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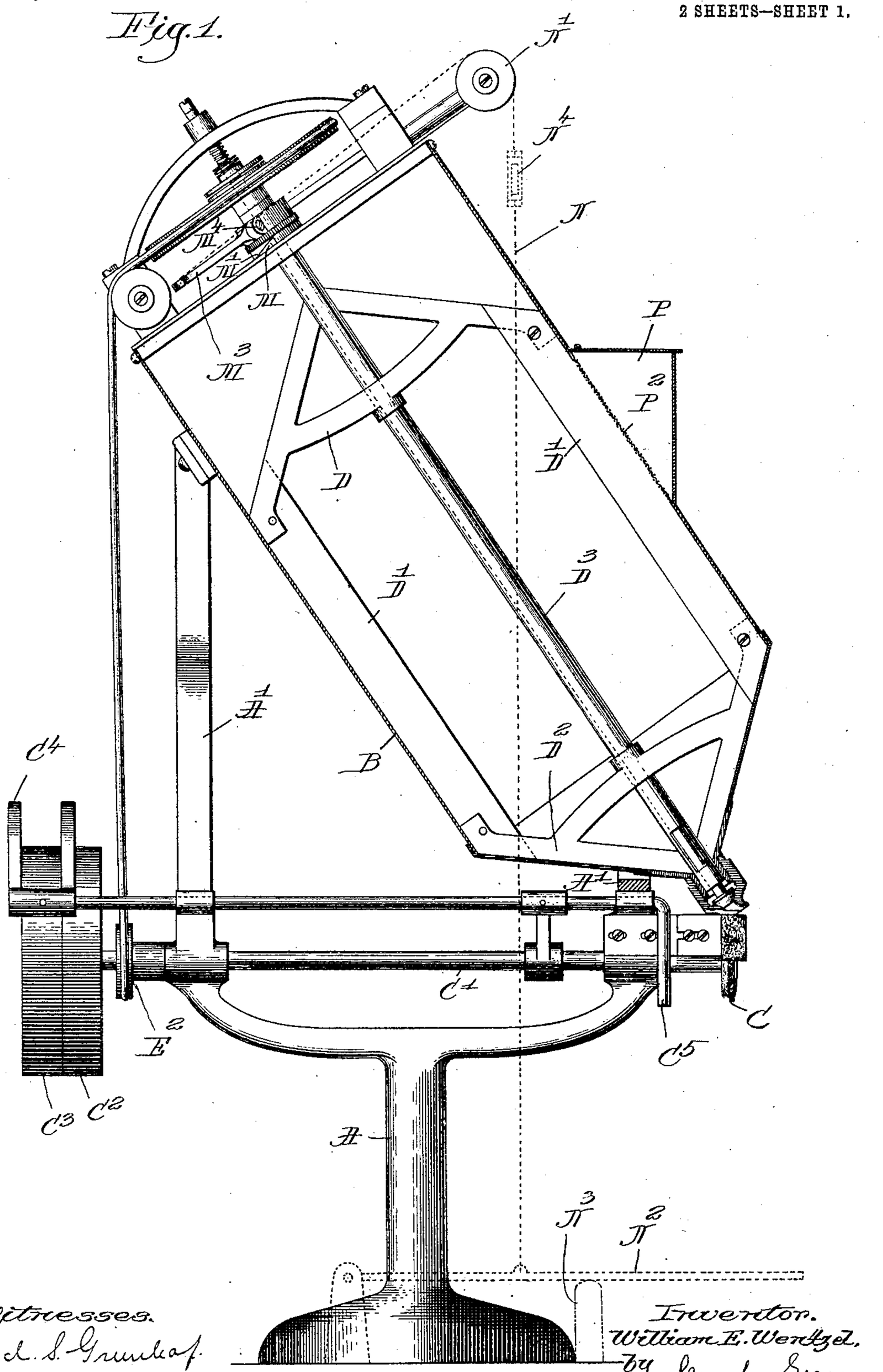
EDGE BLACKING MACHINE.

APPLICATION FILED JUNE 7, 1905.

933,009. Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
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Inventor.
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2 SHEETS—SHEET 2.

Fig. 2.

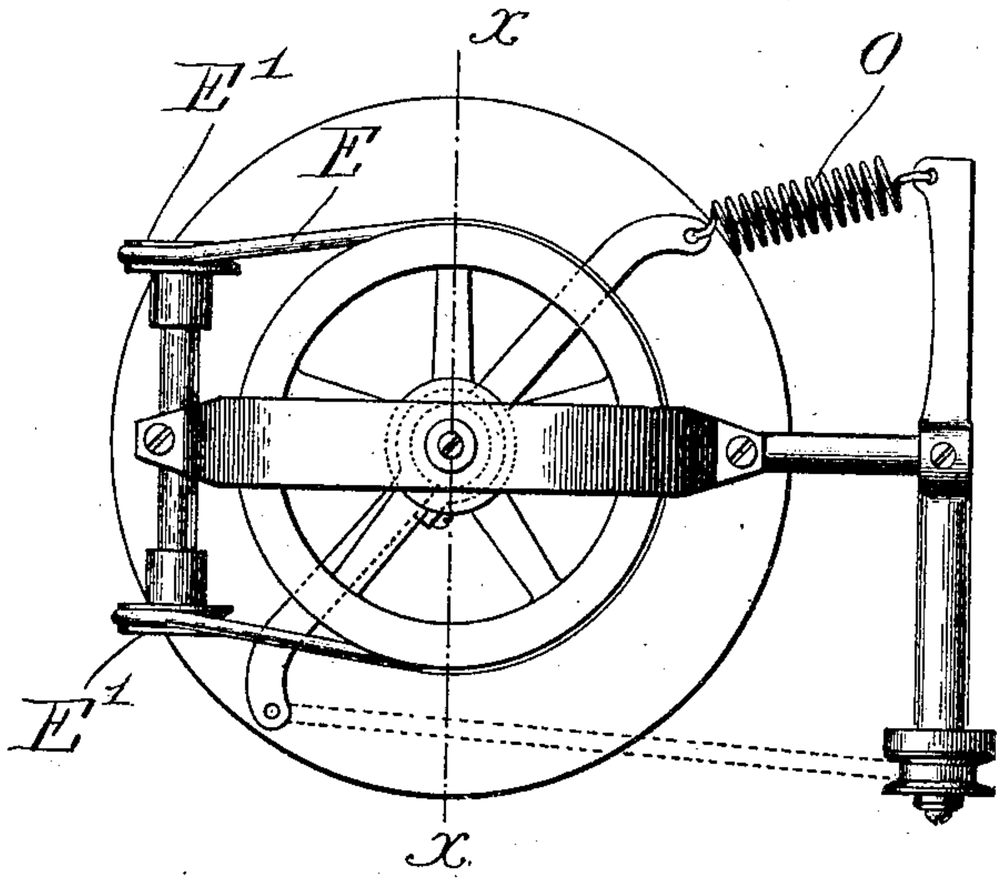


Fig. 3.

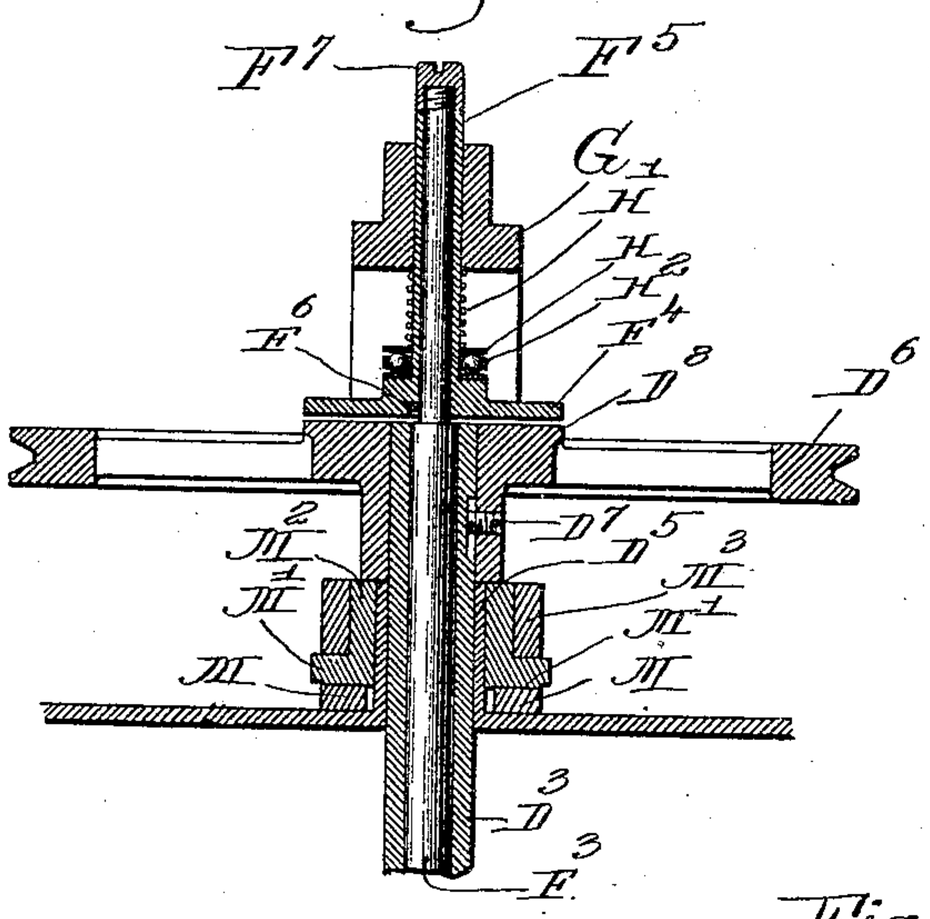


Fig. 4.

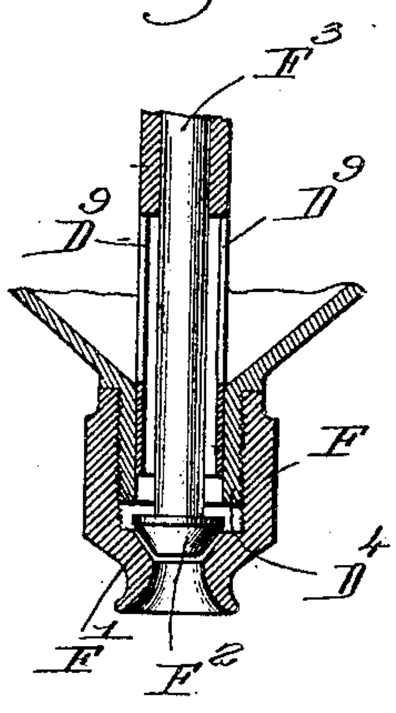


Fig. 5.

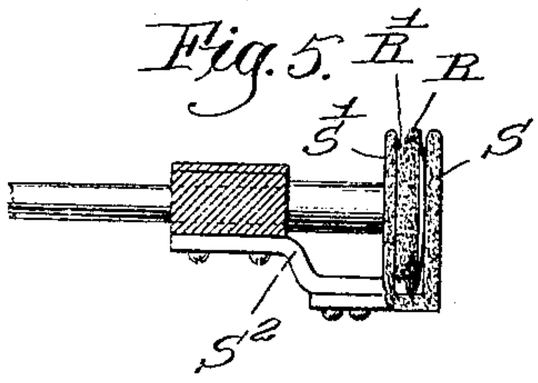
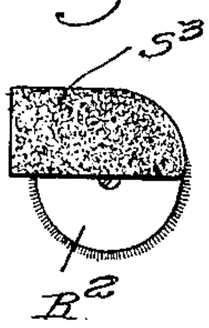


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE

WILLIAM E. WENTZEL, OF LYNN, MASSACHUSETTS; ADELA E. WENTZEL, OF LYNN, MASSACHUSETTS, EXECUTRIX OF SAID WILLIAM E. WENTZEL, DECEASED.

EDGE-BLACKING MACHINE.

933,009. Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed June 7, 1905. Serial No. 264,040.

To all whom it may concern:

Be it known that I, WILLIAM E. WENTZEL, a citizen of the United States, residing at Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Edge-Blacking Machines, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a simple and efficient machine for applying blacking or other coloring solution to the edge of the sole and heel of a boot or shoe.

After a boot or shoe has been completed it is necessary to coat the exposed edge of the sole and heel, not only upon the periphery, but also upon the top of that portion extending slightly out beyond the vamp. The coating solution must be applied evenly, and without being daubed over the vamp or other portion of the shoe where it would produce an unsightly appearance. In this operation, as in all operations connected with the manufacture of boots and shoes, it is desirable to obtain as rapid and efficient work as possible. In the machine of the present invention the shoe is held up against a rotating brush, the coating material is fed onto the brush in just the desired amount, and the brush is guided along the edge of the sole and heel, the vamp is protected from contact with the brush, and any superfluous coating solution is wiped up from the brush and guide.

The drawings show a machine embodying in its preferred form the invention, although it is obvious that many changes in construction, arrangement and operation of the parts may be made without departing from the spirit of the invention.

In the drawings, Figure 1 represents a rear elevation, partially in cross-section, of the machine; Fig. 2 a plan view of the reservoir and the mechanism mounted on the top thereof; Fig. 3 an enlarged cross-section through the upper portion of the reservoir and the mechanism mounted thereon, taken through the axis thereof and on the line *x*—*x*, of Fig. 2; Fig. 4 is an enlarged cross-section of the lower end of the reservoir and the valve, the said section being taken at right-angles to that appearing in Fig. 1; Fig. 5 is a plan view of the brush with the framework in cross-section; Fig. 6 is a side view of the brush and wiper.

The machine comprises a suitable stand A, with uprights A′, A′, supporting the tank or reservoir B for containing the coating solution. The reservoir B is preferably inclined to the vertical, as indicated in the drawing, thus rendering the machine more compact, and yet allowing the solution to feed by gravity to the valve directly over the brush.

The brush C for applying the solution is mounted on a shaft C′, journaled in the lower portion of the stand A, and this shaft carries a fast pulley C^2, and a loose pulley C^3, a suitable shipper C^4 with its operating rod C^5 being provided whereby the belt can be shipped from one pulley to the other and the machine thrown into or out of operation.

The solutions usually employed for the coating of the sole edge settle rapidly, and become in the lower portion of the tank or reservoir containing them thick and pasty. It is necessary, therefore, to stir the solution frequently to keep it of the required consistency. To secure this end a stirrer D is mounted in the tank, and is shown as comprising two wide blades D′, D′, which not only stir the solution but scrape the sides of the tank reached by the solution, and a stirring and scraping blade D^2, of triangular form, stirring the solution at the bottom of the tank and scraping also the bottom surface of the tank. The stirrer D is mounted fast on a hollow shaft D^3, journaled in suitable bearing extensions D^4, D^5 of the reservoir, and carries at its upper end a pulley D^6, keyed thereto at D^7, adapted to rotate the shaft and to slide lengthwise thereof, for a purpose to be described.

The pulley D^6 is continuously rotated during the operation of the machine from the main shaft C′, by means of a belt E, running over idlers E′, and around a pulley E^2, fast to said shaft.

The lower end of the reservoir carries a valve to feed the solution out upon the brush in the desired quantity. It is necessary that this valve should be capable of regulation to supply the exact amount needed, according to the size of the surface to be coated, the speed with which the work is done, and the consistency of the solution employed. Whenever the machine is left standing idle, and even when the stirrer is run-

ning and the machine is not being used, the solution will settle and thicken around the valve, and will start to flow with difficulty, or spurt out suddenly. The obviation of this difficulty is one of the most important features of the present invention. Herein means are provided for stirring up or agitating the solution at the outlet through the valve, so that the liquid will flow readily through the valve when the valve is open. This is secured by rotating the valve when it is lifted from its seat, and also by rotating the end of the stirrer D, having its bearing in the outlet of the reservoir and forming itself an outlet for the solution. The tubular end of the stirrer which projects into the reservoir outlet forms in fact an inner movable wall of the outlet, for the liquid is fed through the tubular end portion of the stirrer. The rotation of the stirrer therefore agitates the liquid at the outlet by moving the wall of the opening through which the liquid is fed. In the construction shown and described both these parts are rotated and rotated in the same direction, but the advantages of the invention will be secured to a large extent by rotating either part alone, the other remaining stationary, or by rotating both parts in opposite directions, but the construction shown has been found to work with great success and to be a simple construction.

A nozzle F is screwed or otherwise fastened onto the lower projecting end of the reservoir, and carries a preferably conical valve-seat F′. A valve F^2, shaped to fit the seat is mounted on the end of a long rod F^3, extending up through the hollow shaft D^3. At its upper end the rod F^3 has fastened thereon a clutch or friction disk F^4, and the rod is journaled in a frame G on top of the reservoir and has a thrust-bearing against the frame. This construction is obtained by forming the friction disk F^4 with an integral tube F^5, embracing the rod F^3, the whole being keyed to the rod as at F^6. A cap F^7, screwed onto the end of the rod, and abutting against the sleeve F^5 holds the parts together. The thrust-bearing is preferably formed by a disk H, surrounding the tube, and separated from the frame G by a spiral spring H′, and a ball-bearing H^2 is located between the disk H and the disk F^4.

The pulley D^6 is provided with a friction surface D^8, coöperating with the friction disk F^4, and when the valve is closed these parts are slightly separated, as indicated in Fig. 3.

The valve is lifted from its seat by giving a vertical movement to the pulley D^6 and bringing it into contact with the friction disk F^4. This is secured by mounting integrally of the bearing D^5 coöperating cams. Cams M, M, are mounted diametrically opposite fast to the top of the tank, and cam surfaces M′, coöperating with the cams M, M, are formed on the sleeve M^2. A lever M^3 is clamped at M^4 around and to the sleeve M^2. When, now, the lever is pulled it will rotate the sleeve M^2 and cause the cam surfaces M′ to ride up on the cams M, thus raising the sleeve M^2 and with it the pulley D^6. The lever M^3 is operated by a chain N running over a suitable pulley N′, and connected with a suitable treadle or other device N^2, the movement of which treadle is limited by a stop N^3.

In operation the belt shipper C^5 is moved to bring the belt onto the fast pulley and at once the stirrer is set in operation and stirs the solution continually. The shoes are then presented to the brush C, and at the same time the desired amount of solution is allowed to run out on the brush. This is done by depressing the treadle N^2, which swings the lever M^3, and through the cams raises the pulley D^6 into contact with the friction disk F^4. This again lifts the valve F^2 from its seat, but at the same time causes the valve to rotate, because the means (the pulley etc.) for lifting the valve from its seat is itself in constant rotation. Immediately, therefore, the valve is lifted from its seat it turns or stirs up the thickened or coagulated solution and allows it to run out freely onto the brush. When the necessary amount has been supplied the lever is released and a spring O returns the parts to their normal position and the valve drops back onto its seat.

The extent to which the valve F^2 is lifted from its seat is controlled in various ways. First, the movement of the treadle is limited by the stop N^3; second, the movement of the lever N^2 may be adjusted by a turn-buckle N^4, or similar device, located in the chain N, and third, the cam sleeve M^2 may be adjusted rotarily within the clamping lever M^3.

The solution is supplied to the tank through a cover opening P, the bottom of which is a sieve P^2.

In the construction shown the tubular shaft D^3 has its bearing in the lower end of the reservoir, and to allow the feed of the solution to the valve openings D^9 are formed in the sleeve, and sufficient space is provided between the rod F^3 and the inner wall of the tube to allow of the flow of the solution.

In coating the sole and heel edge, the brush must not only coat the periphery of the sole and heel but must reach into the recess formed between the vamp and the sole, to coat thoroughly the exposed top of the sole or heel. The brush is therefore constructed of two sections, the exterior of comparatively long and stiff bristles R, and the interior of comparatively short and pliable bristles R′. The former reach over and coat the upper exposed edges, the latter apply the coating to the periphery. The width of the sections may be varied according to the

width of the work to be coated. In order to protect the coating solution from being applied to the vamp or anything but the sole, a metallic disk R^2 of slightly less diameter than the bristles is mounted on the exterior of the brush. This disk serves not only to guard the parts of the shoe, but also serves as a guide for presenting the heel and sole to the brush. This disk is allowed to run in the recess between the edge of the sole or heel and the vamp. In this manner the shoe can be readily and accurately presented to the brush.

In order to prevent any slight surplus of the solution from running onto the surface of the disk R^2 or dropping off from the brush onto the shaft C′ wipers are provided. The wipers consist of two plates S, S′, adjustable with respect to each other so as to press lightly against the opposite sides of the brush and guard, and mounted by an arm S^2 to the frame of the machine. These plates are covered with a suitable absorbent material S^3, preferably in the form of a sleeve slipped on over the plates so as to be capable of removal when desired. These absorbent plates remove any of the solution running over onto the guard R^2 or liable to drip onto the shaft C′ and keep the whole clean and neat. In practice when the machine is properly handled they are found to take up very little of the solution and will need comparatively infrequent replacing.

While the machine has been described as particularly designed for the application of a coating solution to the edges of the sole and heel of boots and shoes, it is obvious that in many respects it is equally applicable to the application of other solutions for other purposes, and the invention is not to be restricted to the particular use for which the machine is especially adapted.

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

1. In an apparatus of the class described, a liquid reservoir, terminating in a cylindrical outlet, a stirrer in said reservoir provided with a tubular end portion extending into said outlet, means for rotating the stirrer, a valve at the reservoir outlet below the end of the stirrer, and means for opening and closing said valve.

2. In an apparatus of the class described, a liquid reservoir terminating in a cylindrical outlet, a stirrer in said reservoir provided with a tubular end bearing portion fitting said outlet, and through which tubular end portion the liquid is fed, means for rotating the stirrer, a valve at the reservoir outlet, and means for opening and closing said valve.

3. In an apparatus of the class described, a liquid reservoir, a stirrer in said reservoir, means for rotating the stirrer, a valve seat in the reservoir outlet, a valve coöperating with said seat, means for normally maintaining said valve closed in engagement with its seat, means for lifting the valve from its seat and thereupon rotating it with respect to its seat.

4. In an apparatus of the class described, a liquid reservoir terminating in an outlet, a valve seat in the reservoir outlet, a valve coöperating with said seat, means for normally maintaining the said valve closed in engagement with its seat, means for lifting the valve from its seat and thereupon rotating it with respect to its seat.

5. In an apparatus of the class described, a liquid reservoir, a stirrer in said reservoir, means for rotating the stirrer, a valve at the reservoir outlet, means for lifting the valve from its seat and simultaneously clutching it to said stirrer rotating means.

6. In an apparatus of the class described, a liquid reservoir, a stirrer in said reservoir, means for rotating the stirrer, a valve at the reservoir outlet, means for lifting the valve from its seat and simultaneously clutching it to said stirrer rotating means, a rotary brush below said outlet.

7. In an apparatus of the class described, a liquid reservoir, a hollow shaft extending through said reservoir and carrying a stirrer, a valve at the lower end of the reservoir, a valve stem for said valve extending up through said hollow shaft, a driving pulley keyed to slide longitudinally on the upper end of said hollow shaft, a friction disk mounted on the upper end of said valve stem, means for rotating the pulley, means for lifting the pulley on the hollow shaft whereby when the pulley is raised it is brought into contact with the friction disk simultaneously lifting the valve from its seat and setting it into rotation.

8. In an apparatus of the class described, a liquid reservoir, a hollow shaft extending through said reservoir and carrying a stirrer, a valve at the lower end of the reservoir, a valve stem for said valve extending up through said hollow shaft, a driving pulley keyed to slide longitudinally on the upper end of said hollow shaft, a friction disk mounted on the upper end of said valve stem, means for rotating the pulley, means for lifting the pulley on the hollow shaft whereby when the pulley is raised it is brought into contact with the friction disk simultaneously lifting the valve from its seat and setting it into rotation, a rotary brush below said valve.

9. In an apparatus of the class described, a liquid reservoir, a hollow shaft extending through said reservoir and carrying a stirrer, a valve at the lower end of the reservoir, a valve stem for said valve extending up through said hollow shaft, a driving pulley keyed to slide longitudinally on the upper end of said hollow shaft, a friction disk

mounted on the upper end of said valve stem, means for rotating the pulley, means for lifting the pulley on the hollow shaft whereby when the pulley is raised it is brought into contact with the friction disk simultaneously lifting the valve from its seat and setting it into rotation, a ball thrust bearing between said friction disk and the frame of the machine.

10. In an apparatus of the class described, a liquid reservoir, a hollow shaft extending through said reservoir and carrying a stirrer, a valve at the lower end of the reservoir, a valve stem for said valve extending up through said hollow shaft, a driving pulley keyed to slide longitudinally on the upper end of said hollow shaft, a friction disk mounted on the upper end of said valve stem, means for rotating the pulley, means for lifting the pulley on the hollow shaft whereby when the pulley is raised it is brought into contact with the friction disk simultaneously lifting the valve from its seat and setting it into rotation, a yielding ball thrust bearing between said friction disk and the frame of the machine.

11. In an apparatus of the class described, a liquid reservoir, a stirrer in said reservoir, means for rotating said stirrer including a friction member, a valve at the lower end of the reservoir, a valve stem for said valve carrying a second friction member, means for simultaneously lifting the valve from its seat and bringing said friction members into contact, whereby the valve is rotated when lifted from its seat.

12. In an apparatus of the class described, a liquid reservoir, a valve seat in the reservoir outlet, a valve coöperating with said seat, means for normally maintaining said valve closed in engagement with its seat, means for lifting the valve from its seat and thereupon rotating it with respect to its seat, means for adjusting the extent of movement of the valve when lifted from its seat.

13. In an apparatus of the class described, a liquid reservoir, a stirrer in said reservoir, means for rotating the stirrer, a valve at the reservoir outlet, means for lifting the valve from its seat and simultaneously clutching it to said stirrer rotating means, means for varying the extent at which the valve is lifted from its seat when clutched to the stirrer rotating means.

14. In an apparatus of the class described, a liquid reservoir, a hollow shaft extending through said reservoir and carrying a stirrer, a valve at the lower end of the reservoir, a valve stem for said valve extending up through said hollow shaft, a driving pulley keyed to slide longitudinally on the upper end of said hollow shaft, a friction disk mounted on the upper end of said valve stem, means for rotating the pulley, a cam for lifting said pulley, a lever connected with said cam, and means for swinging the lever, whereby when the pulley is raised it is brought into contact with the friction disk simultaneously lifting the valve from its seat and setting it into rotation, a ball thrust bearing between said friction disk and the frame of the machine.

15. In an apparatus of the class described, a rotary brush comprising a circular layer of comparatively long and stiff bristles, a disk located on one side of said layer, and a layer of comparatively short and pliable bristles located on the opposite side.

16. In an apparatus of the class described, a rotary brush, absorbent wipers located at each side of and in contact with said brush.

17. In an apparatus of the class described, a rotary brush provided at one side with a disk serving as a combined guide and guard, absorbent wipers located at each side of and in contact with the said brush and disk.

18. In an apparatus of the class described, a rotary brush provided at one side with a disk serving as a combined guide and guard, wiper plates located at each side of said brush, a removable absorbent covering for each plate.

19. In an apparatus of the class described, a rotary brush provided at one side with a disk serving as a combined guide and guard, wiper plates located at each side of said brush, a removable absorbent covering for each plate, said plates being adjustable toward and from each other to accommodate brushes of varying thickness.

20. In an apparatus of the class described, a liquid reservoir, a cylindrical outlet at the lower end thereof provided with an inner movable wall, means for rotating said inner wall of the outlet, a valve for said outlet.

21. In an apparatus of the class described, a liquid reservoir, a cylindrical outlet at the lower end thereof provided with an inner movable wall, means for rotating said inner wall of the outlet, a rotatable valve having a stem extending up within but separated from said inner wall, means for rotating said valve and stem.

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

WILLIAM E. WENTZEL.

Witnesses:
NATHAN HEARD,
MABEL PARTELOW.