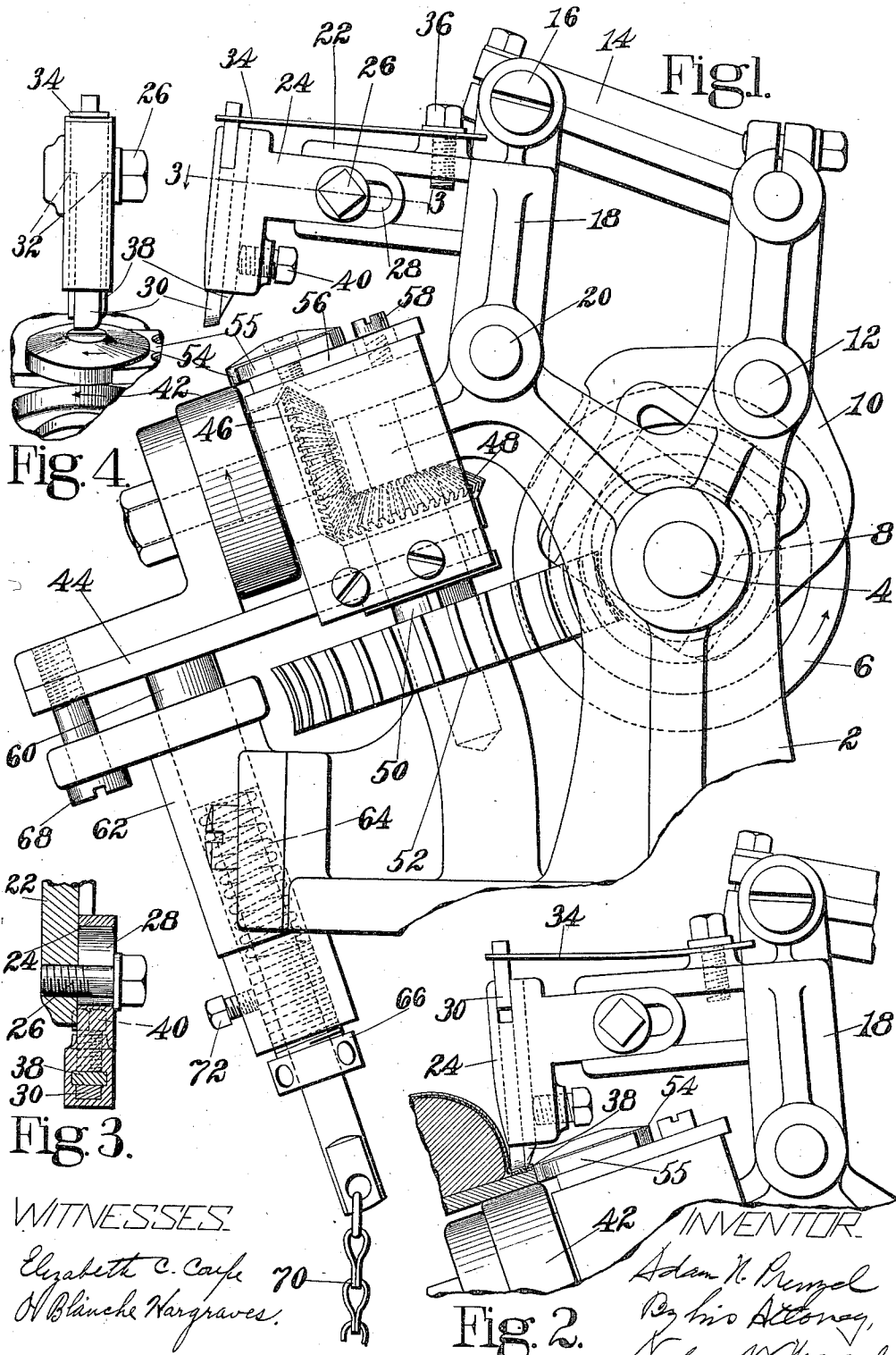


A. H. PRENZEL.
 MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
 APPLICATION FILED MAY 29, 1912.

1,093,008.

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WITNESSES:

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Fig. 2.

UNITED STATES PATENT OFFICE.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

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Specification of Letters Patent. Patented Apr. 14, 1914.

Application filed May 29, 1912. Serial No. 700,454.

To all whom it may concern:

Be it known that I, ADAM H. PRENZEL, a citizen of the United States, residing at Halifax, in the county of Dauphin and State of Pennsylvania, have invented certain Improvements in Machines for Use in the Manufacture 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 is of particular utility in the process of manufacturing stitch-down shoes. In making shoes of the latter type, the upper is attached to the sole by a line of fastenings extending around the margin of the sole some distance back from the sole edge, thus leaving the out-turned flange of the upper lying upon the upper marginal surface of the sole. Later a welt is secured upon this out-turned flange by a line of stitches or other fastenings that extend through the welt, flange and sole, or soles, and permanently secure these parts together. Prior to the attachment of the welt, however, it is necessary to trim off the portions of the out-turned flange of the upper that project beyond the edge of the sole. Usually it is preferable to trim this flange along a line lying back of the sole edge, so that the welt may be pulled down tightly on to the face of the sole near the edge, where it will conceal the trimmed edge of the lining and upper leather, which otherwise would be exposed to view between the welt and sole and would present an objectionable appearance. Furthermore, it is desirable, before the welt is attached, to beat down the out-turned flange of the upper, particularly around the toe of the shoe where it is likely to bunch and wrinkle, and thus to provide a smooth surface for the reception of the welt.

It is the chief object of this invention to devise a machine for performing these operations. To these ends the invention provides novel trimming and pounding mechanisms preferably, but not necessarily, arranged to operate simultaneously on the work; novel gaging and supporting means for properly positioning the work in the machine; and suitable adjustments for en-

abling the machine to operate upon shoes differing widely in style and character.

The invention will be readily understood from the following description, reference being made to the accompanying drawings, in which—

Figure 1 shows in side elevation a machine embodying the present invention; Fig. 2 shows in side elevation certain parts of the machine shown in Fig. 1 as they would appear when operating upon a shoe; Fig. 3 is a cross sectional view on the line 3—3, Fig. 1; and Fig. 4 is a view in front elevation of the parts engaging the work.

The machine shown comprises a frame 2, having suitable bearings for the support of a rotary shaft 4 which is driven by a belt running over a pulley 6 fixed thereon. This shaft carries an eccentric that rotates in, and carries with it, a block 8 which fits snugly, but slidingly, between the machined faces of a forked arm of a bell crank lever 10 mounted to oscillate about a pivot 12. The other arm of this lever is pivoted to a link 14, which in turn is pivotally connected at 16 to one arm of another bell crank lever 18, fulcrumed on the machine frame at 20. An arm 22 projecting forwardly from the lever 18 is grooved on one side to receive the shank of a tool holder 24; and this holder is secured to the arm by means of a bolt 26 that extends through a slot 28 of the shank, and clamps it adjustably to the lever arm. The body of the holder 24 extends at substantially right angles to its shank and is provided with an internal guideway, substantially rectangular in cross section, for the reception of a hammer 30. The hammer is designed to slide freely in this guideway and, in order to limit its downward movement relatively to the holder, it is provided, near its upper end, with two projecting shoulders 32 that engage the bottom of a slot which forms an extension and enlargement of the guideway. The hammer normally is held at the downward limit of its movement by means of a leaf spring 34, having an aperture through which a reduced portion of the upper end of the hammer projects, the other end of the spring being clamped to the arm 22 of the lever 18 by means of a bolt 36. It will be evident that this spring will yieldingly resist the upward movement of the hammer through the holder

24. Adjoining the guideway for the hammer 30 is another guideway extending parallel thereto, but wider than the first guideway, for the reception of the trimming knife 38. The knife may be adjusted longitudinally in its guideway, and may be clamped in adjusted position by a bolt 40 that is threaded into the holder and bears against the knife.

10 The knife and hammer are mounted directly over a feed wheel 42, which supports the work during the trimming and pounding operations. This wheel rotates on a stud supported in a bracket that is mounted on a movable table 44; and it has fixed thereto 15 a bevel gear 46 which meshes with a similar gear 48. The latter gear is supported by the table 44 and is splined on a shaft 50 so that it rotates with this shaft but may slide axially thereon. The shaft is driven by a 20 worm gear 52 which meshes with a worm carried by the driving shaft 4.

It will now be understood that, when the driving shaft is rotated, the lever 10 will be 25 oscillated about its fulcrum 12 by means of the eccentric and the block 8 carried thereby, and that this motion will be transmitted through the link 14 to the bell crank lever 18, causing the holder 24 to reciprocate 30 toward and from the periphery of the feed wheel 42. At the same time, the gear connections between the driving shaft 4 and the feed wheel 42 will cause the wheel to rotate to feed the stock along under the hammer 30 35 and knife 38.

In order to aid the workman in guiding the shoe for the operation of the tools thereon, an edge guiding or gaging roll 54 is rotatably mounted with its edge close to the 40 periphery of the feed wheel 42. A slide 56 supports the roll 54 and is secured, by means of a screw 58 projecting through a slot in the plate, to a part of the frame that extends substantially parallel with the axis of rotation of the feed wheel 42. This arrangement 45 permits the adjustment of the guiding roll 54 relatively to the periphery of the feed wheel. The plate 55, secured to the slide 56 beside and partially encircling the feed roll 54, aids the operator in guiding the shoe 50 properly for the action of the knife and hammer.

For the purpose of facilitating the introduction of the work into the machine while 55 it is running, provision is made for moving the feed wheel away from the path of movement of the tools. To this end the table 44 is provided with a depending stem 60 which slides freely through an aperture formed in a bracket 62 secured to the machine frame 2. 60 A spring 64, backed up by a sleeve 66 threaded into the aperture of the bracket 62, encircles the stem 60 and acts upon a shoulder formed thereon to raise the stem and 65 thereby to hold the feed wheel in its upper-

most position. This movement of the feed wheel under the influence of the spring 64 is limited by a screw 68 that projects upwardly through an aperture in the bracket 62, and is 70 threaded into the table 44. This screw also serves to adjust the position of the feed wheel relatively to the tool holder 24, and the other parts of the machine. A chain 70 connects the lower end of the stem 60 to a 75 foot treadle (not shown) by means of which the table and feed wheel may be depressed against the action of the spring 64. The tension of the spring 64 may be varied by turning the sleeve 66 in or out, and a set screw 72 threaded through the bracket 62 80 bears against the sleeve 66 and serves to hold it in adjusted position.

In using the machine, the shoe is presented to the tools in the manner indicated in Fig. 2, the tread face of the shoe sole being supported on the periphery of the feed wheel 42, and the edge of the sole bearing against the guiding roll 54. The face of the hammer 30 is set slightly below the edge of the 85 knife 38 and, consequently, upon the downward stroke of the holder, the hammer strikes the work in advance of the knife. The spring 34 permits the hammer to slide 90 yieldingly through the holder as the holder continues on its downward movement. While the hammer thus holds the stock 95 pressed against the sole, the edge of the knife 38 enters the flange of the upper and cuts entirely through it. Preferably, the position of the knife is so adjusted in its 100 holder, or the position of the feed wheel is so adjusted by means of the screw 68, that the knife cuts entirely through the flange of the upper and slightly into the upper face 105 of the sole. This adjustment insures a clean cut. Furthermore, it is usually preferable to adjust the edge guiding roll 54 so that the line of cut of the knife 38 will lie just back of the sole edge; or this adjustment may be 110 effected by moving the holder 24 in the arm 22 of bell crank lever 18. Upon the return stroke of the holder 24, the spring 34 keeps the hammer 30 pressed against the work 115 until after the knife 38 has been lifted clear of the flange; but when the shoulders 32 of the hammer strike the bottom of the slot in which they slide, the holder then swings the hammer upwardly out of contact with the work. The feed wheel 42 moves the work 120 along under the holder while it is guided by the operator to cause the entire margin of the flange to be trimmed and pounded.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is: 125

1. A machine for operating upon stitch-down shoes, comprising in combination, means for pressing the out-turned flange of the upper against the sole close to the body of the upper, and means acting simultane- 130

ously therewith to cut through said flange against the surface of the sole.

2. A machine for operating upon stitch-down shoes, comprising in combination, means for pounding the out-turned flange of the upper against the margin of the shoe sole, and means acting simultaneously therewith to trim off the marginal portion of said flange.

3. A machine for operating upon stitch-down shoes, comprising in combination, means for pounding the out-turned flange of the upper against the sole, and means acting while the stock is held under pressure by said pounding means to cut through said flange against the surface of the sole.

4. A machine for operating upon stitch-down shoes, comprising in combination, means for supporting the tread face of a shoe sole, a hammer for pounding the out-turned flange of the upper, a knife for trimming said flange, and means for driving said hammer and knife to cause them to operate simultaneously upon the shoe.

5. A machine for operating upon stitch-down shoes, comprising in combination, a feed roll for supporting the tread face of a shoe sole, means for pressing against the sole that portion of the out-turned flange of the upper lying close to the body of the shoe, a knife operating simultaneously therewith, and gaging means for causing said knife to trim said flange along a line lying between the edge of the sole and the body of the shoe.

6. A machine of the class described, comprising in combination, means for supporting the tread face of a shoe sole, a holder, a hammer yieldingly secured in said holder, a knife rigidly mounted in said holder, means for reciprocating said holder toward and from said supporting means, and gaging means for guiding a shoe to cause said hammer and knife to operate simultaneously upon the stock lying along the margin of the shoe sole.

7. A machine of the class described, comprising in combination, a work feeding roll, a holder, a knife rigidly secured in said holder, a hammer yieldingly mounted in said holder, and means for reciprocating said holder to move the knife and hammer toward and from the supporting surface of said roll.

8. A machine of the class described, comprising in combination, a work feeding roll, a holder, a hammer and a knife carried by

said holder, means for reciprocating said holder to carry said knife and said hammer toward and from said roll, means whereby a relative adjustment of said holder and roll toward or from each other may be effected, an edge gage positioned adjacent to the periphery of said roll, and means whereby a relative adjustment of said holder and edge gage may be effected in a direction transverse to the direction of movement of said holder.

9. A machine for operating upon stitch-down shoes, comprising in combination, a support for the tread face of a shoe sole, a knife, means for reciprocating said knife toward and from the surface of said support, and means for gaging the position of a shoe to cause said knife to cut through the marginal flange of the upper against the face of the sole to trim said flange along a line lying between the sole edge and the body of the shoe.

10. A machine of the class described, comprising in combination, a feed wheel, a knife, means for reciprocating said knife toward and from the periphery of said wheel, an edge gage positioned close to the periphery of said wheel near the path of travel of said knife, said feed wheel and edge gage being relatively adjustable in a direction substantially parallel to the axis of said wheel.

11. A machine of the class described, comprising in combination, a support for the tread face of a shoe sole, a holder having two guideways formed therethrough, a hammer positioned in one of said guideways, a spring acting on said hammer to press it toward said support, said hammer and holder having cooperating means for limiting the movement of said hammer by said spring, a knife adjustably positioned in the other guideway, means for clamping said knife in adjusted position, means for reciprocating said holder toward and from said support, and an edge gage adjustable relatively to said support to guide the edge of the sole for the operation of said knife and hammer.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADAM H. PRENZEL.

Witnesses:

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LUTHER W. RYAN.