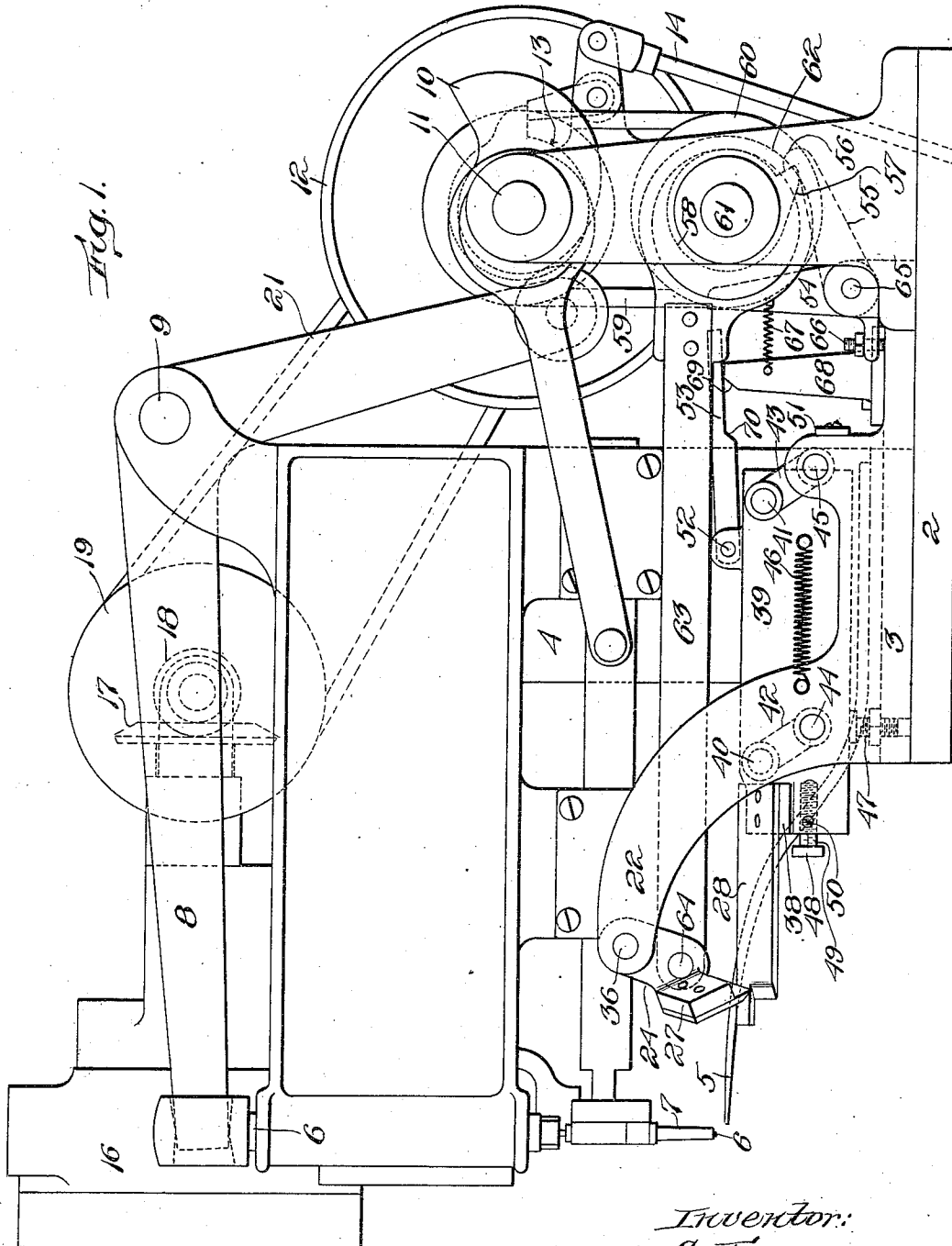


L. G. FREEMAN.
HEEL SEAT JOINTING MACHINE.
APPLICATION FILED JULY 13, 1908.

1,019,145.

Patented Mar. 5, 1912.

4 SHEETS—SHEET 1.



Witnesses:

Louis Brown
Edward Maxwell

Inventor:

Louis G. Freeman,

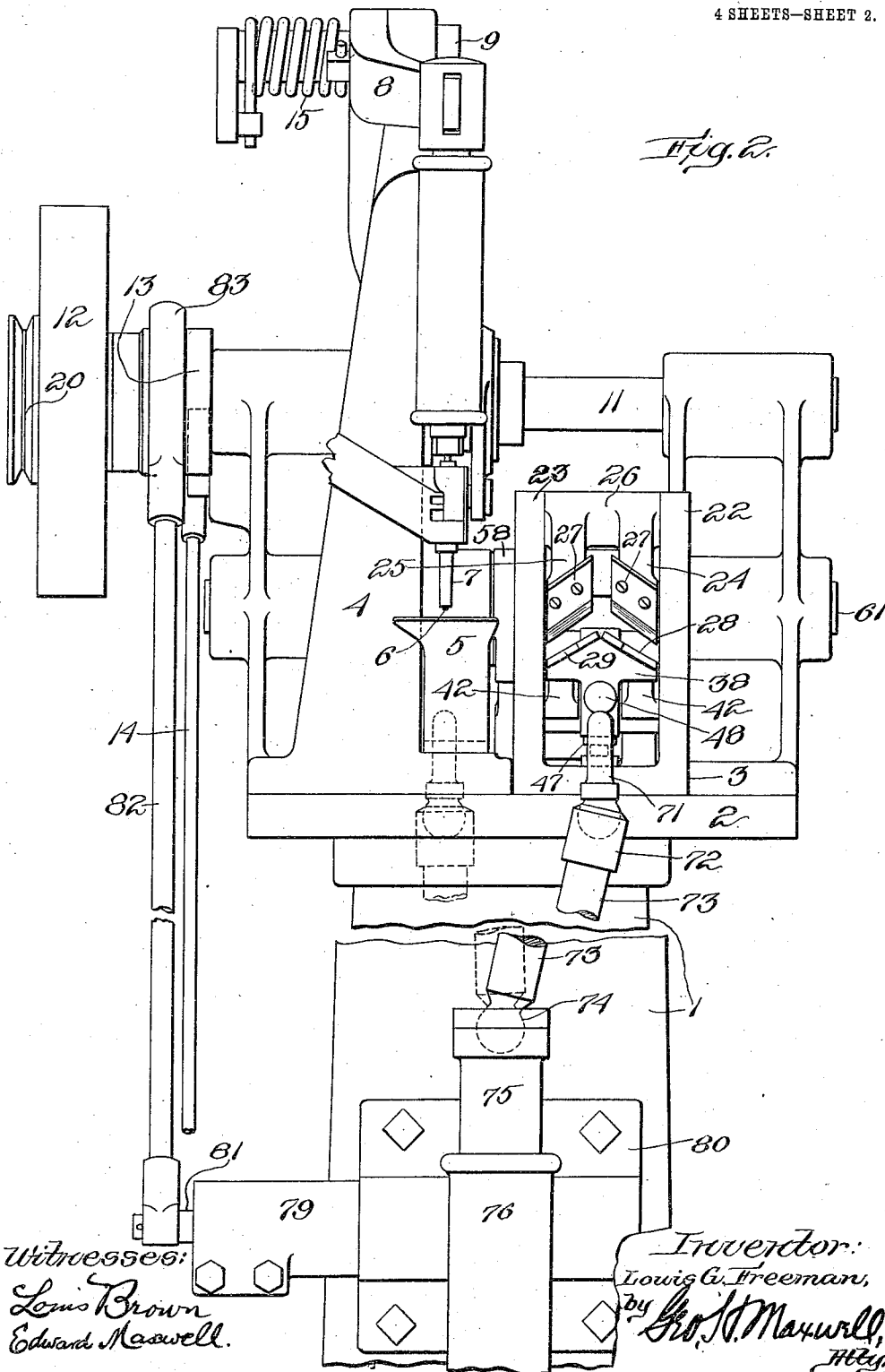
by Geo. S. Maxwell,
Atty.

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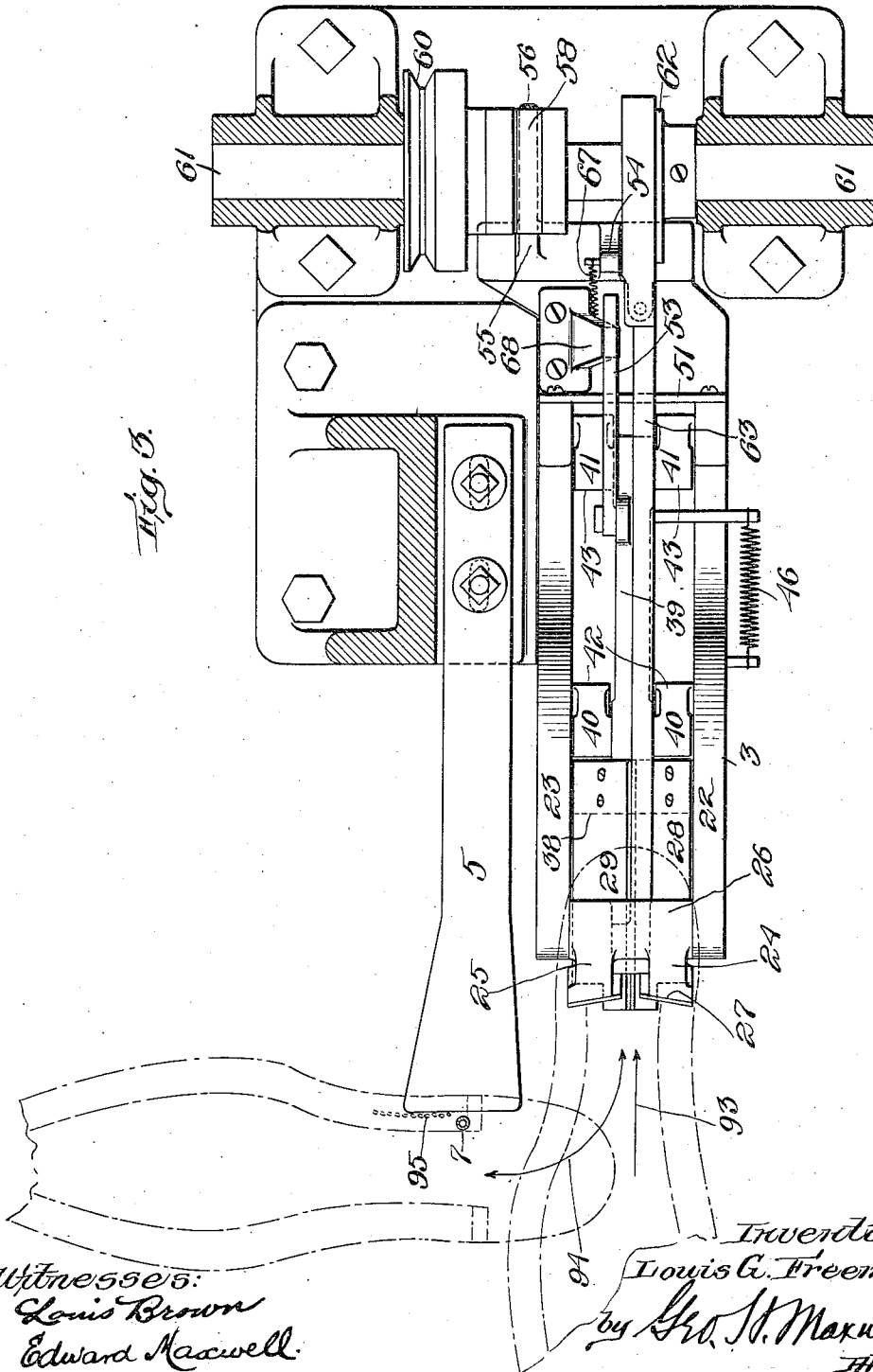


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4 SHEETS—SHEET 4.

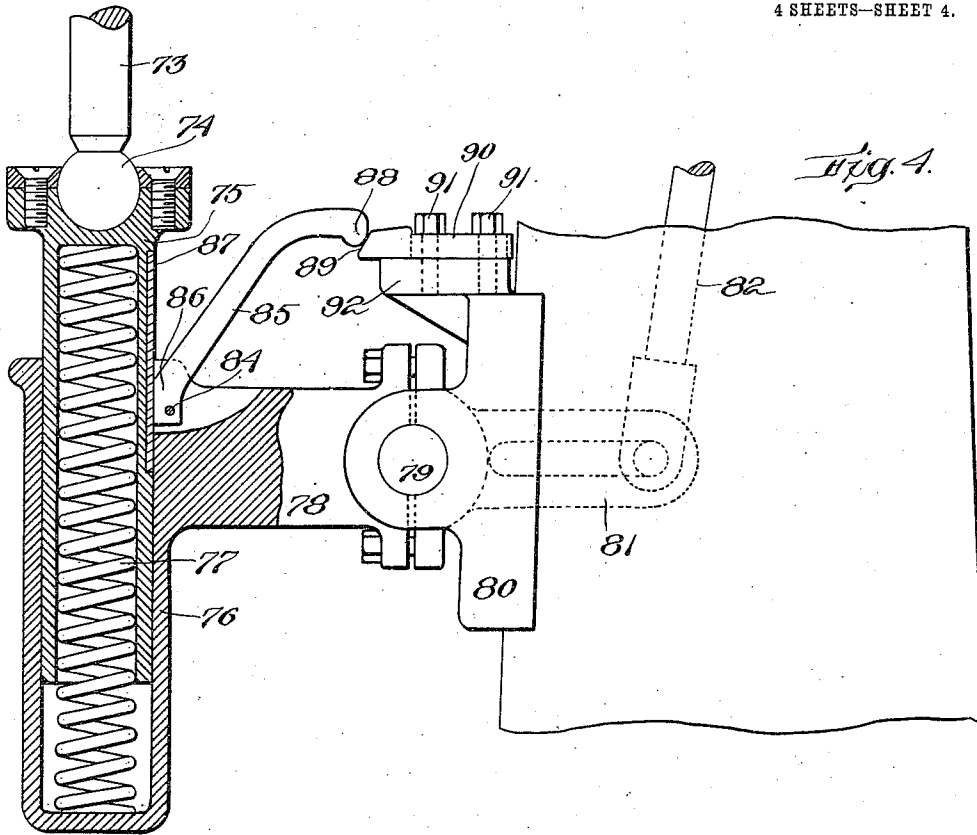


Fig. 5.

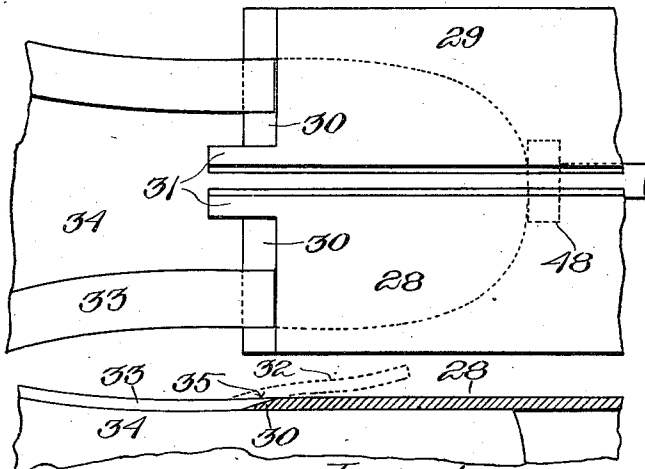


Fig. 6.

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Att'y.

UNITED STATES PATENT OFFICE.

LOUIS G. FREEMAN, OF CINCINNATI, OHIO, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-SEAT-JOINTING MACHINE.

1,019,145.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed July 13, 1908. Serial No. 443,261.

REISSUED

To all whom it may concern:

Be it known that I, LOUIS G. FREEMAN, a citizen of the United States, and resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in Heel-Seat-Jointing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the manufacture of welt shoes, it is necessary to trim the rear ends of the welt adjacent the heel, in order to make a neat and practically concealed joint, this being accomplished usually by skiving or scarfing the ends of the welt, so as to make a lapped joint with the rand or heel layer, and then push in and tack down these scarfed ends of the welt. Accordingly my present invention aims to provide means for quickly and accurately accomplishing by a machine these results which have been heretofore accomplished by hand.

The constructional details and further objects and advantages of my invention will be pointed out more at length in the course of the following description, reference being had to the accompanying drawings, in which I have shown a preferred embodiment of the invention.

In the drawings, Figure 1 is a view in side elevation of the head of the machine; Fig. 2 is a view thereof in front elevation; Fig. 3 is a horizontal sectional view showing the scarfing mechanism in top plan; Fig. 4 is an enlarged vertical sectional view of the lower end of the jack; and Figs. 5 and 6 show in top plan and longitudinal section a portion of a shoe in operative position being scarfed.

The general features of my invention may have a wide variety of embodiments, and accordingly it will be understood that I do not intend to limit my invention to the preferred constructional details herein shown, but, except in my more specific claims, intend to include any kind of scarfing, nailing, and holding mechanisms provided they are arranged and actuated to cooperate in accordance with the broad features of my invention, which I will now set forth with reference to the specific embodiment herein chosen for the purpose of giving a clear explanation.

On a suitable pedestal 1 is a head 2 pro-

vided at one side, preferably the right, with a bracket 3 which carries the scarfing or cutting mechanism, and at the other side with an upright 4 carrying a tacker mechanism and spring pusher bar or positioner 5. The tacker may be of any kind, and accordingly I have not attempted herein to show the details thereof, it being sufficient to indicate the driver 6, nozzle 7, bell-crank driving lever 8 pivoted at 9 and actuated by a cam 10 of a shaft 11 driven by a pulley 12, connected therewith by a clutch 13 operated by a foot lever (not shown) and connecting rod 14. The driving blow is produced in usual manner by a spring 15 and the tacks are fed from a hopper 16 whose agitating mechanism is driven by gears 17 and 18, pulleys 19, 20 and belt 21.

Referring now to the scarfing mechanism, between two forwardly and upwardly extending uprights 22, 23 of the bracket 3 are pivoted two arms 24, 25 connected by a sleeve or yoke 26 and provided at their lower ends with knives 27 set obliquely, as best shown in Fig. 2, to cooperate with two members 28, 29 which constitute cutting blocks and means for controlling the length of the scarf and preventing the knives from cutting improperly. To this end each member 28, 29 is provided with a beveled or sloping front edge 30 and an adjacent projecting end 31. The beveled edges 30 are sufficiently long to accommodate all the sizes of shoes which it is intended that the machine shall operate upon, and the slope of said beveled edges determines the angle or bevel of the scarfing or skiving of the welt, as will be more evident viewing Figs. 5 and 6, where it will be seen that in operation the free end 32 of the welt 33 of a shoe 34 is permitted to ride up over the edge 30 to the position shown in Fig. 6, or in other words the shoe is pushed toward the members 28, 29 in such position that the heel end comes under said members while the welt-ends pass over said members, which serve as welt rests or supports and deflect the welt-ends in the position shown in Fig. 6, so that when the knives swing down in their cutting operation they cut off the welt-ends along the line 35, Fig. 6. The pivot 36 which constitutes the center of swinging movement of said knives is directly over the forward ends of the supporting members 28, 29 so that the knives cut substantially in

the plane of the top surface of said supporting members. As herein shown, the members 28, 29 normally occupy a lowered position, being carried by a cross bar or block 38 rigidly secured to the front end of a heavy bar 39 pivoted at 40, 41 to the upper ends of links 42, 43 which are pivoted at their lower ends at 44, 45 to the uprights 22, 23, being normally swung forward into their inclined position by a spring 46 and limited in their downward movement by a screw stop 47 which engages the bar 39. At its forward end the bar 39 carries a heel stop 48 which controls the position of the scarf, being provided with an accurate gage 49 for this purpose and adjustable out and in, being locked in adjustment by a set screw 50. Thus when the heel of the shoe is placed against the heel stop 48 and pushed rearwardly, the result is that the members 28, 29 are raised in operative position by the rearward swinging of the links 42, 43, the rearward movement being stopped by the engagement of the bar 39 with a cross plate 51.

Pivoted at 52 to the bar 39 and moving therewith is a finger or trigger 53 whose free end normally engages the upper arm 54 of a bell crank whose opposite arm 55 has a hook or detent 56 engaging a lug 57 of a clutch 58. The clutch may be of any well known type, and hence I have omitted showing the details thereof. Power is derived from any suitable source, as from the shaft 11 through a belt 59 engaging a belt pulley 60 loose on the shaft 61 which carries the clutch 58. The clutch 58 is also provided with a crank or eccentric 62 connected by a rod 63 to the scarfing knives, where it is pivoted at 64.

The bell crank 54, 55 is pivoted at 65, and its normal position is preferably regulated by a set screw 66, said bell crank being held normally toward the left Fig. 1 by a spring 67 secured to the arm 54 at one end and to a post 68 at its other end. The post 68 has a beveled corner 69 to engage an incline 70 on the under surface of the finger 53, so that as the latter is moved backward by the engagement of the heel of a shoe with the heel stop 48 the trigger first trips the bell crank and then its incline 70 rides up on the bevel 69 so as to hold said trigger out of the path of the bell crank, thereby permitting the latter to spring back into its normal position the moment that the clutch has started. By this provision, the clutch and connected mechanism, including the scarfing knives, are positively stopped after each operation and cannot be started again until the shoe-engaging parts have been restored to their initial position again.

Viewing Fig. 2 it will be seen that the scarfing knives and welt-supporting blocks or members are inclined relatively to each

other or arched with their outer edges depending, the purpose of this inclination being to accommodate the knives to the position of the welt-ends with relation to the molded or curved shank of the shoe.

The shoe is yieldingly supported on a jack pin 71 mounted by means of a universal joint 72 in the upper end of the jack post 73, which in turn is supported at its lower end by a ball socket joint 74, see Figs. 2 and 4, in the upper end of a sleeve 75 arranged to telescope in a surrounding cup-shaped sleeve or support 76, being yieldingly supported therein by a spring 77. The supporting sleeve 76 is formed integrally with an arm 78 fast on a shaft 79 pivoted on a block 80 mounted on the front of the column or pedestal 1 so as to bring the jack near to and approximately beneath the tacking mechanism. The shaft 79 is provided at its outer end, see Fig. 2, with a rearwardly extending crank 81, see also Fig. 4, connected by a rod 82 to an eccentric 83 driven by the shaft 11 whenever the clutch 13 is released by the operator. Pivoted at 84 to the jack support 78 is a locking dog or lever 85 whose lower end 86 when in the position shown in Fig. 4 permits the sleeve 75 to move freely up and down in the sleeve 76, but when turned on its pivot away from the position shown in Fig. 4 it instantly bites against the wear plate 87 and locks the two sleeves immovably together. To accomplish the automatic locking of the jack as thus explained, I provide the upper end of the lever 85 with a bearing surface 88 to engage the cam end 89 of a block 90 adjustably secured by bolts 91 to the upper end 92 of the block 80. The action of this cam arrangement is such that when the jack is raised by the rod 82 to bring the shoe into position beneath the tacker, the jack is positively locked against yielding movement just as it gets into nail-receiving position with the leather against the bottom of the nozzle 7, the rod 82 giving a very slightly further upward movement to the jack, with the result that the latter is pinched against the last as the tack is driven, with almost exactly the same action and result as when a nail is driven by a hand hammer. The forcible pressing together of the jack and nozzle acts like a hammer to pound the leather as the tack is driven.

The operation of my machine is as follows. The operator first seizes the jack post 73 and swings it forward into jacking position, places the shoe on the spindle 71 and then swings it to the left and back with the heel toward the machine until the heel rests against the heel stop 48, and the beveled edges of the angularly arranged welt rests 28, 29 extend over the bottom of the heel-part of the shoe and between the seam and the ends of the welt in the position shown in Fig. 6. He then shoves the shoe inwardly,

Figs. 1 and 3, in the direction of the arrow 93, on Fig. 3, until the clutch trip 56 releases the clutch 13. At this moment the shoe and its welt-supporting rests 28, 29 have been swung on the links 42, 43 rearwardly and upwardly to the full line position, Fig. 1, so that the top surfaces of the members 28, 29 are in the proper plane to cooperate with the scarfing knives 27. Immediately upon the releasing of the clutch 13, the knife actuator 63 is moved to the rear, thereby swinging the scarfing knives downwardly in an arc of movement approximately tangential to the top surfaces of the parts 31, and slicing or chopping off the welt-ends with a bevel or length of slope regulated by the angle or bevel of the surfaces 30. The projecting ends 31 act as guards to protect the shoe and prevent the plates from cutting any other parts excepting the welt-ends. Adjustment of the heel stop which engages the back seam of the heel determines the point where the welt shall be scarfed, and the scarfing takes place instantly when the shoe has been shoved back to proper position. All the operator has to do is to shove the shoe under the overhanging welt rest members 28, 29, and against the heel stop 48, and then shove the shoe back. This single movement releases the clutch, permitting the knives to operate, and also brings the welt rest up into proper cooperating position. By having the welt rest or support normally forward and down it is in the best position to enable the operator to observe how he is placing the shoe and to lift the welt-ends with his hand over the beveled ends 30 in case the latter do not readily slide in under said ends as the shoe is being shoved back into place. Simply pushing the shoe back into position as far as the welt rest will go automatically throws in the clutch which operates the cutting mechanism. As soon as the welt is trimmed or scarfed the knife returns to raised position clear of the rest and their stops. The shoe is then pulled forward toward the operator and swung around in the direction of the arrow 94, the adjacent front edge and corner of the pusher or positioner 5 being located just right to catch under the welt as soon as the shoe is swung toward it, and then as the shoe is moved forward so as to bring the adjacent scarfed end of the welt below the nozzle, the stationary pusher 5 engages the stitches 95 which join the welt to the shoe upper and the operator, by pressing inwardly on the shoe, stretches the slack leather of the upper tightly over the last, and, as he does so, depresses the treadle rod 82, at once raising the jack, which is automatically locked by the engagement of the surfaces 88, 89, and then the further raising movement hammers or pinches and presses the welt down hard upon the upper, and at

the same moment the nail is driven by the nailer or tacker. The operator has been enabled to retain his grasp or manipulative hold on the shoe without let up, so that as a result of the combined hand manipulation and machine manipulation a perfectly smooth, tight shank portion of the upper is secured. Having nailed one side the jack-locking mechanism releases and lowers the jack, and the operator immediately pulls the shoe toward him from under the nozzle, turns the shoe and presents the other side, pressing the upper and welt against the pusher blade to take up all slack leather at the joint the same as before, and again depressing the treadle and treadle rod, causing the jack to rise, become positively locked and then hammer or press the joint hard against the nozzle (which I make extra large for facilitating this operation) and drive the nail, thereby holding all that the hand manipulation and juxtaposition of mechanisms have accomplished. When a nail is driven and the machine comes to the stopping point, the jack is thereby released from the nozzle so that the operator can pull the shoe toward him for inspection or can swing it on the comparatively long front edge of the presser 5 or otherwise manipulate the leather so as to bring the joint into exactly the desired position for receiving another tack if deemed necessary. The jack is operated in timed relation with the tacking mechanism and only when a nail is being driven, being free to yield at all other times and adjust itself according to the height of the last and shoe. The jack does not lock excepting on the last quarter of its upper stroke, being free approximately three quarters of the stroke, depending upon the adjustment of the cam block 90, but when cutting the welt joint the jack is perfectly free and it is also perfectly free when placing the shoe on the jack spindle, and when moving the latter under the nozzle to tack the joint. It is not locked until the operator depresses the treadle to drive the nail, which starts the jack lever 81 to swing the locking device upward, although, in practice, this does not usually move the jack, which has already been previously so located by hand as to bring the leather of the shoe against the nozzle. As soon as the jack lever has brought the locking mechanism into action, then the further movement of said lever starts the compression of the leather between the jack spindle and the nozzle, this pressure being exerted on the loose leather under the nozzle where the tack is to be driven. For handling the average sizes of adult shoes, the pusher or presser and the tacker are about four inches forward of the mechanism for trimming or scarfing the joint and about three inches to one side, this relation of the parts permitting the operator to maintain

his grasp upon the leather about the waist of the shoe while moving the shoe in the directions of the arrows 93, 94, and this relation also causes the adjacent corner or edge of the pusher to engage between the welt and upper when the shoe is swung as indicated by the arrow 94.

I do not herein claim the pusher or positioner *per se*, as that forms the subject matter of a separate application, where it is duly claimed (Serial No. 389,663, filed August 22, 1907).

It will be understood that my invention is not to be limited to the construction details herein set forth as the preferred embodiment thereof, as many variations in form, arrangement and combination of parts may be resorted to without departing from the spirit and scope of my invention as set forth in the following claims.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. A jointing machine, consisting of scarfing mechanism and nail driving mechanism arranged to operate on different portions of the shoe, and a supporting jack for the shoe, said parts being juxtaposed so as to scarf the welt-ends and nail the scarfed ends without removing the shoe or releasing the manipulative hold on the shoe.

2. In a jointing machine, scarfing mechanism to scarf the ends of the welt, nail driving mechanism to nail the scarfed welt-ends, positioning means for engaging and maintaining the welt and upper in fixed relation to the nail driver, and a supporting jack, the tack driver and positioning means being located ahead of the scarfing mechanism and the jack mounted to move from one to the other, the distance of said nail driver and positioning means ahead of the scarfing mechanism being such as to cause the scarfed shoe properly to engage said positioning means immediately upon being swung with the jack forward away from scarfing position, whereby the operator is enabled to maintain his manipulative hold upon the loose leather about the joint until the jointing operation is completed.

3. In a jointing machine, a welt rest in the form of a blade adapted to enter between the welt and the bottom of the shoe in supporting engagement beneath the welt and mounted for movement substantially perpendicularly with relation to the plane of action of the scarfing mechanism, and scarfing mechanism coöperating with said rest in scarfing the welt-end thus supported on said rest.

4. In a jointing machine, a welt rest in the form of a blade adapted to enter between the welt and the bottom of the shoe in supporting engagement beneath the welt and for movement to carry the work from

position of presentation into welt scarfing position, a pivoted scarfing knife mounted to swing approximately tangentially to the welt-supporting surface of said rest, and means for swinging said knife.

5. In a jointing machine, a welt rest in the form of a blade adapted to enter between the welt and the bottom of the shoe in supporting engagement beneath the welt and mounted for movement lengthwise of the shoe to carry the work into and out of the path of the scarfing mechanism, and scarfing mechanism coöperating with said rest in scarfing the welt-end thus supported on said rest, said rest having projecting portions extending over the bottom of the shoe in position to guard the latter against being accidentally cut by said scarfing mechanism.

6. In a jointing machine, movably mounted welt rests for receiving beneath them the heel end of a shoe and supporting above them the opposite ends of the welt, scarfing mechanism for scarfing the two welt-ends thus supported and means actuated by the movement of said rests to cause the operation of the scarfing mechanism.

7. In a jointing machine, opposite welt rests for receiving beneath them the heel end of a shoe and supporting above them the opposite ends of the welt, said rests being arched with their outer edges depending to conform approximately to the rounded bottom of the shoe, and scarfing mechanism for scarfing the two welt-ends thus supported obliquely.

8. In a jointing machine, a welt scarfing means, a welt supporting blade into operative relation to which the shoe is to be moved endwise and by the engagement of which with the end of the in seam the longitudinal position of the shoe relative to the scarfing means may be determined, additional means for positioning the shoe longitudinally in case the shoe is not stopped in the proper position by the engagement of the in seam with the welt supporting blade, power driven actuating mechanism, and connections wherethrough said mechanism may be started by pressure of the shoe applied through either said blade or said additional positioning means.

9. In a jointing machine, scarfing mechanism, means for supporting the welt-ends in position to be scarfed thereby, actuating means for said scarfing mechanism, and tripping means for setting the latter in operation actuated by the moving of the shoe into operative position.

10. In a jointing machine, scarfing mechanism, means which is mounted for upward movement by pressure exerted through the shoe tending to press the shoe stock down into position for the shoe to be treated and which is arranged to extend under and sup-

port the welt ends in position to be scarfed, actuating means for said scarfing mechanism, and tripping means arranged to be actuated by movement of said welt end supporting means by the shoe after a predetermined pressure has been applied to compress the shoe stock between said supporting means and the last bottom.

11. In a jointing machine, scarfing mechanism, actuating mechanism therefor, including a clutch, a heel stop arranged to have a predetermined movement to permit the shoe to reach correct operative relation to the scarfing mechanism, and tripping mechanism actuated by the movement of said heel stop for tripping said clutch when the shoe reaches a predetermined operative relation to the scarfing mechanism.

12. In a jointing machine, scarfing mechanism, actuating mechanism therefor, including a clutch, a movable heel-stop, tripping mechanism actuated by the movement of said heel stop when engaged by a shoe for tripping said clutch, and means for automatically restoring said tripping mechanism into position to limit the scarfing mechanism to one operation for one movement of the heel stop.

13. In a jointing machine, skiving mechanism, a movable heel stop, operating means for said skiving mechanism, including a clutch, a detent normally restraining the clutch, a trigger movable with said heel stop for releasing said detent, automatic means to restore said detent to clutch-restraining position, and means for automatically moving said trigger out of the path of said detent as soon as the latter has been tripped.

14. In a jointing machine, a scarfing knife, and a welt rest for supporting the welt-end in position to be scarfed, said welt-rest being movably supported and normally occupying a forward and downward position with relation to its operative supporting position.

15. In a jointing machine, a scarfing knife, a welt rest for supporting the welt-end in position to be scarfed, said welt rest being movably supported and normally occupying a forward and downward position with relation to its operative supporting position, and means in position to be engaged by the shoe for moving said welt rest into operative position by the movement of the shoe.

16. In a jointing machine, scarfing mechanism, and nail driving mechanism, combined with a jack support for the shoe, provided with spring raising means for giving the jack an upward tendency at all times with relation to the scarfing mechanism, and locking mechanism for said jack actuated in timed relation to the nail driving movements of the nail driver for locking said jack against the action of its spring when a nail is to be driven.

17. In an apparatus for use in removing surplus material at and adjacent to the two end portions of the welt of a lasted and welted shoe, welt end rests inclined transversely in opposite directions downwardly and outwardly.

18. In an apparatus for use in removing surplus material at and adjacent to the two end portions of the welt of a lasted and welted shoe, welt end rests formed to support the two ends of the welt at the same time in positions to be cut, and shaped to receive an arched shank between the welt ends.

19. In an apparatus for use in removing surplus material at and adjacent to the two end portions of the welt of a lasted and welted shoe, welt end rests comprising side members inclined transversely of the shoe in opposite directions and having sharpened in-seam stitch cutting ends.

20. A welt butting machine having, in combination a welt butting knife, and shoe positioning means arranged to engage the shoe bottom before the shoe reaches welt butting position and to guide and control the movement of the shoe into operative relation to the knife.

21. A welt butting machine having, in combination with a welt butting knife, shoe positioning means arranged to engage the shoe between the welt and the innersole and guide the shoe into predetermined relation to the path of the knife.

22. In a machine of the class described, having, in combination, means for removing surplus material from a shoe bottom, and a guard arranged to receive the shoe in a position remote from said means and to guide and direct movement of the shoe into operative relation thereto.

23. A machine of the class described, having, in combination, means for operating on a shoe bottom, a shield for the shoe bottom arranged to receive the shoe in a position remote from said means and to be moved in a predetermined path with the shoe into operative relation to said means.

24. A machine of the class described having, in combination, a welt butting knife, a welt end rest movable from and toward the path of the knife and arranged to receive the welt end while in a position remote from the knife and to move with the work into the path of the knife and to support the welt end during the welt butting operation effected by the knife.

25. A machine of the class described having, in combination, a welt butting knife, and a welt end rest movable from and toward the path of the knife and comprising a thin edged plate formed and arranged to be introduced between the shoe bottom and an end portion of the welt which is to be severed while said rest is away from the knife

and to move with the shoe to carry the welt into the path of the knife and to protect the shoe bottom from injury by the knife during the welt butting operation.

5 26. A machine of the class described having, in combination, means for operating on a welted shoe and a welt supporting abutment 5 that is constructed and arranged to engage the shoe in the crease between the
10 upper and the welt and to be automatically

moved upwardly together with the shoe when the shoe is pressed against the edge of the abutment.

In testimony whereof, I have signed my name to this specification, in the presence of 15 two subscribing witnesses.

LOUIS G. FREEMAN.

Witnesses:

F. J. DERRICK,

J. F. HUCK.

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