A. PERRI.

SHOE FILLING MACHINE.

APPLICATION FILED OCT. 19, 1906.

1,186,602.

Patented June 13, 1916.

2 SHEETS—SHEET 1.

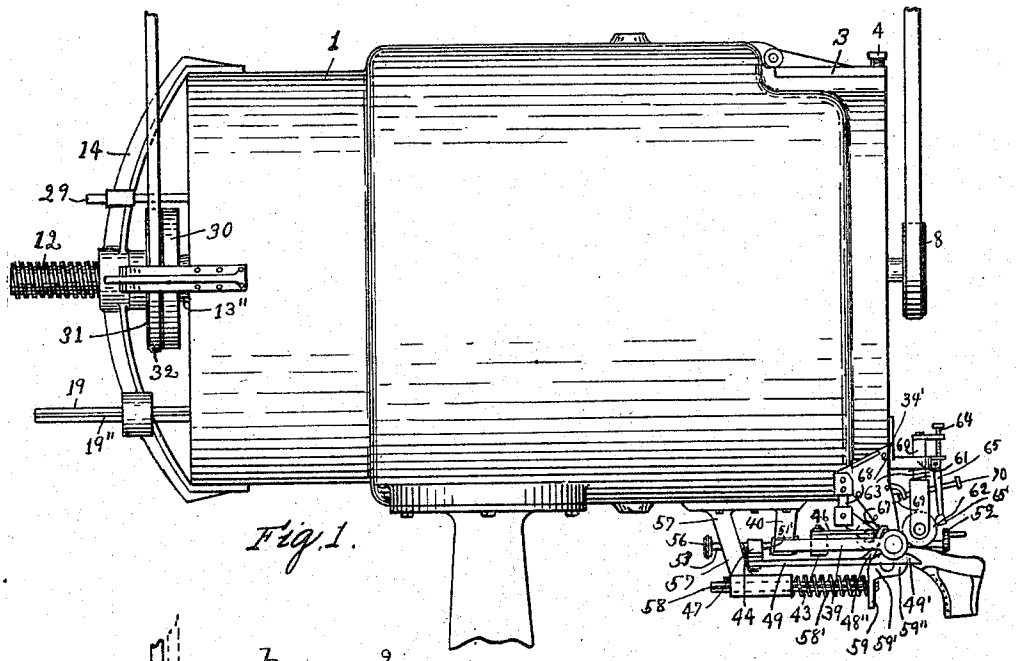


Fig. 1.

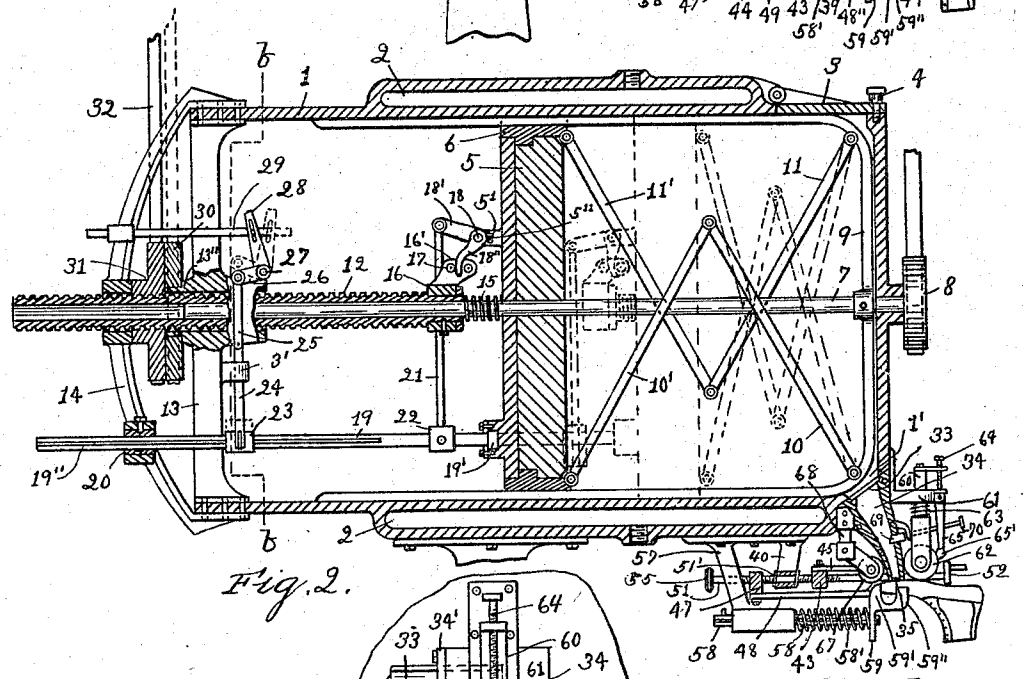


Fig. 2.

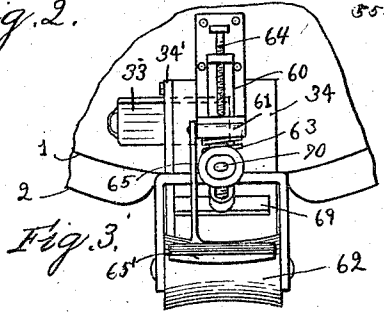


Fig. 3.

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2 SHEETS—SHEET 2.

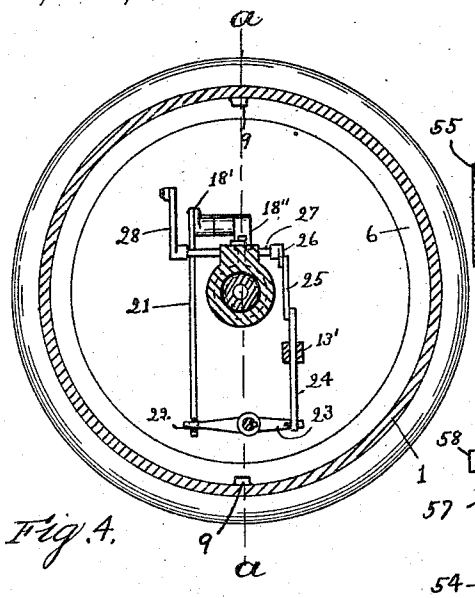


Fig. 4.

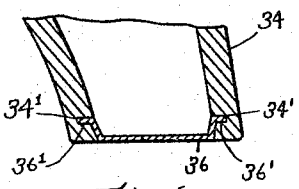


Fig. 6.

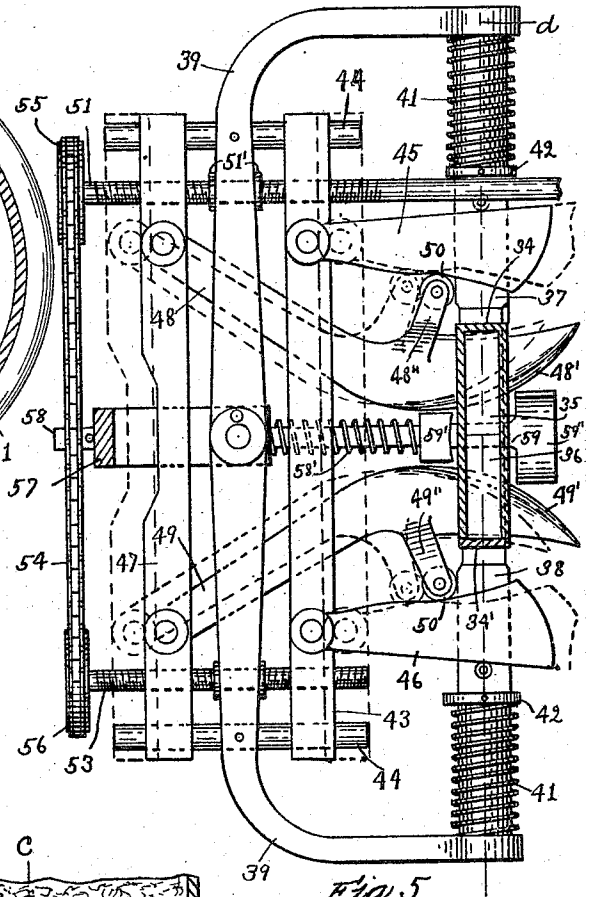
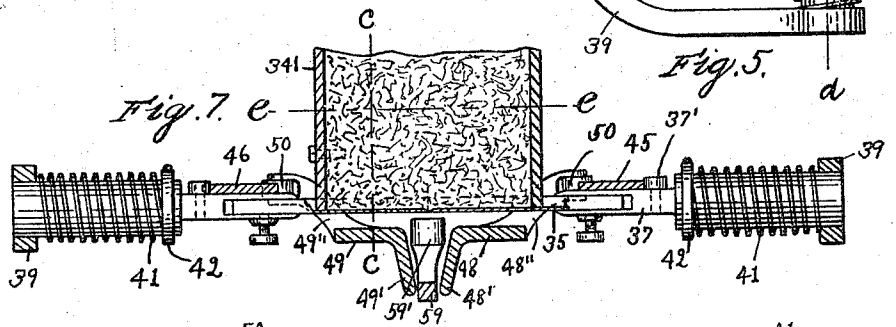


Fig. 5.



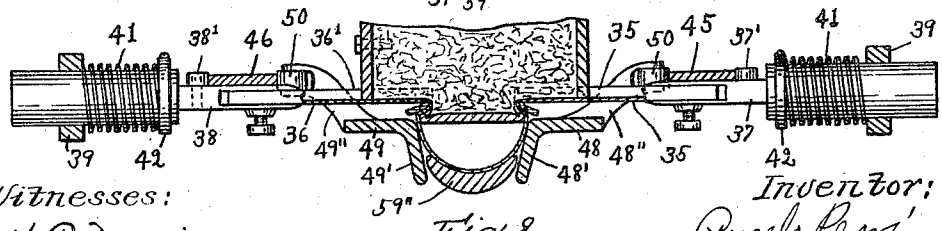


Fig. 8.

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UNITED STATES PATENT OFFICE.

ANGELO PERRI, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SHOE-FILLING MACHINE.

1,186,602. Specification of Letters Patent. Patented June 13, 1916.

Application filed October 19, 1906. Serial No. 339,647.

To all whom it may concern:

Be it known that I, ANGELO PERRI, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Shoe-Filling Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a machine for filling the space which is ordinarily formed between the inner sole and the outer sole of a shoe in the process of manufacture, said space being surrounded by the stitch-receiving lip of the innersole and the upturned edges of the upper and welt in a Goodyear welt shoe, and said space being surrounded by the welt which is attached to the outersole in McKay sewed, imitation Goodyear welt shoes. In the case of the Goodyear welt shoes the filler is placed on the inner sole, and, in the case of the McKay sewed shoes, on the outer sole, before the outersole is attached.

The invention will be described in connection with a machine for filling Goodyear welt shoes, but it should be understood that by making slight obvious changes it may be used on McKay shoes.

In filling the insoles of shoes preparatory to laying the outersoles it has been customary in some cases to mix ground cork, leather trimmings or other fine granular material with cement to form a paste. In other cases a filler comprising ground cork or other base held together by a binder, which has the property of softening when heated, has been used. In any case, however, irrespective of the nature of the filler it has been customary to mix and apply said filler by hand, a trowel or spatula being the tool commonly used.

In order to do away with the slow and laborious method outlined above one object of this invention relates to the provision of automatic means for permitting filler to be delivered to a shoe. This object may be attained by providing a receptacle for filler and means for putting said receptacle into communication with the cavity of a shoe upon presentation of the shoe in proper position; and in the illustrated embodiment of the invention the means whereby communication is governed is operable by the shoe itself as it is moved into position and withdrawn therefrom.

Since the sizes of shoes and hence the dimensions of the cavities to be filled, vary considerably it is advantageous that a machine be provided in which the amount of filler discharged shall vary directly with the size of the shoe presented to be filled. In the illustrated embodiment of the invention this result is attained by providing a plurality of levers having shoe-engaging faces, said levers serving through suitable mechanism to control the size of the outlet from the receptacle. With this construction the amount of filler being discharged at any given instant varies with the position of the levers, said position varying in turn with the width of the shoe which is being presented to the shoe-engaging faces, while the whole amount discharged upon any given shoe depends also upon its length, since the longer the shoe the longer the time during which the levers are held in operative position.

Inasmuch as shoes of the same size vary in the contour of the insole, there is also a corresponding variation in the outline of the lip thereof and consequently of the area to be filled. It is obviously desirable to cause the filler to be delivered to all parts of the cavity within the lip of the insole and at the same time prevent the delivery of any outside the lip thereof, since otherwise the filler might become lodged on the welt and thereby interfere with the proper attachment of the outer sole.

Another object of my invention, then, relates to the provision of means for controlling the area to which the filler is delivered. This may be conveniently accomplished by providing adjusting means whereby the effective throw of the shoe-engaging levers may be varied in different portions of their paths. Although in the illustrated embodiment this means for controlling the area to which the filler is delivered is shown in connection with the means for controlling the outlet from the receptacle, it should be understood that the connection between these means is in no wise essential.

It is advantageous that an even and uni-

form pressure be maintained upon the filler particularly when said filler is of a thick paste-like consistency; and inasmuch as the filler is not continuously discharged it is also advantageous that the pressure be yieldingly exerted so that during the intervals that the outlet to the receptacle is closed the parts of the device may not be subjected to excessive strain.

A further object of this invention, then, relates to the provision of yielding means for advancing the piston together with means for periodically compressing the yielding means as the piston is advanced. It will be apparent that by so constructing the device that the periodic actions of the compressing means are sufficiently frequent the yielding means may be caused to exert an approximately uniform pressure throughout the stroke of the piston.

Looking at the above feature of the invention from another standpoint it may be said to comprise a spring for advancing the plunger together with mechanism for compressing said spring and means whereby the compressing mechanism periodically comes to rest until more work is fed to the machine and a portion of the filler discharged whereupon the compressing mechanism is again thrown into operation. The machine may therefore be allowed to stand idle, the spring, however, remaining sufficiently compressed so that by merely feeding more work to said machine the piston will be advanced and the compressing mechanism will take up its periodic action once more.

Another object of this invention relates to means for pressing the filler against the insole. This may conveniently be accomplished by providing a roller which shall traverse the filler after it has been delivered to the shoe and which shall shape said filler and pack it into the space between the inseams. It may be that a plurality of such rollers are desirable, and in the illustrated embodiment two are shown, one which acts while the shoe is being presented to the machine and the other while it is being withdrawn therefrom.

Another object of this invention relates to a support, or guide for the shoe to aid in maintaining it in proper position while it is being presented to and withdrawn from the machine.

These and other features of the invention including certain details of construction and combinations of parts will be explained in connection with the following description of a machine and will be pointed out more definitely in the claims.

For an understanding of my invention reference is made to the accompanying drawing, in which,

Figure 1 is a side elevation of my apparatus. Fig. 2 is a central vertical section thereof on line *a*—*a* of Fig. 4. Fig. 3 is a front elevation of the delivery apparatus. Fig. 4 is a cross section on the line *b*—*b* of Fig. 2. Fig. 5 is an enlarged plan view partly in section on the line *e*—*e* of Fig. 7 of the nozzle gate operating mechanism. Fig. 6 is a sectional view on the line *c*—*c* of Fig. 7. Figs. 7 and 8 are sectional views on the line *d*—*d* of Fig. 5.

The mechanism for exerting pressure upon the filling material in the receptacle will first be described. It should be understood, however, that said mechanism is shown merely because the illustrated machine is adapted to handle a thick viscous substance and that this mechanism may be dispensed with if desired when a substance which will flow by gravity is employed.

The receptacle or magazine 1 for containing the filling material is preferably made in the form of a cylinder having a chamber of uniform diameter, and a surrounding steam jacketing chamber 2 is provided in its walls, so that its contents may be readily heated and kept hot. The cylinder is provided with a filling opening, which is adapted to be closed by means of a cover 3 and locked by the screw 4. A piston 5 is provided within the cylinder, which is encircled by an annular ring 6, said ring being swiveled on the piston and fitted in the cylinder chamber, so that it may be rotated thereon while it is being pressed forward by the piston and is acting as a part thereof. A shaft 7 is rotatably mounted in the front end of the cylinder, and passes through said piston 5, said shaft having a driving pulley 8 on its outer end. A stirrer frame 9 is secured to said shaft closely adjacent its front end, said frame preferably being of U-shape and adapted to fit the front end and sides of the cylinder. As shown in Fig. 4, the ring 6 is provided with diametrically opposite notches in its periphery through which the parallel portions of frame 9 pass so that said ring may slide with relation thereto but must rotate therewith. Two pairs of stirrer blades 10, 10′, and 11, 11′ are provided which are jointed together at adjacent ends, the opposite ends of blades 10 and 11 being respectively pivoted to the frame 9 at its opposite points on the front end thereof and the opposite ends of blades 10′, 11′ being respectively pivoted at diametrically opposite points on the annular ring 6. Said pairs of blades lie at opposite sides of the shaft 7, as shown, and are adapted to be folded or extended according to the position of the piston 5.

A screw-threaded rod 12 is slidably mounted in a pair of spider frames 13 and 14, which are secured in the rear open end of the cylinder, said rod being arranged centrally of the cylinder in alinement with

shaft 7, and having a central bore adapted to permit shaft 7 to telescope therewith. A spring 15 is provided between the inner or front end of the rod 12 and the rear end of the piston 5, said spring encircling the shaft 7. A collar 16 is rigidly mounted on the inner end of the rod 12, said collar having an upwardly extending bracket 16′ on which a pair of rolls 17 are mounted adjacent each other. A bracket 5′ is formed on the rear end of the piston 5 and a shaft 18 is journaled therein, said shaft having an arm 18′ and a forked arm 18″ secured thereto at approximately right angles. The forks of arm 18″ extend on opposite sides of bracket 16′ between rolls 17, as shown in Figs. 2 and 4. A rod 19, is rotatably mounted in and secured, at its front end, by a swivel connection 19′ to the rear side of the piston 5 and is rotatably mounted at its rear end in the frame 14. A link 21 is pivoted at its upper end to the crank arm 18′, and is loosely pivoted at its lower end to a crank arm 22 which is rigidly mounted on the shaft 19. A crank arm 23 is splined on the shaft 19, the groove 19″ running nearly the entire length of said shaft, and through a sleeve 20 which provides a bearing for said shaft in frame 14. A link 24 is loosely pivoted at its lower end to the end of the arm 23 and extends upwardly through and is slidably fitted in a bracket 3′ formed on the frame 13, and the upper end of said link 24 is pivoted to a link 25 which in turn is pivoted to an arm 26, secured on a shaft 27, the latter being rotatably mounted in the spider 13. An arm 28 is secured to shaft 27 at right angles to arm 26, and a belt shifting bar 29 is pivotally connected to the end of said arm 28, said bar being slidably mounted in the spider frame 14. A loose pulley 30 is mounted on a hub 13″ formed on the spider 13 and a pulley 31 is mounted on rod 12 between the end of said hub and the spider 14, so that it is held from axial movement, and is provided with threads which engage the threads of said rod 12. A belt 32 is adapted to run on both pulleys.

The operation of the device thus far described is as follows:—Assuming that the parts are in the position of Fig. 2, the pulley 31 will then be driven to force the rod 12 inwardly or toward the piston 5. This action will cause the spring 15 to be compressed, so as to force the piston toward the head of the cylinder. When the spring 15 has become compressed, as shown, for example, in the dotted position of Fig. 2, the arm 18″ will be thrown down to a position similar to that of said dotted position by the forward movement of the bracket 16′ the rear roll 17 of which engages therewith. This movement causes the arm 18′ and link 21 to be forced downwardly, in turn causing the arm 22 to be swung down and the shaft 19 to be rotated swinging arm 23 upwardly and lifting the link 24, so as to move the arms 26 and 28 to the dotted position of Fig. 2, the latter acting to draw forward the belt shifting bar 29, so as to shift the belt 32, which was running on the pulley 31, onto the loose pulley 30. The forward movement of the rod 12 is thus temporarily arrested after the spring 15 has been placed under sufficient compression to force forwardly the piston 5 a distance equal to that which rod 12 was advanced. As the piston 5 is forced forwardly away from the front end of the rod 12, the arm 18′ will be gradually raised to the full line position of Fig. 2, drawing the link 21 upwardly, and through the intermediate mechanism, forcing the belt shifting bar 29 rearwardly, so as to shift the belt 32 onto the pulley 31, causing the advancing operation above described to be repeated, so that a sufficiently even pressure is maintained on the piston during the entire process of forcing the filler from the cylinder. It will be seen that the more frequent the periodic compressions of the spring, the more nearly will a uniform pressure be exerted upon the piston, and that said frequency can be controlled by properly positioning the levers which shift the belt. During this operation the stirrer may be continuously rotated and as the piston 5 is advanced, the blades thereof will be gradually folded together, as indicated in the dotted line position of Fig. 2. This operation may continue until the cylinder is empty and then the piston may be withdrawn by reversing the pulley 31, so as to withdraw rod 12, causing bracket 16′ to draw on lever 18″, the latter being drawn against a stop 5″ on bracket 5′.

The mechanism for exerting pressure upon the filling material having thus been described, the means for causing said material to be delivered to a shoe will now be taken up.

The cylinder 1 is provided with a discharge opening 1′, in its lower side and at its front end, which is adapted to be closed by a gate 33 and a nozzle 34 is secured to said cylinder in coincidence with said opening and extends downwardly therefrom, so that when said gate 33 is open the material will be discharged therein. Said nozzle is oblong in cross section, as shown in Fig. 5, its length from right to left being much greater than its width from front to rear, and the discharge end thereof being approximately in a horizontal plane. A pair of horizontally disposed sliding-gates or valve members 35 and 36, said gates or members forming a valve, are mounted in grooves 34′ formed in the lower end of the nozzle, on the inner side thereof, said gates or valve members having upwardly and outwardly extending edge flanges, those of the

member 36 being shown at 36′, which are located respectively in said grooves, and hold the gates or valve members so that their under sides are approximately flush with the end edges of the nozzle, as shown in Fig. 6. Said gates or valve members 35 and 36 are oppositely disposed and adapted to meet at their front edges in the middle of the nozzle to close the passageway therethrough, said front edges being beveled from their under sides to form knife edges. The opposite ends of said gates or valve members 35 and 36 are adjustably mounted and secured in sockets formed in the adjacent ends of a pair of oppositely disposed rods 37 and 38, respectively, which are slidably mounted in the ends of a U-shaped bracket 39, as shown in Figs. 5 and 7, said bracket being rigidly secured to the cylinder 1 by means of a bracket 40, as shown in Figs. 1 and 2. Springs 41 are provided on each valve rod 37 and 38, between the bracket 39 and collars 42, which are adjustably secured on said rods, so that said springs may act in opposite directions to move said gates or valve members to their closed positions. A cross bar 43 is slidably mounted upon a pair of guide rods 44, 44 which are rigidly mounted in the bracket 39 and a pair of cams 45, 46 are pivotally mounted at their rear ends on said cross bar 43, said cams extending forwardly, resting upon the valve rods 37 and 38, respectively, and bearing against abutments 37′, 38′ rigidly mounted in said rods. A cross bar 47 is also slidably mounted upon the front ends of rods 44, 44, in the rear of the bracket 39, and a pair of operating levers 48, 49, are pivotally connected at their rear ends to said cross bar 47. Said operating levers extend forwardly, convergently and then divergently, so as to provide oppositely disposed, convex, shoe-engaging faces 48′, 49′. The portions of said levers bearing said faces lie beneath and adjacent the end of nozzle 34, and said levers are provided with oppositely disposed arms 48″, 49″, which extend obliquely upward in position to engage the cams 45 and 46, respectively, said arms being provided with friction rolls 50 at their ends which bear directly against the adjacent edges of said cams. An adjusting screw 51, having a hand wheel 52 at its front end, is journaled in bracket 39 and held from longitudinal movement therein by collars 51′, and is also threaded in the adjacent ends of cross bars 43 and 47, the threads which engage one cross bar being right hand and those which engage the other being left hand, so that when said screw is turned, said cross bars, will be moved in opposite directions. In order that the movement of said cross bars upon the guide rods 44, 44 may be even and may not bind, a similar screw 53 having similar right and left threads is threaded in the opposite ends of the bars 43 and 47, and also has a swivel connection with bracket 39. Said screws 51, 53, are adapted to be driven simultaneously by means of a chain 54, which passes over sprockets 55, 56 respectively mounted upon said screws 51, 53. With this arrangement, by turning the screw 51, the points of engagement of the arms 48″, 49″ with the cams 45, 46 may be varied.

A bracket arm 57 extends from the cylinder and a rod 58 is slidably mounted in the end thereof and has a spline thereon to hold it from turning, and a spring 58′ is interposed between arm 57 and a shoe support 59, which is mounted on the front end of said rod 58. Said support 59 is provided with an upright arm 59′, having a concave face on its front side adapted to receive the end of the toe of a shoe, and to hold the same in line with said rod 58. Said support 59 is also provided with a forwardly and upwardly extending arm 59″, which is provided with a forwardly extending transversely concave face on its upper end, adapted to receive the upper side or vamp portion of the shoe as it is held against the arm 59′. The central line of said rod 58, and the middle line of the faces on said arms, lie in the central vertical plane of the nozzle 34 and cylinder 1. Said supporting arms 59′, 59″ also lie midway between and closely adjacent said operating levers 48, 49.

A vertically movable rod 60 is mounted in a bracket 61 in front of nozzle 34 and a roll 62 is supported on the lower end of said rod in position to press on the bottom of a shoe as it is held in support 59. A spring 63 acts to press said roll 62 downwardly and a stop screw 64 acts to limit said downward movement. An arm 65 bearing a felt pad 65′ at its lower end is pivotally supported on bracket 61, said pad being adapted to apply a lubricant to the surface of roll 62, to prevent the latter from sticking to the filling material. A roll 67 is rotatably mounted upon an arm 68, which is vertically adjustable in a socket formed in the bottom of the cylinder, said roll being located in the rear of the nozzle 34. Both rolls 62 and 67 are held approximately tangent to the plane of the end edges of the nozzle. A regulating gate 69 is provided in the nozzle approximately midway between the gate 33 and the end of the nozzle, said gate 69 being adapted to be adjusted by stem 70.

The operation of the above described apparatus is as follows: The cylinder having been filled with suitable filling material, the spring 15 being under tension and the gates 33 and 69 opened, the shoe is placed bottom side up in the guiding support 59, so that its toe is pressed against the face of arm 59′, and its vamp is resting on the face of

arm 59″ while its bottom is pressed against the end of the nozzle, as shown in Figs. 1, 2 and 8. The shoe is then pressed rearwardly or inwardly, and as it is moved in this direction the edges or sides of the shoe, adjacent the welt, engage the faces 48′, 49′ of the operating levers 48, 49 and cause said levers to be swung apart. The rolls 50 on said levers engage the cams 45 and 46 and swing them correspondingly and they in turn move the holder rods 37 and 38 in opposite directions opening the gates or valve members 35 and 36 approximately to the same extent. The parts are so adjusted that these gates or valve members will be opened just as soon as the front end of the cavity in the shoe is beneath the end of the nozzle, and, as the shoe is pressed rearwardly, they will be opened still farther, and, as the width of the cavity corresponds to the width of the shoe, their front edges will at all times be approximately coincident with the inner side of the projection which surrounds and forms the cavity, as shown in Fig. 8. The shoe is pressed rearwardly until the cavity therein has been passed beneath the nozzle and then it is withdrawn, so that the gates or valve members 35, 36 will be closed by the springs 41. During this movement the filling material will be forced into the shoe cavity, and as the projecting edges of the welt upper and lip are held firmly against the end of the nozzle and the under sides of the gates or valve members, the material will not only be discharged into the shoe cavity alone, but it will be held from escaping therefrom. The rolls 62 and 67 serve to press down and level the filling material even with the edges of the welt and upper, during the inward and outward movement of the shoe, said rolls preferably being slightly concaved longitudinally, as shown with respect to roll 62, in Fig. 3, to give the filling a slightly rounded surface.

The support 59 not only assists the operator in holding the shoe up against the end of the nozzle, but it also serves to guide the shoe during the inward movement thereof, so that the operator is more likely to hold the shoe straight and less likely to press it unequally against one lever or the other, although such unequal pressure will not materially affect the position of the front edges of the valves with relation to the sides of the cavity.

In practice it is necessary to adjust the relative positions of the operating levers and cams according to the shape of shoes which are being filled. For example, with a wide-toed shoe the levers 48, 49 would be engaged much nearer the ends thereof than with a narrow toed shoe. With the wide toed shoe the valve must also be opened rapidly, while with the narrow-toed shoe it must be opened more gradually as the shoe is pushed inward. For these reasons the above described means for adjusting the relative positions of said levers 48, 49, and the cams 45, 46 which they engage, is provided. That is, when screw 51 is turned to draw back the levers 48, 49 for a broad toed shoe, the cams 45, 46 will be moved forwardly, so that the rolls 50 will engage the cams nearer their pivots than before, with the result that a certain movement of the operating levers will swing the cams farther and therefore open the valve faster than it would when in the position previous to said adjustment. The faces of cams 45 and 46 are shaped according to requirements, I having ascertained that cams of substantially the configuration shown in Fig. 5 are adapted for shoes of widely varying shapes, but is is possible that under some conditions it would be necessary to employ cams of somewhat different shape than that shown.

The flow through the nozzle is regulated by the gate valve 69, and when use of the machine is to be discontinued the valve 33 is closed and the side 341 of the nozzle removed so that the interior of the nozzle may be cleaned out.

Although this invention has been shown and described in connection with a particular machine it should be understood that the machine is purely illustrative and that nothing herein contained is to be construed as limiting this invention in the scope of its application to the particular machine shown and described.

Inasmuch as there is herein disclosed the first mechanical means for filling shoes this invention is to be regarded as a pioneer invention in this art.

The details of the mechanism for exerting pressure upon the filling material and for stirring the filling material formed the subject matter of divisional application Serial No. 505,604 which has resulted in Patent No. 1,120,847.

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

1. An apparatus for filling shoes comprising a receptacle having a discharge opening, means for delivering the filling material through said opening and means for varying the width of said opening, having operating devices disposed to be engaged by the sides of the cavity to be filled, and to be moved in opposite directions according to the configuration of said sides, substantially as described.

2. An apparatus for filling shoes comprising a receptacle having a discharge opening, means for delivering the filling material through said opening, a valve for varying the width of said opening, and operating devices for said valve disposed to be en-

gaged by the shoe, as the latter is passed across said opening, to open said valve to an extent corresponding to the width of the cavity in the shoe, substantially as described.

3. An apparatus for filling shoes comprising a receptacle having a discharge opening, means for delivering the filling material through said opening, a valve for varying the width of said opening, and operating devices for said valve disposed to be engaged by the shoe, as the latter is passed across said opening, to open said valve to an extent corresponding to the width of the shoe and means for automatically closing said valve, substantially as described.

4. An apparatus for filling shoes comprising a nozzle, the end of said nozzle being shaped to correspond to the transverse shape of the shoe bottom so that the sides of the shoe cavity to be filled may be held thereagainst as the shoe is passed beneath the end thereof, means for forcing the filler through said nozzle, and means for varying the width of the opening therethrough, substantially as described.

5. In an apparatus for filling shoes, a nozzle and means for forcing the filling material through said nozzle, a valve for closing said nozzle slidable transversely thereof approximately flush with its discharge end, said discharge end being shaped to permit the portion of the shoe bottom about the cavity therein to be filled to be held thereagainst and means for opening the valve to an extent corresponding to the width of the cavity, substantially as described.

6. An apparatus for filling shoes comprising a receptacle having a discharge opening, a valve comprising members movable in opposite directions to close said opening and means for simultaneously opening said members to an extent corresponding to variations in the width of the cavity to be filled, substantially as described.

7. An apparatus for filling shoes comprising a receptacle having a discharge opening, a valve comprising members movable in opposite directions to close said opening, and operating devices for said members disposed simultaneously to engage opposite sides of the shoe and movable in opposite directions to open said valves simultaneously, substantially as described.

8. In an apparatus for filling shoes, a nozzle and means for forcing the filling material through said nozzle, a valve comprising members slidable transversely of the nozzle in opposite directions and meeting at an intermediate point thereof to close the same, and independent operating devices for each member disposed to be engaged by opposite sides of a shoe adjacent the cavity therein to be filled, substantially as described.

9. An apparatus for filling shoes comprising a nozzle, and means for forcing the filling material therethrough, means for holding the shoe bottom against the discharge end of the nozzle while the shoe is moved across said end, and means for simultaneously varying the size of the passageway through the nozzle, substantially as described.

10. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, means for holding the bottom of the shoe against the discharge end of the nozzle as the shoe is moved across said end, and means for varying the size of the passageway through the nozzle having operating devices adapted to be engaged by the sides of the shoe during its guided movement, substantially as described.

11. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, means for guiding the shoe while its bottom is held against and moved across the discharge end of the nozzle, and means for varying the size of the passageway through the nozzle having operating devices adapted to be engaged by the sides of the shoe during its guided movement, substantially as described.

12. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, means for guiding the shoe while its bottom is held against and moved across the discharge end of the nozzle, a pair of closing devices for varying the size of the passageway through the nozzle and movable in opposite directions to close the same, and independent operating devices for each of said closing devices disposed to be engaged by opposite sides of the shoe during its guided movement, substantially as described.

13. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, a valve comprising a pair of spring actuated gates slidable transversely of the nozzle in opposite directions and meeting at an intermediate point thereof to close the same, and shoe engaging devices disposed at opposite sides of the nozzle and in operative connection with said gates to cause separation thereof against the action of their springs corresponding to the extent which said shoe engaging devices are separated by passing a shoe therebetween, substantially as described.

14. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, a spring actuated gate valve slidable transversely of the nozzle to vary the size of the passageway therethrough, an operating lever having a shoe-engaging face, and a cam lever

disposed to be engaged by said operating lever and to be moved thereby into engagement with said valve to open the same, substantially as described.

15. An apparatus for filling shoes comprising a nozzle and means for forcing the filling material therethrough, a gate valve to vary the size of the passageway therethrough, an operating lever having a shoe-engaging face, a cam lever disposed to be engaged by said operating lever and to be moved thereby into engagement with said valve to open the same, and means for varying the relative position of said levers to vary the extent to which said valve is opened for a certain movement of said operating lever, substantially as described.

16. An apparatus for filling shoes comprising a nozzle, and means for forcing the filling material therethrough, a spring actuated gate valve to vary the size of the passageway therethrough, two independent supports having an operating lever and a cam lever pivotally mounted thereon, respectively, said operating lever having a projection to engage said cam lever to cause the same to move said valve against the action of its spring, and means for adjusting said supports to vary the point of engagement between said operating and said cam lever, substantially as described.

17. An apparatus for filling shoes comprising a nozzle, means for forcing the filling material therethrough, a plurality of spring actuated gates to close the same, and a plurality of operating devices for said gates having shoe-engaging faces adapted to be separated by forcing the shoe therebetween, substantially as described.

18. An apparatus for filling shoes comprising a nozzle, and means for forcing the filling material therethrough, a pair of oppositely disposed gates, means for forcing them toward each other to close said nozzle at its end, a pair of independent supports, a pair of operating levers pivotally mounted on one of said supports and a pair of cam levers pivotally mounted on the other support, said operating levers extending across the nozzle adjacent its end and having oppositely disposed shoe-engaging faces between which the shoe is forced to move their respective levers into engagement with said cam levers at intermediate points therein, engaging devices between said cam levers and said gates, whereby separation of said operating levers will cause said gates to be opened, and means for adjusting one of said supports with relation to the other, substantially as described.

19. An apparatus for filling shoes comprising a nozzle, and means for forcing the filling material therethrough, a pair of oppositely disposed gates, spring actuated means for forcing them toward each other to close said nozzle at its end, a pair of independent supports, a pair of operating levers pivotally mounted on one of said supports and a pair of cam levers pivotally mounted on the other support, said operating levers extending across the nozzle adjacent its end and having oppositely disposed shoe-engaging faces between which the shoe is forced to move their respective levers into engagement with said cam levers at intermediate points therein, engaging devices between said cam levers and said gates whereby separation of said operating levers will cause said gates to be opened, and means for moving said pivotal supports in opposite directions to vary the extent of opening of said gates, substantially as described.

20. An apparatus for filling shoes comprising a nozzle, and means for forcing the filling material therethrough, a pair of oppositely disposed gates, spring actuated means for forcing them toward each other to close said nozzle at its end, a pair of independent supports, a pair of operating levers pivotally mounted in one of said supports and a pair of cam levers pivotally mounted on the other support, said operating levers extending across the nozzle adjacent its end and having oppositely disposed shoe-engaging faces between which the shoe is forced to move their respective levers into engagement with said cam levers at intermediate points therein, engaging devices between said cam levers and said gates, whereby separation of said operating levers will cause said gates to be opened, and adjusting devices for simultaneously moving said supports in opposite directions to vary the extent of opening of said gates, substantially as described.

21. A shoe filling apparatus comprising a nozzle and means for forcing the filling material therethrough, as the shoe is passed beneath the end thereof, and a roll adjacent the nozzle for leveling the material after it has been discharged into the shoe cavity, substantially as described.

22. A shoe filling apparatus comprising a nozzle and means for forcing the filling material therethrough, as the shoe is passed beneath the end thereof, and a pair of rolls respectively disposed in front of and behind said nozzle for leveling the material after it is delivered, on the inward and outward movement of the shoe, substantially as described.

23. A shoe filling machine, having in combination, mechanism constructed and arranged to deliver a layer of viscous filling material on the bottom of a shoe, and means for causing said mechanism to operate upon presentation of a shoe in operative relation to said mechanism.

24. A shoe filling machine, having in com-

bination, a receptacle for filling material, said material comprising a comminuted solid the particles of which are held together by a sticky binder, and automatic means for causing said machine to deliver a quantity of said filling material.

25. A shoe filling machine, having in combination, a receptacle for filler, automatic means for causing said machine to deliver filler, and means for varying the quantity delivered by said automatic means.

26. A shoe filling machine having, in combination, a receptacle for viscous filling material, said receptacle being provided with means for heating said filling material to render it sluggishly fluid, and means for causing a quantity of said filling material to be delivered in a layer upon the bottom of a shoe presented in operative relation to said receptacle.

27. A shoe filling machine, having in combination, a receptacle for filler, means becoming operative upon presentation of a shoe in operative relation to said machine for causing said machine to deliver filler to a shoe, and means for varying the quantity delivered by said first named means.

28. A shoe filling machine having in combination, a receptacle for filler, means located in said receptacle for stirring said filler, and means operated by presentation of a shoe for causing a quantity of the filler to be delivered to said shoe.

29. A shoe filling machine having, in combination, a receptacle for filling material, said receptacle being provided with an outlet and with a heating chamber for increasing the temperature of said receptacle and thereby softening said filling material, means located in said receptacle for stirring said filling material, a valve normally closing said outlet, and means operated by presentation of a shoe in operative relation to said machine for opening said valve.

30. A shoe filling machine having in combination, a receptacle for filler, automatic means for causing a quantity of said filler to be delivered to a shoe, and means for adjusting said automatic means.

31. A shoe filling machine having in combination, a receptacle for filler, and means for causing said filler to be delivered to a shoe in a quantity determined by the size of said shoe.

32. A shoe filling machine having in combination, a receptacle for filler, means for causing said filler to be delivered to a shoe in a quantity determined by the size of said shoe, and means for varying the quantity delivered to shoes of the same size.

33. A shoe filling machine having in combination, a receptacle for filler, means becoming operative by contact with the shoe for causing a quantity of filler to be delivered to said shoe, and means for varying the point at which said shoe contacts with said contacting means.

34. A machine for filling shoes, having in combination, a receptacle for filler and means for causing said filler to be delivered to a shoe within the welt thereof and for preventing said filler from being delivered upon said welt.

35. A machine for filling shoes, having in combination, a receptacle for filler, means for causing said filler to be delivered to a shoe, and means for controlling the area to which said filler is delivered.

36. A machine for applying filler to the insoles of shoes, having in combination, a receptacle for filler and means dependent upon the contour of the insole for controlling the area to which the filler is delivered.

37. A machine for filling shoes, having in combination, a receptacle for filler, and means becoming operative upon presentation of a shoe for causing a quantity of said filler to be delivered to the bottom of said shoe within the welt thereof.

38. A machine for filling shoes, having in combination, a receptacle for filler, means becoming operative upon presentation of a shoe for causing a quantity of said filler to be delivered to said shoe, and means for controlling the area to which said filler is delivered.

39. A machine for applying filler to the insoles of shoes, having in combination, a receptacle for filler and means dependent upon the contour of the insole for controlling the area to which filler is delivered, said means becoming operative upon presentation of a shoe.

40. A machine for filling shoes, having in combination, a receptacle for filler, and means becoming operative upon contact with a shoe for causing a quantity of said filler to be delivered to the bottom of said shoe within the welt thereof.

41. A machine for filling shoes, having in combination a receptacle for filler, means becoming operative upon contact with a shoe for causing a quantity of said filler to be delivered to said shoe, and means for controlling the area to which said filler is delivered.

42. A machine for applying filler to the insoles of shoes, having in combination, a receptacle for filler and means dependent upon the contour of the insole for controlling the area to which filler is delivered, said means becoming operative upon contact with a shoe.

43. A machine for filling shoes, having in combination, a receptacle provided with an outlet, a valve controlling the flow through said outlet, means for forcing filling material toward the outlet, and means adapted

to become operative upon presentation of a shoe for opening said valve.

44. A machine for filling shoes, having in combination, a receptacle for filler and automatic means for progressively delivering the filler to a shoe and automatically varying the width of the stream of filler with the width of the shoe between the inseams thereof.

45. A machine for filling shoes, having in combination, a receptacle for filler and automatic means for progressively delivering the filler to a shoe and varying the width of the stream of filler to correspond to the width of the shoe between the inseams thereof.

46. A machine for filling shoes, having in combination, a receptacle for filler, said receptacle being provided with an outlet, means for normally closing the outlet to said receptacle, means for forcing said filler toward said outlet, and means operated by presentation of the shoe for opening said closing means.

47. A machine for filling shoes, having in combination, a receptacle for filler having an outlet, means for normally closing said outlet, and a plurality of operating devices for said closing means, said devices having shoe-engaging faces adapted to be separated by forcing the shoe therebetween.

48. A machine for filling shoes, having in combination, means for delivering filling material to the cavity in the bottom of a shoe, and means for packing said material into said cavity.

49. A machine for filling shoes, having in combination, means for delivering filling material to the insole of a shoe and for limiting it to the area within the inseam, and means for pressing said material against said insole.

50. A machine for filling shoes, having in combination, a receptacle for filler, said receptacle being provided with a nozzle, a valve controlling the flow of filler through said nozzle, means becoming operative upon presentation of a shoe for opening said valve, and means for pressing said filler against said shoe.

51. A machine for filling shoes, having in combination, means for delivering filler to a shoe and adjustable means for pressing said filler against said shoe.

52. A machine for filling shoes, having in combination, means for delivering filler to a shoe, and yieldable means for pressing said filler against said shoe.

53. A machine for filling shoes, having in combination, means for delivering filler to a shoe, and means for rolling said filler into place.

54. A machine for filling shoes, having in combination, means for delivering filler to a shoe and a concave roller for shaping said filler.

55. A machine for filling shoes, having in combination, means to deliver filling material to a shoe, means to press said material against said shoe, and a support for said shoe.

56. A machine for filling shoes, having in combination, means to deliver filling material to a shoe, means to press said material against said shoe, and means for guiding said shoe as it is presented to the delivery means.

57. A machine for filling shoes having in combination, a receptacle having a discharge opening and means dependent upon the size of the shoe presented to be filled for varying the size of said opening.

58. A machine for filling shoes, having in combination, a receptacle provided with a discharge opening, a valve for varying the width of said opening and operating mechanism for said valve disposed to be engaged by a shoe as the latter is passed across said opening to open said valve to an extent corresponding to the width of the cavity in said shoe.

59. A machine for filling shoes having in combination, a receptacle having a nozzle the outline of the end of which corresponds to the outline of the bottom of a shoe, so that the sides of the cavity to be filled may be held against said nozzle as the shoe is passed across it, and means for controlling the amount of filling material passing through said nozzle.

60. A machine for filling shoes, having in combination, a receptacle provided with an outlet, a valve for closing said outlet and means for opening said valve to an extent corresponding to one dimension of the cavity to be filled.

61. A machine for filling shoes, having in combination, a receptacle, a nozzle leading from said receptacle, means for holding a shoe against the discharge end of said nozzle while the shoe is being moved across said end, and means for simultaneously varying the size of the passageway through said nozzle.

62. A machine for filling shoes, having in combination, means for delivering filler to a shoe as said shoe is presented thereto and withdrawn therefrom, means for compacting said filler during presentation of said shoe and means for compacting said filler as the shoe is withdrawn.

63. A machine for filling shoes, having in combination, a nozzle, means for delivering filler through said nozzle as a shoe is advanced and withdrawn in directions at an angle to the direction of delivery of said nozzle and a plurality of means for compacting said filler during both movements.

64. A machine for filling shoes, having in combination, means for delivering filler to a shoe and means for maintaining an approximately uniform pressure on said filler during its delivery.

65. A machine for filling shoes, having in combination, means for delivering filler to a shoe, means for maintaining an approximately uniform pressure on said filler during its delivery and means for pressing said filler against said shoe.

66. A machine of the class described, having in combination, a receptacle for filler said receptacle being provided with an outlet, means for maintaining an approximately uniform pressure upon said filler, and means becoming operative upon presentation of a shoe for causing said filler to be discharged upon said shoe.

67. A machine for filling shoes, having in combination, a receptacle for filler, said receptacle being provided with a normally closed outlet, means for exerting an approximately uniform pressure upon said filler, and automatic means becoming operative upon presentation of a shoe for opening said outlet.

68. A machine for filling shoes, having in combination, a receptacle for filler, said receptacle being provided with a normally closed outlet, a piston, a spring for advancing said piston, automatic means for periodically compressing said spring as said piston is advanced and means becoming operative upon presentation of a shoe for opening said outlet.

69. A machine for filling shoes, having in combination, a receptacle provided with a normally closed outlet, means for exerting pressure upon material contained in said receptacle and means becoming operative upon presentation of a shoe for opening said outlet.

70. A machine for filling shoes, having in combination, a receptacle provided with an outlet, a piston, resilient means for advancing said piston, and means becoming operative upon presentation of a shoe for opening said outlet.

71. A machine for filling shoes, having in combination, a receptacle provided with an outlet, a piston, a spring for advancing said piston, a valve controlling said outlet, and means becoming operative upon presentation of a shoe for actuating said valve.

72. A machine of the class described, having in combination, a receptacle provided with an outlet, means for forcing material from said receptacle, an extensible stirrer, means for operating said stirrer, and means operated by presentation of stock for controlling said outlet.

73. A machine of the class described, having in combination, a receptacle provided with an outlet, a piston in said receptacle, a stirrer located between said piston and said outlet said stirrer being capable of folding as said piston is advanced, and means for controlling said outlet.

74. A machine of the class described, having in combination, a receptacle provided with an outlet, a piston, resilient means for moving the piston, means for maintaining such movement approximately constant, and means becoming operative upon presentation of stock for opening said outlet.

75. A machine of the class described, having in combination, a receptacle, a piston, a spring for shifting the piston along the receptacle, automatic means for maintaining the tension of the spring approximately constant, and means becoming operative upon presentation of stock for causing a portion of the contents of the receptacle to be delivered.

76. A machine for handling shoe bottom filler, comprising means for supplying the filler material, said machine containing a delivery opening, means for forcing said material forward to said delivery opening, mechanism coöperating therewith for delivering the filler in a thin ribbon-like layer into the shoe, and means for gaging the width of said delivered layer to the width of the shoe bottom.

77. A machine for handling shoe bottom filler, comprising means for supplying the filler material, said machine containing a delivery opening, means for forcing said material forward to said delivery opening, mechanism coöperating therewith for delivering the filler in a thin ribbon-like layer into the shoe, and automatic means for gaging the width of said delivered layer to the width of the shoe bottom.

78. An apparatus for filling shoe-bottoms, containing a heated melting tank, having its delivery at the bottom, automatically operated closing means therefor operated by a shoe-guiding means, said shoe-guiding means, and means to spread in the shoe cavity the melted material delivered to the cavity from the melting tank.

79. An apparatus for filling shoe-bottoms, having a hopper for delivering filler material by gravity, controlling means for permitting the delivery of filler material to a shoe-bottom cavity, and a roll for pressing said material down into said cavity.

80. An insole filling machine comprising, in combination, automatic insole-filling mechanism to provide an insole with a layer of adhering filling material; and work presenting means to present an insole in operative relation to said mechanism.

81. A machine of the character described comprising, in combination, insole filling mechanism to provide an insole with a layer

of adhering filling material; and controlling means therefor operable automatically upon presentation of the work for causing said mechanism to deliver the filling material.

82. An insole-filling machine comprising, in combination, means to provide an insole with adhesive confined within the lip thereof; and a work support for the insole.

83. A machine for filling shoes, having, in combination, means for delivering filling material to the cavity in the bottom of a shoe, means for packing said material into said cavity, and means for lubricating said packing means.

84. A machine for filling shoes, having, in combination, means for delivering filling material to a shoe, means for pressing said material against said shoe, and means for lubricating said pressing means.

85. A shoe filling machine, having, in combination, a receptacle for filling material said receptacle being provided with an outlet, mechanism for controlling said outlet, said mechanism being constructed and arranged to be operated by presentation of a shoe in operative relation to said outlet, and means for adjusting said mechanism to vary the quantity of filling material discharged upon the shoe.

86. A shoe filling machine having, in combination, a receptacle for viscous filling material, said receptacle being provided with an outlet; a valve arranged to control the flow of filling material through said outlet, and a means connected with said valve movement of which opens said valve to discharge a quantity of said filling material upon the bottom of a shoe presented in operative relation to said outlet.

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

ANGELO PERRI.

Witnesses:
L. H. HAMMAN,
CYNTHIA DOYLE.

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