

SOLE PRESSING MACHINE.

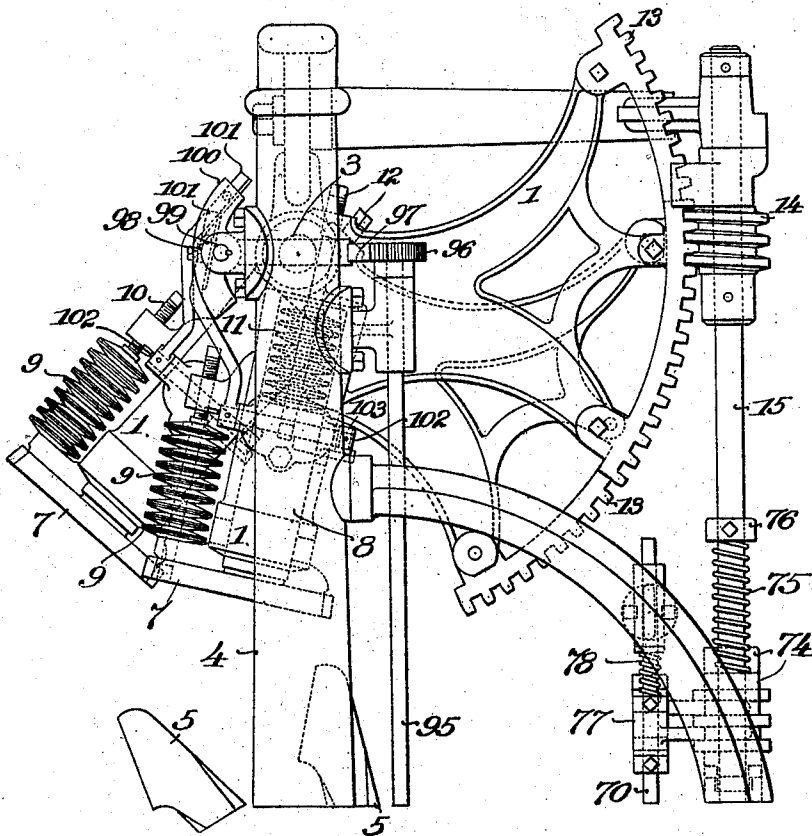
APPLICATION FILED MAY 18, 1903. RENEWED MAR. 12, 1908.

939,462.

Patented Nov. 9, 1909.

7 SHEETS--SHEET 1.

Fig: 1.



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SOLE PRESSING MACHINE.

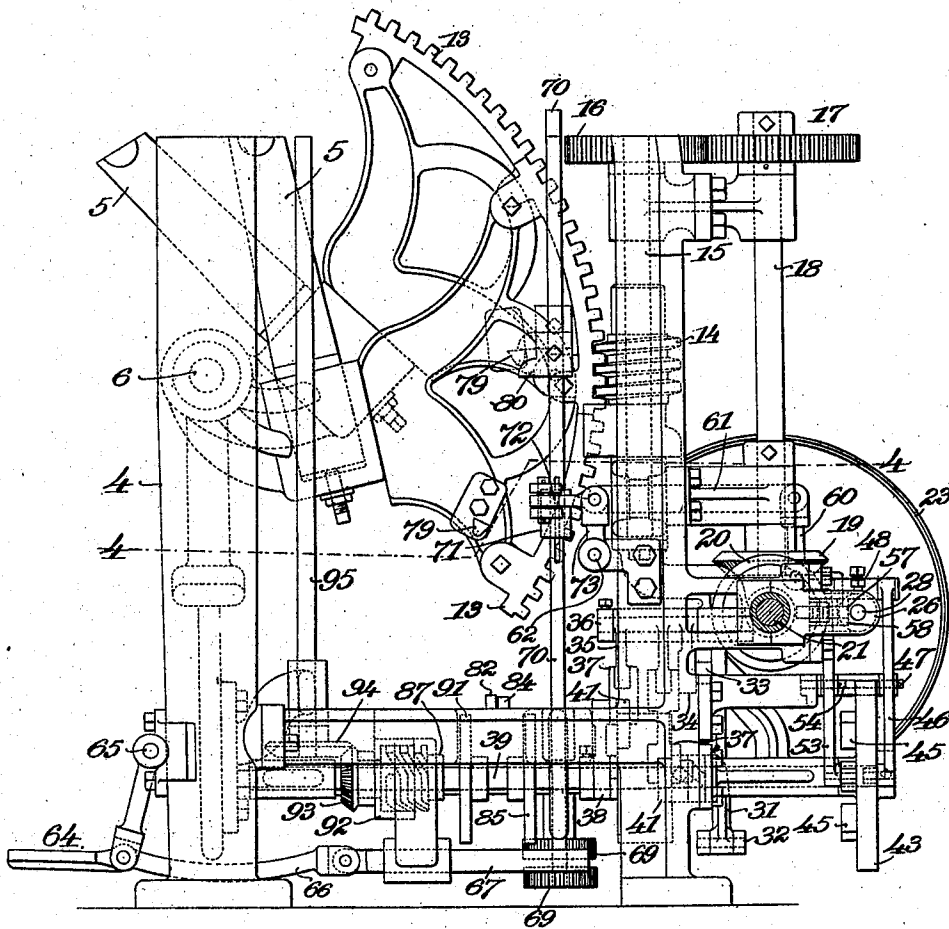
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7 SHEETS—SHEET 2.

Fig. 2.



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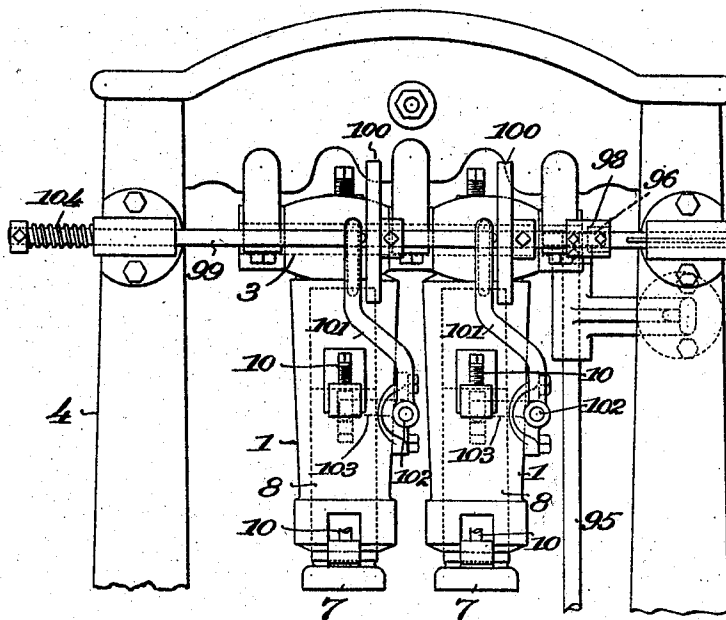
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7 SHEETS—SHEET 3.

Fig. 3.



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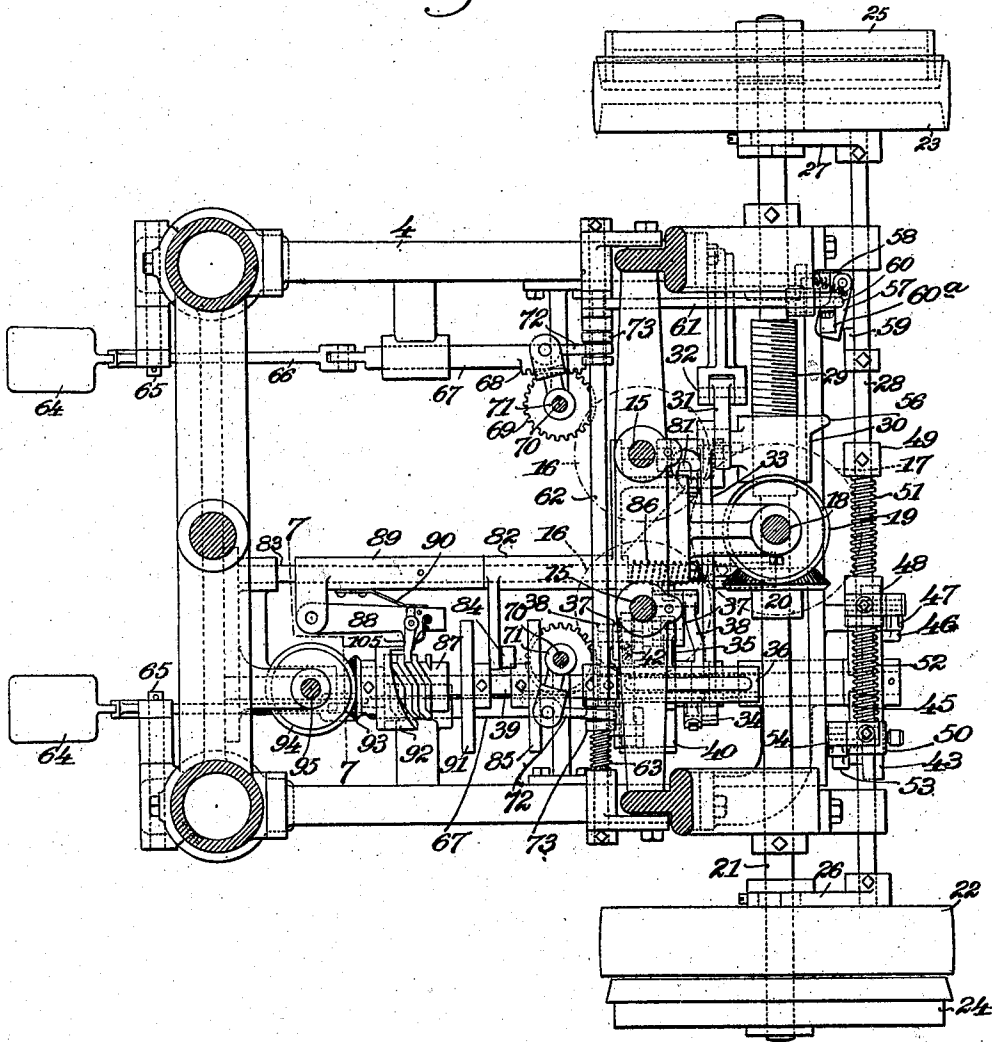
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7 SHEETS—SHEET 4.

Fig. 4.



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7 SHEETS—SHEET 5.

Fig. 5.

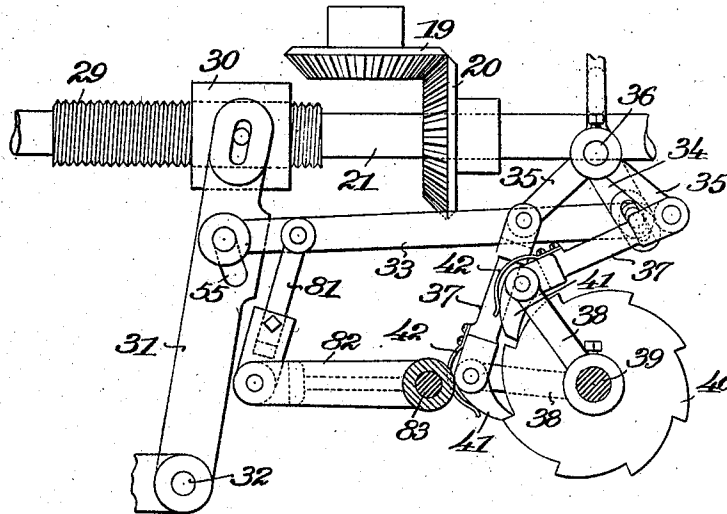
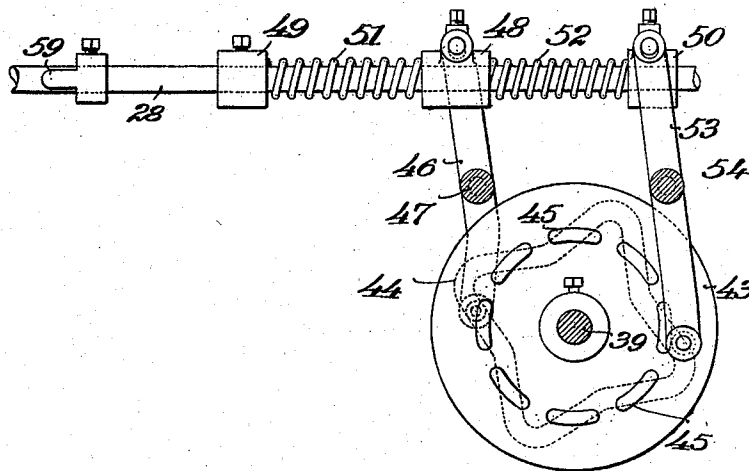


Fig. 6.



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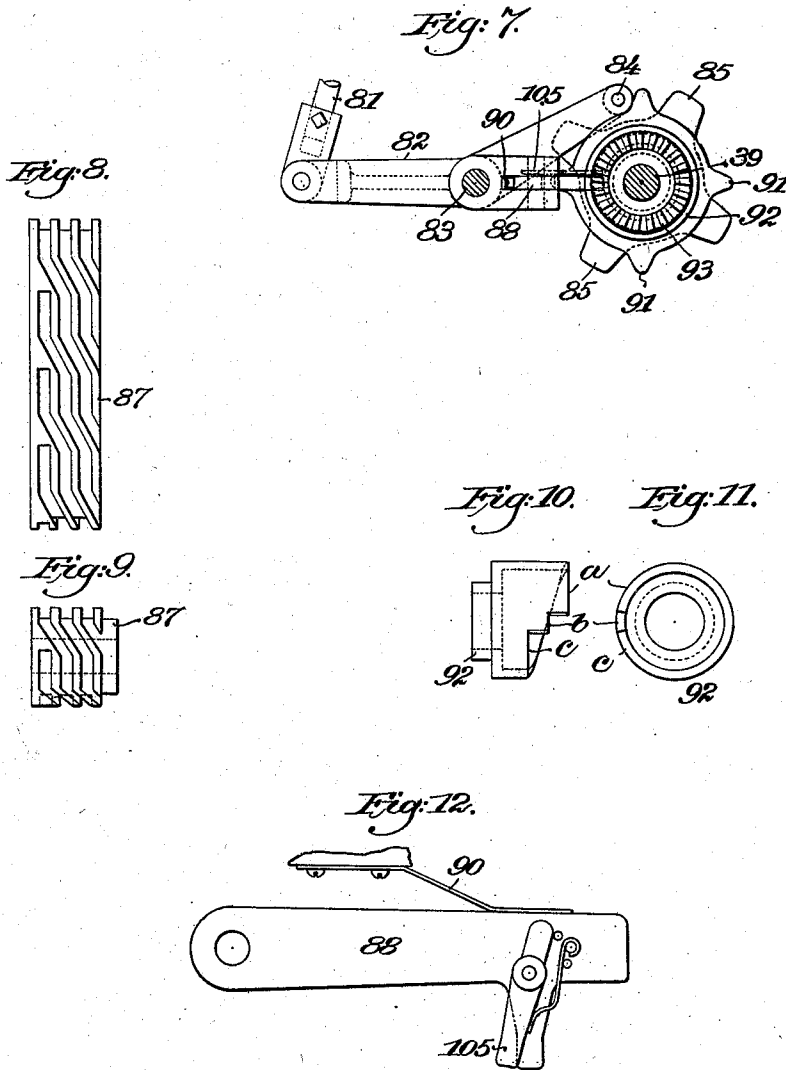
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7 SHEETS—SHEET 6.



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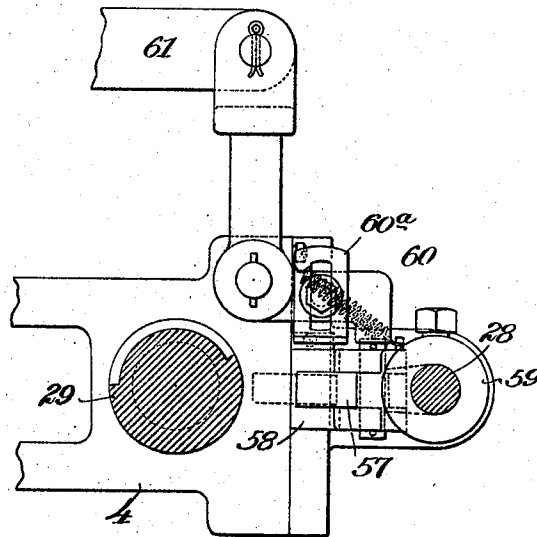
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939,462.

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7 SHEETS—SHEET 7.

Fig. 13.



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UNITED STATES PATENT OFFICE.

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SOLE-PRESSING MACHINE.

939,462.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed May 18, 1903, Serial No. 157,707. Renewed March 12, 1908. Serial No. 420,693.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a 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 which are used in the manufacture of boots and shoes to perform the operations known in the art as sole laying and sole leveling.

More particularly the present invention relates to that class of sole pressing machines, extensively used to perform the sole leveling operation, which comprises a shoe supporting jack, a cooperating sole pressing form, and means for actuating the jack and form to subject the sole of a shoe supported upon the jack to a rolling pressure.

Rolling pressure sole leveling machines are usually constructed to exert two pressures upon the sole of a shoe, one pressure being produced by the inward movement of the jack and form from a position at the front of the machine in which a shoe can be readily removed from the jack and another shoe placed thereon, which position is termed a position of presentation, and another pressure being produced during the return movement of the jack and form to the position of presentation. It is often desirable, however, to subject the sole to a greater number of pressures in order to properly beat out or level the sole. In many machines, this is accomplished by starting and stopping the machine several times without removing the shoe from the jack. Machines have, however, been devised by which the jack and form are automatically and continuously moved to produce this result, and in an application filed May 18, 1903, Serial No. 157,706, I have disclosed such a machine. In the machine disclosed in said application and in all other sole pressing machines with which I am familiar, the number of pressures to which the sole is subjected is predetermined by the construction of the machine or is dependent upon the will of the operator. The number of pressures necessary to properly beat out or level a sole

varies with the thickness of the sole, and an object of my invention is to provide a sole pressing machine by which soles of different thicknesses will be subjected to the required number of pressures. With this object in view, my invention broadly considered contemplates providing a sole pressing machine comprising a jack and a form and means for relatively actuating the jack and form to press the sole of a shoe supported upon the jack with means controlled by the thickness of the sole of a shoe for determining the number of pressing operations to which the sole is subjected.

I believe that I am the first in the art to provide a sole pressing machine of any description in which the number of pressures exerted upon the sole of a shoe is determined by the thickness of the sole, and I therefore consider this feature of my invention as broad and generic in character and as capable of embodiment in other forms of sole pressing machines as well as in that form in which the sole is subjected to a rolling pressure. While this feature of my invention broadly considered may be embodied in any sole pressing machine comprising a shoe supporting jack and a cooperating sole pressing form, it is preferably embodied in a machine in which the jack and form are actuated to subject the sole of a shoe to a rolling pressure as it is of special importance in this class of machines to subject the sole to a number of pressures to properly beat out or level the sole.

In the machine disclosed in my application above referred to and in all other rolling pressure sole leveling machines with which I am familiar in which mechanism is provided which operates to move the jack and form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures and in which the jack is stopped automatically in a position of presentation, no means forming a permanent part of the machine are provided for varying the number of pressing operations to which the sole is subjected, the same number of pressures being exerted upon a thin sole as upon a thick sole. I believe that I am the first to provide such a machine with means permanently embodied therein for varying the number of pressing operations to which the sole is subjected whether such means are controlled by the thickness of the

sole of a shoe or are controlled by any other means or by the operator, and I accordingly consider a feature of my invention to consist in providing a sole pressing machine comprising mechanism acting to move a jack and form to subject the sole of a shoe to a plurality of rolling pressures, and means acting automatically to stop the jack in a position of presentation, with any means forming a permanent part of the machine for varying the number of pressing operations to which the sole is subjected.

The machine which I have disclosed herein as embodying my invention in its preferred form in addition to the broad features of invention above referred to embodies other features of invention hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art. As to these features of invention it is to be understood that except as specifically defined in the claims they are not limited to any particular construction or arrangement of parts but may be embodied in constructions other than those illustrated and hereinafter described without departing from the spirit thereof.

Referring to the drawings, Figure 1 is a view in side elevation of the upper portion of a roller pressure sole leveling machine embodying a preferred form of my invention; Fig. 2 is a view in side elevation of the lower portion of the machine, this figure in connection with Fig. 1 forming a view in side elevation of the complete machine; Fig. 3 is a view in front elevation of the upper portion of the machine with the two arms by which the sole pressing forms are supported swung rearwardly into a vertical position; Fig. 4 is a sectional plan view taken on the line 4—4 of Fig. 2; Figs. 5 and 6 are detail views of the mechanism for reversing and stopping the driving shaft of the machine; Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 4 illustrating a portion of the mechanism by which the number of pressing operations to which the sole of a shoe is subjected is controlled; Fig. 8 is a view showing the timing cam of the mechanism illustrated in Fig. 7 developed; Fig. 9 is a view in side elevation of the timing cam; Fig. 10 is a view in side elevation and Fig. 11 a view in end elevation of the stop cam which forms a portion of the mechanism illustrated in Fig. 7; Fig. 12 is a detail view of an arm forming a portion of the mechanism illustrated in Fig. 7, and Fig. 13 is a detail sectional view illustrating the mechanism for throwing the main driving shaft into operation.

The machine illustrated in the drawings is a duplex rolling pressure sole leveling machine of the same general type as the sole leveling machine disclosed in United States patent to Tripp No. 296,486, dated April 8,

1884. The machine comprises two pivotally mounted arms upon which the sole pressing forms are supported and two pivotally mounted arms upon which the shoe supporting jacks are supported, the arrangement of the arms being such that when two of the arms supporting a jack and a cooperating form respectively are oscillated the sole of the shoe supported upon the jack is subjected to a rolling pressure. The two sets of arms are oscillated by means of a common actuating mechanism which comprises a driving shaft, through connections between the driving shaft and the arms. The driving shaft is rotated alternately in opposite directions, means being provided by which the reversals in the direction of rotation are produced automatically, and the connections between the driving shaft and the pivotally mounted arms are such that the direction of the oscillation of the arms is changed with each reversal in the direction of rotation of the driving shaft. When the machine is at rest the pivoted arms are at the extreme limit of their forward movement, the jacks and forms being separated to allow shoes to be removed from or placed upon the jacks.

During the operation of the machine one pair of arms upon which a jack and its cooperating form are supported are moved from the position at the front of the machine, which position is termed a position of presentation, toward the rear of the machine to subject the sole of the shoe supported upon the jack to a rolling pressure and are then either returned to the position of presentation at the front of the machine thereby subjecting the sole of the shoe to another rolling pressure, or are moved forward and back one or more times through a lesser arc to subject the sole of the shoe to a number of rolling pressures and then finally returned to the position of presentation at the front of the machine. During the movement of one jack and its cooperating form to level the sole of a shoe the arms supporting the other jack and form are disconnected from the actuating mechanism, means being provided for connecting and disconnecting each set of arms and the actuating mechanism so that one jack and form can remain in a position of presentation while the other jack and form are being actuated to level the sole of a shoe and return the jack and form to a position of presentation. When the jack and form are returned to a position of presentation the arms upon which they are supported are automatically disconnected from the driving shaft and the rotation of the driving shaft is automatically stopped. In order to vary the number of pressing operations to which the sole of the shoe is subjected the machine is provided with means controlled by the thickness of the sole of the shoe upon the jack for determin-

ing the number of oscillations imparted to the arms upon which the jack and form are supported before the jack and form are returned to the position of presentation. These means as shown consist of mechanism thrown into operation at a time during the operation of the machine determined by the thickness of the sole of the shoe being operated upon and which when thrown into operation acts upon the mechanism for automatically reversing the direction of rotation of the driving shaft and delays the action of this mechanism until the jack and form are returned to the position of presentation.

15 In the drawings 1 indicates arms, two in number, pivotally mounted at 3 in the upper front portion of the machine frame 4. 5 indicates two arms pivotally mounted in the machine frame at 6 below the arms 1.

20 The sole pressing forms are supported upon the arms 1 and the jacks are supported upon the arms 5, the arrangement of the arms 1 and 5 being such that the forms upon the arms 1 cooperate with the jacks upon the arms 5 to subject the soles of shoes supported upon the jacks to a rolling pressure when the arms are oscillated. The jacks, which are not illustrated, may be of any suitable construction adapted to support a shoe and may be secured to the arms 5 in any customary or desired manner. The forms are also not shown on the drawings and may be of any usual or desired construction. These forms are secured, as is common in this class of machines, to form carriers each of which consists of a plate 7 provided with a stem 8 mounted to slide in one of the arms 1. Each form carrier is pressed downwardly by a series of springs 9 supported upon a rod 10 and interposed between a collar on the rod and an upwardly projecting portion of the plate 7, the upper end of the rod 10 having a screw-threaded engagement with a lug projecting from the arm 1 and having a sliding engagement with the upwardly extending portion of the plate 7. The form carrier is also pressed downwardly by means of a series of springs 11 surrounding a rod 12 having a screw-threaded engagement at its upper end with the arm 1 and having a sliding engagement at its lower end with the stem 8, the springs being interposed between a collar on the rod and the upper end of the stem 8. The form carrier is thus yieldingly forced toward the jack and is allowed to rise as the jack and form are swung from the front toward the rear of the machine to bring the form into contact with the sole of the shoe and to subject the sole to a rolling pressure. It will be evident that the distance to which the form carrier is raised will vary with the thickness of the sole of the shoe being operated upon and this varying movement of the form carrier is utilized to determine the number of pressing operations to which the sole is subjected as will be hereinafter described. Each of the arms 1 and 5 is provided with a toothed segment 13 which meshes with one of four worms 14 upon two vertical shafts 15. Each shaft 15 is provided with a gear 16 which meshes with a gear 17 upon the upper end of a short vertical shaft 18. The shaft 18 is provided at its lower end with a bevel gear 19 which meshes with a bevel gear 20 upon the main driving shaft 21. The above-described construction is such that both shafts 15 are rotated in the same direction, the direction of rotation of the shafts 15 depending upon the direction of rotation of the shaft 21.

In order to oscillate either jack and its cooperating form backward and forward from a position at the front of the machine to level the sole of a shoe supported upon the jack the main driving shaft 21 is rotated alternately in opposite directions. To this end driving pulleys 22 and 23 are mounted to rotate loosely upon opposite ends of the driving shaft 21 and to be capable of moving longitudinally thereon. These pulleys are continuously driven in opposite directions from any suitable source of power. Rigidly secured to the opposite ends of the main driving shaft are frictional clutch members 24 and 25 with which cooperating clutch members upon the pulleys 22 and 23 are arranged to be brought into engagement, in order to clutch either pulley to the driving shaft. The pulleys 22 and 23 are provided with grooved collars which are engaged respectively by arms 26 and 27 secured to a shipper rod 28. The arrangement of the shipper rod 28 and the arms 26 and 27 is such that when the shipper rod is in its medial position both pulleys are disconnected from the clutch members 24 and 25 and rotate loosely upon the driving shaft. When the shipper rod is moved in one direction the pulley 23 is moved into engagement with the clutch member 25 and the driving shaft is rotated in one direction and when the shipper rod is moved in the opposite direction the pulley 22 is moved into engagement with the clutch member 24 and the direction of rotation of the driving shaft is reversed.

In the machine shown in the drawings, means are provided for automatically actuating the shipper rod 28 to reverse the direction of rotation of the driving shaft 21 and for finally stopping the shipper rod in its medial position so that the jack and form which are connected to the driving shaft are moved automatically and continuously to level the sole of a shoe supported upon a jack and are finally returned to the position of presentation at the front of the machine. The means for actuating the shipper rod 28 to reverse the direction of rotation of the driving shaft will be clearly understood

from an inspection of Figs. 5 and 6. Referring to these figures 29 indicates a worm upon the main driving shaft which is engaged by a traveling nut 30. This nut has a pin and slot connection with the upper end of a lever 31 pivoted at 32 to the frame of the machine. The lever 31 is connected by means of a link 33 to an arm 34 projecting from the hub of a bell crank lever 35 pivoted at 36 to the frame of the machine. The two arms of the bell crank lever 35 are connected by means of links 37 to the distance arms 38 pivotally mounted upon a shaft 39 upon opposite sides of a ratchet wheel 40 secured to the shaft. Pawls 41 are mounted upon the pivot pins connecting the links 37 and distance arms 38 and are held in engagement with the teeth of the ratchet wheel by leaf springs 42. The above-described connections between the traveling nut 30 and the ratchet wheel 40 are such that the ratchet wheel and the shaft 39 to which it is secured are intermittently rotated as the nut travels back and forth on the worm 29, one pawl 41 being in engagement with a tooth of the ratchet wheel when the nut is traveling in one direction and the other pawl being in engagement with the teeth of the ratchet wheel when the nut is traveling in the opposite direction. Also secured to the shaft 39 is a disk 43 provided on one face with a cam groove 44 and on the opposite face with a series of cam projections 45. The cam groove 44 is engaged by a roll or stud upon the lower end of a lever 46 pivoted at 47 to the frame of the machine and having a pin and slot engagement at its upper end with a collar 48 mounted to slide upon the shipper rod 28. Two collars 49 and 50 are secured to the shipper rod upon opposite sides of the collar 48 and coiled springs 51 and 52 surround the shipper rod and are interposed between the collars 49 and 50 and the loose collar 48. The collar 50 has a pin and slot connection with the upper end of a locking lever 53 pivoted at 54 to the frame of the machine and provided at its lower end with a roll or stud which is arranged to be engaged by the cam projections 45 on the disk 43. The arrangement of the levers 46 and 53, the cam groove 44 and the cam projections 45 is such that as the shaft 39 and the cam disk 43 secured thereto are rotated the shipper rod 28 is held from movement by the engagement of the stud on the lower end of the locking lever 53 with either the outer or inner surface of one of the cam projections 45 until the collar 48 has been moved by means of the lever 46 and cam groove 44 to compress one of the springs 51 or 52. After the spring has been compressed the continued movement of the cam disk 43 moves the cam projection 45 out of engagement with the stud on locking lever 53, thereby releasing the lever and allowing the

spring which has been compressed to move the shipper rod 28 to reverse the direction of rotation of the driving shaft. The stud on the lower end of the locking lever 53 is alternately engaged by the outer and inner surfaces of the cam projections 45 so that the shipper rod is held alternately in its extreme positions to the right and to the left with one of the driving pulleys clutched to the driving shaft.

The machine illustrated in the drawings is designed to impart to the jack and form connected to the driving shaft a relatively long movement from a position of presentation at the front of the machine to a position of pressure and thereafter either to return the jack and form at once to the position of presentation at the front of the machine or to impart a number of shorter intermediate movements to the jack and form and then return them to the position of presentation. The ratchet wheel 40 illustrated in the drawings is provided with eight teeth and the shape and arrangement of the cam groove 44 and cam projections 45 is such that a movement of the shaft 39 through one eighth of a revolution is sufficient to effect a reversal in the direction of rotation of the driving shaft. In order to allow the jack and form connected to the driving shaft to be moved through a number of shorter oscillations before being returned to the position of presentation at the front of the machine, means are provided for adjusting the connections between the traveling nut 30 and the ratchet wheel 40 to allow the nut to travel varying distances before moving the shaft 39 through an eighth of a revolution. To this end the link 33 is connected to the lever 31 by means of a pin passing through the slot 55 in the lever 31. When the link 33 is raised with the pin in the upper portion of the slot it will be evident that a shorter travel of the nut 30 is required to move the shaft 39 through an eighth of a revolution than when the link 33 is in its lowered position with the pin in the lower portion of the slot 55. The link 33 is automatically raised and lowered during the operation of the machine as will be hereinafter described. When the machine is at rest with the forms and jacks in the position of presentation at the front of the machine and both driving pulleys disconnected from the driving shaft, the link 33 is in its lowered position and the nut 30 is in its extreme position at the left as viewed in Fig. 5. When the machine is started into operation the link 33 is raised during the inward movement of the jack and form and is held raised until the jack and form enter upon their final outward movement. During the final outward movement the link 33 is lowered and the nut 30 is allowed to travel back to its original ex-

treme position at the left as viewed in Fig. 5. The nut 30 in moving to the right as viewed in Fig. 5 always travels to the same point; but is only returned to its extreme position at the left when the jack and form are returned to the position of presentation at the completion of the leveling operation.

The final movement of the nut 30 to its extreme position at the left as viewed in Fig. 5 is utilized to disconnect both driving pulleys from the main driving shaft. To this end the nut is provided with a projection 56, (see Fig. 4) which is arranged to engage a movable stop 57 pivotally mounted upon a block 58 which is pivoted so as to be capable of swinging vertically upon the frame of the machine. When the nut 30 reaches its extreme position at the left the projection 56 contacts with the stop 57 and moves it into the path of a stop collar 59 secured to the shipper rod. The stop 57 is moved into the path of the stop collar 59 before the shipper rod is actuated so that when the shipper rod is actuated it is stopped in its medial position with both driving pulleys disconnected from the driving shaft.

In order to release the shipper rod 28 and allow it to move to connect the pulley 23 to the driving shaft in starting the machine into operation, the stop 57 is depressed out of engagement with the stop collar 59, this movement of the stop 57 being permitted by the pivotal connection of the block 58 with the frame of the machine. The stop 57 is depressed by means of a bent lever 60 (see Figs. 2 and 4), the horizontal arm of which is arranged to contact with the upper surface of the stop 57, and the vertical arm of which is connected by means of a link 61 to an arm projecting upwardly from a rock shaft 62. The stop 57 is normally held raised by means of a spring connecting the stop with the frame of the machine, and the horizontal arm of the bent lever 60 is normally held raised by means of a coiled spring 63 surrounding the rock shaft 62 having one end connected to the frame of the machine and the other end secured to the shaft. The rock shaft 62 is actuated to depress the stop 57 and throw the machine into operation by means of either of two treadles 64 located at opposite sides of the front of the machine. Each treadle is pivoted to the machine frame at 65 and is connected by means of a link 66 to a slide 67 provided with a rack 68 which meshes with a pinion 69 upon the lower end of a rod 70 mounted to oscillate and move vertically in the frame of the machine. Splined upon each rod 70 is an arm 71 which has a pin and slot connection with a link 72 connecting the arm 71 to an arm 73 projecting upwardly from the rock shaft 62. The above-described connections between the treadles 64 and the rock shaft 62 are such that when

either treadle is depressed the corresponding rod 70 is oscillated and the shaft 62 is rocked to depress the stop 57. The pin and slot connections between the arms 71 and links 72 permit one rod 70 to be oscillated without oscillating the other.

In the machine illustrated in the drawings, both jacks and their cooperating forms are disconnected from the driving shaft when the jacks and forms are in the position of presentation at the front of the machine. Either jack and its cooperating form can be connected to the driving shaft so as to be actuated to level the sole of a shoe and to return to a position of presentation, the other jack and form remaining in the position of presentation disconnected from the driving shaft. In order to allow the jacks and forms to be connected to and disconnected from the driving shaft the gears 16 are mounted to rotate loosely upon the shafts 15 and are provided with clutch members which are arranged to be engaged by clutch members 74 splined upon the shafts and mounted to move longitudinally thereon. Each clutch member 74 is acted upon by a spring 75 coiled around a shaft 15 and interposed between a fixed collar 76 and a clutch member 74, the tendency of the springs being to force the clutch members 74 into engagement with the clutch members on the gears 16. Each clutch member 74 is engaged by an arm 77 secured to the upper end of a rod 70. A spring 78 surrounding the upper end of each rod 70 and interposed between the bearing for the upper end of the rod and the arm 77 tends to force the rod downwardly. A projection 79 on a plate secured to each of the arms 5 is arranged to engage a block 80 secured to the rod 70 when the arm 5 is swung to return the jack to its position of presentation, the engagement of the projection 79 with the block 80 lifting the rod 70 to automatically disconnect the clutch member 74 from the clutch member of the gear 16 and hold the clutch members separated while the jack remains in the position of presentation. When the machine is thrown into operation by the depression of either treadle 64 the oscillation of the corresponding rod 70 moves the block 80 out of engagement with the projection 79 and allows the clutch member 74 to move into engagement with the clutch member of the gear 16.

In order to insure that each jack and its cooperating form shall be disconnected from its actuating mechanism when returned to a position of presentation, the projections 79 are so arranged as to be brought into engagement with the blocks 80 before the rotation of the main driving shaft is stopped; and in order to insure that each jack and form shall be connected to its actuating mechanism at the same point in the travel

of the nut 30 at which they are disconnected, means are provided for preventing the actuation of the rod 70 to move the blocks 80 out of engagement with the projection 79 until the driving shaft has been thrown into operation and the nut 30 has traveled a certain distance on the worm 29. The means for preventing the actuation of the rods 70 to remove the blocks 80 from engagement with the projection 79 until the nut 30 has traveled a certain distance on the worm 29 consists of a stop plate 60^a adjustably secured to the bent lever 60. When the machine is started into operation by the depression of a treadle 64 the plate 60^a contacts with the nut 30 or its projection 56 and prevents the treadle 64 being depressed a sufficient distance to actuate a rod 70 so as to remove a block 80 from engagement with a projection 79. The treadle 64 is, however, depressed a sufficient distance to move the stop 57 out of engagement with the stop collar 59 on the shipper rod. After the driving shaft 21 is thrown into operation the nut 30 is moved from beneath the plate 60^a and the treadle is allowed to complete its movement so as to actuate the rod 70 to remove the block 80 from engagement with the projection 79.

It will be evident that the number of pressing operations to which the sole of a shoe is subjected will depend upon the time during the operation of the machine at which the link 33 is moved into its lowest position. In the machine illustrated in the drawings the link 33 is moved by mechanism which is thrown into operation at a time during the operation of the machine determined by the thickness of the sole of the shoe being operated upon. The link 33 is connected by means of a link 81 to one arm of a lever 82 pivotally mounted upon a rod 83 so as to be capable of moving longitudinally thereon. The other arm of the lever 82 is provided with a roll or stud 84 which is arranged to be engaged by a cam 85 secured to the shaft 39. When the stud 84 is upon a raised portion of the cam 85 the link 33 is held in its lowered position, but when the stud is out of engagement with the cam or in contact with a low part of the cam, the link 33 is held in its raised position. During the greater portion of the operation of the machine the stud 84 is held out of the path of movement of the cam 85 by means of a spring 86 surrounding the rod 83 and tending to force the lever 82 to the left as viewed in Fig. 4. The lever 82 is moved to bring the stud 84 into the path of movement of the cam 85 by means of a timing cam 87 secured to the shaft 39. This timing cam is provided with a series of cam grooves as is clearly illustrated in Figs. 8 and 9, one of which, while the machine is in operation, is in engagement with a finger projecting from an arm 88 pivotally mounted

ed upon a sleeve 89 mounted upon the rod 83 so as to move longitudinally thereon. The arm 88 is pressed toward the cam 87 by means of a spring 90. When the machine is at rest, the arm 88 is in its extreme position at the right as viewed in Fig. 4, the finger of the arm being at the end of one of the cam grooves. During the first inward movement of the jack and form in leveling a shoe, the arm 88 is raised by means of a cam 91 secured to the shaft 39 which engages the end of the arm and the arm is moved to the left and its finger brought into engagement with one of the grooves of the timing cam 87. The point on the timing cam which is engaged by the finger of the arm 88 is determined by a stop cam 92 which is mounted to rotate loosely upon the shaft 39 and which covers up a portion of the timing cam. A bevel gear 93 is secured to the stop cam 92 and meshes with a bevel gear 94 upon the lower end of a vertical shaft 95. To the upper end of the shaft 95 is secured a gear 96 with which meshes a rack 97 carried by an arm 98 secured to a rod 99 mounted to slide in bearings in the upper front portion of the machine frame. To the rod 99 are secured two segmental shaped plates 100 against the sides of which the upper ends of arms 101 bear. The arms 101 are secured to and project upwardly from rock shafts 102 journaled in the arms 1 upon which the form carriers are mounted. Arms 103 project inwardly from the rock shafts 102 and are engaged by the stems 8 of the form carriers. The above-described connections between the form carriers and the stop cam 92 are such that the upward movement of either form carrier causes a rotation of the stop cam, the amount of rotation depending upon the extent of the upward movement of the form carrier which in turn depends upon the thickness of the sole of the shoe being operated upon. A coiled spring 104 surrounding one end of the rod 99 and interposed between a collar on the end of the rod and one of the bearings for the rod tends to hold the rod in its extreme position toward the left as view in Fig. 3. The stop cam 92 illustrated in the drawings (see more particularly Figs. 10 and 11) is provided with three portions marked respectively *a*, *b* and *c*, which are designed to be engaged by the finger of the arm 88 and determine the point on the timing cam which is to be engaged by the arm. In the machine shown in the drawings, if the shoe being operated upon has a thin sole, the stop cam 92 will be rotated so as to bring the portion *a* of the cam into the path of movement of the finger on the arm 88 and the arm will be engaged by the timing cam so as to be moved a sufficient distance to bring the stud 84 of the lever 82 into the path of movement of the cam 85 during the

first outward movement of the jack and form. When, therefore, the stop cam 92 is set to cause its portion *a* to engage the finger of the arm 88 the jack and form will be moved from a position of presentation to a position of pressure and immediately returned to a position of presentation. When thicker soles are operated upon the cam 92 will be turned sufficiently to bring either the portion *b* or *c* into the path of movement of the finger on the arm 88 and the arm will not be moved by the timing cam to bring the stud 84 of the lever 82 into the path of movement of the cam 85 until a number of shorter intermediate movements are imparted to the jack and form before being returned to the position of presentation. In the machine shown in the drawings one shorter movement in each direction will be imparted to the jack and form when the portion *b* of the stop cam 92 limits the movement of the arm 88 and two intermediate shorter movements in each direction will be imparted to the jack and form when the portion *c* of the stop cam limits the movement of the arm 88. When the arm 88 is raised and moved backward to bring the finger thereon into engagement with a groove of the timing cam, the finger is prevented from dropping into a groove until it strikes the stop cam by means of a spring pressed finger 105 (see more particularly Fig. 12).

The operation of the machine above described is as follows:—When the machine is at rest both the jacks and their cooperating forms are in the position of presentation at the front of the machine, both rods 70 are held raised by the engagement of projections 79 with blocks 80, the shipper rod 28 is held in its medial position by the engagement of the stop collar 59 with the stop 57 and both the driving pulleys are disconnected from the driving shafts. The spring 51 surrounding the shipper rod is compressed tending to force the shipper rod to the left as viewed in Fig. 6 and the stud on the lower end of the locking lever 53 is opposite a space between two of the projections 45. The arm 88 and the lever 82 are in their extreme position at the right as viewed in Fig. 4, the end of the arm 88 being in engagement with the cam 91 and the stud 84 of the lever 82 being upon a raised portion of the cam 85. A shoe having been placed upon one of the jacks, the treadle on that side of the machine is depressed. The depression of the treadle first releases the shipper rod as has been described and then releases the rod 70 connected with the jack which is to be thrown into operation. The driving shaft is thus connected to one of the driving pulleys and the jack upon which the shoe has been placed and its cooperating form are connected to the driving shaft. During the first inward

movement of the jack and form, the form carrier is raised a distance determined by the thickness of the sole of the shoe being operated upon, and the stop cam 92 is rotated through the connections hereinbefore described. During the inward movement of the jack and form and after the stop cam 92 has been operated, the cam 91 raises the arm 88 and allows the spring 86 to force the lever 82 and the arm 88 to the left as viewed in Fig. 4. The movement of the arm 88 and of the lever 82 to the left is limited by the contact of the finger of the arm 88 with the stop cam 92, the finger dropping into one of the grooves of the timing cam 87. The finger engages one of the straight portions of the groove and is moved by the inclined portion of the groove during the outward movement of the jack and form. The driving shaft is rotated alternately in opposite directions and the shaft 39 is rotated step by step through the connections hereinbefore described. During the rotation of the shaft 39 the arm 88 is moved toward the right as viewed in Fig. 4 by the engagement of the timing cam with the finger of the arm 88 and during one of the outward movements of the jack and form brings the stud 84 of the cam 82 into the path of movement of the cam 85, which acts to depress the link 33 and thereby delays the action of the reversing mechanism until the jack and form are returned to the position of presentation, the movement of the nut 30 to its extreme position at the left (as viewed in Fig. 5) at this time acting to throw the stop 57 into the path of movement of the stop collar 59 so as to arrest the shipper rod 28 in its medial position when the reversing mechanism operates.

Having thus indicated the nature and scope of my invention and having specifically described a machine embodying a preferred form thereof, I claim as new and desire to secure by Letters Patent.

1. A sole pressing machine, having, in combination, a shoe supporting jack, a cooperating sole pressing form, means for relatively actuating the jack and form to press the sole of a shoe supported upon the jack, and means controlled by the thickness of the sole of the shoe for determining the number of pressing operations to which the sole of the shoe is subjected, substantially as described.

2. A sole pressing machine, having, in combination, a shoe supporting jack, a cooperating sole pressing form, mechanism acting continuously to move the jack and form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures, means acting automatically to stop the jack in a position of presentation, and means permanently embodied in the machine for varying the number of pressing operations to

which the sole is subjected, substantially as described.

3. A sole pressing machine, having, in combination, a shoe supporting jack, a co-operating sole pressing form, mechanism acting continuously to relatively actuate the jack and form to subject the sole of a shoe supported upon the jack to a plurality of pressing operations and thereafter relatively actuate the jack and form through a greater distance to bring the jack and form into a position of presentation, and means permanently embodied in the machine for varying the number of pressing operations to which the sole of the shoe is subjected, substantially as described.

4. A sole pressing machine, having, in combination, a shoe supporting jack and a co-operating sole pressing form arranged to subject the sole of a shoe supported upon the jack to a rolling pressure, mechanism for imparting to the jack and form relatively long movements from and toward a position of presentation and intermediate shorter movements, and means for varying the number of such intermediate shorter movements, substantially as described.

5. A sole pressing machine, having, in combination, a shoe supporting jack, a co-operating sole pressing form, means for relatively actuating the jack and form to subject the sole of a shoe supported upon the jack to a rolling pressure, and means controlled by the thickness of the sole of the shoe for determining the number of pressing operations to which the sole of the shoe is subjected, substantially as described.

6. A sole pressing machine, having, in combination, a shoe supporting jack, a co-operating sole pressing form, means for relatively actuating the jack and form to subject the sole of a shoe supported upon the jack to a plurality of pressing operations, and for thereafter relatively actuating the jack and form through a greater distance to bring the jack and form into a position of presentation, and means controlled by the thickness of the sole of the shoe for determining the number of pressing operations to which the sole of the shoe is subjected, substantially as described.

7. A sole pressing machine, having, in combination, a shoe supporting jack and a co-operating sole pressing form arranged to subject the sole of a shoe supported upon the jack to a rolling pressure, mechanism for imparting to the jack and form relatively long movements from and toward a position of presentation and intermediate shorter movements, and means controlled by the thickness of the sole of a shoe for determining the number of such intermediate shorter movements, substantially as described.

8. A sole pressing machine, having, in combination, a shoe supporting jack, a sole

pressing form, a driving shaft, suitable connections for actuating the jack and form to subject the sole of a shoe supported upon the jack to a rolling pressure, means for rotating the driving shaft in opposite directions, means acting automatically to produce a plurality of reversals in the direction of rotation of the driving shaft, means for varying the number of revolutions of the driving shaft in each direction to impart to the jack and form relatively long movements from and toward a position of presentation, and intermediate shorter movements, and means for varying the number of such intermediate shorter movements, substantially as described.

9. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing form, a driving shaft, suitable connections for actuating the jack and form to subject the sole of a shoe supported upon the jack to a rolling pressure, means for rotating the driving shaft in opposite directions, means acting automatically to produce a plurality of reversals in the direction of rotation of the driving shaft, means for varying the number of revolutions of the driving shaft in each direction to impart to the jack and form relatively long movements from and toward a position of presentation, and intermediate shorter movements, and means controlled by the thickness of the sole of a shoe for determining the number of such intermediate shorter movements, substantially as described.

10. A sole pressing machine, having, in combination, a plurality of shoe supporting jacks, a plurality of co-operating sole pressing forms, a common actuating mechanism for actuating each jack and its co-operating form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures, means for connecting each jack and its co-operating form to such common actuating mechanism and for disconnecting them therefrom, and means controlled by the thickness of the sole of a shoe being operated upon for determining the number of pressing operations to which the sole is subjected, substantially as described.

11. A sole pressing machine, having, in combination, a shoe supporting jack, a sole pressing form, a driving shaft, and suitable connection for actuating the jack and form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures, means for rotating the driving shaft in opposite directions, means acting automatically to reverse the direction of rotation of the driving shaft, and means controlled by the thickness of the sole of the shoe being operated upon for determining the number of pressing operations to which the sole of the shoe is subjected, substantially as described.

12. A sole pressing machine, having, in

combination, a shoe supporting jack, a cooperating sole pressing form, mechanism acting continuously until thrown out of operation to move the jack and form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures, and means permanently embodied in the machine whereby the number of pressures to which the sole is subjected before said mechanism is thrown out of operation can be varied, substantially as described.

13. A sole pressing machine, having, in combination, a shoe supporting jack, a cooperating sole pressing form, mechanism acting continuously to move the jack and form to subject the sole of a shoe supported upon the jack to a plurality of rolling pressures, means acting automatically to stop the jack in a position of presentation, and means operative during the operation of the machine

for varying the number of pressing operations to which the sole is subjected, substantially as described.

14. A sole pressing machine, having, in combination, a shoe supporting jack, a cooperating sole pressing form, mechanism acting continuously to move the jack and form to subject the sole of the shoe supported upon the jack to a plurality of rolling pressures, means acting automatically to stop the jack in a position of presentation, and means acting automatically to vary the number of pressing operations to which the sole is subjected, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:

GRACE C. MOONEY,
FARNUM F. DORSEY