

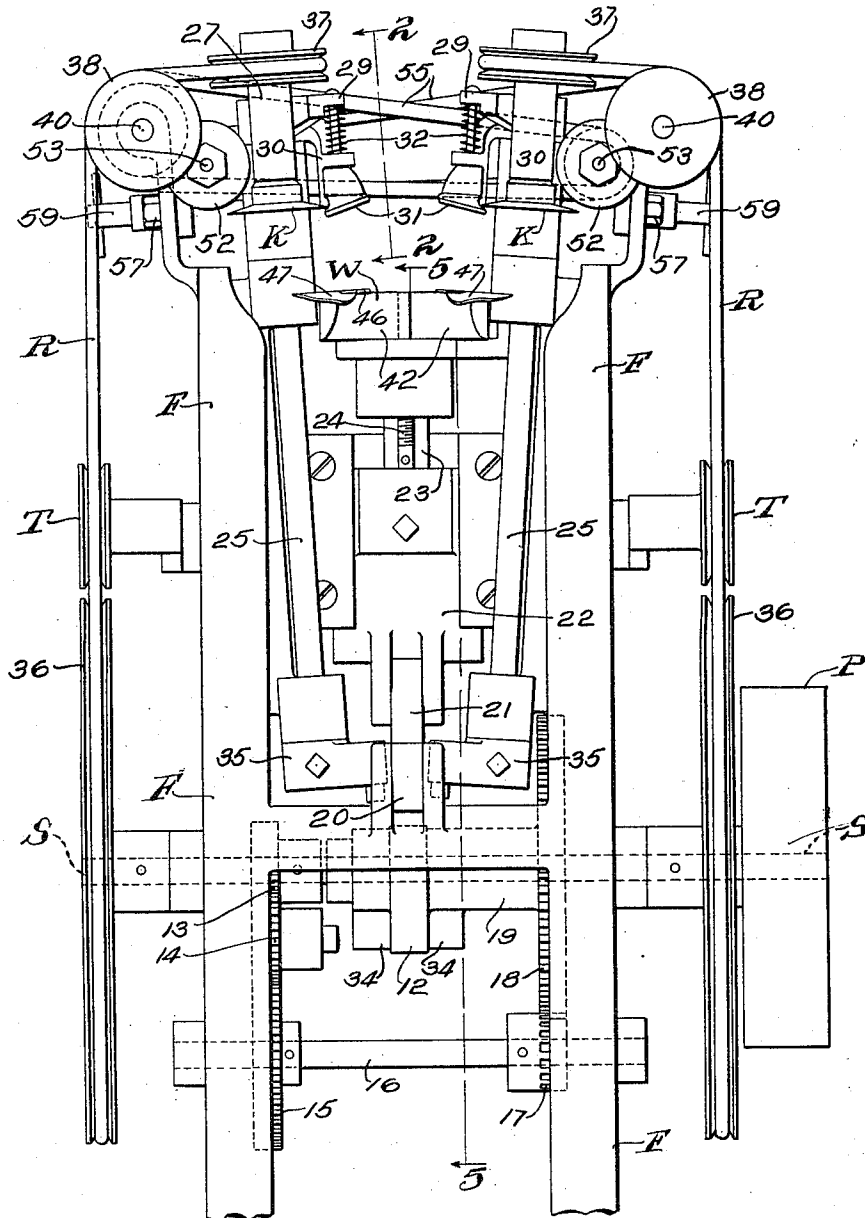
G. L. ROLLINS.
WELT BUTTING MACHINE.
APPLICATION FILED JUNE 5, 1911.

1,030,613.

Patented June 25, 1912.

4 SHEETS-SHEET 1.

Fig. 1.



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Inventor:

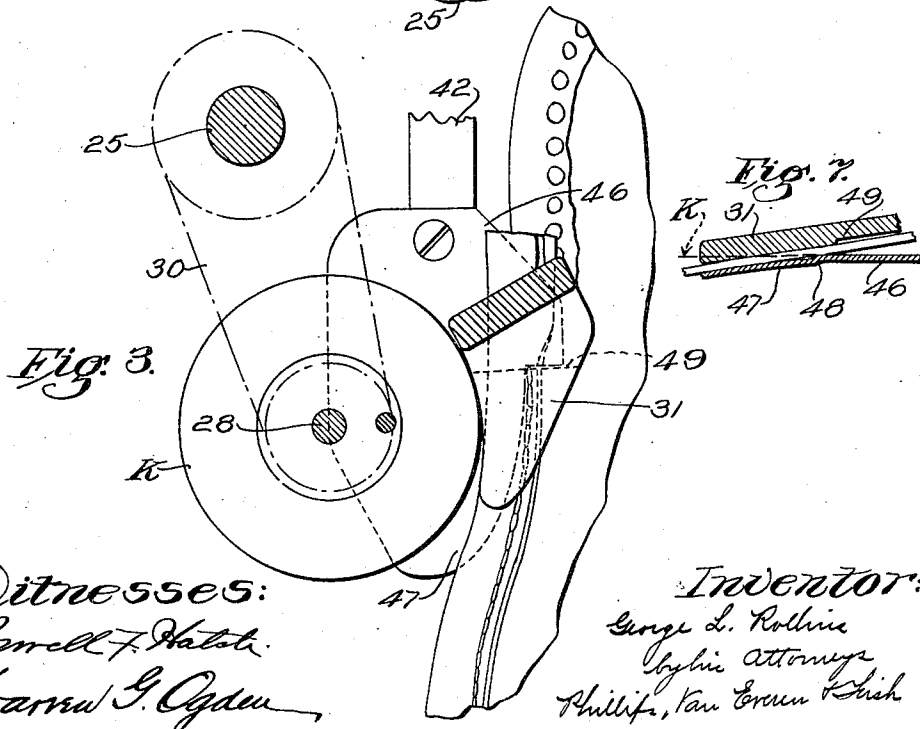
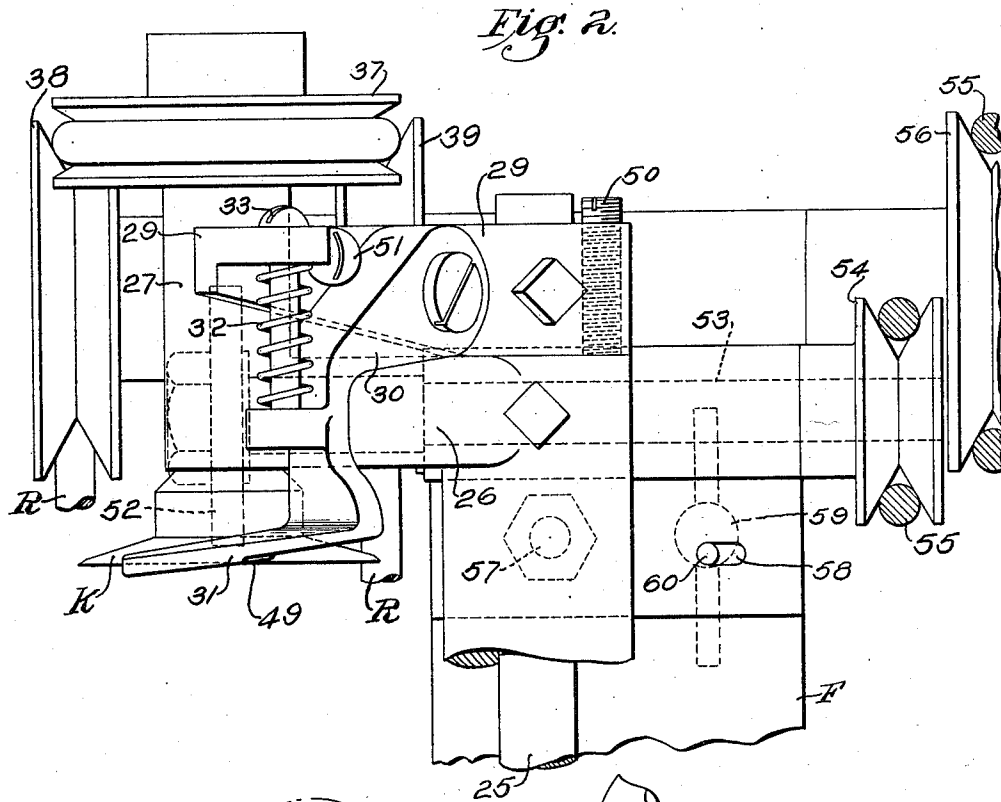
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4 SHEETS—SHEET 2.



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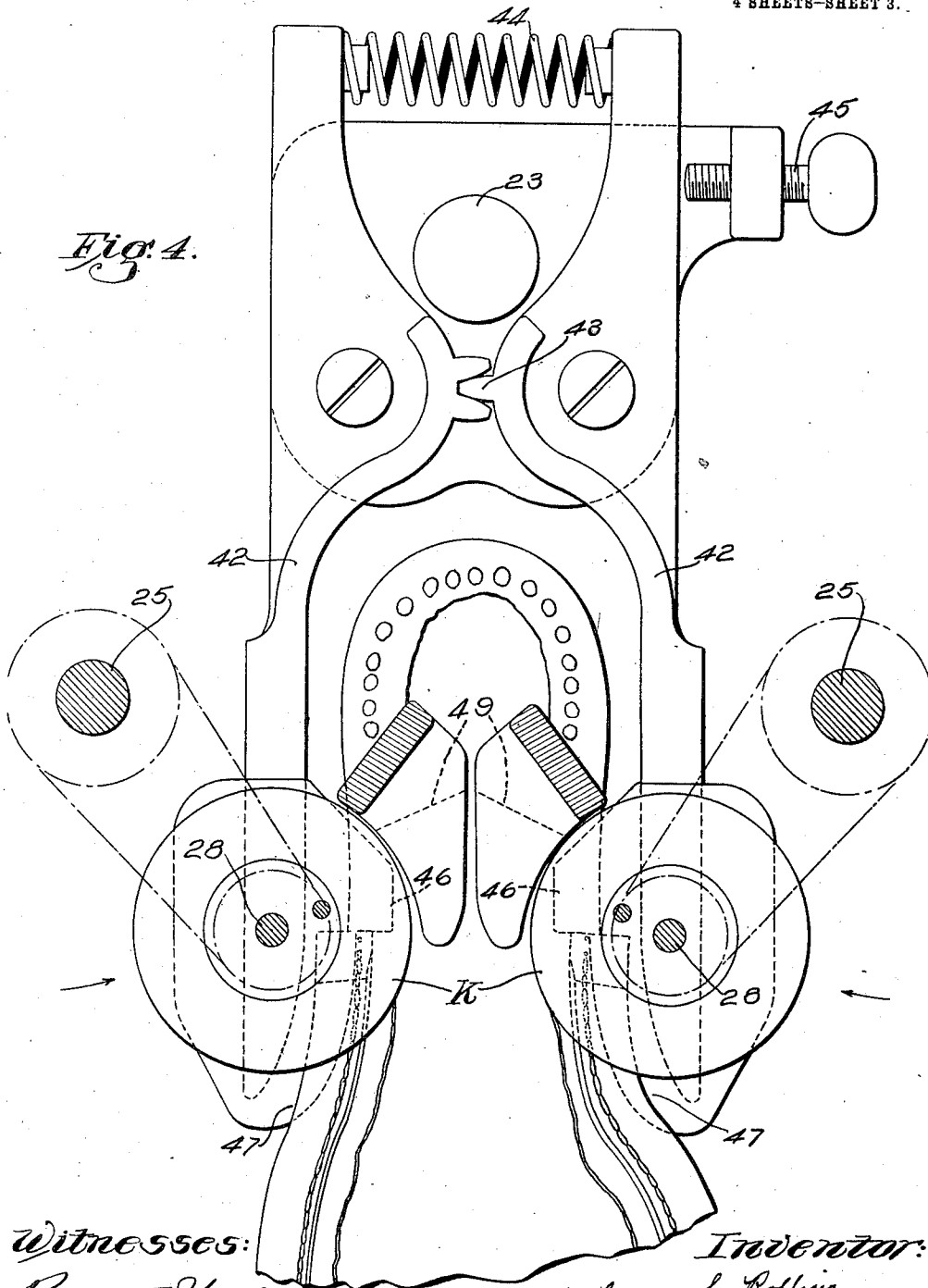
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4 SHEETS-SHEET 3.

Fig. 4.



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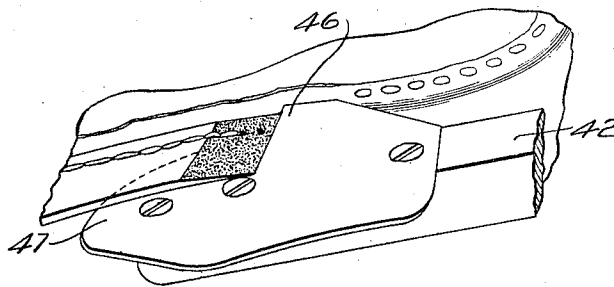
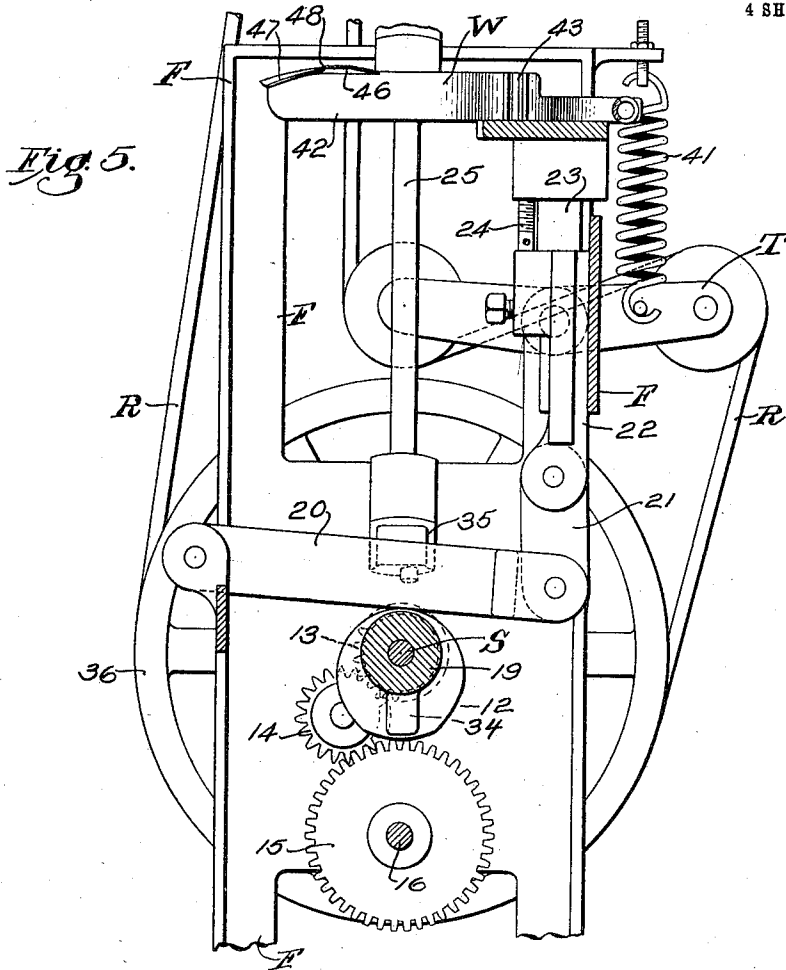
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4 SHEETS-SHEET 4.



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Fig. 6.

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UNITED STATES PATENT OFFICE.

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WELT-BUTTING MACHINE.

1,030,613.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed June 5, 1911. Serial No. 631,376.

To all whom it may concern:

Be it known that I, GEORGE L. ROLLINS, a citizen of the United States, residing at Bridgewater, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Welt-Butting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for operating on the ends of the welt of a welted shoe, after the inseam sewing operation has been performed, and more particularly to the operation of butting the welt ends preparatory to the sole laying operation.

When the shoe comes from the welt sewing machine the free ends of the welt are not of uniform length, nor, usually, of the proper length, and as cut by the inseaming operative make a distinct shoulder which, if left when the sole is laid, spoils the appearance of the shoe at the shank and frequently interferes with the proper heeling of the shoe by making an uneven heel seat. To provide for a smooth and even laying of the sole at the shank and an even heel seat the free or butt ends of the welt are skived or beveled, thus effectually disposing of the shoulder which causes the trouble. This operation is called "welt butting" and was first performed entirely by hand although at the present time several machines have been designed by means of which it may be performed.

The object of the present invention is to improve the machines for performing the operation of butting the welt ends by simplifying their construction and mode of operation, and rendering them more certain and accurate in the performance of their functions thus insuring a better and more perfect product.

To the accomplishment of this object the invention, in the best form known to the invention at the present time, comprises the features and combinations of parts hereinafter specifically described and then set forth in the appended claims.

The preferred form of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine with the work support retracted and ready for the reception of a welted shoe about to be operated upon; Fig. 2 is an elevation of the operating parts looking in the direction of the arrows on the line 2—2 of Fig. 1; Fig. 3 is a plan of one of the welt butting knives and welt pressing device showing the knife just about to enter the welt; Fig. 4 is a plan (full size) showing the relative positions of the work support, knives and pressers, after the welt ends have been butted; Fig. 5 is an elevation (partly in section) of the mechanism for elevating the work support and for operating the welt butting knives, looking in the direction of the arrows on the line 5—5 of Fig. 1; Fig. 6 is a perspective (full size) of a portion of the work support with a butted welt end resting thereon; and Fig. 7 is a diagrammatic detail (full size) showing the cooperation of the welt pressers and welt support, the plane of travel of the welt butting knife being indicated by a dash line.

In the embodiment of the invention illustrated in the drawings, and referring first to Figs. 1 and 5, a driving shaft S, provided with a belt pulley P, is suitably journaled in the frame F and is rotated at a high speed to impart a rapid movement to the rotary welt butting knives K driven by the rope drives R. The vertically movable work support W is reciprocated at a slower speed, which may be varied to suit the operative, by suitable gearing from the shaft S to an operating cam 12. At one side of the frame the shaft S carries a gear 13 which meshes with an idle gear 14 on a stud projecting from the frame, which idle gear in turn meshes with a gear 15 on a counter-shaft 16. The counter-shaft also carries a pinion 17 which drives a gear 18 on a sleeve 19, loose on the shaft S, which is provided with the cam 12. With this gearing the sleeve 19 is rotated in a direction opposite to that of the shaft S. A cross bar at the front of the frame carries a pair of lugs between which is

pivoted the forward end of a lever 20 extending rearwardly above, and resting on, the cam 12. The rear end of the lever 20 is connected by a link 21 with the lower end of a slide 22 guided by vertical gibs on the frame and provided with a bore through which is passed the stem 23 of the work support W. The work support may be given a gross adjustment by loosening the set screw which holds the stem in place, and a fine adjustment by means of the screw pin 24 threaded into the head of the stem and bearing on the slide 22. With this construction it will be seen that the rotation of the cam 12 from the position shown in Fig. 5 will cause the work support to be elevated and to fall back by force of gravity. Suitably journaled in the frame, at each side of the work support, are two vertically arranged rock shafts 25, they being placed at a slight angle to the vertical so that the plane of travel of the knives K, which they carry, will be substantially parallel to the surface of the margin of the sole of the shoe to be operated on, at the end of the welt, which surface is at a slight angle to the horizontal, when the shoe is on the work support, owing to the transverse convexity of the last bottom. At the upper ends of the rock shafts 25 are fixed forwardly projecting arms 26 (Fig. 2) each of which carries a vertically arranged sleeve 27 in which are journaled the shafts 28 (Figs. 3 and 4) which operate the flat disk knives K. Above each of the arms 26, but at an angle thereto, is another arm 29 (Fig. 2) upon which is a vertically movable lever 30 carrying at its lower end a welt presser 31, the welt engaging surface of which is set at an angle to the plane of the knives K. The pressers 31 are arranged to lie in advance of the knives K and move with the knives as they are advanced to cut the welt by the rocking of the rock shafts 25. The welt pressers are yieldingly pressed toward the shoe by coiled springs 32 surrounding screws 33 (Fig. 2) passed through the ends of the arms 29 and threaded into lugs on the levers 30.

To rock the rock shafts 25, and thus cause the welt butting knives to be moved inward, the sleeve 19 (Figs. 1 and 5) is provided with a pair of lugs 34, which, for convenience, may be termed tappet cams, and which, in the rotation of the sleeve are caused to engage pins projecting downwardly from the ends of inwardly directed crank arms 35 fixed on the lower ends of the rock shafts. While the tappet cams 34 act to advance the knives K to sever the welt ends, after the cams disengage themselves from the pins on the crank arms 35, the knives are returned to their outward, inoperative position by the action of the rope drives R as will now be described.

The rope drives R (Figs. 1, 2 and 5) comprise two continuous rope belts each running over a sheave 36 on the driving shaft S, and a sheave 37 on the knife shaft 28, at substantially right angles to each other, the direction of the belts being changed by passing over pairs of idle sheaves 38 and 39 fast and loose respectively on horizontal shafts 40 extending from front to rear and journaled in brackets at the upper portion of the frame outside of the rock shafts 25. A belt tightener T, as fully shown in Fig. 5, is interposed in each of the rope drives and is mounted on the frame at the rear, the tension being obtained by means of a spring 41 connecting the tightener with the frame. The arrangement for rotating the knives just described constitutes an important feature of the invention as, when the knives are moved inward to cut the welt ends the belt is placed under a greater tension owing to the expanding of the belt tightener spring 41 and thus a tight belt, and its consequent advantages, is provided at the time the cut is being made.

The work support W (Figs. 4 and 5) comprises two side arms 42 pivotally mounted on the head of the stem 23 and provided with intermeshing gear teeth 43 and with rearward extensions between which is seated a coiled spring 44. The arms will thus open equally when a shoe is forced between them and will be held against the shoe by the spring. An adjustable stop screw 45 is provided to limit the opening movement of the arms. At the forward end of each arm, at its upper side, there is mounted a welt supporting plate having a part 46 adapted to extend over the heel seat at the rear of the insole and beneath the free end of the welt, and a part 47 adapted to enter the welt crease and bear against the insole. The part 47 extends at a slight angle to the part 46 (Figs. 5 and 7) and at the juncture of the two parts a transverse shoulder 48 is formed. The welt pressers 31 are also provided on their lower, or welt engaging, faces with a transverse shoulder 49 (see Figs. 2 and 7 and the dotted line Fig. 3). After the work support, with welted shoe thereon, has been elevated, thus clamping the welt ends between the welt pressers and welt supporting plates, and the knives have been advanced to the position where they are about to enter the welt, the shoulders 49 on the pressers are brought to a position substantially parallel to the shoulders 48 on the plates and slightly in advance of them (see Fig. 3). This serves to press the welt into the shoulders 48 and turn the free ends at an angle to the surface of the parts 46 of the welt supporting plates. As the upward movement of the work support has brought the surfaces of the parts 46 of the plate

into coincidence with the plane of cutting movement of the knives, the upturned ends of the welt allow the knives to make a clean and even cut through the grain side of the welt as shown in Fig. 6. The advance of the pressers along the welt ends, as shown in Fig. 7, maintains the welt pressed against the shoulders 48 while the free ends of the welt extend into the clearance space between the pressers and welt supporting plates provided by the angular position of the welt pressers.

The welt presser carrying arms 29 may be moved vertically on the rock shafts 25, to adjust the pressers for varying thicknesses of welt, by means of screw pins 50 (Fig. 2) and their angular relation to the rock shafts is determined by the set screws 51 (Fig. 2) which bear against the sleeves which carry the knife shafts 28. The angular position of the presser levers 30 and the tension of the spring 32 may be adjusted by the screw 33. Thus the welt pressers may be adjusted to care for all kinds of work. Means is also provided in the present machine for keeping the knives sharp. Emery wheels 52 (Figs. 1 and 3) are mounted above the knives at the forward ends of the countershafts 53 which carry sheaves 54 at their rear ends. These sheaves are driven by rope belts 55 traveling over sheaves 56 on the rear ends of the shafts 40. The journals of the shafts 53 are provided with depending plates which are pivoted to the frame at 57 (see dotted lines Fig. 2) and are provided with slots 58. Studs 59 (Figs. 1 and 2) are passed through the frame at each side having at their ends eccentric pins 60 which enter the slots 58. On rotating the studs 59, the pins 60 act to tip the emery wheels about the pivots 57, into and out of contact with the knives.

In operating the machine, after throwing on the power the knives are continuously rotated and the work support is continuously reciprocated from the position shown in Fig. 1 to a position just beneath the knives where the surface of the welt supporting plate is in coincidence with the plane of travel of the knives, as in Fig. 3. The lowering of the work support after the butting operation is completed is a distinct advantage in that the butted shoe can be removed and a new shoe entered without interference by the knives or pressers. The shoe is pushed into the work support between its arms 42 until the last inseam stitch abuts against the forward edge of the parts 46 of the welt supporting plates. A further advantage of the lowered work support is now seen, as, when the support is elevated the welt ends are brought vertically against the welt pressers which are so adjusted as to clamp the welt yieldingly in

butting position against its supporting plate. The movement of the shoe into position in the manner described is important as it enables wet or soft stock to be properly positioned for the cutting operation. With stock of this character if the pressers are moved onto the welt from the side, its ends are apt to be forced inward and the cut made by the knife will not be clean and square across the welt as is desirable for reasons well known to those skilled in the art. After the cam 12 has elevated the shoe, a dwell holds the shoe in position while the pressers are advanced to smooth the welt and turn up its ends for the operation of the cutters, as described, and the knives are advanced over the surface of the welt supporting plate and through the welt ends, to the positions shown in Fig. 4, by the tappet cams 34. The rope belts are tightened during the knife movement, elongating the springs 41, which, after the tappet cams disengage themselves from the crank arms 35, act to return the knives and pressers to their initial, inoperative position shown in Fig. 1. The work support then falls by gravity and the butted shoe may be removed.

The invention is not limited to the details of construction and operation of the illustrated embodiment nor to the conjoint use of all its features but may be embodied in other forms within the terms and spirit of the claims.

What is claimed as new, is:—

1. A welt butting machine, having, in combination, a welt pressing device, a shoe support including a welt supporting device engaging the welt crease of a welted, unsoled shoe, normally in retracted position relative to the welt pressing device, a welt cutting knife, and means for preliminarily advancing the shoe support with the welted shoe thereon toward the welt pressing device until the welt end is clamped between the welt pressing and welt supporting devices in position to be operated upon by said knife, and means for thereafter relatively moving the support and knife to butt the welt, substantially as described.

2. A welt butting machine, having, in combination, a shoe support having a plate arranged to extend under the free end of the welt of a welted, unsoled shoe, a welt butting knife, means to advance said knife across said supporting plate in a plane parallel to the plane of its surface, and means to advance the shoe support and the welted shoe thereon to bring said planes into coincidence before the knife is advanced, substantially as described.

3. A welt butting machine, having, in combination, a shoe support having a plate arranged to extend under the free end of the welt of a welted, unsoled shoe, a welt

butting knife, means to advance said knife across said supporting plate in a plane parallel to the plane of its surface, means to advance the shoe support and the welted shoe thereon to bring said planes into coincidence before the knife is advanced, and means to hold the free welt ends at an angle to the surface of said plate during the advance of the knife, substantially as described.

4. A welt butting machine, having, in combination, a welt pressing device, a shoe support, including a welt supporting device engaging the welt crease of a welted, unsoled shoe, normally in retracted position relative to the welt pressing device, a welt cutting knife, means for advancing the shoe support and the welted shoe thereon toward the welt pressing device until the welt end is clamped between the welt pressing and welt supporting devices and is held in a plane at an angle to the cutting plane of the knife, and means for advancing the knife through the welt end and the pressing device over the welt end in advance of the knife, substantially as described.

5. A welt butting machine, having, in combination, a welt butting knife, a welt presser located in advance of said knife, a shoe support beneath said device and normally lowered to a position to permit a welted, unsoled shoe to be placed thereon without engaging the presser or knife, means for moving the shoe vertically into engagement with the presser, and means for thereafter advancing the presser along the welt and the knife across and through the welt, substantially as described.

6. A welt butting machine, having, in combination, a vertically movable support for a welted, unsoled shoe, a vertically arranged rock shaft at one side of said support, a forwardly extending arm at the upper end of said shaft carrying a welt butting knife, a crank arm on the lower end of said shaft, a power shaft, and means on said power shaft to raise the work support and place the shoe thereon in welt butting position and thereafter to engage said crank arm and rock the rock shaft to advance the knife over the shoe and through the welt end, substantially as described.

7. A welt butting machine, having, in combination, a vertically movable support for a welted, unsoled shoe, a vertically arranged rock shaft at one side of said support, a forwardly extending arm at the upper end of said shaft carrying a welt butting knife, a crank arm on the lower end of said shaft, a power shaft an eccentric on said shaft to raise the work support and place the shoe in welt butting position, a tappet cam to engage said crank arm and rock the rock shaft to advance the knife toward

the welt end, and means to return the knife to its initial, inoperative position, substantially as described.

8. A welt butting machine, having, in combination, a support for a welted, unsoled shoe comprising a welt supporting plate having a part extending over the heel seat and beneath the free end of the welt, a part entering the welt crease extending at an angle to the other part and a transverse shoulder at the juncture of the two parts, a welt cutting knife arranged to pass widthwise through the welt, and a welt presser arranged to press the welt end into said shoulder at the commencement of the cutting operation to cause the knife to emerge from the grain side of the welt at substantially this point, substantially as described.

9. A welt butting machine, having, in combination, shoe positioning means, a rotary disk knife for butting the welt, a belt drive including a belt tightener for continuously rotating said knife, and means to advance the knife to give it a cutting stroke whereby the belt is tightened during the cut, substantially as described.

10. A welt butting machine, having, in combination, shoe positioning means, a rotary disk knife for butting the welt, a belt drive for continuously rotating said knife, means to advance the knife to cut the welt, and a belt tightener in the belt drive to permit such movement and to return the knife to its initial, inoperative position, substantially as described.

11. A welt butting machine, having, in combination, a welt butting knife, and a welt presser located in advance of the knife having provision for vertical, horizontal and angular adjustment relative to the cutting plane of the knife, substantially as described.

12. A welt butting machine, having, in combination, a welt butting knife, and a welt presser located in advance of the knife having provision for both vertical and angular adjustment relative to the cutting plane of the knife, substantially as described.

13. A welt butting machine, having, in combination, a reciprocatory work support, a rotary disk knife for butting the welt, and power means for continuously rotating the knife and continuously reciprocating the work support toward and from the knife, substantially as described.

14. A welt butting machine, having, in combination, a reciprocatory work support, a rotary disk knife for butting the welt, power means for continuously rotating the knife and continuously reciprocating the work support toward and from the knife, and means for advancing the knife through the welt end between the reciprocations of the work support, substantially as described.

15. A welt butting machine, having, in combination, a work support, a knife for butting the welt, means to move the support and shoe thereon into position for the welt to be butted and for holding it in such position for a time, means for advancing the knife bodily through the welt in a direction to sever the welt end while the shoe is so held, and means permitting the support to withdraw from the knife after the welt has been butted, substantially as described.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."