by which it is secured in the holder; and Fig. 8 is a perspective view showing the method of securing the upper work support in the frame of the machine.

The supporting frame 2 is provided near its upper end with suitable bearings for the reception of a rotary shaft 4, which has attached to its rear end fast and loose pulleys 6 and 8 respectively. The shaft may be driven by a belt running on said pulleys and a belt shifter 10 is provided for transferring said belt from one pulley to the other. The forward end of the shaft is provided with a short screw threaded stud which receives the rotary tool 12. This tool is designed to engage the edge of the welt of a shoe to crowd portions of the stock backwardly toward the upper and for this purpose is given the general shape of the frustum of a cone and is provided on its lateral surface with a plurality of ribs 14. The ribs are inclined to the elements of the lateral surface of the cone and decrease gradually in height from the smaller end of the tool to the larger end, and the rearward sides of the ribs may be cut away as shown to form a more pronounced edge. The forward end of the tool is ground or rounded off so as to avoid any sharp edges that might injure the upper and this grinding produces a more or less polygonal shape as shown. While a variety of forms and shapes of tools may be employed without departing from the spirit of the invention, the tool shown has been found to produce very satisfactory results.

A work support is arranged in operative relation to the tool 12 and comprises a rod 16 mounted in the frame and a split block 18 adjustably secured to the forward end of the rod by bolt 20. For the purpose of securing the rod 16 in adjusted position, a block 22 (see Fig. 8) is positioned in an aperture formed in the frame at right angles to the axis of the rod and has one end shaped to engage the rod. A bolt 24 extending through the block is adapted to force the block tightly against the rod 16 and hold the same against longitudinal movement. The rod is flattened on its lower side as shown in Fig. 3 for engagement with the surface of the bolt 24 and is thereby pre-

vented from turning in the frame. Guide-ways are formed in the block 18 for the reception of a slide 26, a bolt 28 being arranged to spring the split portions together to clamp the slide in an adjusted position. The slide 26 carries at its upper end a plate 30 having an arc-shaped recess formed therein to constitute a bearing for one end of the roll 32 designed to engage the tread face of the sole of a shoe presented to the operation of the tool 12. The other bearing for the roll 32 consists of a stud 34 projecting from the lower end of the roll and received in a suitable aperture in the slide 26. The lower end of the stud is threaded to receive a nut and check nut to limit the upward movement of the roll. It should be noted that the forward vertical faces of the slide 26 are beveled or inclined so that a shoe engaging the roll 32 may be rocked thereon to position it accurately with reference to the tool. By the construction described the work support may be adjusted longitudinally in the frame, axially on the pivot bolt 20 or vertically in the block 18 to accommodate varying thicknesses of soles and different styles of shoes.

The pounding tool hereinabove referred to is shown at 36 and comprises a shank portion adapted to be secured in the holder and an operating portion. The latter portion has a shoulder 38 designed to engage the edge of the welt of a shoe and a projecting lip 40 designed to operate upon the upper surface of the welt. The work ordinarily is fed past the tool from right to left and the width of the lip 40 is gradually increased in the direction of feed of the work, as indicated in Fig. 1, so that the widest portion of the lip engages the top of the welt just before the welt leaves the tool. The ends of the shoulder and lip are rounded off so that the stock passes readily under the lip and shoulders. The outer face of the lip of the tool is beveled so that it may be forced into the crease between the welt and upper of a shoe. A slot 42 is formed in the forward face of the shank of the tool to receive the head 44 of a T-shaped member, the shank 46 of which is secured in the lower split end of a holder 48. The split portions of the holder are clamped onto the shank 46 by a bolt 50.

The operating mechanism for the tool 36 consists of a rotary hammer mechanism of the type disclosed in the United States Patent No. 768,560 granted August 23, 1904. This hammer mechanism is supported on and driven by the shaft 4 and comprises a cage or carrier 51 screwed onto the shaft and a series of rolls 52 mounted in the carrier. The holder 48 slides in a vertical guideway in the frame, its upper end being normally below the path of rotation of the rolls; but when the holder is raised in its guideway by the engagement of the work with the tool, its

upper end enters the path of travel of the rolls, and as they rotate about the shaft 4 they deliver a succession of rapid blows to the tool holder. An adjustable set screw 54 threaded into an aperture in the frame of the machine serves as a stop to limit the upward movement of the tool holder. The work support for the pounding tool is similar in general construction to that previously described. The work engaging member consists of a slide 56 having beveled or inclined faces and is mounted for vertical adjustment in a guideway formed in a split block 58. A bolt 60 binds the split portions onto the slide to secure it in adjusted position. The block 58 is mounted for angular adjustment on the forward end of a rod 62, a bolt 64 operated to hold the block in adjusted position. The rod 62 extends through the lower end of a supporting bracket 66, depending from the frame 2, and has its upper side flattened to engage a transverse pin 68 secured in the bracket which prevents angular movement of the rod. It is desirable that this work support shall be capable of ready and accurate adjustment toward and from the pounding tool to accommodate varying thicknesses of soles. Accordingly, means are provided whereby this adjustment may be effected merely by turning a hand wheel. Referring to Figs. 2 and 4, the forked end of a member 70 is secured to the frame by a pin 72, and this member has an enlarged screw threaded portion 74 and a reduced extension 76 projecting toward the tool 36. The adjusting wheel 78 has a central aperture to receive the rod 62 and is provided with a tubular extension 80 which is internally threaded near its end to engage the threaded portion 74 of the member 70. An enlargement or head 82 formed on the end of the rod 62 engages the inner face of the adjusting wheel and prevents the rod from sliding out of the aperture. Mounted loosely on the extension 76 of the member 70 is a nut 84 having external screw threads to engage the internal threads of the tubular member 80. A spring 86 surrounding the extension 76 abuts at one end against the head 82 and at its other end against the nut 84 and tends to press the rod 62 and the work support toward the tool 36. The nut 84 may be adjusted to vary the tension of the spring 86 by inserting a rod 87, indicated in dotted lines in Fig. 4, in one of a plurality of pockets or slots 88 formed in the upper surface of the nut and then turning the nut to advance it toward or withdraw it from the head 82. A slot 90 formed in the member 80 permits the necessary angular movement of the rod 87 to make the described adjustment. It will be obvious that to adjust the work engaging member 56 toward or from the tool 36, it is necessary merely to turn the adjusting wheel 78 in

one direction or the other. The spring 86 permits the work support to yield away from the tool to compensate for variations in the thickness of the work.

It is usually preferable to give the sole edge a rough trimming with a cutter shaped to leave a lip protruding from the edge of the welt as indicated at *a*, Fig. 2, before presenting the shoe to the operation of this machine. The sole edge is then wetted and when sufficiently softened is presented to the operation of the tool 12 in substantially the position shown in Fig. 2. As the shoe is fed past the tool from right to left the ribs 14 catch the lip and turn or rub it backwardly and upwardly toward the upper into substantially the position indicated in said figure. Because of the greater height of the ribs at the smaller end of the tool where they engage the lower portion of the edge of the welt and the upper edge of the outsole, the rubbing or upsetting action is greatest at this point, where, of course, the stock resists the upsetting action more than at the upper edge of the welt. The shoe with its welt thus partially turned back is next presented to the tool 36 which completes the turning back operation. The shoulder 38 of the tool engages the edge of the welt and the lip 40 engages the upper surface of the welt. The shoe is fed past the tool from right to left, the narrow portion of the lip first engaging the top of the welt and the widest portion operating on the surface of the welt just before the shoe leaves the tool. This portion of the lip preferably is wide enough to extend into the crease between the welt and upper so as to act upon the entire width of the welt. The lip thus operates progressively over the width of the welt as the shoe is fed past the tool. This tool not only exerts a further crowding and upsetting action upon the stock but also smooths down and consolidates the stock previously acted upon by the rotary tool. The operating face of the lip extends at an oblique angle to the shoulder and therefore forms a uniformly beveled surface around the entire forepart of the sole margin; at the same time it presses the stock down close onto the stitches of the outseam, thus effectually concealing them.

It is not essential that the shoe be given a rough trimming to leave the lip projecting from the welt as above described to be preferable and many manufacturers prefer to turn back the welt in the manner set forth by operating upon the sole in the shape in which it comes from the rough rounder. After the welt has been turned back and smoothed down, the shoe is given its final trimming and the turned over welt is finished upon a welt indenting and burnishing machine or in some other suitable manner.

Having described our invention what we claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the character described comprising a tool having an acting face constructed and shaped to act upon the marginal portion of the welt of a shoe to force some of the stock backwardly toward the upper in combination with means for imparting a succession of rapid blows to said tool:

2. In a machine of the character described, a tool comprising a portion arranged to be secured rigidly in a holder and a work engaging portion comprising a shoulder arranged to engage the edge of the welt of a shoe and a beveled lip projecting beyond said shoulder and adapted to engage the top of the welt, the width of said lip being gradually increased in the direction of feed of the work.

3. In a machine for operating on the welt of a shoe, a tool having an extended work engaging face, a portion of said face being shaped for engagement with the edge of the welt and another portion being shaped for engagement with the top of the welt and constructed and arranged to operate progressively over the width of the welt as the work is fed past the tool.

4. In a machine for operating upon the welt of a shoe, a tool having a shouldered work engaging face, the shouldered portion of said face being shaped for engagement with the edge of the welt and having its ends rounded off, a lip projecting beyond said shoulder and having a face extending obliquely from the shoulder and adapted to engage the top of the welt, the width of said lip beyond the shoulder being gradually increased in the direction of feed of the work whereby it operates progressively over the width of the welt as the work is fed past the tool.

5. In a machine for operating upon the welt of a shoe, a tool having an extended work engaging face, a portion of said face having the shape of a shoulder adapted to engage the edge of the welt of a shoe, a lip having an operating face projecting varying distances beyond said shoulder and arranged to engage the top of the welt whereby as the work is fed past the tool the tool operates a plurality of times on each portion of the welt and successive portions of the lip act successively upon different widths of the welt.

6. In a machine for operating upon the welt of a shoe a tool having a shouldered work engaging face, the shouldered portion of said face being shaped for engagement with the edge of the welt, a lip projecting beyond said shoulder and cut away on its forward edge at an angle to said shoulder, the work engaging face of the lip projecting

obliquely from the shoulder and means for imparting a pounding movement to said tool in a direction transverse to the shoulder, whereby as the work is fed past the tool the tool operates a plurality of times upon each portion of the welt and successive portions of the lip operate upon different widths of the welt to crowd the stock backwardly toward the upper and downwardly over the outseam.

7. A machine of the character described comprising a tool having a shoulder adapted to engage the edge of the welt of a shoe and a lip arranged to engage the top of the welt, a holder in which said tool is secured against rotation and means for imparting a succession of rapid blows to said holder.

8. A machine of the character described comprising in combination a tool having a face shaped to engage the edge and top of the welt of a shoe, a holder in which said tool is secured, means for imparting a succession of rapid blows to said holder and adjustable means for limiting the range of movement of said tool.

9. A machine of the character described comprising a tool constructed to operate on the marginal portion of the welt of a shoe to force some of the stock backwardly over the stitches of the outseam in combination with a work support positioned in operative relation to said tool and provision whereby relative angular adjustment of said tool and support may be effected.

10. A machine of the character described comprising a tool arranged to operate upon the marginal portion of the welt of a shoe to force some of the stock backwardly over the stitches of the outseam in combination with a yielding work support arranged in operative relation to said tool and constructed and arranged for angular adjustment relative to said tool.

11. A machine of the character described comprising a tool constructed and arranged to operate on the welt portion of a sole edge to force some of the stock backwardly toward the upper in combination with a work support positioned in operative relation to said tool and arranged for adjustment longitudinally and angularly with relation thereto.

12. In a machine of the character described, a tool constructed and arranged to operate on the marginal portion of the welt of a shoe to force some of the stock backwardly toward the upper and a work support cooperating with said tool and arranged for adjustment vertically, longitudinally and angularly with relation to said tool.

13. In a machine of the character described, a tool arranged to operate on the margin of a shoe sole to force some of the stock backwardly toward the upper, a work

support arranged in operative relation to said tool, said support being adjustable vertically, longitudinally and angularly with reference to said tool and means for yieldingly pressing said work support toward the tool.

14. In a machine of the class described, a tool constructed and arranged to operate upon the marginal portion of a shoe sole to force some of the stock backwardly toward the upper, in combination with a work support arranged in operative relation to said tool, said support comprising a rod adjustable relative to the frame of the machine, means for holding said rod in adjusted position, a block angularly adjustable on the forward end of said rod, means for securing said block in adjusted position, a slide vertically adjustable in said block, and means for securing said slide in adjusted position in said block, said slide having its vertical edges beveled or inclined.

15. In a machine of the character described, a tool arranged to operate on the margin of a shoe sole and a work support arranged in operative relation to said tool, said support comprising a screw threaded member secured to the frame of the machine, an adjusting wheel having a tubular threaded extension engaging the threaded

portion of said member, a rod projecting axially through said wheel, a block angularly adjustable on the forward end of said rod, a slide adjustable vertically in said block, said slide being provided with a face adapted to engage the tread face of the sole of a shoe presented to the operation of said tool, a spring bearing against the inner end of said rod and a nut bearing against said spring and having threaded engagement with the threaded extension of said adjusting wheel whereby the tension of said spring may be varied.

16. A machine of the character described comprising in combination a tool constructed and arranged to operate on the marginal portion of the welt of a shoe to force some of the stock backwardly over the stitches of the outseam and a work support arranged in operative relation to said tool and having beveled or inclined faces whereby the shoe may be rocked thereupon as it is presented to the operation of the tool.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN B. HADAWAY.
JOHN V. ALLEN.

Witnesses:

GEO. E. WARREN,
CHESTER E. ROGERS.