

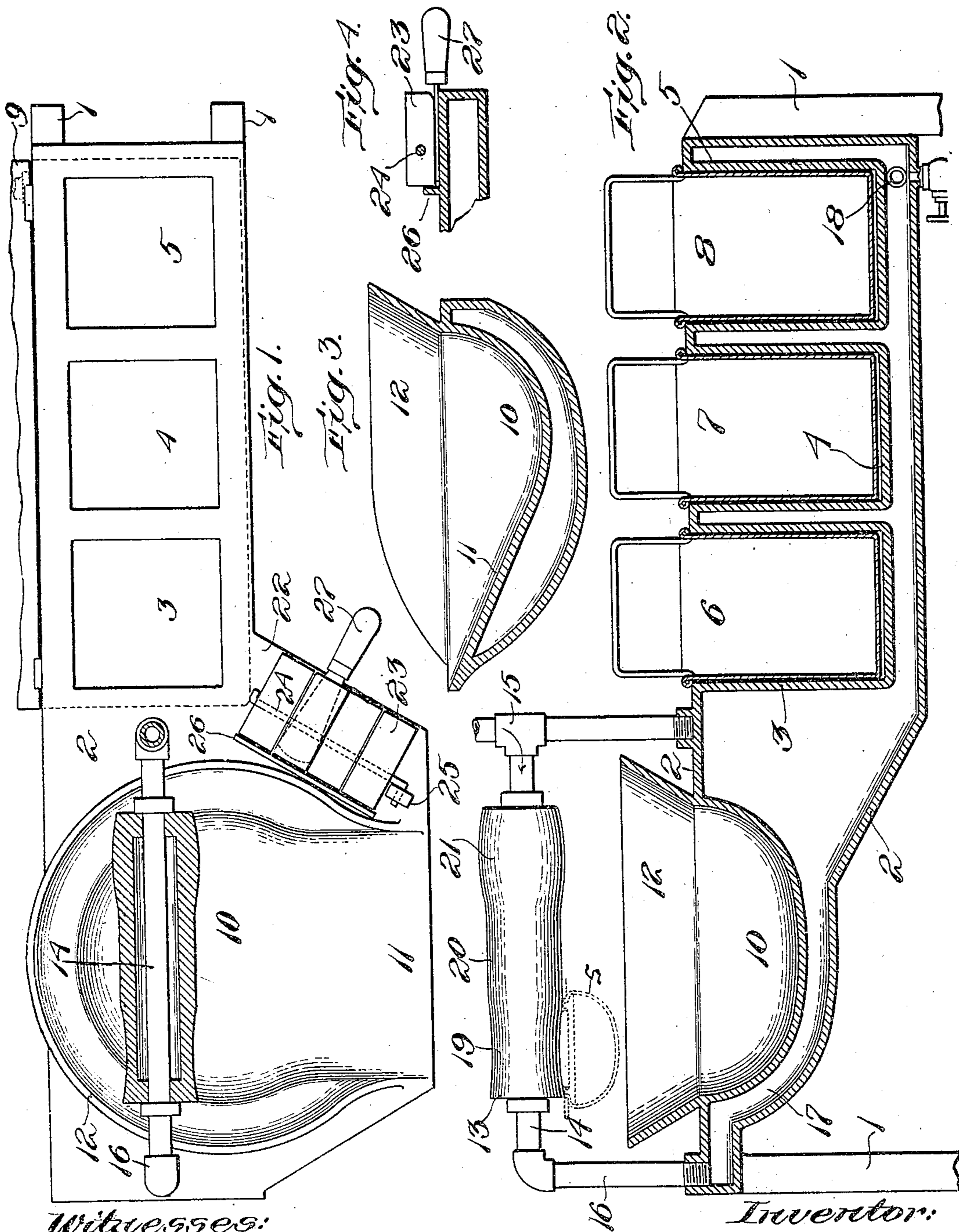
No. 808,227.

PATENTED DEC. 26, 1905.

W. B. ARNOLD.

SHOE FILLING APPARATUS.

APPLICATION FILED AUG. 28, 1905.



Witnesses:

Arthur F. Randall
M. A. Jones.

Inventor:

William B. Arnold,
by Geo. H. Maxwell
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM B. ARNOLD, OF NORTH ABINGTON, MASSACHUSETTS, ASSIGNOR
TO NORTH AMERICAN CHEMICAL COMPANY, OF NEW YORK, N. Y., A
CORPORATION OF MAINE.

SHOE-FILLING APPARATUS.

No. 808,227.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed August 28, 1905. Serial No. 275,988.

To all whom it may concern:

Be it known that I, WILLIAM B. ARNOLD, a citizen of the United States, residing at North Abington, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Shoe-Filling Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

Various expedients have from time to time been resorted to for giving a shoe pliability and lightness and yet have a comparatively thick tread portion or support for the foot, with the result that what are known in the trade as "Goodyear-welt" shoes and "McKay-welt" shoes are now commonly-recognized constructions, these shoes being distinguished by having a cavity between the inner sole and the outer sole surrounded by a welt, (and in the case of the Goodyear construction also bounded by the stitch-receiving rib of the inner sole and the adjacent edge of the upper, against which the inner edge of the welt is sewed,) this cavity being filled with some kind of filler.

My invention is a machine for rendering feasible the application of the Thoma shoe-filler, so that this highly-meritorious and desirable filler can be employed with the rapidity and results which are demanded in modern factory practice. Notwithstanding the recognized desirability and superiority of this kind of filler when in the shoe the cost of applying it by hand is practically prohibitive on account of the difficulty and slowness of working it by hand. Accordingly I have devised the hereinafter-described apparatus for enabling the operator to apply this Thoma filler with the same rapidity as and greater neatness than the commonly-used rubber-cement filler.

The constructional details of my invention will be pointed out in the following description, reference being had to the accompanying drawings, in which I have illustrated a preferred form of my apparatus.

In the drawings, Figure 1 is a top plan view of my filler-applying apparatus. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a transverse sectional view showing the shape of the dip-pot, and Fig. 4 is a frag-

mentary sectional view showing the dip-knife heater.

Ordinary rubber-cement filler (which is composed simply of ground cork mixed with naphtha-dissolved rubber) is applied cold like thin mortar, excepting that its smeary sticky character requires care on the part of the operator; but Thoma filler is of an entirely different character, being normally semisolid and capable of application only when hot and even then being so quick-setting and sticky as to present practical difficulties. This filler comes in so-called "loaves" convenient to handle.

I provide on standards 1 a steam-jacketed table 2, containing a suitable source of filler-supply, herein shown as comprising three compartments 3 4 5, each steam-jacketed and adapted to receive filling-pots 6 7 8 and to be closed by a cover 9 for slowly melting the filler. Adjacent these supply-compartments the table contains a shallow dip-pot 10, having a wide-open mouth and preferably projecting upwardly and forwardly at 11 and surrounded by a flaring drip-guard 12. Above the rear end of the dip-pot is a superheating-tool, herein shown as consisting of a roll 13, mounted to turn freely on a steam-pipe 14, steam entering in the direction of the arrow 15 and after heating said roll passing downwardly at 16 into the table at 17 and thence out at 18. The steam-pipes 14 16 form a heating-stand for the roll. This superheating-tool constitutes the most important feature of my invention, as I have found that by providing this highly-heated roll close to the delivery end of the dip-pot, so that the operator can instantly raise the filled shoe into contact therewith and superheat the top surface of the filler, an exceedingly quick, neat, and satisfactory result can be obtained. The roll has a concave surface 19, a straight surface 20, and a convex surface 21, thereby enabling the operator to give the exact surface and compression desired to the filler and to accurately regulate the quantity left in the cavity of the shoe or in any part of said cavity. To prevent chilling the filler, the dip tool or knife must be kept hot, and accordingly I provide convenient means for this purpose, having shown herein the table as projecting at 22 to form a flat ledge, over which are a series of

weights 23, carried by a rod 24, pivoted in a post 25 and abutting against a ledge 26, so that a dip-knife 27 may be simply thrust quickly beneath said weights, which yield to receive the same and yet hold the blade of the knife down tightly on the hot table, so that the knives become quickly heated. The table and weights are readily cleaned simply by swinging the weights and rod over forward on the post 25. The ledge 26 serves to limit the free upward tipping of the weights and also prevent them from sliding back on the table when the knives are thrust beneath them. I provide a number of these knives, so that a hot one is always ready.

The operation of my apparatus is as follows: The operator first places a loaf or a portion of a loaf of filler in each supply-pot and then turns on the steam. The filler slowly softens until it becomes fluid, whereupon he empties one of the pots (pot 6, for instance) into the dip-pot 10 and replaces pot 6, in which he puts a fresh loaf of filler, (so that by the time he has used the filler from pots 7 and 8 pot 6 will again be ready for emptying.) He then seizes a hot dip-knife 27, which is so shaped as to take up the right amount of the hot filler from the front shallow end 11 of the pot 10, and deposits it in the cavity of the shoe, a shoe being indicated at s, Fig. 2. Thereupon the shoe is instantly raised against the superheating-roll 13 and is pressed vertically against the under side of said roll and moved forward and back, the skilled operator directing the shoe over such portions of the roll as required to fill the shoe with exactly the proper surface curvature and to give the correct pressure and spreading of the binder which is caused to flow in the top layer of the filler by reason of the extra heat of the roll 13. This is accomplished almost instantly. If the operator wishes to have a thin filling, he employs the convex surface 21, and if he wishes to depress the filling at the edges he employs the corner between the parts 19 and 20, while if he wishes the middle of the filling to be raised he employs the concave portion 19. Ordinarily he employs the flat portion 20. I prefer to provide all three parts in the same roll, although in some instances I do not do so, especially in McKay work, where it is desirable to keep all the filler entirely within the cavity. In Good-year work the filler is deposited by the knife 27 in a mass which projects above the level to be filled, so that the pressure of the shoe against the superheating-tool 13, which immediately follows, liquefies the top surface of this projecting mass, so that it flows not only into all the corners and crevices and sewing or seam, but flows over the joined edges of the inner sole, welt, and upper and into the joints, thereby rendering the shoe absolutely and permanently waterproof. Having passed the shoe forward and back against the heating-tool 13, the operator quickly runs his

knife obliquely over the welt-surface, thereby removing any burs of protruding filler at the edges, which are caught by the drip-guard 12. He then deposits the filled shoe on the rack and takes up another shoe and repeats the process. The shoe on the rack sets at once—that is to say, it ceases to be very soft and plastic and becomes resilient and semiplastic—ready immediately for receiving the outer sole. As the hot filler in the dip-pot 10 becomes partially exhausted, the operator empties the supply-pot 7 thereinto, and when again exhausted he replenishes it from pot 8, and so on, each time placing a fresh loaf of filler in the emptied supply-pot, so that notwithstanding the slow liquefying which is necessary with this filler there is always a supply ready at hand.

I have found that by maintaining the pressure vertical against the superheating-tool there is no tendency to smear the filler or deface the shoe, and the filler will not stick to or follow the roll, and also this vertical pressure will produce a superior adhesion of the filler to the bottom and sides of the cavity.

As already intimated, various changes and substitutions may be made without departing from my invention. The main object, which must not be lost sight of, is the provision of means for maintaining a constantly ready supply of hot filler at the hand of the operator, (notwithstanding the slow heating and liquefying which is necessary,) so that his dip-pot need never remain empty, and providing at the open mouth of the latter a superheating pressure device for enabling the operator to bring vertical pressure on the filler in the shoe and at the same time to give the outer surface thereof an additional heating, or, as I have termed it, a "superheating." The space between the roll 13 and the mouth of the dip-pot is unoccupied, and the distance is such as merely to permit the free and necessary movements of the operator in manipulating the shoe against the roll. I prefer to have a shallow portion 11, as the peculiar nature of this filler is such that when hot it can be more readily raised by first pressing it downward slightly with the knife just before dipping under it to raise the desired quantity for the shoe; but I do not wish to limit myself in all cases to this shape of dip-pot. The same remark applies to the yielding pressing means or weights for heating the dip-knives, the means herein shown being preferable because of their convenience for cleaning and use. So, likewise, as to the superheating means I prefer to employ a roll and to have it mounted on a stationary axis, as I have found that the best results are secured by having the superheating means fixed and having the operator move the shoe, regulating manually the vertical pressure, angle of the shoe, &c., although I have secured fair results by having the superheating means movable over the filled shoe.

Also I do not restrict my invention to the precise means shown for delivering segregated portions of the fully-heated filler from the supply source to the dip-pot, as various other forms and arrangements come within my invention. While I have found the proportions of heating-surface, &c., substantially as herein shown to be adapted to the best results; it will be understood that the construction in these respects will be varied to suit the steam-pressure or other heating means and situations of the various factories. The present form of my apparatus is the form which I have found best adapted generally to individual operators.

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

1. In a shoe-filling apparatus, means for supplying hot filler for a shoe, and superheating means mounted close to the delivery end of said supplying means for instantly applying a superheating contact over the top of the filled surface of the shoe.

2. In a shoe-filling apparatus, a wide, open-mouthed, heated dip-pot for providing hot filler for a shoe, a stand carrying a superheating-tool mounted over said dip-pot, all the space between the latter and the tool being free and unoccupied, to permit the shoe to be filled close to the pot and then raised at once into pressing contact with the under side of the tool, and means for maintaining the tool uniformly hot.

3. In a shoe-filling apparatus, a heating-stand provided with a freely-rotatable roll maintained uniformly hot thereby and having a free open space at the under side of the roll constructed to permit the free manipulating of a filled shoe while held pressed upwardly against said roll.

4. In a shoe-filling apparatus, a wide, open-mouthed, heated dip-pot for providing hot filler for a shoe, a stand carrying a superheating-tool mounted over said dip-pot, all the space between the latter and the tool being free and unoccupied, to permit the shoe to be filled close to the pot and then raised at once into pressing contact with the under side of the tool, means for maintaining the tool uniformly hot, and a raised drip-guard extending about said dip-pot outside of the area required for manipulating the shoe, to return to said pot all surplus filler from the shoe.

5. In a shoe-filling apparatus, a heated dip-pot for providing hot filler for a shoe, a stand carrying a superheating-tool mounted over the rear end of said dip-pot, and means for internally heating said tool, said dip-pot having a deep rear end and a wide, shallow front end extending beyond said tool a distance to permit the free filling of a shoe over said dip-pot without interference with said superheating-tool, and the latter being remote from said

pot a sufficient distance to permit the free pressing of the filled shoe by said tool without interference with said dip-pot.

6. The herein-described shoe-filling apparatus, comprising a source of filler-supply, a shallow, wide-open dip-pot for fully-heated filler, means for maintaining the latter hot and for simultaneously slowly heating said source of supply, means for transferring fully-heated filler in segregated quantities from said supply to said dip-pot, and a heated roll mounted immediately adjacent said dip-pot in position to be pressed instantly by a shoe when filled over said dip-pot.

7. The herein-described shoe-filling apparatus, comprising a multicompartment source of filler-supply, a dip-pot, a roll at the open mouth of the latter, and heating means for slowly heating the filler-supply, maintaining the dip-pot warm and keeping the roll uniformly hot.

8. In a shoe-filling apparatus, a heated dip-pot for supplying hot filler for a shoe, a stand provided with a superheating-tool mounted close to the open end of said pot in position to permit the shoe when filled to be freely and instantly manipulated in pressing engagement with said superheating-tool, and quick-heating means at one side of said dip-pot for heating the dip-knives used for applying the filler from the pot to the shoe.

9. In a shoe-filling apparatus, a heated dip-pot for supplying hot filler for a shoe, a stand provided with a superheating-tool mounted close to the open end of said pot in position to permit the shoe when filled to be freely and instantly manipulated in pressing engagement with said superheating-tool, and quick-heating means at one side of said dip-pot for heating the dip-knives used for applying the filler from the pot to the shoe, said means comprising a hot table and yielding pressing means for pressing the knives against said table.

10. In a shoe-filling apparatus, a heated dip-pot for supplying hot filler for a shoe, a stand provided with a superheating-tool mounted close to the open end of said pot in position to permit the shoe when filled to be freely and instantly manipulated in pressing engagement with said superheating-tool, and quick-heating means at one side of said dip-pot for heating the dip-knives used for applying the filler from the pot to the shoe, said means comprising a hot table and yielding pressing means for pressing the knives against said table, said pressing means being instantly shiftable from the table for the removing of filler.

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

WILLIAM B. ARNOLD.

Witnesses:

GEO. H. MAXWELL,
M. A. JONES.