Aug. 15, 1933. C. TURNER 1,922,117

COATING MACHINE

Filed May 11, 1929

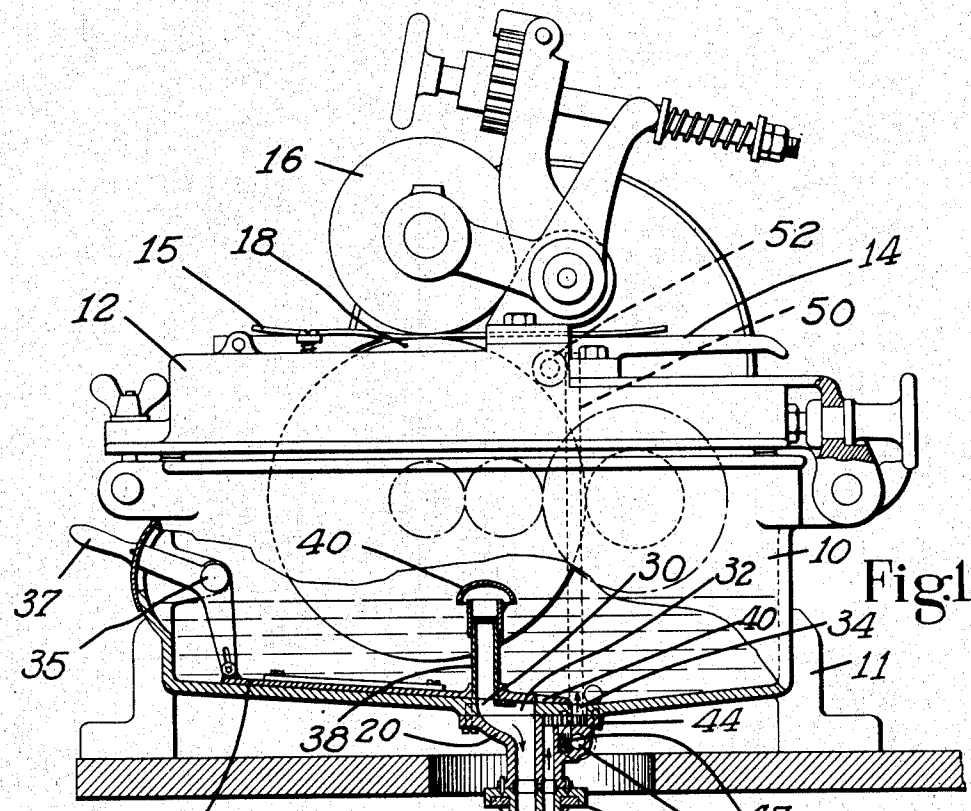


Fig. 1.

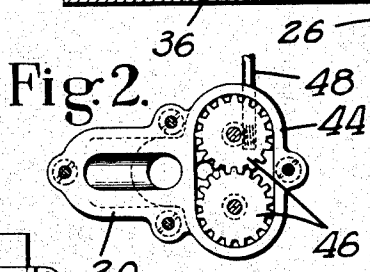


Fig. 2.

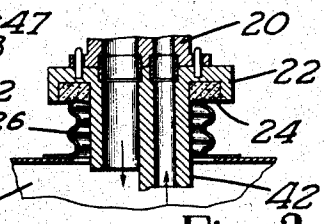


Fig. 3.

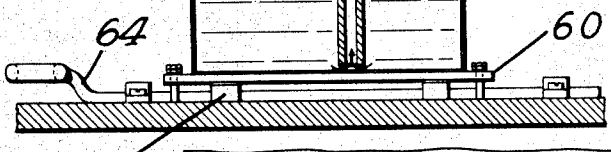


Fig. 4.

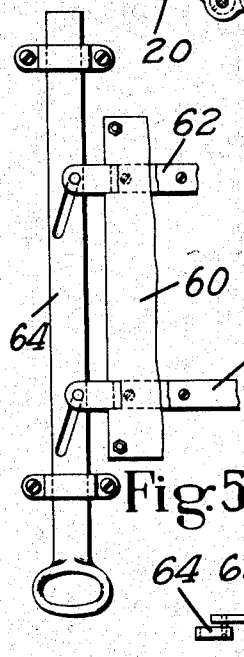
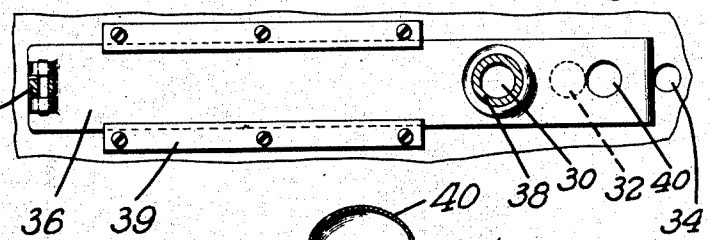


Fig. 5.



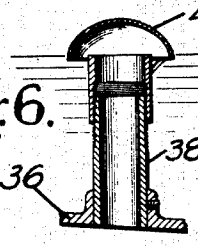


Fig. 6.

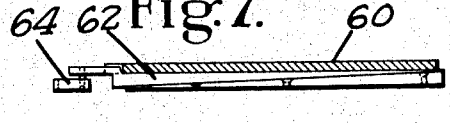


Fig. 7.

INVENTOR

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By his Attorney,

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UNITED STATES PATENT OFFICE

1,922,117

COATING MACHINE

Cameron Turner, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a Corporation of New Jersey

Application May 11, 1929. Serial No. 362,373

12 Claims. (Cl. 91—51)

This invention relates to coating machines in general and is herein disclosed in its application to machines for applying cement to parts of boots and shoes.

In operating cementing machines under factory conditions, it is important to maintain a large supply of cement available within the machine so that the work may be carried on continuously without the necessity for interruption to replenish the supply. It is, moreover, important to maintain the cement at a uniform level in order to insure the desired accuracy in the coating or cement applying operation. Accordingly, it is important to supply cement to the machine or to its service reservoir at substantially the same rate at which it is withdrawn for application to the work.

In one aspect, my invention consists in a coating machine having a service reservoir communicating with a container for a reserve supply of cement and improved detachable connections between the two, including a pump operating to deliver an excess amount of cement to the reservoir and an adjustable overflow return pipe acting to maintain the cement in the reservoir at a constant predetermined level. Such construction satisfactorily meets the requirements of commercial coating machines in the respects above discussed and possesses other advantages which will hereinafter appear.

In handling a cement including a rubber solvent, such as gasoline, it is desirable to enclose the reservoir to reduce evaporation of the solvent. This is effected in accordance with a feature of my invention by completely enclosing the service reservoir and by sealing the container communicating with the reservoir against the circulation of air. As herein shown, this is effected by arranging the container beneath the service reservoir so that it communicates with the latter through its bottom, the cement level being maintained by a liquid sealed overflow pipe in the reservoir which leads back to the container.

It is also desirable to maintain a constant and uniform circulation of the cement to prevent it from settling or separating. This is effected, as herein shown, by drawing the supply of cement for replenishing the service reservoir from the bottom of the container, forcing it through the bottom of the reservoir and the contents thereof and returning the surplus cement from the surface of that contained within the reservoir.

It is desirable that the container used for replenishing the service reservoir may be of such commercial type that it may be used for transportation and storage of the cement, if desired. In accordance with another feature of my invention, accordingly, the service reservoir is provided with a downwardly directed opening and means is provided for supporting a commercial container outside the machine and in communication with said opening, so that when one container is emptied a new full container may be readily substituted in its place. The connection of the container with the service reservoir is such that it can be readily made and the outlet is so controlled that it may be closed to permit the removal of the container. In this connection, another feature of the invention consists in means for opening the service reservoir so that its contents can be drained to the container when the machine is not in use and which may be operated also to close the container for the purpose of washing it out with a solvent at the end of a day's run.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing, in which

Fig. 1 is a view in elevation of the machine with certain parts shown in section;

Fig. 2 is a plan view, on an enlarged scale, of the pump;

Fig. 3 is a sectional view, on an enlarged scale, of the connection between the service reservoir and the container;

Fig. 4 is a plan view of the slide for controlling the connection between the reservoir and the container;

Fig. 5 is a plan view of a portion of the mechanism for maintaining the container in place;

Fig. 6 is a detail view in section of the overflow pipe; and

Fig. 7 is a detail of the mechanism for supporting the container.

As already stated, this invention relates to coating machines in a broad sense, and of such machines those for applying cement or other adhesive constitute an important class. The machine herein shown will, for convenience, be termed a cementing machine and the liquid which it applies to the work will be termed cement, in which term is comprehended any liquid adhesive.

The illustrated machine comprises a base 11, in which is mounted an enclosing casing 10 which serves as a service reservoir and also as

the main portion of the machine frame. The upper part 12 of the frame is hinged at one side of the casing 10 and is provided with a work table 14 upon which is illustrated a piece of work 15 in position to have cement applied to it. Mounted within the casing 10 is a driven cement applying roll 18 which carries cement to the lower surface of the work piece, passing over the work table 14. This cooperates with a spring mounted presser roll 16, the work being engaged between these two rolls at an opening in the work table and fed by them from front to rear. The construction of these parts may correspond to those of any coating machine of commercial type, the one illustrated in outline being a machine of the type shown in Letters Patent No. 1,780,341, granted Nov. 4, 1930, upon the application of John W. Cosgrove.

To the bottom of the casing 10 is secured a downwardly extending nozzle 20 having inlet and outlet passages and adapted to be readily connected to a downwardly extending suction pipe 42 by means of the readily separable joint shown in Fig. 3 operating by a straight line movement to bring the parts together. It will be observed that this suction pipe includes a flanged disk 22 recessed on its under face to receive a ring 24 of rubber or other yielding material and provided on its upper face with sleeves and dowels to effect a readily separable joint with the nozzle 20. This flanged disk 22 also has a passage adapted to be alined with an overflow pipe 38 and a coacting passage in the nozzle 20. The nozzle 20 also contains a gear pump, comprising the gears 46, as shown in Fig. 2, which act to draw cement upwardly through the suction pipe 42 and discharge it into the bottom of the service reservoir through the opening 34. One of the gears 46 is provided with a downwardly extending stem 47, in which are formed gear teeth which cooperate with the teeth of a worm formed on the end of a horizontally disposed shaft 48. The shaft 48, in turn, is driven by a geared connection with a vertical shaft 50 which is driven in any convenient manner from the moving parts of the machine as, for example, through the horizontal worm 52.

The bottom of the service reservoir is provided with two additional openings 30 and 32 in line with the opening 34, as shown in Fig. 4. A slide 36 is guided for movement on the bottom of the reservoir by undercut ribs 39 and is provided with a vertically disposed overflow pipe 38, having a threaded nipple 41 supporting in spaced relation an inverted cap 43 at its upper end. The nipple and cap may be adjusted vertically upon the overflow pipe to determine the cement level in the reservoir. The upper end of the nipple 41 extends slightly above the rim of the inverted cap 43, so that the upper end of the overflow pipe is at all times under liquid seal and the circulation of air through the overflow pipe is thus prevented.

The slide 36 is provided with an opening 40 located between the overflow pipe 38 and the end of the slide. At its outer end the slide is connected to a bell crank lever 37 which is pivoted upon a stud 35 within the casing 10 and extends outwardly through a slot in a curved boss on the frame within convenient reach of the operator. A cover 33, attached to the lever 37, closes the slot in all positions of the lever. The slide 36 may be set in any one of three positions by appropriately moving the lever 37. As shown in Figs. 1 and 4, the overflow pipe registers with the opening 30 and the inlet opening 34 is uncovered. If the lever 37 is swung upwardly, retracting the slide 36, the overflow pipe 38 is moved toward the left out of register with the opening 30 and the opening 40 in the slide is brought into register with the opening 32. This permits the contents of the service reservoir to be quickly drained. If the lever 37 is swung downwardly to the limit of its movement, the slide 36 is advanced so that its end closes the inlet opening 34 and the overflow pipe is closed by the portion of the reservoir bottom between the openings 30 and 32. The reservoir is thus entirely closed and may be washed out with solvent supplied when the upper part 12 of the frame is swung into an open position.

The service reservoir communicates through the nozzle 20 with a container 28, which may be a can or other commercial container having an upwardly extending nozzle 26 of the proper diameter to fit at its upper edge against the rubber ring 24. The container 28, after the suction pipe 42 has been inserted therein, is supported upon a vertically movable plate 60 which, in turn, rests upon wedge-shaped bars 62, as shown in Fig. 7. At its left end, each bar 62 has a pin projecting into an oblique slot in a slide member 64. It will be apparent that by moving the slide 64 inwardly, as shown in Fig. 5, the wedge-shaped bars 62 will be drawn outwardly and the plate 60 lowered, permitting disengagement of the container can 28 from the nozzle 20.

In operating the machine herein shown, the slide 36 is first moved to close the service reservoir and a small amount of cement supplied thereto. The container 28 on which has been positioned the flanged disk 22 with its suction pipe 42 dipping into the contents of the container is then moved into position beneath the nozzle 20 and forced upwardly by the movement of the slide 64 to close the slip joint of the suction pipe 42 and establish a tight connection between the container and the reservoir. The machine is then started, so that the gear pump is set in motion and the lever 37 swung into the position shown in Fig. 1, in which the inlet opening 34 is uncovered and the overflow pipe 38 brought into registration with the opening 30. The cement previously delivered to the service reservoir acts to prime the pump and circulation of the cement at once ensues, in which cement is drawn from the bottom of the can 28 through the suction pipe 42 and delivered, through the inlet opening 34, to the service reservoir. If the machine is not operating the entire amount of cement circulated reaches the overflow pipe 38 and returns to the can 28. If the machine is in operation, cement is continuously withdrawn from the service reservoir and applied to the work but even when operating continuously, the amount of cement supplied by the gear pump will be in excess of that withdrawn from the reservoir, so that the cement level will be maintained at all times and the surplus returned through the overflow pipe 38.

At the end of the day's run, the lever 37 is moved into its uppermost position and the contents of the service reservoir drained back to the can 28. This may be then removed to the place of storage and the waste of cement remaining about the machine is avoided. If the machine is to be washed out with solvent, this may be effected by moving the lever 37 to the downward limit of its movement, thereby

closing the openings in the service reservoir, so that it will hold the solvent. This, in turn, may be discharged from the machine after the removal of the container and the machine is thus left in a clean condition.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A device of the class described, comprising a service reservoir for cement, a commercial container, and connections between the two including a pump operating to deliver an excess amount of cement to the reservoir, an adjustable overflow return pipe acting to maintain the cement in the reservoir at a constant predetermined level, and an inverted cup-like member over the overflow pipe with its lower edge below the upper edge of said pipe.

2. A device of the class described, comprising a service reservoir for cement, a container, connections between the two including a supply opening and an overflow return opening, and means for simultaneously closing both of said openings.

3. A device of the class described, comprising a service reservoir for cement, a container, connections between the two including a supply pipe and an overflow return pipe, and means within the reservoir for simultaneously closing both connections or for closing the supply pipe alone.

4. A device of the class described, comprising a service reservoir for cement having inlet and outlet passages in the bottom, a container communicating with the bottom of the reservoir through the inlet passage, an overflow return pipe projecting upwardly a predetermined distance above the bottom of the reservoir adapted to conduct excess cement to the container through the outlet passage, means for continuously delivering an excess amount of cement from the container to the reservoir to maintain the cement level therein, and a slide carrying said pipe constructed and arranged in one position to close both the inlet and outlet passages.

5. A device of the class described, comprising a service reservoir for cement, a container located beneath the reseroir and communicating therewith by a passage, and a slide within the reservoir carrying an upstanding overflow return pipe and movable to bring the latter into registration with said passage or to close the passage.

6. A device of the class described, comprising a service reservoir for cement having a nozzle at the bottom, means for withdrawing cement from the reservoir and applying it to the work, a detachable container, means comprising a suction pipe readily attachable to said nozzle by a straight line movement for delivering cement from the container to the reservoir to maintain the cement level therein comprising recirculating and overflow return connections which include a pump, and means for forcing said container toward the reservoir to close the joint in the suction pipe.

7. A device of the class described, comprising a service reservoir from which cement is drawn, a detachable commercial container located beneath the reservoir, means for lifting and delivering an excess of cement from the container to the reservoir, a nozzle means secured to said reservoir comprising a suction pipe and an overflow return connection for governing the cement level and recirculating the surplus cement, and means for clamping said commercial container in tight engagement with said nozzle means.

8. A device of the class described, comprising a service reservoir from which cement is drawn, a commercial container having an opening of small size and located beneath the reservoir, and means for clamping the container to the reservoir embodying supply connections for taking cement from the bottom of the container and delivering it through the bottom of the reservoir adapted to be introduced through the opening of the container, together with an overflow return connection leading through the bottom of the reservoir to the container.

9. A device of the class described, comprising a service reservoir from which cement is withdrawn for application to the work, a nozzle communicating with the bottom of the reservoir, a container located beneath the reservoir and having detachable connection with the lower end of the nozzle, a discharge pipe from the container passing up through said nozzle, and means for closing the nozzle without affecting its connection with the container.

10. A device of the class described, comprising a service reservoir from which cement is withdrawn for application to the work, a nozzle communicating with the bottom of the reservoir, a container connected to the lower end of the nozzle, a pipe projecting from the nozzle to the bottom of the container, and a pump located in the nozzle for drawing cement from the container and discharging it into the reservoir.

11. A device of the class described, comprising a service reservoir from which cement is withdrawn for application to the work, a container connected to the bottom of the reservoir and communicating therewith through an opening, and an overflow return pipe projecting a predetermined distance above said opening, serving to determine the cement level, and movable means supporting said overflow pipe slidable to permit the reservoir to drain directly through said opening.

12. A cement applying machine having an enclosed service reservoir from which cement is withdrawn for application to the work, a nozzle projecting from the reservoir, means for forcing a commercial container into air-tight relation with said nozzle, and means embodying a plurality of passages for effecting a circulating flow of cement between the reservoir and container through said nozzle.

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