No. 817,408. PATENTED APR. 10, 1906.

J. H. WALL.

SHOE DIPPING MACHINE.

APPLICATION FILED NOV. 7, 1905.

Fig. 1.

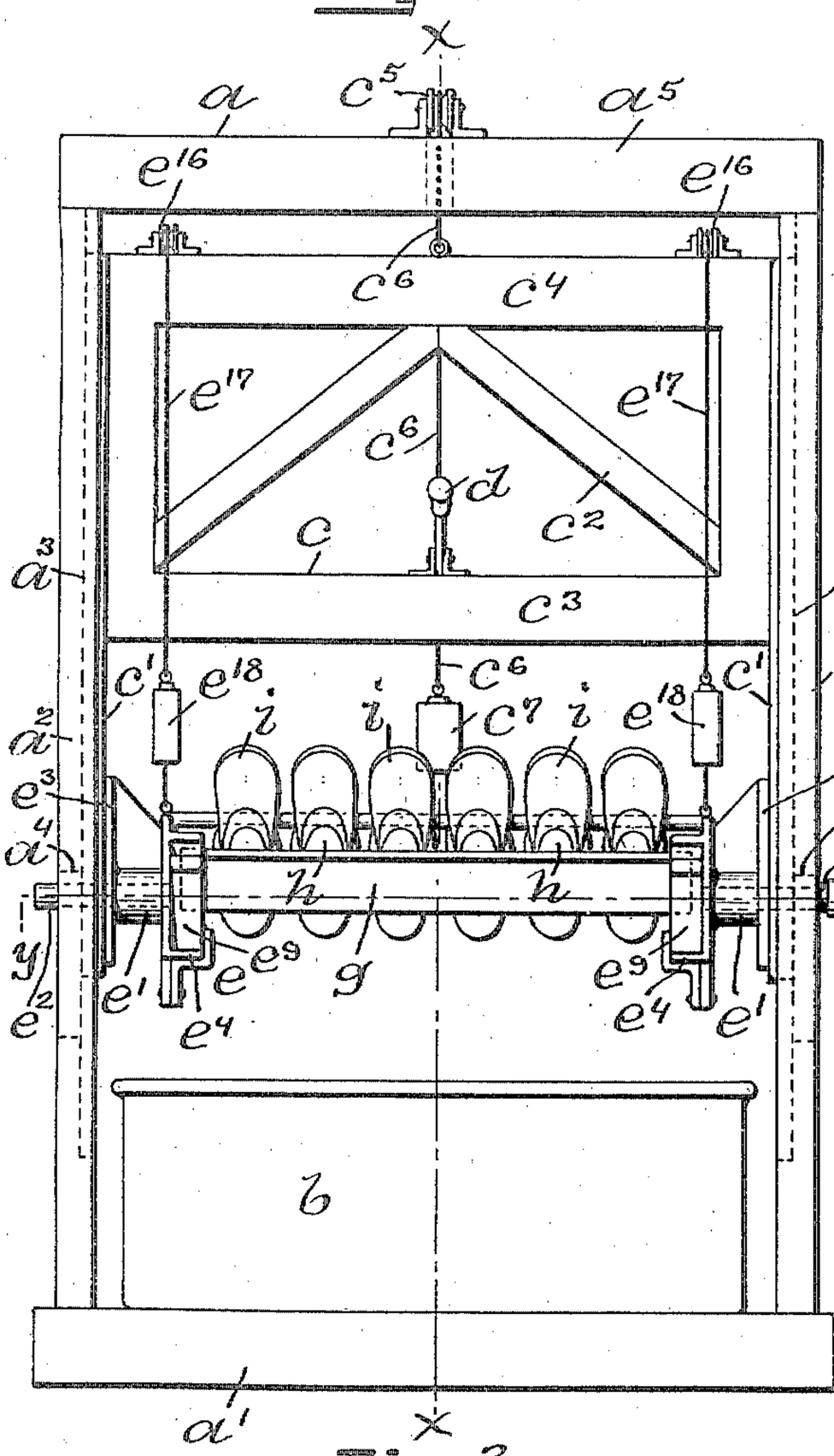


Fig. 2.

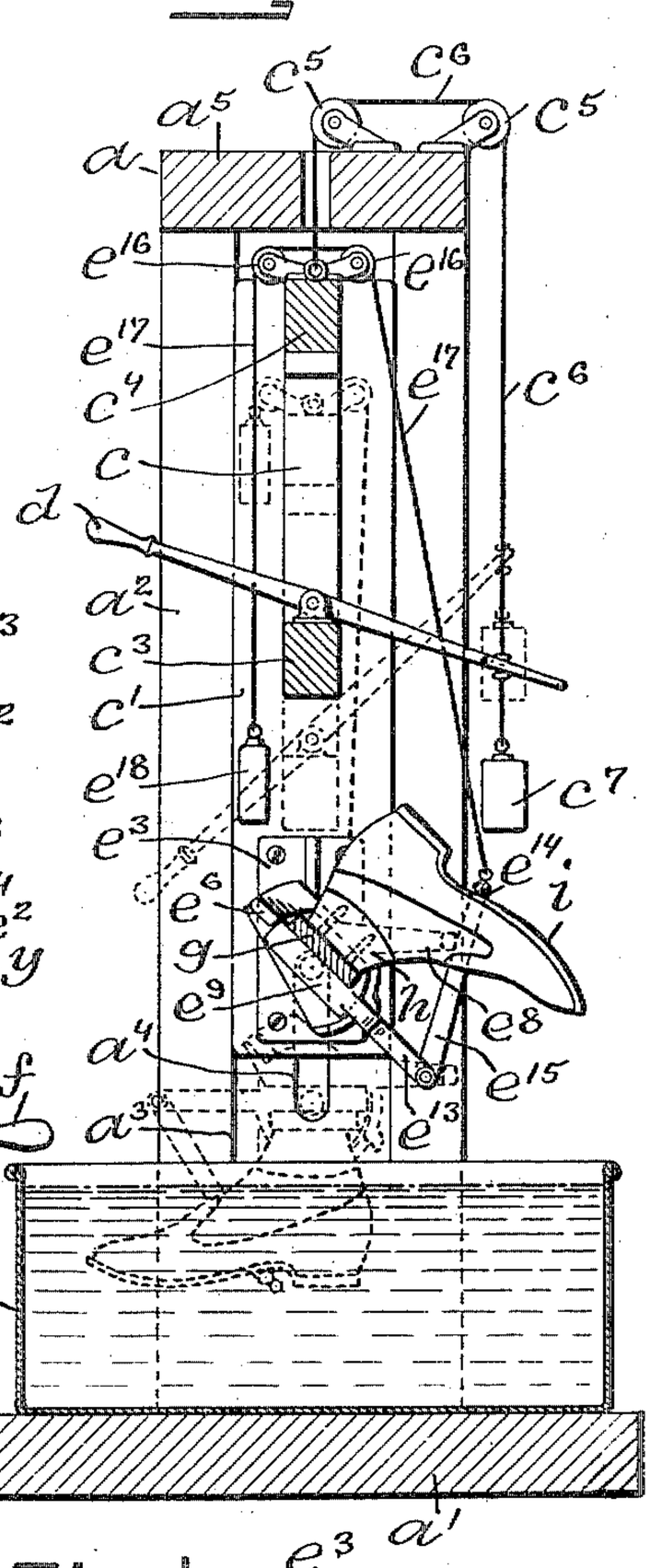


Fig. 3.

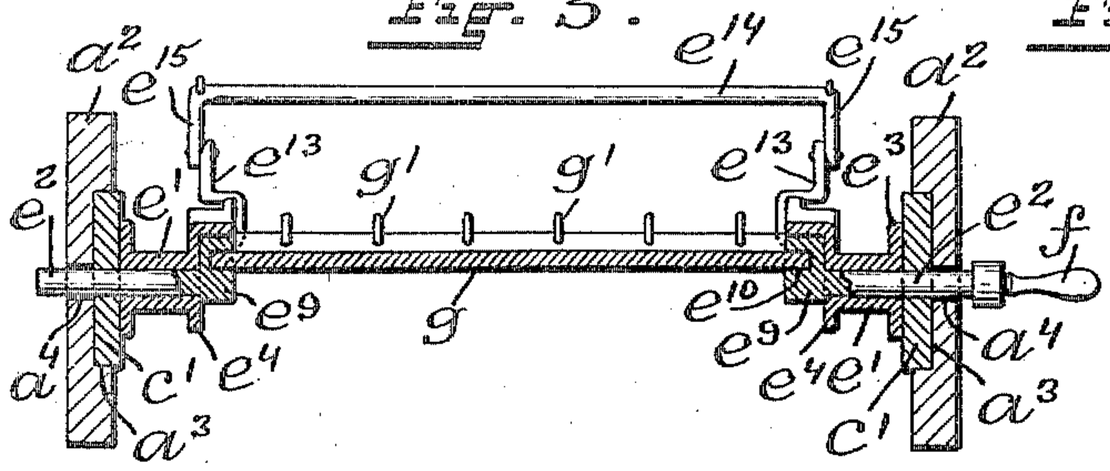
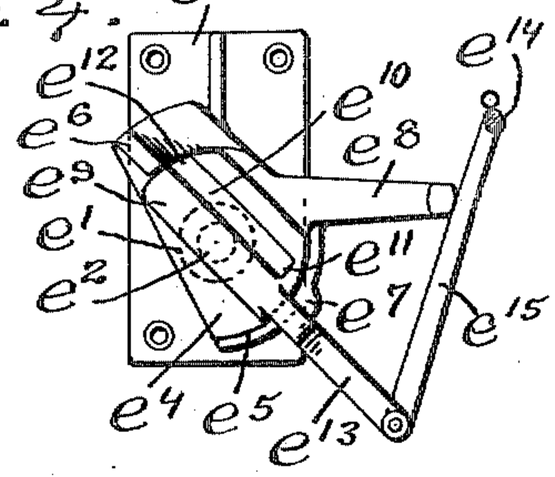


Fig. 4.



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SHOE-DIPPING MACHINE.

No. 817,408. Specification of Letters Patent. Patented April 10, 1906.

Application filed November 7, 1905. Serial No. 286,190.

To all whom it may concern:

Be it known that I, JOHN H. WALL, a citizen of the United States, residing at Bristol, in the county of Bristol and State of Rhode Island, have invented a new and useful Improvement in Shoe-Dipping Machines, of which the following is a specification.

This invention has reference to an improvement in a machine used in the process of manufacturing rubber shoes, and more particularly to an improvement in a machine adapted to dip or varnish rubber shoes.

In the process of manufacturing rubber shoes the varnishing of the shoes has heretofore been done by hand. This method of varnishing the shoes is necessarily slow and adds materially to the cost of the shoes.

The object of my invention is to reduce the cost of manufacturing rubber shoes, and I accomplish this object by providing a machine adapted to dip or varnish a plurality of shoes in one operation of the machine.

A further object of my invention is to simplify the construction of a rubber-shoe dipping or varnishing machine, whereby a plurality of shoes are quickly inserted in the machine, dipped or varnished in one operation of the machine, and removed from the machine by the operator in less time than has heretofore been done.

My invention consists in the peculiar and novel construction of a shoe-dipping machine adapted to varnish a plurality of rubber shoes in one operation of the machine, with details of construction, as will be more fully set forth hereinafter.

Figure 1 is a vertical front view of my improved rubber-shoe-dipping machine, showing the machine in the normal position with a plurality of shoes in the machine ready to be dipped or varnished in one operation of the machine. Fig. 2 is a vertical sectional view taken on line X X of Fig. 1, showing the machine in its normal position in full lines and in the position it would assume in dipping or varnishing the shoes in broken lines. Fig. 3 is a transverse sectional view taken on line Y Y of Fig. 1 through the shoe holding and rotating mechanism; and Fig. 4 is an enlarged detail end view of one end of the holding and rotating mechanism, showing the same in its normal position.

In the drawings, *a* indicates the frame of the machine; *b*, the varnish-tank; *c*, the vertical slide; *d*, the lowering and elevating lever; *e*, the rotating mechanism; *f*, the rotating crank; *g*, the peg-bar; *h h*, a plurality of shoe-lasts on the peg-bar, and *i i* a plurality of rubber shoes on the lasts.

The frame *a* consists of a base a', adapted to support the varnish-tank *b*, the vertical end supports a^2 a^2, each having the vertical ways a^3 a^3 for the slide *c*, and the vertical transverse slots a^4 a^4, through which the shafts of the rotating mechanism *e* extend, as shown in broken lines in Fig. 1 and in full lines in Fig. 3, and the top bar a^5, connecting the upper ends of the end supports a^2 a^2, as shown in Fig. 1.

The slide *c* consists of the vertical end bars c' c', adapted to have a vertical reciprocating movement in the ways a^3 a^3 in the end supports a^2 a^2, and the connecting truss-frame c^2, having the bottom bar c^3 and the top bar c^4, as shown in Fig. 1. The lowering and elevating lever *d* is pivotally secured adjacent its center to the lower bar c^3, as shown in Fig. 2. Two pulleys c^5 c^5 are secured centrally to the bar a^5 of the frame *a*, and a cord c^6 is secured at one end to the top bar c^4 of the slide *c*. This cord c^6 extends upward over the pulleys c^5 c^5 and then downward on the back of the machine to the weight c^7. The rear end of the lever *d* is secured to the cord c^6, as shown in Fig. 2. The pull of the weight c^7 on the cord c^6 counterbalances the slide *c*.

The rotating mechanism *e* consists of the bearings e' e', supporting the rock-shafts e^2 e^2. Each bearing is formed on the plate e^3, which is secured to the lower end of a bar c' of the slide *c* by screws or other means, as shown in Figs. 1 and 2. A member e^4 is formed on the inner end of the bearing e', and this member is shaped to have the semicircular concave portion e^5 formed concentric with the hole in the bearing e', the outwardly-extending lip e^6 forming a guide for the peg-bar *g*, the stop e^7, and the rearwardly-extending arm e^8, as shown in Fig. 4. The rock-shafts e^2 e^2 are supported in the bearings e' e', each rock-shaft having the enlarged semicircular inner ends e^9 shaped to loosely fit in the semicircular concave portions e^5 of the member e^4. An elongated recess e^{10}, having the closed end e^{11} and the open end e^{12} adjacent the lip e^6, is formed in the enlarged end e^9 for the ends of the peg-bar *g*, and an arm e^{13} extends rearwardly from the end e^9 in a position to engage with the under side of the stop e^7 with the mechanism in its normal position as shown in Fig. 4. A locking-bar e^{14} extends lengthwise of the machine at the rear.

This bar is bent at each end to form the downwardly-extending arms e^{15} e^{15}, which are pivotally secured at their ends to the ends of the arms e^{13} e^{13} in a position for the arms e^{15} e^{15} to engage with the ends of the arms e^{8} e^{8} (which form a stop for the same) and for the bar e^{14} to pass over the soles of the shoes i i, adjacent the heels of the same with the mechanism in its normal position, as shown in full lines in Fig. 2. Pulleys e^{16} e^{16} are pivotally secured at each end to the top bar c^{4} of the slide c. Cords e^{17} e^{17} are secured to the ends of the bar e^{14}. These cords extend upward over the pulleys e^{16} e^{16} and then down to the weights e^{18} e^{18}, the pull of the weights on the cords holding the arms e^{15} e^{15} on the bar e^{14} against the end of the arm e^{8}, as shown in Figs. 2 and 4. The crank f is secured to the outer end of (preferably) the right-hand rock-shaft e^{2}, as shown in Fig. 1.

The peg-bar g has the series of pegs g' g' extending outward from the upper face of the bar in sets of two, one set for each shoe-last h h. These pegs enter coinciding holes in the top of the lasts, as shown in dotted lines in Fig. 2.

In the operation of my improved shoe-dipping machine the tank b is supplied with varnish or a similar liquid, a plurality of rubber shoes i i are placed on the lasts h h, and the lasts placed uniformly on a peg-bar g, on which they are held by the pegs g' g'. The bar g, with the lasts and shoes, is now placed in the machine in a position for the ends of the bar g to enter the recesses e^{10} e^{10} in the ends e^{9} e^{9} on the rock-shafts e^{2} e^{2}, in which the bar is held, and for the soles to pass under the the locking-bar e^{14}. The slide c is now lowered a predetermined distance by depressing the lever d and the rotating mechanism e partly rotated by turning the crank f to the left, thus submerging the shoes in the varnish in the tank b, as shown in broken lines in Fig. 2. As the rotating mechanism e starts to rotate the arms e^{15} e^{15} on the locking-bar e^{14} leave the ends of the arms e^{8} e^{8}, and the bar e^{14} rides up under the heels of the shoes, where it is held by the pull of the weights e^{18} e^{18} on the cords e^{17} e^{17}, attached to the bar e^{14}, thereby locking the shoes and lasts to the peg-bar g in the operation of dipping the shoes. The peg-bar g is locked in the reverse position in the recesses e^{10} e^{10} by the wall forming the semicircular concave portion e^{5} in the member e^{4} closing the open end e^{12} of the recesses, as shown in broken lines in Fig. 2. On the reverse movement of the crank f and an upward movement of the lever d the mechanism resumes its normal position, the locking-bar e^{14} is released by the arm e^{8}, and the peg-bar, with the shoes, is removed from the machine.

It is evident that the construction of the machine may be varied without materially affecting the spirit of my invention.

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

1. In a shoe-dipping machine, a peg-bar for supporting a plurality of shoes, means for securing the shoes to the peg-bar, mechanism for rotatably supporting the peg-bar, and a tank adapted to hold varnish or similar liquid.

2. In a shoe-dipping machine, a support for a peg-bar, a peg-bar carrying a plurality of shoes, means for automatically locking the shoes to the peg-bar, means carried by the support for rotating the peg-bar, and a tank adapted to hold varnish or similar liquid.

3. In a shoe-dipping machine, a frame, a tank adapted to hold varnish or similar liquid in the frame, a slide supported in vertical ways in the frame, means for counterbalancing the slide, means for lowering and elevating the slide, a rotating mechanism on the slide, means in the rotating mechanism for holding a plurality of shoes, and means for partly revolving the rotating mechanism, whereby a plurality of shoes are coated with varnish or similar liquid in one operation of the machine.

4. In a shoe-dipping machine, a frame, a tank adapted to hold varnish or a similar liquid supported in the frame, a slide supported in vertical ways in the frame, means for counterbalancing the slide, means for lowering and elevating the slide, a rotating mechanism on the slide, a bar, a plurality of shoe-lasts, a plurality of shoes on the lasts, means for holding the shoe-lasts on the bar, means in the rotating mechanism for holding the bar, and means for partly revolving the rotating mechanism, whereby a plurality of shoes are coated with varnish or similar liquid in one operation of the machine.

5. In a shoe-dipping machine, a frame having a base and vertical end supports, a tank supported on the base and adapted to hold varnish or a similar liquid, a slide supported in vertical ways in the end supports, means for counterbalancing the slide, means for lowering and elevating the slide, a rotating mechanism on the slide, a bar, a plurality of shoe-lasts holding a plurality of rubber shoes, means for holding the shoe-lasts on the bar, means in the rotating mechanism for holding the bar and for locking the bar in the reverse position, means for automatically locking the lasts and shoes to the bar in the reverse position, and means for partly revolving the rotating mechanism, whereby a plurality of rubber shoes are coated with varnish or a similar material in one operation of the machine.

6. In a shoe-dipping machine, a frame a having the base a', the vertical end supports a^{2} a^{2} and the top bar a^{5}, a tank b adapted to hold varnish or similar liquid on the base a', a slide c supported in vertical ways in the end

supports a^2 a^2, pulleys c^5 c^5 on the top bar a^5, a cord c^6 secured to the slide c and running over the pulleys, a weight c^7 secured to the end of the cord c^6, a lever d pivotally secured to the slide c and to the cord c^6, a rotating mechanism e on the slide c, a crank f operatively connected with the rotating mechanism e, a bar g having the pegs g' g', a plurality of lasts having coinciding holes for the legs g' g', a plurality of rubber shoes on the lasts, means in the rotating mechanism e for holding the bar g, and means for automatically locking the lasts and shoes to the bar in the reverse position, whereby on lowering the slide c by the lever d and partly revolving the rotating mechanism e by the crank f, a plurality of rubber shoes are coated with varnish or a similar material in one operation.

7. In a shoe-dipping machine, the combination of a frame a, a tank b adapted to hold varnish or a similar liquid, a slide c supported in vertical ways in the frame a, means for lowering or elevating the slide c, a rotating mechanism e consisting of the bearings e' e' each formed on a plate e^3 secured to the slide c and having a member e^4 shaped to have the semicircular concave portion e^5, the outwardly-extending lip e^6, the stop e^7, and the rearwardly-extending arm e^8, the rock-shafts e^2 e^2 supported in the bearings e' e' and each having the enlarged end e^9 in which is the elongated recess e^{10} having the closed end e^{11} the open end e^{12}, and an arm e^{13} adapted to engage with the stop e^7, a locking-bar e^{14} bent at each end to form the arms e^{15} e^{15} which are pivotally secured at their ends to the ends of the arms e^{13} e^{13} in a position to engage with the ends of the arms e^8 e^8, pulleys e^{16} e^{16} pivotally secured to the top of the slide c, cords e^{17} e^{17} secured to the bar e^{14} and extending upward over the pulleys, weights e^{18} e^{18} secured to the ends of the cords, a crank f secured to a rock-shaft e^2, a bar g, a plurality of shoe-lasts holding a plurality of rubber shoes, and means for holding the shoe-lasts on the bar, whereby on placing the ends of the bar g in the recesses e^{10} e^{10} in the rotating mechanism e and operating the slide c and the crank f a plurality of rubber shoes are coated with varnish or similar liquid in one operation of the machine.

8. In a shoe-dipping machine the combination of a frame a, a tank b adapted to hold varnish or a similar liquid, a slide c, a lever d on the slide, a rotating mechanism e, a crank f operatively connected with the rotating mechanism e, a bar g, a plurality of shoe-lasts h h on which are a plurality of rubber shoes, means for holding the lasts h h on the bar g, and means in the rotating mechanism e for holding the bar g, whereby a plurality of rubber shoes are coated with varnish or a similar liquid in one operation of the machine.

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

JOHN H. WALL.

Witnesses:
ADA E. HAGERTY,
J. A. MILLER.