

1,057,790.

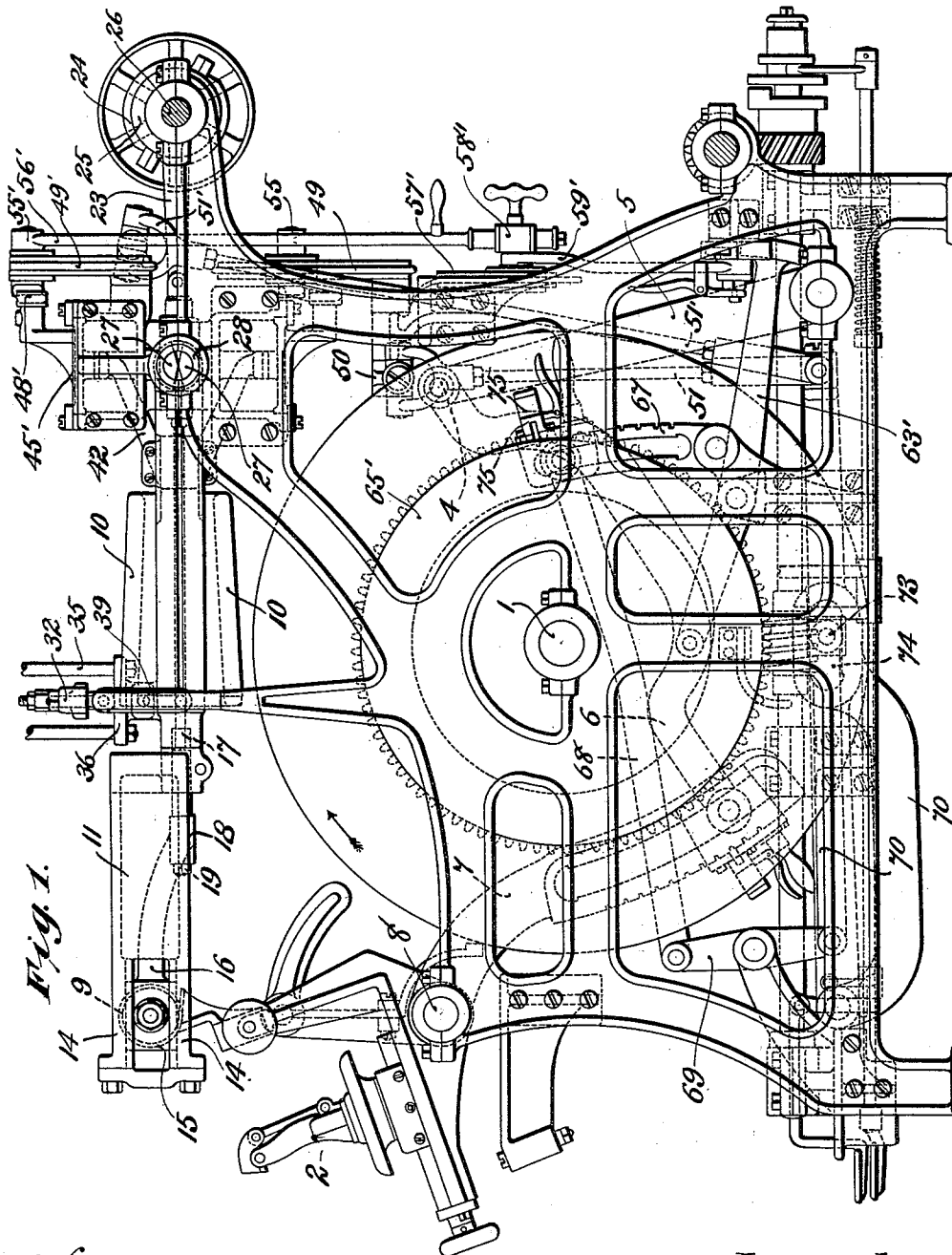


Fig. 1.

Witnesses:

E. Wurdeman
N. D. McPhail

Inventor:

Erastus E. Winkley
By Phillips Van Everen & Fish
Attys

1,057,790.

Patented Apr. 1, 1913.

6 SHEETS—SHEET 2.

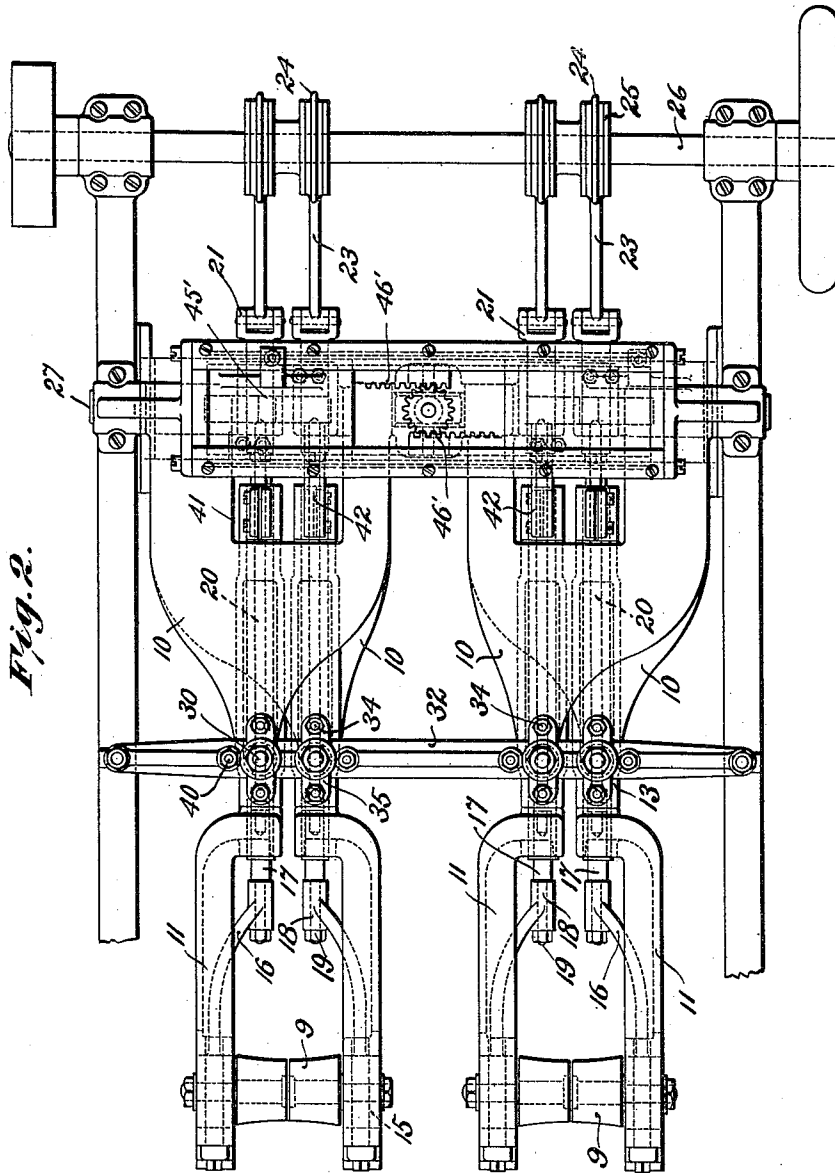


Fig. 2.

Witnesses:

E. Wurdeman
N. D. McPhail

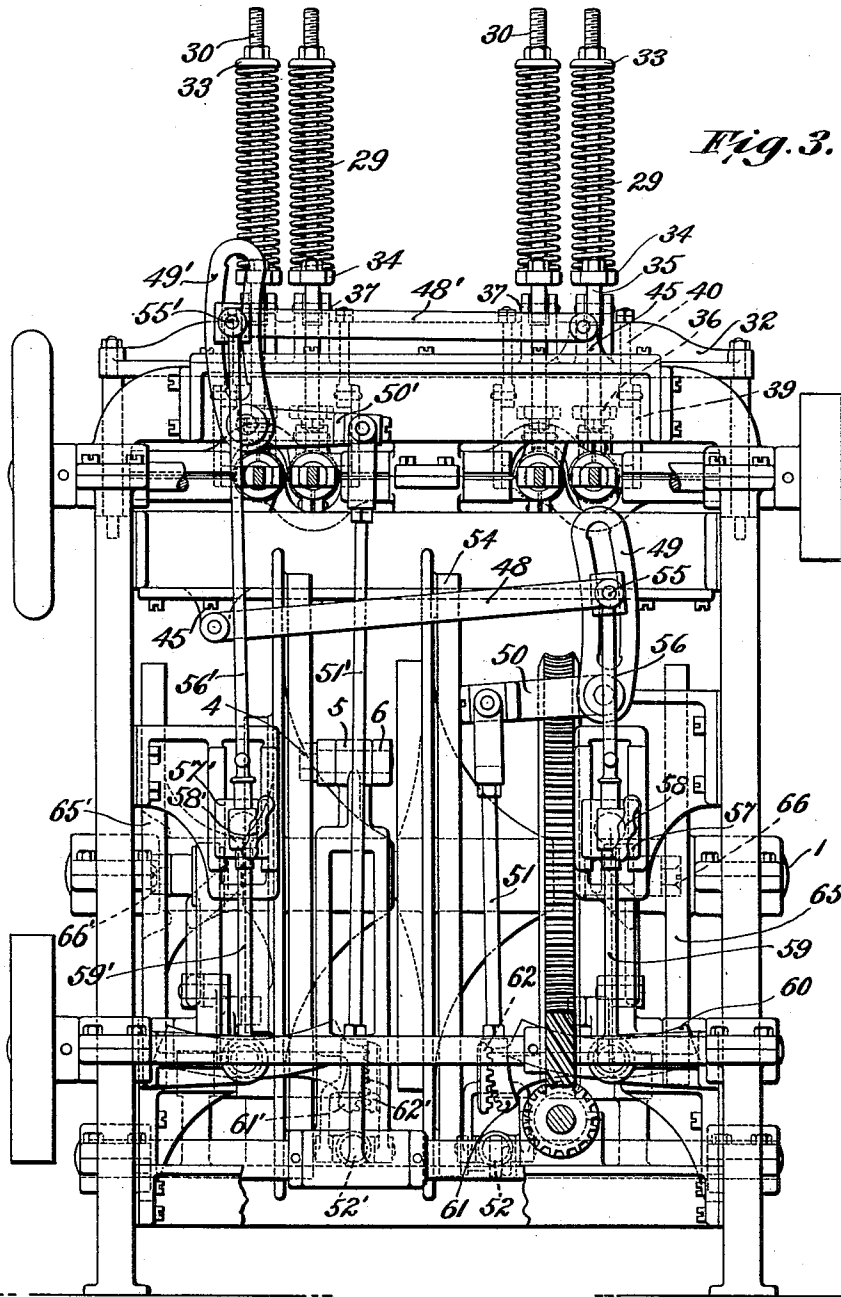
Inventor:

Ernest E. Winkley
by
Phillips Van Eeren & Fish
Attys

1,057,790.

Patented Apr. 1, 1913.

6 SHEETS—SHEET 3.



Witnesses:

E. W. Winkley
H. D. McPhail

Inventor:

Erastus E. Winkley
by *Phillips Van Erevant Fish*
Atty

1,057,790.

Patented Apr. 1, 1913.

6 SHEETS—SHEET 4.

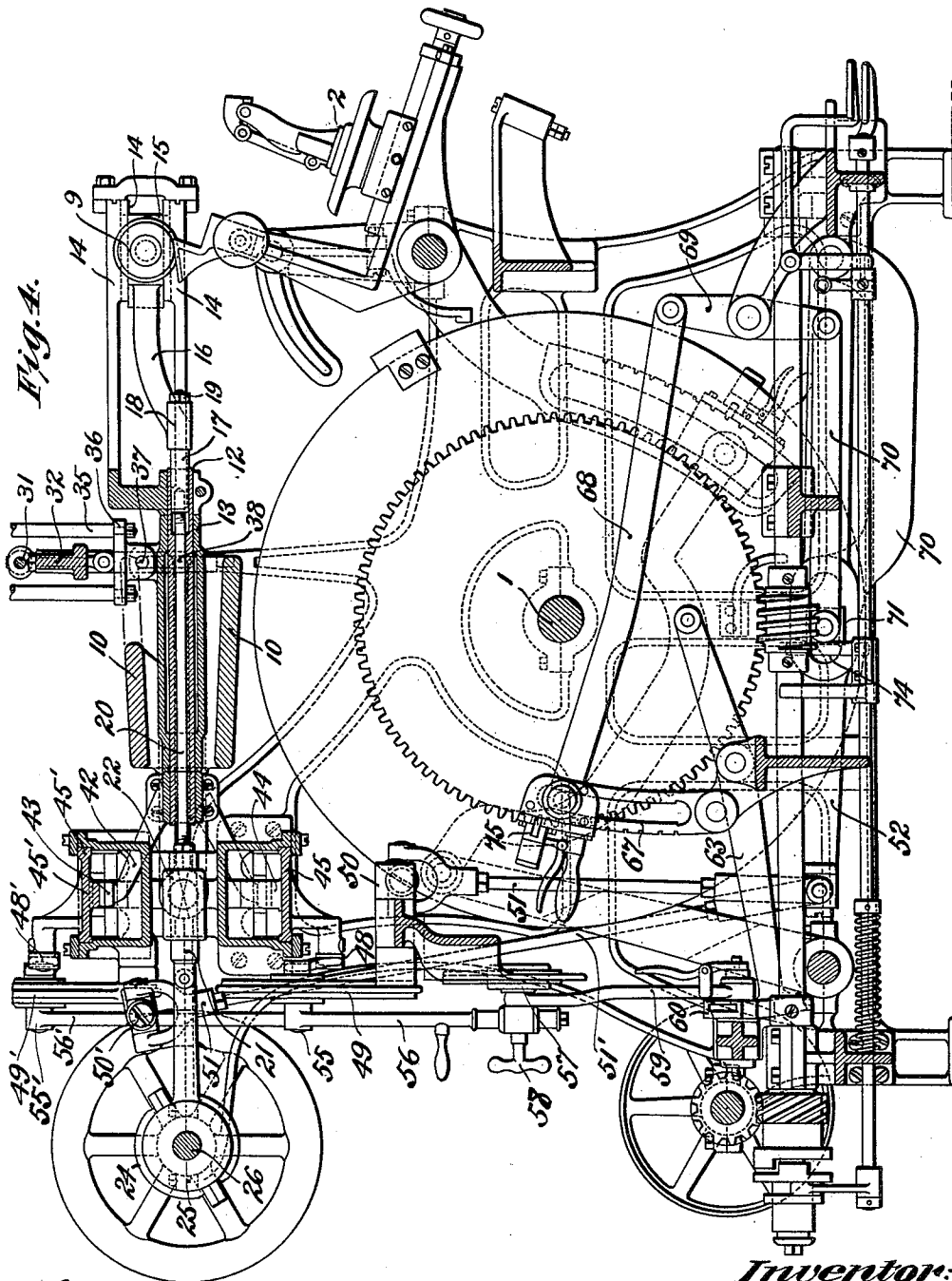


Fig. 4.

Witnesses:

E. Wurdeman
H. D. McPhail

Inventor:

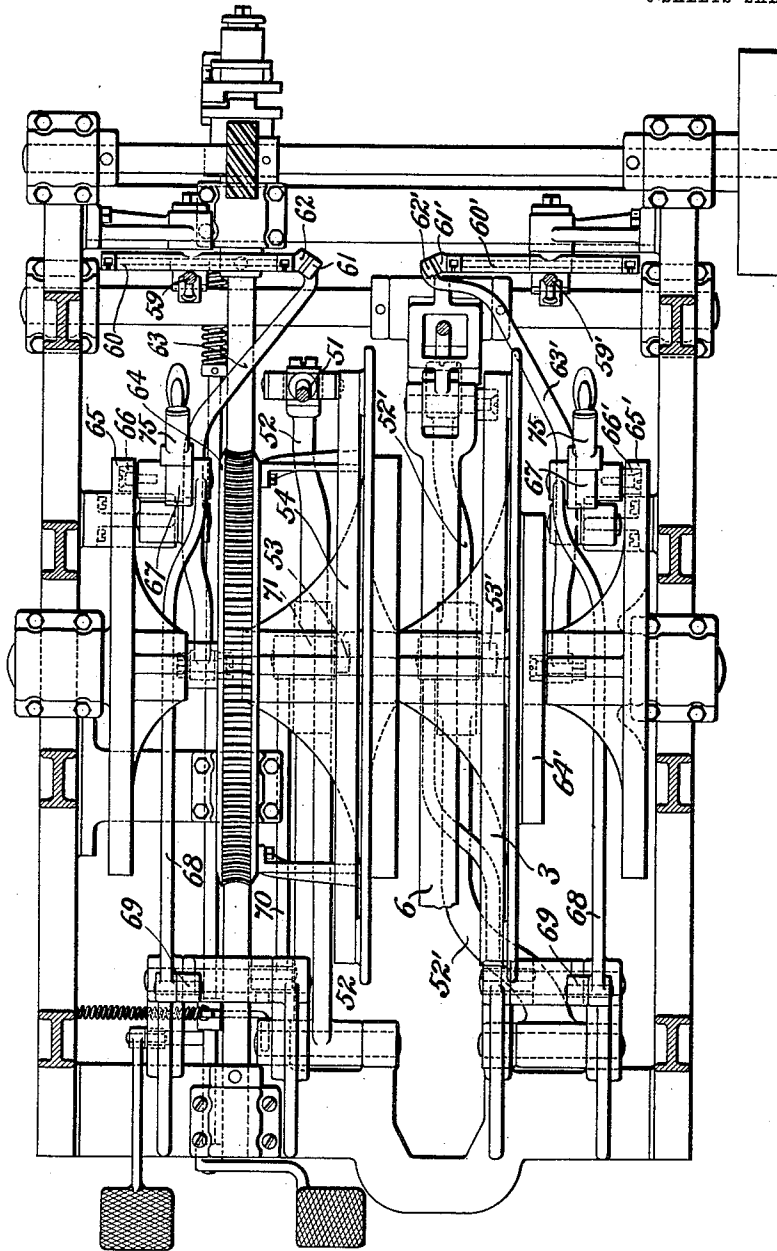
Erastus E. Winkley
 By *Phillips Van Eeren & Fish*
Attys

1,057,790.

Patented Apr. 1, 1913.

6-SHEETS-SHEET 5.

Fig. 5.



Witnesses:

E. C. Wurdeman
H. D. McPhail

Inventor:

Erastus E. Winkley
by *Phillips Van Eeren & Fisk*
Attys

1,057,790.

Patented Apr. 1, 1913.

6 SHEETS—SHEET 6.

Fig. 6.

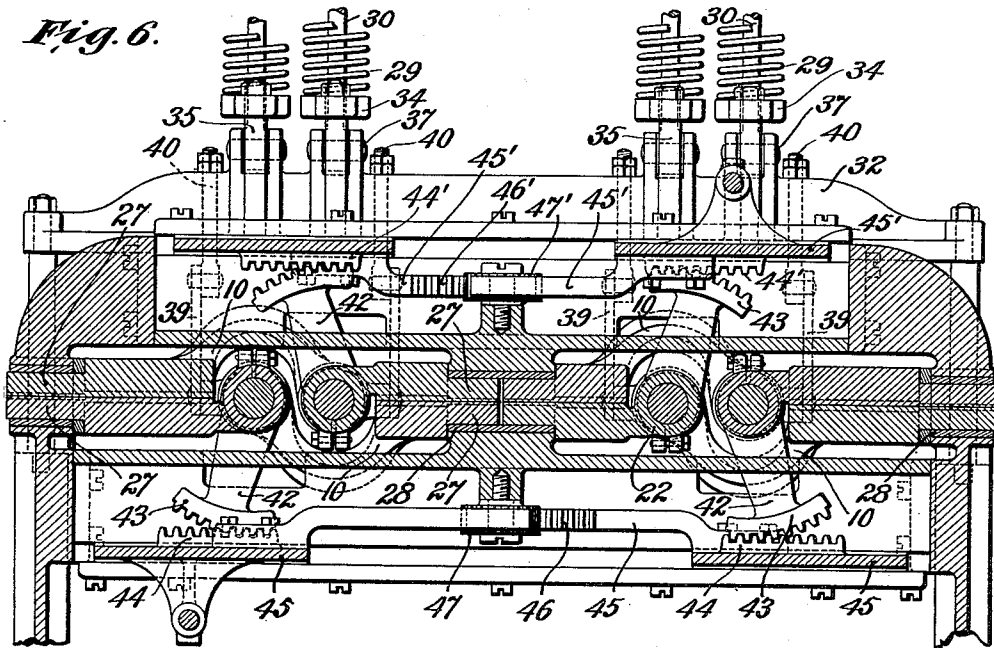
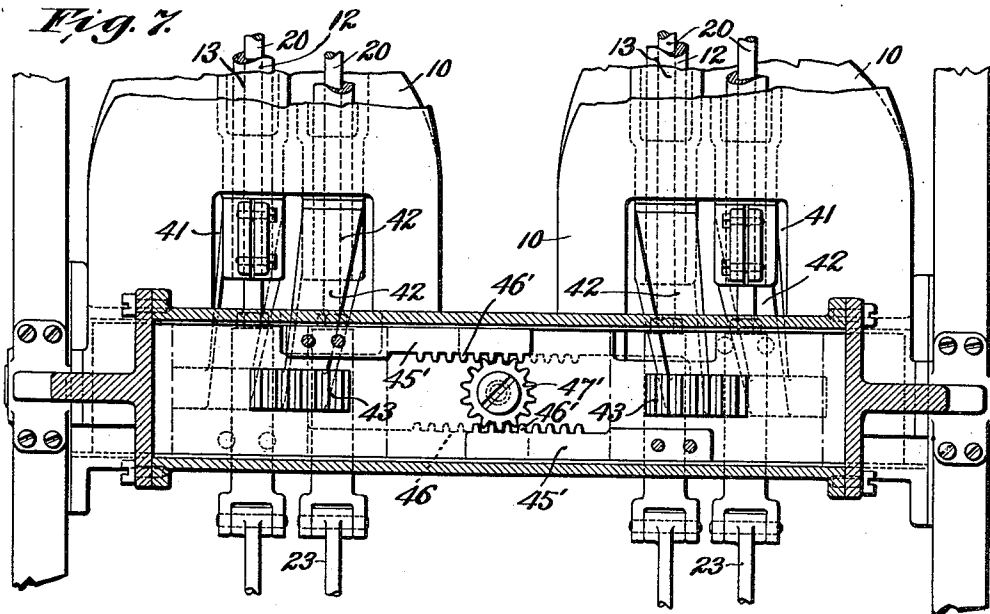


Fig. 7.



Witnesses:

E. C. Wurdeman
H. D. McPhail

Inventor:

Erastus E. Winkley
by *Phillips Van Eeren & Fisk*
Atty.

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SOLE-PRESSING MACHINE.

1,057,790.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed April 6, 1908. Serial No. 425,363.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Pressing 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.

The present invention relates to sole pressing machines, and more particularly to sole pressing machines of that type in which the opposite sides of the sole of a shoe supported upon a jack are acted upon by two or more rolls, and in which a relative movement is imparted to the jack and rolls to cause the rolls to travel along the sole of the shoe. In machines of this type as heretofore constructed, the rolls for acting upon the opposite sides of the bottom of the sole of a shoe have been mounted in the same carrier, and have been pressed against the sole of the shoe on the jack by pressure applied to the roll carrier. With this construction it is impossible to secure an efficient and reliable action of the rolls on both sides of the sole at all times during the operation of the rolls, since the pressure applied to the roll carrier will be unequally supported by the rolls on opposite sides of the sole. Owing to variations in the shape of the sole on opposite sides, or owing to variations in the lateral inclination of the rolls, the roll or rolls on one side of the sole may be applying effective pressure against the sole, while the roll or rolls on the other side of the sole may be applying very little if any pressure to the sole. It is necessary, therefore, in order that both sides of the sole shall be properly pressed and shaped, that the rolls continue to act upon each part of the sole a greater length of time than would be required to properly press and shape one side of the sole.

It is one of the objects of the present invention to improve the construction and mode of operation of this type of sole pressing machines, and to so arrange and actuate the rolls upon the opposite sides of the sole that they will be applied at all times to the sole with an effective pressure, and will accurately and rapidly press and shape the sole.

To this end one feature of the invention contemplates actuating the rolls which act upon the opposite sides of the sole to independently apply pressure to the bottom of the sole of the shoe supported upon the jack. This enables the roll or rolls on each side of the sole to operate under full pressure during the entire operation of the rolls upon the sole, unaffected by the resistance offered by the sole to the roll or rolls acting upon the opposite side of the sole, and unaffected by variations in the inclination of the rolls upon either side of the sole. The accurate and efficient pressing and shaping of both sides of the sole may thus be secured in the time required for pressing and shaping one side of the sole. An accurate shaping of the sole is also insured since each side of the sole is held from distortion while the other side is being acted upon, and the shape given to each side of the sole by the final operation of the roll on that side is not disturbed by a subsequent operation on the other side of the sole. This feature of the invention is preferably embodied in a machine in which the inclination of the rolls is varied during their operation upon the sole by automatically acting mechanism, as thereby the work produced by the machine is rendered more uniform, and also the machine can be run at a higher rate of speed, and can be operated by an unskilled workman. It is immaterial, however, to this feature of the invention in its broader aspects, in what manner the proper lateral inclination of the rolls is secured, or in what manner the lateral inclination is varied, in case provision is made for varying the lateral inclination of the rolls during this operation.

A further object of the invention is to improve the construction and arrangement of the mechanism for varying the relative lateral inclination of the rolls and jacks during the operation of the rolls upon the sole in machines in which rolls are arranged to act upon opposite sides of the sole.

To this end another feature of the invention contemplates the provision of independently acting mechanism connected to the rolls which act respectively on opposite sides of the bottom of the sole of a shoe supported on the jack for varying the lateral inclination of the rolls during their operation upon the sole.

A further feature contemplates the pro-

vision of means for adjusting each of these independently acting mechanisms to vary its action on the connected roll without affecting the adjustment of the other mechanism, so that the proper adjustments may be quickly and accurately made for securing the desired shaping of the sole on opposite sides.

By these features, the two pressing rolls acting upon opposite sides of the sole may be given the lateral inclination requisite for the proper pressing and shaping of the sole being operated upon, and the proper adjustments for the accurate operation of each roll may be conveniently and accurately made.

A further object of the invention is to adapt a machine in which pressing rolls are mounted to act upon opposite sides of the sole of a shoe to operate upon and properly shape the soles of different styles of shoes in which the relative lengths of the forepart and shank vary.

To this end, a further feature of the invention contemplates the provision in a machine provided with a shoe supporting jack and sole pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, of means for varying the operation of the mechanism which changes the relative longitudinal position and lateral inclination of the rolls and jack in such manner as to compensate for variations in the relative lengths of the forepart and shank of shoes of different styles. In its broader aspects this feature of the invention contemplates varying the operation of any portion of the actuating mechanism of the machine so as to cause the rolls acting on opposite sides of the bottom of the sole to properly act upon and shape the two sides of the sole near the juncture of the shank and forepart, regardless of the relative lengths of the forepart and shank. In the preferred embodiment of this feature of the invention, the proper pressing and shaping of the two sides of the shoe sole near the junction of the shank and forepart in operating upon soles in which the relative lengths of the forepart and shank vary, is secured by providing means for varying the operation of the mechanism which changes the relative lateral inclination of the roll and jack in such manner as to compensate for variations in the relative lengths of the forepart and shank. This manner of varying the operation of the mechanism which changes the relative longitudinal position and lateral inclination of the roll and jack so as to compensate for variations in the relative lengths of the forepart and shank of different shoes, constitutes one of the features of the invention which is not confined in its application to machines provided with rolls

arranged to act simultaneously on opposite sides of the sole, but is also applicable to machines in which the two sides of the sole are successively operated upon.

The mechanism hereinafter described for changing the relative lateral inclination of the roll and jack, and the means for varying the operation of this mechanism, are also applicable to other automatic machines for operating upon shoes in which it is necessary or desirable to effect changes in the relative position of parts of the machine for operation upon the shank and forepart, and it is accordingly considered that certain features of the invention, except as defined in the claims, are not limited to use in any particular kind of automatic shoe working machines.

The invention will be readily understood from an inspection of the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying the various features of the invention in their preferred form; Fig. 2 is a plan view; Fig. 3 is a rear elevation, the parts being broken away for the sake of clearness; Fig. 4 is a sectional elevation; Fig. 5 is a sectional plan view, the parts above the main cam shaft being removed, and certain parts broken away for clearness; Fig. 6 is a transverse sectional view on an enlarged scale through the pivotal supports for the roll carrying beds; and Fig. 7 is a plan view of the parts shown in Fig. 6, certain parts being removed for the sake of clearness.

The machine illustrated in the drawings is similar in the construction and arrangement of many of its parts to the machine disclosed in applicant's prior patent for a sole leveling machine, No. 555,548, dated March 3, 1896, to which reference may be had for a more complete disclosure of the construction and operation of the parts not hereinafter specifically described.

The machine illustrated is provided with two jacks and with two sets of sole pressing rolls cooperating with the respective jacks. The operation of the machine is automatic, mechanism being provided for oscillating the jacks to change the relative longitudinal position of the jack and the rolls associated therewith, and for varying the lateral inclination of the rolls during the oscillating movement of the jack to cause the rolls to impart the desired shape to the sole of the shoe. Devices are provided for connecting and disconnecting each jack from the actuating mechanism, and during the operation of the machine but one jack is connected with the operating mechanism at a time, as is usual in this class of machines. To adapt the machine for operating upon both right and left shoes, the mechanism for varying the lateral inclination of the rolls is so con-

structed and arranged that one set of rolls is actuated to give the desired shape to the sole of the right shoe, and the other set of rolls is actuated to give the corresponding shape to the sole of the left shoe.

In the machine illustrated, the various cams for operating and controlling the jacks and rolls to cause the rolls to act progressively along the sole and to properly press and shape the sole, are mounted upon a cam shaft 1 which is operated and controlled by mechanism similar to the mechanism for operating and controlling the cam shaft in the patent above referred to. The relative longitudinal movement between the rolls and jacks is effected by a movement of the jacks which are indicated at 2. The mechanism for operating the jacks is the same as the jack operating mechanism shown in the patent above referred to. The jack actuating cam is indicated at 3, and is engaged by a roll 4 carried upon the upper end of a pivoted arm 5. The arm 5 is connected by a link 6 to the arm 7 which is secured to the jack shaft 8.

The sole pressing rolls are indicated at 9, there being two rolls associated with each jack, and arranged to act respectively upon opposite sides of the sole of a shoe. Each roll is mounted in an independently movable roll carrying bed 10 so that movement of each roll against the sole of the shoe is independent of the movement of the other roll against the opposite side of the sole, and each roll applies its pressure to the sole independently of and unaffected by the pressure applied by the other roll.

In order that the lateral inclination of the rolls may be changed during their operation on the sole, each roll is supported in a roll carrier 11, and in order that the rolls may be vibrated during their operation, each roll is so mounted in its carrier that it may be reciprocated in line with its progressive movement over the sole. Each roll carrier 11 consists of a frame (Figs. 1, 2 and 4) secured upon the forward end of a hollow shaft 12 mounted in a bearing 13 formed in the roll carrier bed 10. The frame is provided with guideways 14 which support and guide the block 15. The roll 9 is journaled upon a stud secured in the block. The block 15 is provided with a rearwardly projecting arm 16 which is connected to the front end of a shaft 17 by means of a bearing 18 formed on the rear end of the arm. The bearing 18 fits upon the reduced end of the shaft 17, and is retained in position on the end of the shaft between the shoulder formed at the inner end of the reduced portion of the shaft and a nut 19 which is screwed on to the end of the shaft. The shaft 17 is mounted in the end of the hollow shaft 12 of the roll carrier, and is connected by a rod 20 with a second shaft 21,

mounted in a bearing 22 formed in the bed 10 in line with the bearing 13. The rear end of the shaft 21 is pivotally connected to the projecting arm 23 of an eccentric strap 24 which surrounds an eccentric 25 on the shaft 26. By these connections between the eccentric 25 and the roll carrying block 15, the roll is rapidly vibrated or reciprocated during its operation upon the sole without interfering with the oscillating movements which are imparted to the roll carrier to vary the lateral inclination of the roll, and without interfering with the vertical movements of the bed 10 as the sole moves progressively under the roll.

The roll carrying beds 10 which carry the roll for operating upon opposite sides of the same sole, are so formed and mounted that one bed overlies the other, and these two beds are provided with semi-cylindrical trunnions 27 which fit within the bearings 28, Figs. 1 and 6. In order that the beds may move independently of each other, the contacting faces of the trunnions 27, and the contacting faces of the rear parts of the beds between the trunnions, are cut away or beveled on opposite sides of the axial line of the trunnions, as indicated in full lines in Fig. 1 and in dotted lines in Fig. 4.

Each roll carrying bed is forced in a direction to press the roll carried thereby against the sole by the action of a spring 29. The spring 29 is mounted upon a bolt 30, the lower end of which is pivoted at 31 to a transverse bar 32 which is held in fixed position above the roll carrying beds. The upper end of the spring bears against an adjustable nut 33, by adjustment of which the tension on the spring may be varied. The lower end of the spring bears upon a plate 34 through the center of which the bolt 30 passes, the plate being free to move vertically on the bolt. The plate 34 is connected by means of rods 35 with a second plate 36, which is pivotally connected at 37 to the upper side of the bearing 13 on the roll carrying bed 10. By this construction the rolls are forced downward by the springs 29 to independently apply pressure on opposite sides of the bottom of the sole of the shoe supported on the corresponding jack. The downward movement of the roll carrying bed is limited by the engagement of a pin 38 on the bearing 13 with the lower end of a slot formed in a link 39 which is supported by a bolt 40.

The lateral inclination of the rolls 9 is varied during their operation upon the sole to properly shape the shank and forepart by imparting the proper oscillating movements to the shafts 12 of the roll carriers. Since the shape and relative lengths of the forepart and shank vary upon the opposite sides of a sole, the mechanism for varying the lateral inclination of the rolls acting upon op-

posite sides of the same sole are constructed to operate independently upon the respective rolls, so that the movements imparted to one roll are not affected or modified by the movements imparted to the other roll. In order that the two sets of rolls may be adapted to act upon right and left soles, however, the mechanism for varying the lateral inclination of the rolls in each set which act upon the corresponding sides or marginal edges of the two soles, are constructed to simultaneously actuate these rolls in the two sets of rolls. In this way the rolls which act upon the inner sides or marginal edges of the soles are given the same lateral inclination at corresponding points along the sole, and the rolls which act upon the outer sides or marginal edges of the two soles are given the same lateral inclination at corresponding points along the sole, while the rolls acting on opposite sides of the same sole are independently actuated and the lateral inclination of one roll or the movement imparted thereto is unaffected by the lateral inclination or the movement imparted to the other roll.

The connections by which the lateral inclination of corresponding rolls in the two sets of rolls are similarly varied, and the lateral inclination of the rolls in each set are varied without affecting the other roll in the same set, are best illustrated in Figs. 2, 6 and 7. The roll carrying beds 10 are provided with openings or recesses 41 between the bearings 13 and 22. The rear ends of the shafts 12 project into these recesses, and arms 42 are secured to the rear ends of the shafts at this point. The arms 42 which are secured to the shafts 12 corresponding to the two outer rolls 9 extend downward in an inclined direction from the ends of the shafts 12, and are provided at their ends with segmental gears 43. These gears engage racks 44 formed on two rack bars 45. The rack bars 45 are also provided with racks 46 which engage opposite sides of a pinion 47, so that a movement of one of the rack bars or of the arms 42 and connected roll carrier will result in a corresponding movement of the other rack bar and connected roll carrier. The arms 42 which are connected to the shafts 12 for the two inner rolls 9 are inclined in an upward direction, and are provided with segmental gears 43 which engage racks 44' formed on rack bars 45' which are also provided with racks 46' engaging opposite sides of a pinion 47', these connections corresponding to the connections between the segmental gear arms on the ends of the shafts 12 for the two outer rolls.

The rack bars 45 and 45' are independently reciprocated to vary the lateral inclination of the rolls acting upon the opposite sides of the same sole by mechanisms

which are substantially duplicates of each other, and which are substantially the same in construction as the mechanism shown in the patent above referred to for operating the roll carrier of that patent to vary the lateral inclination of the roll. As shown in the drawings, one of the rack bars 45 is connected by a link 48 with an arm 49 of a bell crank lever pivoted to the frame of the machine. The other arm 50 of the bell crank lever is connected by a universal joint to the upper end of a link 51, the lower end of which is connected by a second universal joint with the rear end of a lever 52. The lever 52 is provided with a cam roll 53 which engages a cam groove formed in the cam disk 54 which is secured to the cam shaft 1. Through this cam and connections, movements are imparted to the rack bars 45, and through them to the roll carriers, to vary the lateral inclination of the rolls, the cam being shaped to give the outer rolls the proper inclination in accordance with the part of the sole being operated upon.

In order that the amount of inclination imparted to the rolls by the mechanism described may be varied, the link 48 is connected with the arm 49 of the bell crank lever by a pivot 55 which is mounted to slide in a slot in the arm, and is connected by a link 56 with a slide 57. The link 56 is connected to the slide 57 by an adjusting device 58, so that the link can be adjusted with relation to the slide, and thereby the pivot 55 adjusted on the arm 49. This adjustment of the pivot 55 will vary the amount of inclination imparted to the outer rolls 9 by the movement of the bell crank lever, the amount of inclination imparted to the rolls depending upon the distance of the pivot 55 from the pivot of the bell crank lever. An auxiliary mechanism is also provided for varying the operation of the mechanism which controls the lateral inclination of the roll at certain points in its operation upon the sole, so that the desired lateral inclination of the roll when acting upon the forepart and shank may be secured. This auxiliary mechanism comprises mechanism for operating the slide 57 at certain times, so that the position of the pivot 55 on the arm 49 of the bell crank lever is automatically varied during the operation of the roll upon the sole. This mechanism is similar to the auxiliary mechanism shown and described in the patent above referred to, and comprises a link 59 connected at its upper end with the slide 57, and having its lower end adjustably connected with a slotted lever 60. The lever 60 is provided with a segmental gear 61 which engages a segmental gear 62 formed on one end of a lever 63, the other end of which is provided with a cam roll engaging a cam groove formed in

the face of the worm wheel 64 through which the cam shaft is driven. The auxiliary mechanism may be so constructed and arranged as to move the pivot 55 when the roll 9 passes on to the shank portion of the sole, and to return it to its original position when the roll passes off the shank. The extent of the inclination imparted to the roll 9 while acting on the shank will then be controlled by the auxiliary mechanism, and by adjusting this mechanism the inclination imparted to the roll while acting on the shank may be adjusted independently of the inclination of the roll while acting on the forepart. The variation between the inclination of the roll while acting on the forepart and while acting on the shank may be regulated by adjusting the connection between the lower end of the link 59 and the slotted lever 60.

The rack bars 45' are operated to give the inner rolls the desired and proper lateral inclination during their operation upon the sole by mechanism similar in construction and mode of operation to that which operates the rack bars 45. The slotted lever 60' of this mechanism is operated through a cam groove formed in the face of a cam disk 64' secured to the cam shaft, the cam groove being engaged by a roll on one end of the lever 63' which is provided on its other end with a gear segment 62' engaging a gear segment 61' on the slotted lever. The bell crank lever 49' and 50' of this mechanism is connected by the link 51' with the end of the lever 52' which carries a roll 53' engaging a cam groove formed in the face of the cam disk 3. The arm 49' of the bell crank lever is connected by a link 48' with one of the rack bars 45, and the pivot 55' of the link is connected by a link 56' with a slide 57' which is in turn connected by the link 59' with the slotted lever 60'. By these two independently acting mechanisms the two rolls acting upon opposite sides of the same sole may be given the lateral inclination requisite for the proper pressing and shaping of the sole being operated upon, and the proper adjustments for the accurate operation of each roll may be conveniently and accurately made, since the adjustment or movement of one mechanism in no wise affects the other mechanism, and does not require any compensating or modifying adjustment therein.

In order that the machine may be adapted to operate upon different styles of shoes in which the relative lengths of the forepart and shank vary, means are provided for varying the operation of the mechanism which changes the lateral inclination of the rolls in such manner as to compensate for variations in the relative lengths of the forepart and shank of such shoes. This variation in the operation of the mechanism for

changing the lateral inclination of the rolls is effected in the machine shown by varying the time in the operation of the machine at which the operating cam acts to vary the lateral inclination of the roll. In the construction shown, the mechanism for thus varying the effect of the cam upon the leveling roll comprises a cam 65 and connections between this cam and the cam roll 53 for varying the position of the cam roll 53 on the lever 52, and thus changing the time in the operation of the machine when the lever 52 is operated to change the lateral inclination of the leveling roll operated thereby. The compensating cam 65 is provided with a cam groove for operating upon a roll 66 carried by a lever 67. The lever 67 is connected by a link 68 with one arm of a lever 69, the other arm of which is connected by a link 70 with a block 71 which carries the cam roll 53, and is mounted to slide in a slot 74 in the lever 52.

By the action of the cam 65 upon the cam roll 53, the cam roll may be shifted in the lever 52 so that any throw in the cam groove acting upon the roll 53 will come into position to act upon the roll and rock the lever 52 either earlier or later in the rotation of the cam shaft than it would if the roll 53 were not shifted. If the roll 53 is at the right hand end of the slot 74 in Fig. 1, it will be acted upon by any throw in the cam 54 to tip the roll 9 at a certain point in the rotation of the cam shaft, and therefore at a certain point in the travel of the jack under the roll. If the roll 53 is at the left hand end of the slot 74, it will be operated upon by the throw in the cam 54 at a later time in the rotation of the cam shaft, and therefore at a different point in the travel of the jack under the roll. By the action of the compensating cam 65, therefore, the roll 53 may be shifted at proper intervals to modify the timing of the cam 54, and either quicken or delay the tipping of the roll as the sole travels under it, in accordance with the relative proportions of the forepart and shank. In order that the extent to which the timing of the cam 54 is modified may be varied in accordance with the variations in the relative lengths of the foreparts and shanks of different styles of shoes, the end of the link 68 is connected with the lever 67 by an adjusting device 75. By adjusting the pivotal connection between the link 68 and lever 67 to vary the distance of the connection from the pivot of the lever, the movements imparted to the cam roll 53 by the action of the cam 65 may be regulated in accordance with the relative lengths of the shanks and foreparts being operated upon. The cam roll 53' is similarly mounted in the lever 52', and is connected with a compensating cam 65' through connections similar to

those connecting the cam 65 with the cam roll 53. By this cam and connections the action of the cam groove in the cam disk 3 on the inner rolls 9 is modified or varied to compensate for variations in the relative lengths of the forepart and shank at that side of the soles operated upon by the inner rolls.

The features of invention relating to the means for varying the operation of the mechanism which changes the relative lateral inclination of the roll and jack in such manner as to compensate for variations in the relative lengths of the forepart and shank of shoes of different styles, may be embodied with advantage in machines in which the same roll acts successively on the opposite sides of the sole, and it is immaterial to this feature of the invention in its broader aspects in what manner the changes in the relative lateral inclination of the roll and jack are secured, or whether the opposite sides of a sole are simultaneously or successively operated upon. The other features of the invention relating to the forcing of the rolls which act upon opposite sides of a sole independently against the sole, and relating to the operating and controlling of the rolls by mechanisms which operate independently and are independently adjustable, are also generic in character, and not limited to the specific construction and arrangement shown and described, except so far as such arrangement and construction is specified in the claims.

Having set forth the nature and object of the invention, and specifically described one form of machine in which it may be embodied, what I claim is:—

1. A sole pressing machine, having, in combination, a shoe supporting jack, two rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, a movable carrier for each roll, and means acting upon each roll carrier to force the roll carried thereby against the sole and mechanism for independently actuating the rolls during their operation on the sole, substantially as described.

2. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, and means for determining the pressure applied by each roll to its side of the sole and mechanism for independently actuating the rolls during their operation on the sole, substantially as described.

3. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, means for forcing the rolls independently against the soles, and means for independently varying the lateral inclina-

tion of rolls during their operation on opposite sides of the sole, substantially as described.

4. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, means for forcing the rolls independently against the opposite sides of the sole, independently acting mechanisms connected to automatically vary the lateral inclination of the rolls during their operation upon the sole and means for independently adjusting each mechanism to vary its action on the connected roll, substantially as described.

5. A sole pressing machine; having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, and independently acting mechanisms connected to independently vary the lateral inclination of the rolls during their operation upon the sole, substantially as described.

6. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, independently acting mechanisms connected to independently vary the lateral inclination of the rolls during their operation upon the sole and means for varying the action of each mechanism upon the connected roll, substantially as described.

7. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, and mechanism for varying the lateral inclination of each roll during the operation on the sole without affecting the mechanism for varying the lateral inclination of the other roll, substantially as described.

8. A sole pressing machine, having, in combination, a shoe supporting jack, rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported upon the jack, mechanism for varying the lateral inclination of each roll, and means for adjusting each mechanism to vary its action on the connected roll without affecting the adjustment of the other mechanism, substantially as described.

9. A sole pressing machine, having, in combination, a shoe supporting jack, sole pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, connected mechanism acting automatically to change the relative longitudinal position and lateral inclination of the roll and jack, and means for varying the operation of said mechanism to compensate for variations in the relative length of

the forepart and shank of shoes of different styles, substantially as described.

10. A sole pressing machine, having, in combination, a shoe supporting jack, pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, connected mechanism acting automatically to change the relative longitudinal position and lateral inclination of the rolls and jack, and means for varying the operation of said mechanism to compensate for variations in the relative length of the forepart and shank on each side of the sole, substantially as described.

11. A sole pressing machine, having, in combination, a shoe supporting jack, pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, connected mechanism for actuating the jack and rolls to cause the rolls to travel along the sides of the shoe sole and to change the relative lateral inclination of each roll when the roll is at the juncture of the shank and forepart of the sole, and means for adjusting said mechanism to vary independently the points on opposite sides of the sole at which a change is made in the lateral inclination of the corresponding roll for operation on the forepart, substantially as described.

12. A sole pressing machine, having, in combination, a shoe supporting jack, pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, mechanism acting to change the relative longitudinal position of the roll and jack, mechanism for changing the lateral inclination of each roll, and means for adjusting said latter mechanisms to vary the points on the inside and outside of the margins of the sole at which a change in the inclination of the corresponding roll is made for operation on the forepart, substantially as described.

13. A sole pressing machine, having, in combination, a shoe supporting jack, two leveling rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, mechanism acting to change the relative longitudinal position of the rolls and jack, a mechanism connected to each roll for changing its lateral inclination, including a compensating mechanism, and means for adjusting each compensating mechanism to vary the points on the inside and outside margins of the sole at which a change is made in the lateral inclination of the corresponding roll for operation on the forepart, substantially as described.

14. A sole pressing machine, having in combination, a shoe supporting jack, pressing rolls acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, mechanism for actuating the jack to transfer the point of op-

eration along the sole, mechanism acting to automatically tip each roll for operation on the shank and forepart, including compensating mechanism to control the operation of the roll tipping mechanism, and means for adjusting each compensating mechanism to determine the time in the operation of the machine at which the tipping of each roll for operation upon the forepart or shank is effected, substantially as described.

15. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, connected mechanism acting automatically to change the relative longitudinal position and lateral inclination of the roll and jack, and means for varying the operation of the mechanism for varying the lateral inclination of the roll and jack to compensate for variations in the relative length of the forepart and shank of shoes of different styles, substantially as described.

16. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, connected mechanism acting automatically to change the relative longitudinal position and lateral inclination of the roll and jack, means for adjusting said mechanism for operation on shoes of different sizes, and means for adjusting the mechanism for changing the relative lateral inclination of the roll and jack to vary the point on the sole at which a change is made in the relative lateral inclination of the roll and jack for operation on the forepart, substantially as described.

17. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, means for relatively actuating the roll and jack to shape the sole of the shoe, including mechanism for changing the relative lateral inclination of the roll and jack, and means for adjusting said mechanism to determine the time in the operation of the machine at which the change in the relative inclination of the roll and jack is made in passing from the shank to the forepart, substantially as described.

18. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, mechanism for changing the relative lateral inclination of the roll and jack, including a cam and connections, and mechanism operating automatically on said connections to vary the timing of the cam, substantially as described.

19. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, connected mechanism acting automatically to impart relative movements to the roll and jack to transfer the point of operation along the sole, mechanism for changing the relative lateral inclination of the roll and jack for operation on the shank and forepart, including compensating mechanism to control the operation of said mech-

anism, and means for adjusting said compensating mechanism to vary the proportion of the traversing movement taking place while the roll and jack are relatively laterally inclined for operation on the shank, substantially as described.

20. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, mechanism for actuating the jack to transfer the point of operation along the sole, mechanism acting automatically to tip the roll for operation on the shank and forepart, including compensating mechanism to control the operation of the roll tipping mechanism, and means for adjusting said compensating mechanism to determine the time in the operation of the machine at which the change in the inclination of the roll for operation on the shank or forepart is made, substantially as described.

21. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, connected mechanism acting to automatically impart relative movements to the roll and jack to transfer the point of operation along the sole, mechanism acting to automatically change the relative lateral inclination of the roll and jack for operation on the shank and forepart, and means for adjusting said mechanism to vary the proportion of the traversing movement taking place while the roll and jack are relatively laterally inclined for operation on the shank, substantially as described.

22. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, mechanism for actuating the jack to transfer the point of operation along the sole, mechanism acting automatically to tip the roll for operation on the shank and forepart, including compensating mechanism to control the operation of the roll tipping mechanism, and means for adjusting said compensating mechanism to vary the proportion of the traversing movement taking place while the roll is tipped for operation on the shank, substantially as described.

23. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing roll, mechanism for tipping the roll for operation on the shank and forepart, including an actuating lever, connections between the lever and roll, a cam, a cam roll mounted on the lever and movable with relation thereto, and mechanism acting during the operation of the cam to change the relative position of the roll and lever, substantially as described.

24. A sole pressing machine, having, in combination, a shoe supporting jack and leveling devices actuated to independently apply pressure on opposite sides of the forepart of the bottom of the sole of a shoe supported on the jack and mechanism for

independently actuating the leveling devices during their operation on the sole, substantially as described.

25. A sole pressing machine, having, in combination, a shoe supporting jack, leveling devices acting respectively on opposite sides of the forepart of the bottom of the sole of a shoe supported on the jack, and means for forcing the devices independently against the opposite sides of the sole and mechanism for independently actuating the leveling devices during their operation on the sole, substantially as described.

26. A sole pressing machine, having, in combination, a shoe supporting jack, leveling devices acting respectively on opposite sides of the bottom of the sole of a shoe supported on the jack, means for forcing the devices independently against opposite sides of the sole, and mechanism acting automatically to independently vary the lateral inclination of the devices during their operation on the sole, substantially as described.

27. The combination with a tool for operating on a shoe sole of a jack for supporting the shoe, connected mechanism acting automatically to change the relative longitudinal position and lateral inclination of the tool and jack, and means for varying the operation of the mechanism for varying the lateral inclination of the tool and jack to compensate for variations in the relative length of the forepart and shank of shoes of different styles, substantially as described.

28. The combination with a tool for operating on a shoe sole of a jack for supporting the shoe, mechanism for varying the operative position of the tool according as it is operating on the forepart or the shank of the shoe, mechanism for relatively moving the jack and tool to transfer the point of operation along the sole, and means for adjusting the mechanism for varying the operative position of the tool to determine the time in the operation of the machine at which the variation in the operative position of the tool, is made, substantially as described.

29. The combination with a tool for operating on a shoe sole of a shoe supporting jack, means for relatively moving the jack and tool to transfer the point of operation along the sole, means for changing the relative inclination of the tool and jack, and means for adjusting said latter mechanism to determine the time in the operation of the machine at which the change in the relative inclination of the tool and jack is made in passing from the shank to the forepart, substantially as described.

30. The combination with a tool for operating on a shoe sole of a shoe supporting jack, mechanism for relatively operating the

tool and jack to transfer the point of operation along the sole, mechanism for changing the relative inclination of the tool and jack, including a cam and connections, and
5 mechanism operating automatically on said connections to vary the timing of the cam, substantially as described.

31. The combination with a tool for operating on a shoe sole of a shoe supporting
10 jack, connected mechanism acting to automatically impart relative movements to the tool and jack to transfer the point of operation along the sole, mechanism acting to automatically change the relative inclination
15 of the tool and jack for operation on the shank and forepart, and means for adjusting said mechanism to vary the proportion of the traversing movement taking place while the tool and jack are relatively inclined
20 for operation on the shank, substantially as described.

32. A sole pressing machine, having, in combination, a shoe supporting jack, rolls
25 arranged to act on opposite sides of the bottom of the sole of a shoe supported on the jack, and means for forcing each roll against the sole with a pressure unaffected by the resistance offered by the sole to the other
30 roll and mechanism for independently actuating the rolls during their operation on the sole, substantially as described.

33. A sole pressing machine, having, in combination, a shoe supporting jack, rolls
arranged to act on opposite sides of the bot-

tom of the sole of a shoe supported on the
jack, means for yieldingly forcing each roll
against the sole, and means for adjusting
the pressure of one roll without affecting the
pressure of the other roll and mechanism
40 for independently actuating the rolls during
their operation on the sole, substantially as
described.

34. A sole pressing machine, having, in combination, a shoe supporting jack, rolls
45 arranged to act on opposite sides of the bottom of the sole of a shoe supported on the jack, a spring acting to force each roll against the sole of a shoe, and mechanism
for independently varying the lateral inclination of the rolls during their operation
50 upon the shoe, substantially as described.

35. A sole pressing machine, having, in combination, a shoe supporting jack, a plurality of rolls arranged to act on the bottom
55 of the sole of a shoe supported on the jack, and means for forcing each roll against the sole with a pressure unaffected by the resistance offered by the sole to other rolls and mechanism for independently actuating
60 the rolls during their operation on the sole, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

ERASTUS E. WINKLEY.

Witnesses:

IRA L. FISH,
N. D. McPHAIL.

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