A. THOMA.

MACHINE FOR FILLING SHOE BOTTOMS.

APPLICATION FILED APR. 18, 1914.

1,306,727. Patented June 17, 1919.

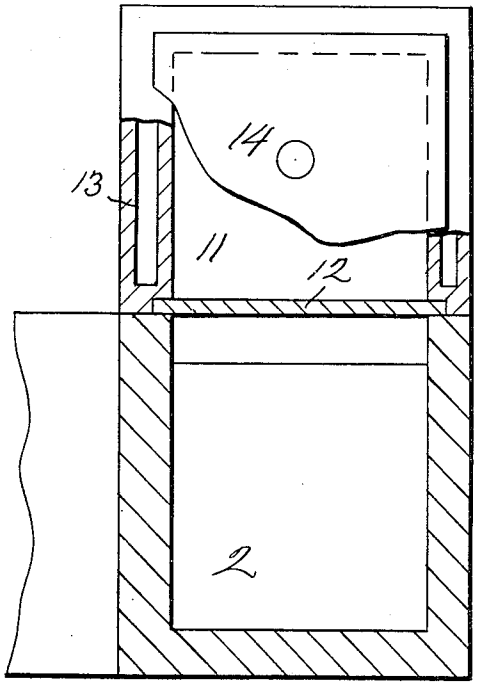


FIG. 3.

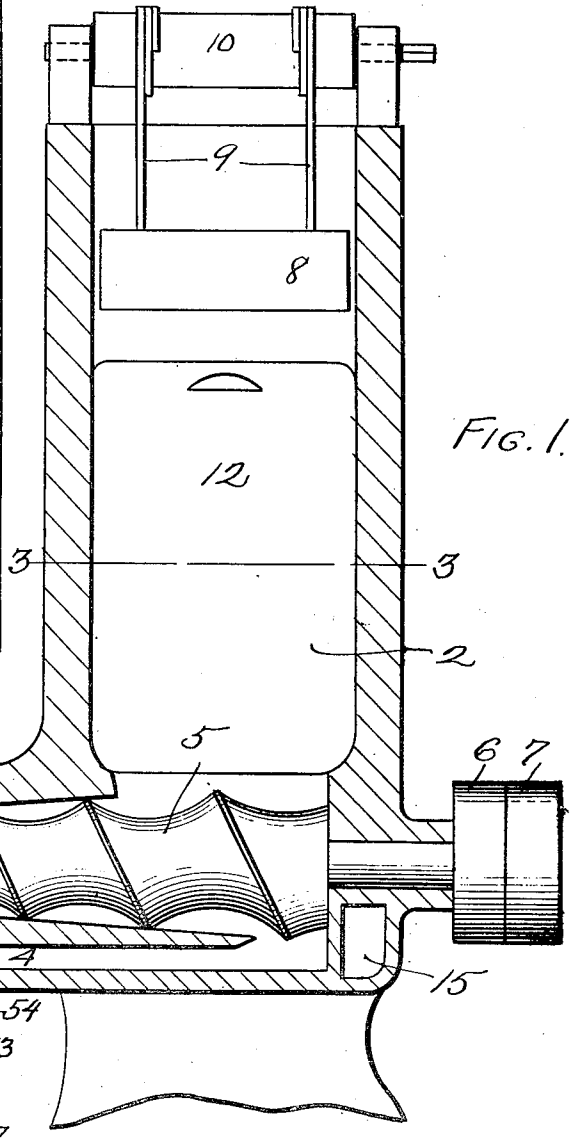


FIG. 1.

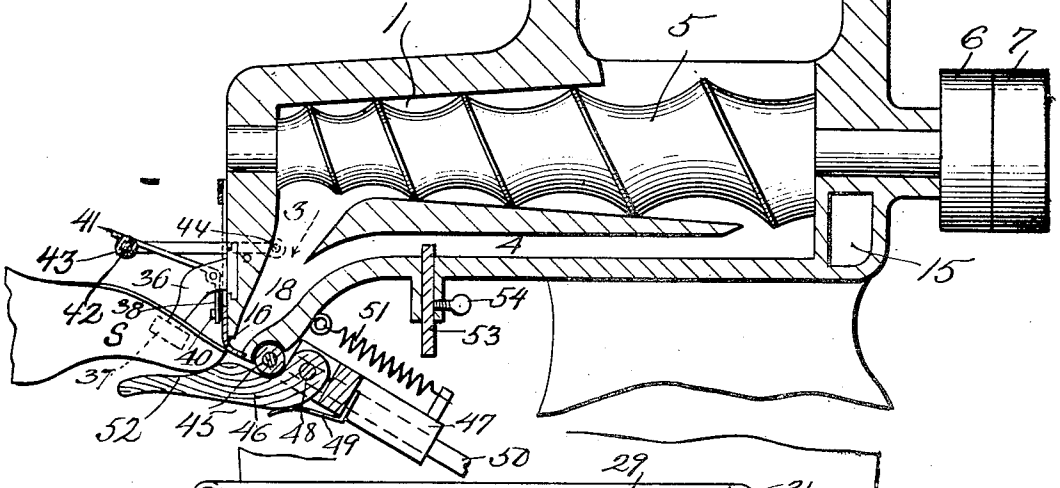
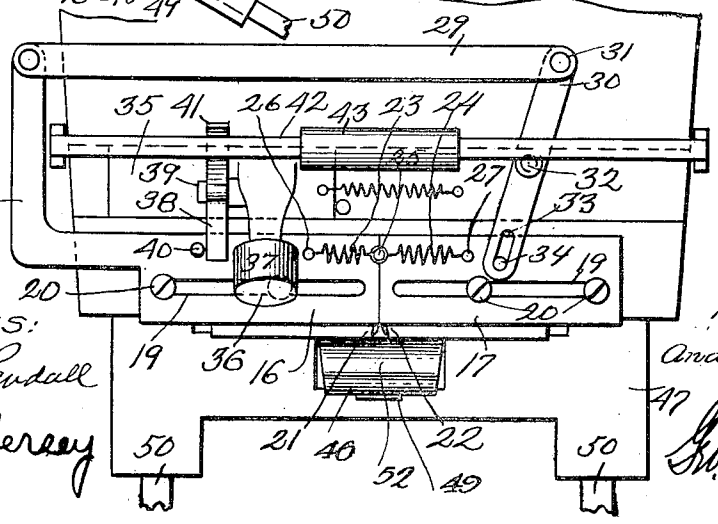


FIG. 2.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FILLING SHOE-BOTTOMS.

1,306,727. Specification of Letters Patent. Patented June 17, 1919.

Application filed April 18, 1914. Serial No. 832,946.

To all whom it may concern:

Be it known that I, ANDREW THOMA, a citizen of the United States, and resident of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Machines for Filling Shoe-Bottoms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This machine is intended to handle the same normally semi-solid shoe filler, sluggishly fluid when hot, which is covered generically by my Patent No. 832,002 of September 25, 1906, the present machine being in many respects the same as the machine of my application Serial No. 350,588, filed January 3, 1907. My present object is to make this type of machine exceedingly rapid and practical for the use of the ordinary boy operator.

To this end I have devised means for mechanically accommodating the work to the natural position and handling of the operator so that, instead of becoming skilled by reason of learning new and unnatural attitudes and movements, he simply proceeds along natural lines, and yet with great rapidity of result. To this end I provide, in connection with the same mechanism for continuous forward flow of the filler past a delivery orifice, a valve for the latter, preferably in two parts opening by movement in opposite directions, and a toe-rest adapted to be grasped by the left hand of the operator as he holds the toe of the shoe with said hand, while holding the heel end of the shoe with his right hand, and in connection therewith I provide mechanism enabling the operator by a slight movement of the shoe toward the left, preferably a swinging movement on said toe-rest, to open the valve instantly to meet the width of a wide or narrow toe and maintain said valve open accurately in accordance with the changing width of the shoe bottom as the shoe is moved quickly forward beneath the delivery orifice. Mechanism is also provided enabling the operator instantly to cause the closing of said valve whenever the desired length of shoe-bottom has been filled. Furthermore, in the preferred form of my invention, the delivery of the filler is at all times within plain view of the operator, thereby coöperating with this provision for varying the width of the ribbon or narrow strip of the filler at will. As the thin ribbon of filler is delivered into the shoe-bottom, the operator regulates the width of said delivery by simply pressing or swinging the shoe to the left more or less. Bearing in mind that an average shoe-cavity is only about three inches wide in its widest part, and that the lateral movement of the shoe is therefore only half as much, it will be apparent that the swinging of the shoe is slight and the greater portion of the shoe movement is therefore straight ahead. A further feature of my invention resides in providing a leveling and condensing tool, preferably in the form of a hot roll, at the very mouth or lip of the orifice. The thin ribbon of filler tends to chill, stiffen and set as soon as it touches the cold, damp leather, and therefore there is a considerable advantage in this respect in having the leveling and condensing tool located as herein. From the foregoing it will be apparent that among the leading features of my invention may be mentioned, 1st, the feature of feeding the filler progressively on the forward movement only, the return movement of the shoe being idle so far as filler is concerned; 2nd, the capacity for filling the shoe from the extreme toe,—and coextensive with its width; 3rd, the provision of a cut-off or valve-closing mechanism operable at the will of the operator, and preferably operable either by hand or by the shoe; 4th, a width control operable at the will of the operator,—and so operable during the lengthwise movement of the shoe—said width control being furthermore preferably arranged to receive aid from the shoe itself (herein shown as by means of innersole-lip guides or engagers); 5th, the provision of means for delivering the filler progressively in sight of the operator as the shoe is moved forward,—and preferably provision for having the shoe move obliquely downward and forward while being filled (as distinguished from moving in a substantially horizontal plane); 6th, means for hastening the delivery of the filler, preferably in the form of an ejector operable separately from the valve,—for causing a copious flood of the filler to be ever ready (this ejector renders the apparatus regulable according to the personal element or habit of motion of the operator, *i. e.* it may be set for slow ejec-

tion if he is phlegmatic, or for medium or fast ejection if he is quick and able); 7th, provision for a combined forward and sidewise movement of the shoe when being filled; 8th, a constant pressure forward on the filler in addition to the mechanism for giving it a continuous movement as aforesaid; 9th, provision for leveling and condensing the filler at once in the shoe-bottom, *i. e.* without any intervening gap or opening between the filler delivery portion of the machine and the point of leveling, which gap would be liable to permit the escape of more or less of the filler from the cavity,—said leveler preferably constituting one lip of the orifice; 10th, a handgrip toe-rest; 11th, a construction which coöperates with the natural position and movement of the operator in holding a shoe with both hands to steady the operator and thereby give him confidence, speed, and relief from fatigue; 12th, means whereby the position of the shoe is entirely dependent on the operator while the shoe is being filled; 13th, a side-movement-of-the-shoe control of the width of, or amount of, filler delivery,—preferably in connection with a progressive longitudinal delivery; 14th, provision permitting the operator to close the orifice or cut off the delivery of filler at any point in the travel of the shoe and while the shoe is still in proper position to be filled (so that the operator not only closes the flow of the filler when a sufficient amount is in sight, but he can continue the forward movement of the shoe after the orifice has been closed and thereby give a more finished condensing and final treatment to the shoe and the filler therein); and, 15th, in general provision whereby although the delivery of the filler is automatic, all the operation (the filler feed, amount of filler-delivery, position of the shoe, time of filler cut-off, etc.) is at the control of the operator or operable at his will at all times. In my machine the control is not primarily by means of the shoe but is always by the operator, or at most by the shoe subject to the operator. In other words, the construction is such that the operator may at all times determine the flow of the filler both as to width, length and amount, as not only are the position and manipulation of the shoe determined by his handling of the shoe, but all other points are equally subject to his immediate control. Moreover the preferred construction enables the operator to deposit a heap of filler if desired, instead of a length of ribbon, simply by swinging the shoe downward slightly.

In the accompanying drawings, in which I have shown a preferred embodiment of my invention,

Figure 1 is a vertical longitudinal sectional view of the complete machine;

Fig. 2 is an enlarged front elevation of the lower portion of the machine; and

Fig. 3 is a horizontal sectional view on the line 3—3, Fig. 1.

A filler chamber 1 is provided, terminating at its rear end in a supply part 2 and at its forward end and lower end in a delivery part 3, the latter connecting by a by-pass 4 to the rear end of the chamber 1, in which chamber is mounted a force feed 5 operated by any convenient means, such as fast and loose pulleys 6, 7. In use, the force feed screw 5 will operate continuously, thereby forcing the filler continuously forward from the part 1 into the part 3 and thence, if the orifice is not open, back through the by-pass 4 to the main chamber 1 again. In order that there may be no diversion, slipback, or interruption of this forward flow of the filler under any circumstances, I provide a constant pressure means, herein shown as preferably consisting of a weight 8 connected by chains 9 to a shaft 10 for lifting said weight from the filler when a fresh supply is needed. This fresh supply is provided in an auxiliary tank 11 which communicates with the part 2 by means of a slide partition or door 12. The tank 11 is steam-jacketed at 13 and provided with a cover 14 and more or less of the main chamber is preferably steam-jacketed as indicated at 15 for more quickly bringing the machine into proper condition for beginning work in the morning. Referring now to the mechanism at the orifice, Figs. 1 and 2, I have provided a valve shown in the form of two thin plates 16, 17 mounted in any suitable way across the narrow orifice or delivery opening 18 herein shown as having slots 19 traveling on slide supports or pins 20 projecting from the front lip of the orifice 18. The orifice or delivery opening 18 opens at the extreme forward lower corner of the machine, and these plates 16, 17 are curved or rounded downwardly and rearwardly as best shown in Fig. 1 so as to give a rounded edge and close the front of the orifice in a more or less oblique direction so that, when opened, the delivery of the filler will be in the view of the operator and the curved lower edge of the valve plates will afford a smooth guiding plane for the forward sliding movement of the shoe. At the meeting ends and lower corners of these plates 16, 17 I provide lip-engagers or guides 21, 22 for catching under or against the inseam lip of the innersole and aiding the operator in maintaining the shoe in proper position and the valve plates at the proper distance apart for accurate and quick filling movement. The valve plates 16, 17 are normally held closed by springs 23, 24 engaging a central stationary pin 25 projecting from the main casting and pins 26, 27 on the respective plates, and are connected by any convenient mechanism to operate together. Many forms of such connections may readily be

devised, that herein shown being presented mainly for convenience of illustration and consisting of an upturned end 28 extending from the plate 16 and connecting by a bar 29 to a lever 30 pivoted at 31 to said bar and at 32 to the main casting and having a slot and pin connection 33, 34 with the valve plate 17. As a convenient means for operating the valve by the side movement already mentioned, I have provided a slide block 35 mounted to slide transversely of the face of the machine just above the valve, from which block projects a rigid arm 36 provided with a roll 37 in position to roll along the side of the shoe *s* when the shoe is held as shown in Fig. 1. The lower arm 38 of a lever which is pivoted at 39 to the block 35 depends normally in engagement against the right hand side of a stud 40 on the valve plate 16, and the upper arm 41 of said lever has sliding engagement with a trip bar 42 having a central trip pad 43. Said bar is rearwardly bent at its opposite ends and pivoted at 44. The mechanism just described, together with the springs 23, 24 for instantly closing the valve, constitutes the cut-off actuator or mechanism, which operates, separately from or independently of the opening means, to actuate the valve. In the rear lip of the orifice 18 and preferably forming the same or a part thereof, I mount a condensing and leveling tool, herein shown as a roll 45. Immediately beneath said roll is a toe-rest 46 made of wood or other non-heat-conducting substance for the convenience of the operator in grasping it. This toe-rest may be mounted in any suitable manner, being herein shown as mounted on a slide rest 47 and preferably pivoted thereto as indicated at 48 and normally held in upward position by a spring 49. The block 47 extends transversely of the machine and is mounted to slide on guide rods 50 which extend downwardly in an oblique direction as shown, as I have found that an operator can fill a shoe much more quickly and accurately and neatly by holding the shoe in the position shown in the drawings, rather than in a horizontal position. The block 47 and toe-rest 46 are normally held forward and upward by a spring 51 and the toe-rest is cut out at 52 to permit the toe to be rocked more or less up and down. The pivoting of the toe-rest is also for this purpose and in order to permit the operator to manipulate the shoe conveniently with relation to the roll and the orifice. A delivery regulator or ejector shown as a plate 53 is arranged to be adjusted up or down in the passage 4 and held in proper adjustment by any suitable means as by a set screw 54 for regulating the force of the filler delivery at the orifice. It is my intention to make the filler material climb over and around this gate or plate 53 so as to subject the material to a retarding influence or obstructing influence.

In use, the operator places the toe of the shoe against the toe-rest. In doing this, he necessarily moves the shoe downward and forward, and without stopping this movement he swings or shifts the shoe slightly to the left, at the same time catching the inseam lip over the two catches or gages 21, 22, and as the shoe swings to the left in engagement with the roll 37 it instantly separates the valve plates 16, 17 until the catches 21, 22 limit mechanically the opening movement while the eye of the operator also influences him to give just the requisite side opening-movement to the shoe. As the filler is under a continuous flow and therefore ready for instant and copious flooding-ejection at all times, the filler pours instantly forward in the desired narrow ribbon of sluggish granular consistency in the full view of the operator, who, without stopping the forward movement of the shoe in the slightest, regulates the width of the ribbon by the side swinging movement of the shoe pivoting against the toe-rest. As the operator has hold of the toe of the shoe and also of the toe-rest with his left hand while his right hand grasps the heel of the shoe, there is no unsteadiness or uncertainty about this movement and it can be accomplished as fast as the eye and skill of the operator can perform the movements. The toe-rest slides forward diagonally downward on its guides 50 and at the same time moves up and down as the operator may require in order to press and spread the filler properly into the shoe cavity by means of the condensing tool or roll 45. As soon as he has shoved the shoe forward and thus filled it to the ball or slightly farther to the front of the shank, he bumps the shoe upward against the pad 43 of the trip device and thereby instantly releases the latch or lever 38 from the pin 40, permitting the springs 23, 24 to close the valve plates 16, 17 instantly, thereby leaving the filled shoe undisturbed in its downward position so that the operator can finish leveling the last portion filled and can otherwise manipulate the shoe according to his judgment and skill with relation to the roll 45 as he pulls the shoe back. As the forward movement of the shoe has then no influence on the valve, it will be seen that my mechanism permits him to move the shoe back and forth with relation to the roll 45 as much as the circumstances may require.

When the filler gets low in the tank, the operator raises the slide 12 and shifts a fresh quantity of properly melted filler into the part 2 of the main chamber, first having raised the weight 8 in order to vacate the space for the filler. Thereupon he lowers the weight on this new supply of filler and

thereby a constant pressure is maintained in addition to the forward feeding or continuous flow of the filler. The action of the weight is to bear down on the filler so as to cause the screw 5 to get a continuous grip on the filler. Its purpose is not to cause any pressure toward the orifice or at the orifice, but simply to crowd the filler onto the screw at the point where the screw might otherwise tend to turn loose in the filler. The filler is extremely light, and of its own weight would not hold closely enough to the screw at this point.

I wish it understood that in many particulars my invention is broadly novel as will be more apparent from the claims, and that many changes in arrangement, construction and combination of parts are therefore within the scope of the broader claims.

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

1. A filler machine, comprising a delivery orifice, mechanism for feeding the filler therethrough into the shoe-bottom on the forward movement of the shoe only, means for closing the orifice when the shoe is filled, and means for permitting said forward movement and an idle return movement.

2. A filler machine, comprising mechanism for feeding the filler into the shoe-bottom on the forward movement of the shoe only, a cut-off for cutting off the filler delivery on said forward movement, and means for permitting said forward movement to continue if desired and for then permitting an idle return movement.

3. A filler machine, constructed and arranged to permit the presentation thereto of a shoe with its bottom-cavity in position to be filled by said machine, and having means operable at the will of the operator for controlling the delivery and width of delivery of the filler into said bottom-cavity.

4. A filler machine, comprising means operable at the will of the operator for controlling the delivery and amount of delivery of the filler and for confining the delivery within the bottom cavity of the shoe, including mechanism permitting said delivery progressively from the extreme toe of the shoe.

5. A filler machine, comprising means operable at the will of the operator for controlling the delivery and width of delivery of the filler, including mechanism permitting said delivery progressively from the extreme toe of the shoe.

6. A filler machine, comprising means operable at the will of the operator for controlling the delivery and width of delivery of the filler, including mechanism permitting said delivery progressively from the extreme toe of the shoe, and coextensive with the width of the shoe cavity at said extreme toe.

7. A shoe-filler machine, comprising filler delivery mechanism including a valve, and valve operating mechanism, including means for opening said valve, and separate cut-off mechanism for said valve operable at the will of the operator for cutting off the delivery of the filler.

8. A shoe-filler machine, comprising filler delivery mechanism including a valve, and operating mechanism for said valve, including cut-off mechanism operable at the will of the operator and containing shoe-actuated operating means for closing said valve and cutting off the delivery of the filler.

9. A shoe-filler machine, having an orifice for the delivery of filler to a shoe-bottom cavity, said machine being constructed and arranged to permit the shoe-bottom to move in direct contact with said orifice, and valve mechanism effecting the delivery of the filler progressively toward the front in the sight of the operator as the shoe is moved in contact with said orifice.

10. A shoe-filler machine, comprising means for delivering filler to a shoe-bottom, and means coöperating therewith to guide the shoe in an obliquely downward direction.

11. A filler machine, having an orifice, and constructed and arranged to permit the presentation thereto of a shoe with its bottom cavity at said orifice to be filled by said machine, mechanism for effecting the continuous flow of the filler past said orifice when closed, mechanism for opening and closing said orifice, and means independent of said last named mechanism operable at the will of the operator for diverting a portion of said flowing filler through said orifice when open to the bottom cavity in amount depending upon the judgment of the operator.

12. A shoe-filler machine, having a delivery orifice, mechanism for effecting the continuous flow of the filler past said orifice when closed, and a hand-operated device tending to aid in the forcible ejection of the filler when the orifice is open and for regulating the pressure of said filler.

13. A shoe-filler machine having an orifice and position-controlling means permitting the forward movement of the shoe in operative relation to said orifice and a simultaneous swing of the shoe transversely of said forward direction.

14. A shoe-filler machine having an orifice and position-controlling means permitting the forward movement of the shoe in operative relation to said orifice and a simultaneous side swing of the shoe, and means operated by said side swing for controlling the filler delivery.

15. A shoe-filler machine, having an

orifice, a valve for controlling the delivery of filler at said orifice, and valve-positioning means movable with said valve and comprising devices for engaging the shoe within the shoe-cavity and also for engaging the outside of the shoe in such manner that the position of the valve may be controlled by movement of the shoe.

16. A shoe-filler machine, having an orifice through which the filler is delivered into the shoe-bottom cavity, a valve for said orifice movable laterally in approximately the plane of said bottom cavity, a guide movable with said valve shaped to cling to the shoe to guide the shoe and limit the movement of the valve, and separate means operable by the shoe for actuating the valve.

17. A shoe-filler machine, having an orifice through which the filler is delivered into the shoe bottom-cavity, a two-part valve for said orifice, a guide movable with the valve for guiding the position of the shoe, and means actuated by a side movement of the shoe for opening both parts of the valve.

18. A shoe-filler machine, having a forwardly and downwardly opening delivery orifice through which the filler is delivered into the shoe-bottom cavity, and a laterally sliding valve for closing said orifice, said valve being in the form of a plate extending downwardly and thence being bent under rearwardly to present a guiding under-surface for the shoe to ride against in sliding beneath said orifice.

19. A shoe-filler machine, having a forwardly and downwardly opening delivery orifice through which the filler is delivered into the shoe bottom cavity, and a laterally sliding valve for closing said orifice, said valve being in the form of a plate extending downwardly and thence being bent under rearwardly to present a guiding under-surface for the shoe to ride against in sliding beneath said orifice, said valve on its under side having a depending guide portion to engage within the shoe-cavity to mutually control the shoe and the valve.

20. A shoe-filler machine, having an orifice, a two-part valve for regulating said orifice, and a guide depending from the adjacent ends of the parts of the two-part valve for engaging the shoe within the shoe-bottom cavity to guide the shoe and prevent undue opening of the valve.

21. A shoe-filler machine, having an orifice for the delivery of filler to the shoe-bottom cavity, a valve for opening and closing said orifice, and an arm projecting in position to be engaged in front of said valve and at one side of the normal position of the shoe being filled and connecting with said valve to move the latter in response to movement of the shoe.

22. A shoe-filler machine, having an orifice for the delivery of filler to the shoe-bottom cavity, a valve for opening and closing said orifice, an arm projecting at one side of the normal position of the shoe being filled and connecting with said valve to open the latter in response to sidewise movement of the shoe in front of said valve, and means separate from said arm for closing the valve.

23. A shoe-filler machine, having an orifice for the delivery of filler to the shoe-bottom cavity, a valve for opening and closing said orifice, an arm projecting at one side of the normal position of the shoe being filled and connecting with said valve to open the latter in response to movement of the shoe, and means operable at the will of the operator in any position of the shoe for closing said valve independently of said opening arm.

24. A shoe-filler machine, having filler delivery mechanism and means for maintaining a constant pressure on said filler at all times, and means operating to cause a continuous flow of the filler in addition to said constant pressure.

25. A shoe-filler machine, having a delivery orifice adjacent its lower end, a chamber for filler in its upper part, a weight located in said upper part for maintaining by gravity a constant pressure on the filler, means for supplying fresh filler located below the upper end of said upper part and below the upper position of said weight, and regulating mechanism at said orifice for controlling the filler as it is delivered to the shoe bottom-cavity.

26. A shoe-filler machine, having a delivery orifice adjacent its lower end, a chamber for filler in its upper part, a weight located in said upper part for maintaining by gravity a constant pressure on the filler, an auxiliary tank adjacent said chamber, provided with means for maintaining a supply of filler in proper condition for delivery to said chamber, means between said chamber and said auxiliary tank for permitting the transmission of filler from said tank to said chamber beneath said weight when the latter is in its uppermost position, and regulating mechanism at said orifice for controlling the filler as it is delivered to the shoe bottom-cavity.

27. A shoe-filler machine, having a delivery orifice adjacent its lower end, a chamber for filler in its upper part, a weight located in said upper part for maintaining by gravity a constant pressure on the filler, an auxiliary tank adjacent said chamber, provided with means for maintaining a supply of filler in proper condition for delivery to said chamber, a slide door between said chamber and tank for permitting the delivery of filler from the latter to the former,

and regulating mechanism at said orifice for controlling the filler as it is delivered to the shoe bottom-cavity.

28. A shoe-filler machine, having a delivery orifice adjacent its lower end, a chamber for filler in its upper part, a weight located in said upper part for maintaining by gravity a constant pressure on the filler, an auxiliary tank adjacent said chamber, provided with means for maintaining a supply of filler in proper condition for delivery to said chamber, means between said chamber and said auxiliary tank for permitting the transmission of filler from said tank to said chamber beneath said weight when the latter is in its uppermost position, means for lifting said weight when it is desired to admit filler beneath the same, and mechanism at said orifice for controlling the delivery of filler to the shoe bottom-cavity.

29. A shoe-filler machine having an orifice, means for controlling said orifice, and a leveling and condensing device mounted at said orifice.

30. A shoe-filler machine, having an orifice, valve mechanism for controlling the delivery from said orifice, and a leveling and condensing device mounted in and constituting a portion of the rear lip of said orifice.

31. A shoe-filler machine, having an orifice for delivering filler into a shoe-bottom cavity, when the shoe is moved lengthwise past said orifice, a laterally movable valve for controlling said filler delivery, and means operable by a side movement of the shoe for opening said valve at the beginning of the forward movement of the shoe.

32. A shoe-filler machine, having an orifice for the delivery of filler to the shoe-bottom cavity, said machine being constructed and arranged to permit the shoe to have a lengthwise movement and an independent transverse movement with relation to said orifice when being filled, and means governed at will entirely by said transverse movement for controlling the time and amount of filler delivery into said bottom-cavity.

33. A shoe-filler machine, having a delivery orifice and a hand-grip toe-rest for receiving the toe and the grasp of the operator's hand on opposite sides thereof.

34. A shoe-filler machine, having a delivery orifice for delivering filler to the shoe-bottom cavity, said machine having provision for heating the filler therein, and a hand-grip toe-rest made of non-heat-conducting material for supporting the toe of the shoe and permitting the grasp of the operator's hand in aid of the support of the toe of the shoe while the latter is being filled.

35. A shoe-filler machine, having a delivery orifice, and a movable toe-rest having a movement permitting the shoe to move longitudinally for being filled and an independent movement to accommodate the shoe in vertical position.

36. A shoe-filler machine, having a delivery orifice, and a movable toe-rest having a movement permitting the shoe to move longitudinally for being filled and an independent movement to accommodate the shoe in vertical position, and means normally holding said rest upward.

37. A shoe-filler machine, having a delivery orifice, a movable toe-rest having a movement permitting the shoe to move longitudinally for being filled and an independent movement to accommodate the shoe in vertical position, means normally holding said rest upward, and a leveling and condensing tool located above said rest whereby said holding means tends to press the bottom of the shoe against said leveling and condensing tool.

38. A shoe-filler machine, having a delivery orifice and a hand-grip toe-rest for receiving the toe and the grasp of the operator's hand on opposite sides thereof, said toe-rest being located to tend to hold the shoe against the orifice.

39. A shoe-filler machine, comprising filler-feeding means, means for regulating the flow of delivered filler, means for positioning the shoe, and cut-off mechanism, all constructed and arranged subject to the control of the operator at all times in the filling of a shoe.

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

ANDREW THOMA.

Witnesses:
GEO. H. MAXWELL,
JAMES R. HODDER.