

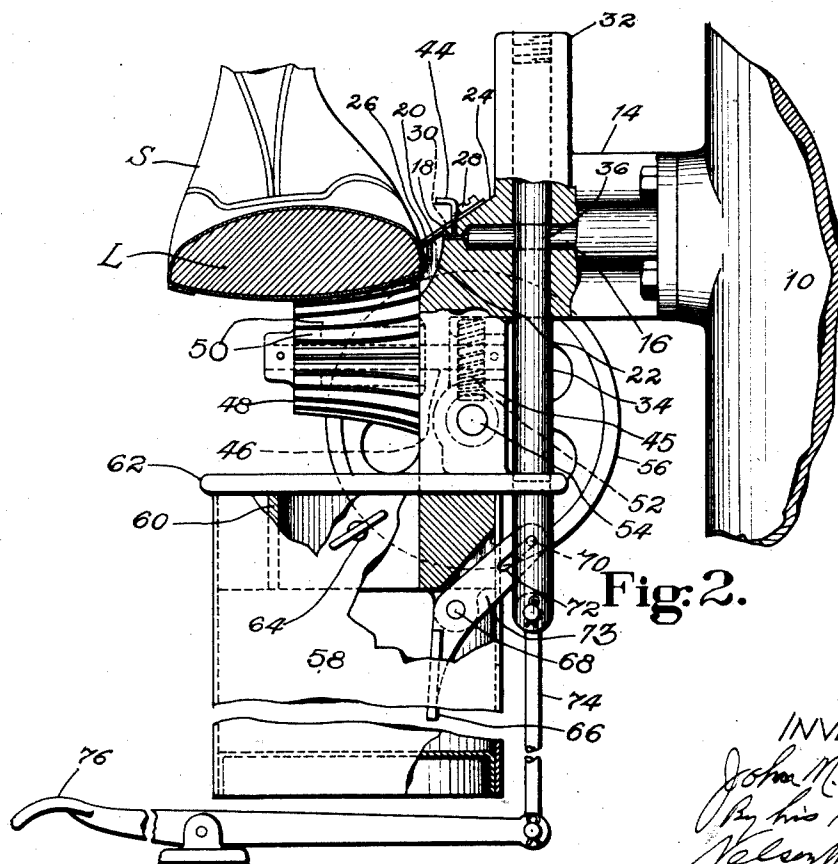
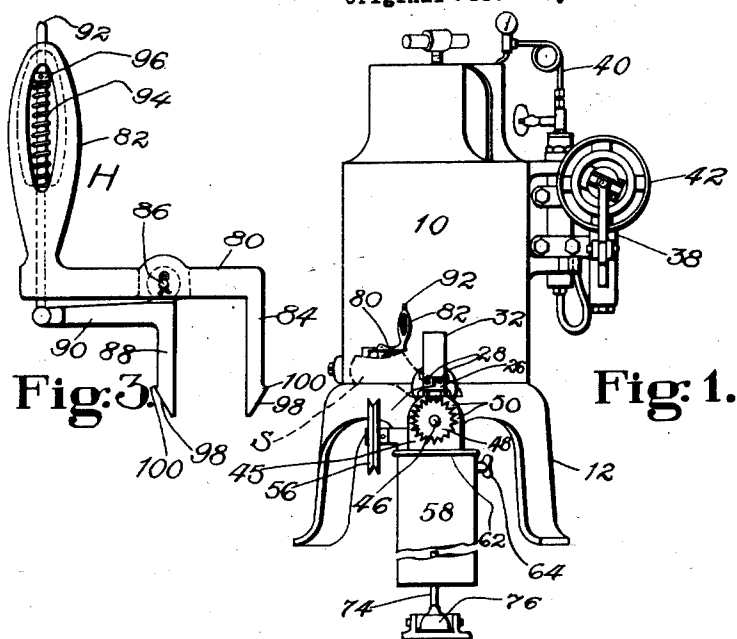
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CEMENTING MACHINE

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CEMENTING MACHINE.

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This invention relates to machines for applying coatings, of such substances as cement, to various objects, it being of especial utility in connection with the cementing of the bottoms and adjacent margins of the uppers of tennis and like shoes for the application of the soles and foxing-strips. It has as an object the provision of a simple, efficient and economical machine by which these areas may be coated quickly and uniformly with the production of sharply defined lines between the coated and uncoated surfaces of the upper material, and without requiring any high degree of skill on the part of the operator.

In the attainment of this object, a feature of the invention consists of a cement-containing chamber having a normally open side providing a delivery opening which is free and unobstructed for the presentation of work thereto and is arranged to be closed by the work, cement being preferably delivered to said opening by gravity, and means for supporting or moving the work in cooperation with this restricted delivery-opening to receive cement directly therefrom. Through the opening into the chamber a portion of the work, as the foxing-area, may project to receive a coating as it is moved past the opening, and if another surface, as the shoe-bottom, is also to be coated, the means for moving the work may act as applying means. Regardless of whether or not there is mechanical means for feeding the work, there is provided a work supporting member having a guiding surface inclined downwardly and outwardly from the lower side of the delivery-opening of the cement-chamber, this member preferably being in the form of a roll having a curved work-engaging surface, the curve substantially conforming to the surface operated upon. With this arrangement, this surface may not only guide and support the work in its movement past the cement-chamber, but may also apply cement to the shoe-bottom, it receiving its supply of cement from the associated applying device. As illustrated, the top wall of the applying chamber has a relatively thin edge for contact with the work, this serving as a gage to define the line between the coated and uncoated areas. I have shown this top wall as adjustable over the chamber, this being preferably in a direction inclined to the horizontal, toward and from the guiding surface of

the work supporting roll. By this means, the width of the coated area may be altered.

In using a machine of this character, as when one applying device supplies the coating material for another, there may be an excess of the cement flow from the applying devices, which should be collected and preserved against evaporation of the solvent to avoid waste. To accomplish this and minimize effort and attention on the part of the operator, a further feature of the invention involves a receptacle to catch the excess cement, and means arranged to control the condition of the receptacle as an incident to control of the operation of the machine. As herein disclosed, the receptacle is provided with a closure, which may be moved to open position for the reception of the cement or to closed position to guard it against evaporation, this closure being actuated to vary the condition of the receptacle through means controlled by the operator. Preferably, I simultaneously operate this closure and govern the flow of cement to the applying device, as by a valve in the supply-conduit, by having connections between the closure and valve.

Other features will be developed in the following description, illustrated by the accompanying drawing, in which appears one of the several embodiments which my invention may assume.

Fig. 1 showing the improved machine in front elevation;

Fig. 2 being a partial side elevation on a larger scale than Fig. 1 and with parts broken away; and

Fig. 3 being a side elevation of a holding device for use in presenting the work to the machine.

A cement-tank 10 is provided with a suitable base 12, by which it may be supported upon a bench or table. Projecting in a substantially horizontal direction from the front of the tank, near the bottom, is a tubular extension 14, through which is a conduit 16 opening into the tank and having at its opposite extremity a reduced delivery-opening or nozzle 18. This nozzle 18 communicates with a delivery-chamber, closed by opposite side walls 20, 20 and a rear wall 22, which is shown as curving downwardly and outwardly from the nozzle so that it also furnishes a bottom wall. This delivery chamber has, at

its front side, a free and unobstructed delivery-opening disposed in substantially a vertical plane so that the foxing area of an upright shoe may be presented to said opening to receive cement flowing out through the opening. The extension 14 is inclined upon its upper face at 24, and on this inclined surface is mounted a top wall 26 of the delivery-chamber, this being illustrated as in the form of a plate having a relatively thin outer edge. Preferably, the top plate 26 is adjustably secured in place by screws 28, 28 passing through slots 30, 30 extending longitudinally of the wall, or in the direction of its inclination. This manner of attachment permits the relation of the outer edge of the wall to be varied both horizontally and vertically over the open delivery-side of the chamber for a purpose which will hereinafter appear.

Rising from the top of the tank-extension 14 is a boss 32, in which is a substantially vertical bore intersecting the conduit 16 and adapted to receive a valve-plunger 34, containing a transverse opening 36 movable into or out of alinement with the conduit. By differently positioning this plunger, the flow from the tank through the nozzle 18 may be controlled. Although the tank and delivery chamber are so positioned that cement may flow on to the work by gravity, it may be desirable to insure this flow when the valve is open by providing an air-pump 38 mounted upon the tank and connected to it by a pipe 40. Power may be applied to the pump through a pulley 42 from any suitable source, and the required pressure produced in the space above the cement at the top of the tank. Co-operating with the nozzle 18 is shown a valve 44 of the needle type, by which the amount of flow into the delivery-chamber 20 may be regulated.

Journalled in a depending portion 45 from the tank-extension 14 is a substantially horizontal shaft 46 carrying an unobstructed work-supporting and cement-applying roll 48. This roll is shown as having an inclined periphery, the larger inner extremity being in close proximity to and overlying the lower portion of the delivery-opening of the chamber. From this inner end to the reduced outer extremity, the periphery is preferably curved to generally conform to the surface to be coated, as a shoe-bottom, said roll being constructed and arranged to deflect cement on to underlying portions of the shoe adjacent to the foxing area. The length of the roll is such that this curved surface will extend for at least half the width of the largest shoe to be operated upon. In the periphery of the roll are preferably longitudinal depressions 50, the inner ends of which receive cement flowing from the chamber 20 and hold this to be spread upon a shoe-bottom applied to the roll. To its function as an applying member, the roll adds that of a support and

a guide for the work along the chamber 20, and may also be caused to feed the work. For this last-mentioned purpose, the shaft 48, which is rotatable about an axis substantially normal to the plane of the delivery opening of the chamber, is driven by gearing 52, which here appears as spiral, from a shaft 54 having a bearing in the portion 45 and lying transversely of the shaft 48. The shaft 54 may receive power through a pulley 56.

To assure the proper supply of cement or other coating fluid to the applying devices, an excess over that required for coating purposes must be delivered, and this tends to drip from the roll. To receive this drip and hold it without undue waste of the cement by evaporation of the solvent, I arrange below the roll 48 a container 58. This, in the present embodiment of the invention, is supported upon an annular flange 60 at the under side of a bracket 62 carried upon the depending portion 45 of the tank-extension 14. The container or receptacle may be removably held in place upon the flange by a set-screw 64 passing through an opening in the container and being threaded into the flange. The container is provided with a closure in the form of a cover 66 hinged at 68 upon the flange 60 and being arranged to swing from a horizontal position, in which the cement-receiving opening of the container is closed, to a vertical position, as illustrated in Fig. 2 of the drawing, in which the container may receive, unimpeded, cement from the roll 48. It is desired that this cover shall be closed at all times when the machine is not in operation. This I accomplish, as here illustrated, by connections to the valve 34. Projecting from the side of the plunger is a pin 70 arranged to enter a slot 72 lying longitudinally of an arm 73 extending from the cover 66. When the valve-plunger is so located that its opening 36 is in alinement with the conduit 16, the pin-and-slot connection holds the cover 66 as shown in Fig. 2. When, however, the plunger is lowered to stop the passage of cement through the conduit, the travel of the pin in the slot swings the cover to a horizontal position, practically closing the opening of the container and effectively preventing the evaporation of the solvent in the cement. This simultaneous movement of the valve and closure I place under the control of the operator by joining the plunger, through a connecting rod 74, to a treadle 76, which may be fulcrumed upon the floor beneath the bench supporting the cement-tank. This manner of connection makes the open or closed condition of the container 58 an incident to the control of the flow through the conduit 16, and entirely relieves the operator of thought upon this score.

In presenting to the machine a shoe S, the foxing-area and bottom of which are to be

coated, I prefer to employ a holder H, applied to the last L within the shoe, to facilitate the operation of turning the work over the roll 48 and along the delivery-opening of the chamber. This holding device has an arm 80, extending from one end of which, at right angles, is a handle 82. At the opposite end and from the opposite side of the arm 80 is a projection 84. Pivoted at 86 between the handle and projection is another projection 88, normally lying substantially parallel to its companion. The projection 88 is in the form of a bell-crank, being provided with an arm 90, to which is articulated a rod 92 passing through a longitudinal bore in the handle 82. Within an opening in this handle and surrounding the rod is a helical spring 94 abutting at one end against the handle and at the other against a collar 96 fixed to the rod. The effect of this spring is to hold the projections 84 and 88 normally in their parallel relation, and yet allow the projection 88 to be swung inwardly, this movement being accomplished by pressure by the operator upon the outer end of the rod 92, which extends beyond the handle. The lasts upon which tennis shoes are made are provided in the cone with two holes, the distance between these being the same as that between the projections 84 and 88 when the rod 92 is depressed. Entrance of the projections into the holes in the last is facilitated by oppositely inclined surfaces 98, 98 upon the outer extremities of the projections. Beyond these inclined surfaces are last-engaging points 100, so that upon the release of the rod 92 by the operator after the projections have been introduced into the holes in the last, the points will engage it and retain it upon the holding device. Now the handle 82 serves, as is shown in Fig. 1 of the drawing, to allow the operator to conveniently associate the work with the applying devices. The top wall 26 of the applying chamber having been adjusted toward or from the adjacent surface of the roll 48 until the space between its outer edge and the roll beneath it is equal to the width of the foxing-area to be coated so that the work is supported in a predetermined relation to the wall 26, the operator places the bottom of the shoe upon the roll, with the upper against the edge of the plate, which thus serves as a gage. Inasmuch as the roll 48 is entirely unobstructed, the work may be brought up to the front of the machine from substantially any direction and the speed of operation will be improved for this reason. Now depressing the treadle 76, the plunger 34 is raised to open the conduit 16, and the cement in the tank, under the influence of the pressure, flows from the nozzle 18 into the delivery-chamber against the shoe-upper, which projects into and closes its open side, and beneath this into the depressions 50. In both the chamber and

grooves there is naturally, from the preceding operation, a residuum of cement, so that it is only necessary to add somewhat to this to prepare the applying devices for the new operation. The amount of cement necessary for this purpose may be controlled both by the adjustment of the needle-valve 44 and by the length of time which the treadle is depressed. The operator now moves the work along the chamber for the consecutive treatment of successive portions of the foxing area, holding the shoe both in contact with the curved surface of the roll and with the edge of the plate 26, he being aided in the advance by the rotation of the roll, which leaves necessary only a guiding action by the operator. This movement disposes the cement from the chamber in a band of limited width over the foxing-area. The contacting gage-edge of the plate limits the flow of cement upwardly upon the shoe to determine the line of the upper edge of the cemented foxing area, and produces a clean line of demarcation between the coated and uncoated areas. At the same time, as the shoe is moved progressively past the delivery device, the roll 48 is coating the adjacent portion of the bottom, the application extending to points somewhat beyond the center line of the shoe, so that when the entire foxing-area has been presented to the delivery-chamber, the bottom will have been fully coated. When the more inclined sections of the upper are reached, as at the inside of the shank, the work may be rocked upon the curved surface of the roll, allowing the correct height of the coating over the upper to be maintained, without interfering with the continuity of the bottom-coating. The work upon a shoe having been completed the operator releases the treadle 76, closing the valve to stop the flow into the chamber and simultaneously raising the cover of the container 58 to protect its contents against evaporation.

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

1. In a machine for applying cement to the foxing areas of shoes, a cement containing chamber having one of its vertical sides open for the outward delivery of cement in a horizontal direction, said opening being free and unobstructed for the presentation of a shoe and adapted to be closed by successive portions of the foxing area of a shoe moved past the opening to present successive portions of the foxing area to said opening for the application of cement thereto, and a driven work supporting roll positioned beneath the opening and rotatable about an axis substantially normal to the plane of the opening.

2. In a cementing machine, a cement-containing chamber having an open delivery-side arranged to apply cement directly to the

work, and means arranged to receive cement from the chamber and apply it to a different area upon said work from that acted upon by the delivery-opening and to move the work in co-operation with the delivery-opening.

3. In a cementing machine, a conduit having an opening arranged to deliver cement by gravity, and an unobstructed work-supporting member having a guide-surface adjacent to said delivery-opening and inclined downwardly and outwardly from it.

4. In a cementing machine, a cement-containing chamber having an open delivery-side, and a guide-roll rotatable adjacent to the delivery-opening about an axis substantially normal to the plane of said open delivery side and having cement-holding depressions extending longitudinally of the roll and arranged to conduct cement away from the chamber.

5. In a cementing machine for curved work, a cement-containing chamber having an open delivery-side, and a guide-roll rotatable adjacent to the delivery-opening and having a work-engaging surface curved to conform to the curvature of said work.

6. In a cementing machine, a cement-containing chamber one side of which is normally open and is arranged to be closed by the work for the application of cement thereto, and a work-supporting member extending outwardly from the cement-containing chamber adjacent to its open side near the lower portion thereof.

7. In a cementing machine, a cement-containing chamber having one side normally open between its top and bottom walls for delivery of cement to work presented thereto, the top wall having a relatively thin edge for contact with the work, and a work-supporting member extending outwardly from the open side near the lower portion thereof.

8. In a machine for applying cement to the foxing areas of shoes, a cement containing chamber having one of its vertical sides open for the outward delivery of cement in a horizontal direction, said opening being free and unobstructed for the presentation of a shoe and adapted to be closed by successive portions of the foxing area of a shoe moved past the opening to present successive portions of the foxing area to said opening for the application of cement thereto, and a work supporting roll rotatable about an axis substantially normal to the plane of the opening and positioned to receive excess cement from said opening and to apply it to the bottom of a shoe so that both the foxing area and the bottom of the shoe are simultaneously coated.

9. In a cementing machine, a cement-containing chamber having an open delivery-side between top and bottom walls, and means arranged to permit the position of the top wall over the delivery-side to be varied.

10. In a cementing machine, a cement-con-

taining chamber having an open delivery-side between top and bottom walls, and means arranged to permit the position of the top wall over the delivery-side to be varied and in a direction inclined to the opening.

11. In a cementing machine, a cement-containing chamber having an open delivery-side between top and bottom walls, a roll rotatable about a substantially horizontal axis and having a work-supporting surface extending outwardly from near the lower portion of the open delivery-side of the chamber, and means arranged to permit the relation of the top wall to the roll to be varied.

12. In a foxing-cementing machine, a cement-receiving chamber having a restricted opening arranged to receive and be closed by the portion of a shoe-upper to which the foxing is to be applied, said opening being so disposed with respect to the chamber that cement will flow therefrom by gravity.

13. In a foxing-cementing machine, a cement-receiving chamber provided with an opening into which may project the portion of a shoe-upper to which the foxing is to be applied, said chamber having a gage-wall arranged to contact with the upper at the line between the coated and uncoated areas.

14. In a bottom and foxing-cementing machine, a bottom-cementing roll, and a cement-receiving chamber opening adjacent to the cementing surface of the roll and arranged to co-operate with the foxing-area of a shoe.

15. In a bottom and foxing-cementing machine, a roll provided with a periphery curved to conform to a shoe-bottom, and a cement-receiving chamber having an opening arranged to co-operate with the foxing-area of a shoe and delivering to the curved surface of the roll.

16. In a bottom and foxing-cementing machine, a roll provided with a periphery curved to conform to a shoe-bottom, and a cement-receiving chamber provided with an opening arranged to co-operate with the foxing-area of a shoe and delivering to the curved surface of the roll, the chamber having a gage-wall arranged for movement toward and from the roll.

17. In a coating machine, an applying device, a receptacle for the coating substance co-operating with the applying device, said receptacle being so arranged that its condition may be varied, and means arranged to control the condition of the receptacle as an incident to control of the operation of the machine.

18. In a cementing machine, a cement-applying device, means for supplying cement thereto, a receptacle arranged to receive cement from the applying device provided with means for varying its condition, and means arranged to control simultaneously the supply of cement to the applying device and said condition varying means.

19. In a cementing machine, a cement-applying device, a conduit delivering thereto, a receptacle co-operating with the applying device and having an opening to receive cement, and means arranged to control simultaneously the flow through the conduit and the opening of the receptacle.

20. In a cementing machine, a cement-applying device, a conduit delivering thereto, a valve in the conduit, a cement-receptacle co-operating with the applying device, a closure for the receptacle, and connections between the valve and closure.

21. In a cementing machine, a cement-applying device, a conduit delivering thereto, a valve in the conduit, a cement-receptacle co-operating with the applying device, a closure for the receptacle, and operator-controlled means for simultaneously actuating the valve and closure.

22. In a cementing machine, a plurality of cement-applying devices one of which is arranged to deliver cement to another, a receptacle arranged to receive an excess of delivered cement, a movable closure for the receptacle, and operator-controlled means for moving the closure.

23. In a cementing machine, a cement-containing chamber having an open delivery-side, a guide-roll rotatable adjacent to the delivery-opening, a receptacle situated beneath the guide-roll, a movable closure for the receptacle, and a treadle connected to the closure.

24. A foxing cementing machine constructed and arranged to deposit cement, flowing under the influence of gravity, directly upon the foxing areas of shoes as relative movement is produced between the shoes and the machine to provide for the consecutive treatment of successive portions of the foxing areas of the shoes, said machine having a cement-delivery device provided with a free and unobstructed delivery-opening disposed in a substantially vertical plane so that the foxing area of an upright shoe may be presented to said opening to receive cement flowing out through the opening, the top wall of the delivery device adjacent to said opening being constructed and arranged to determine the line of the upper edge of the cemented foxing area, thereby limiting the width of the stripe of cement.

25. A foxing cementing machine constructed and arranged to deposit cement, flowing under the influence of gravity, directly upon the foxing areas of shoes as relative movement is produced between each shoe and the machine to provide for the consecutive treatment of successive portions of the foxing areas of shoes, said machine having a cement-de-

livery device provided with a free and unobstructed delivery-opening disposed in substantially a vertical plane so that the foxing area of an upright shoe may be presented to said opening to receive cement flowing out through the opening, and means adjacent to the lower side of said opening and constructed and arranged to deflect the cement on to underlying portions of the shoe adjacent to the foxing area.

26. In a machine for applying cement progressively around the foxing areas of shoes, a cement delivery device having a free and unobstructed delivery-opening in an upright plane and constructed and arranged to deliver cement by gravity, means on said device forming the upper edge of said opening and having a thin edge adapted to contact with shoes at the upper edges of their foxing areas, thereby to determine the upper edge of the stripe of cement which is applied, means for supplying cement to said delivery device, and means for supporting shoes in a predetermined relation to said edge defining means as the shoes are moved relatively to the device to apply cement progressively around their foxing areas.

27. In a machine for applying cement on the foxing areas of shoes, cement supplying means, a delivery device for said supplying means having a free and unobstructed opening in an upright plane, the upper edge of which is determined by a plate adapted to contact with and to determine the upper edge of the cemented area, and means for supporting a shoe for presentation to said delivery device constructed and arranged to move it progressively past the delivery device so as to coat the whole of the foxing area.

28. In a machine for applying cement by gravity on to the foxing areas of shoes, a supply means having a delivery device provided with a free and unobstructed opening in an upright plane to which successive portions of each shoe may be presented progressively to receive cement from said opening, and a receptacle for catching surplus cement located beneath the delivery-opening.

29. In a machine for applying cement to the foxing areas of shoes, a delivery device opening laterally to allow a shoe to be presented thereto to receive cement flowing out through said opening, and a rotatable work supporting means constructed and arranged to assist in carrying a shoe past the opening so that successive portions of the foxing area may be coated.

In testimony whereof I have signed my name to this specification.

JOHN M. BENJAMIN.