J. W. COSGROVE.

CEMENTING APPARATUS.

APPLICATION FILED AUG. 16, 1917.

1,325,623.

Patented Dec. 23, 1919.

3 SHEETS—SHEET 1.

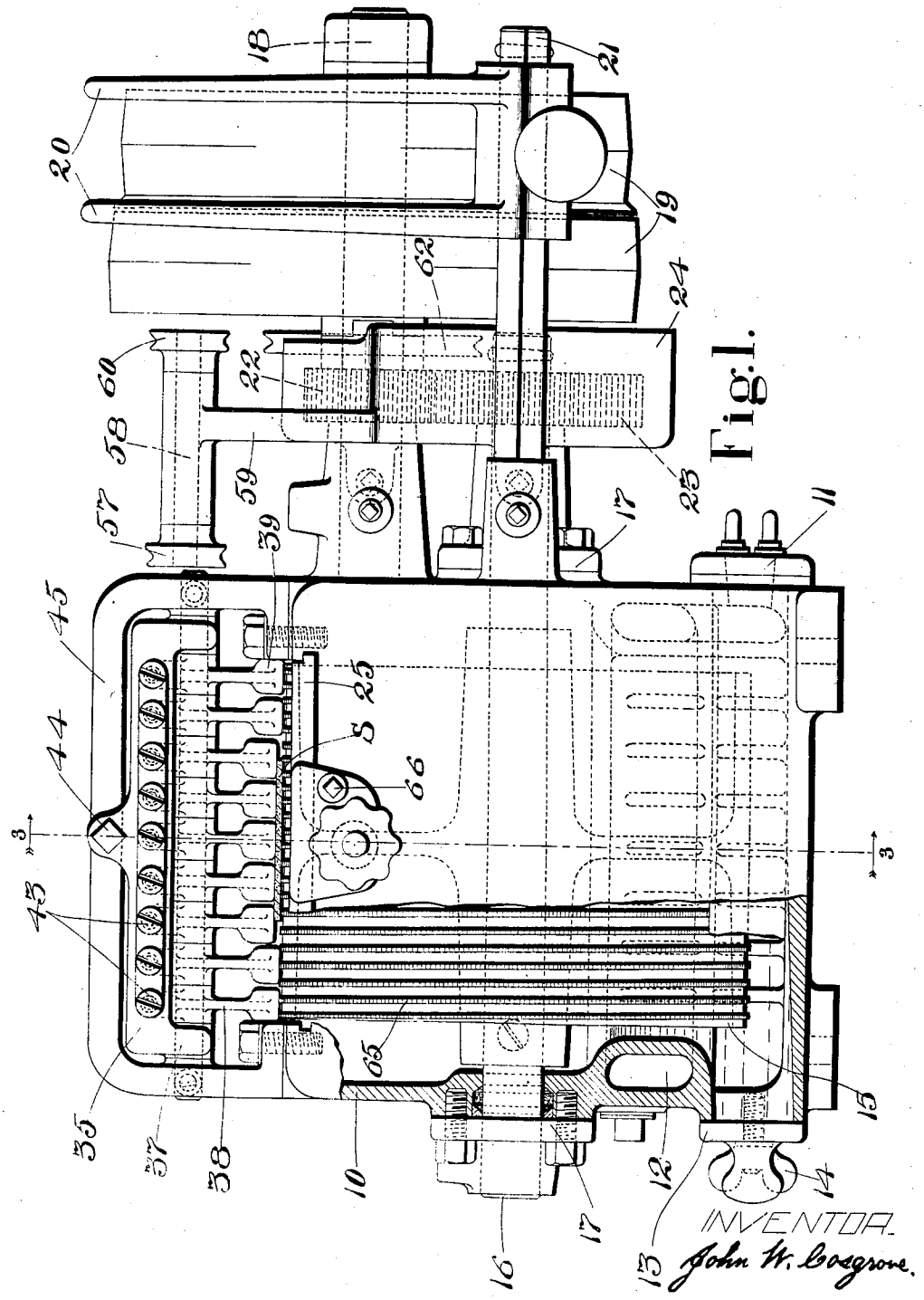


Fig. 1.

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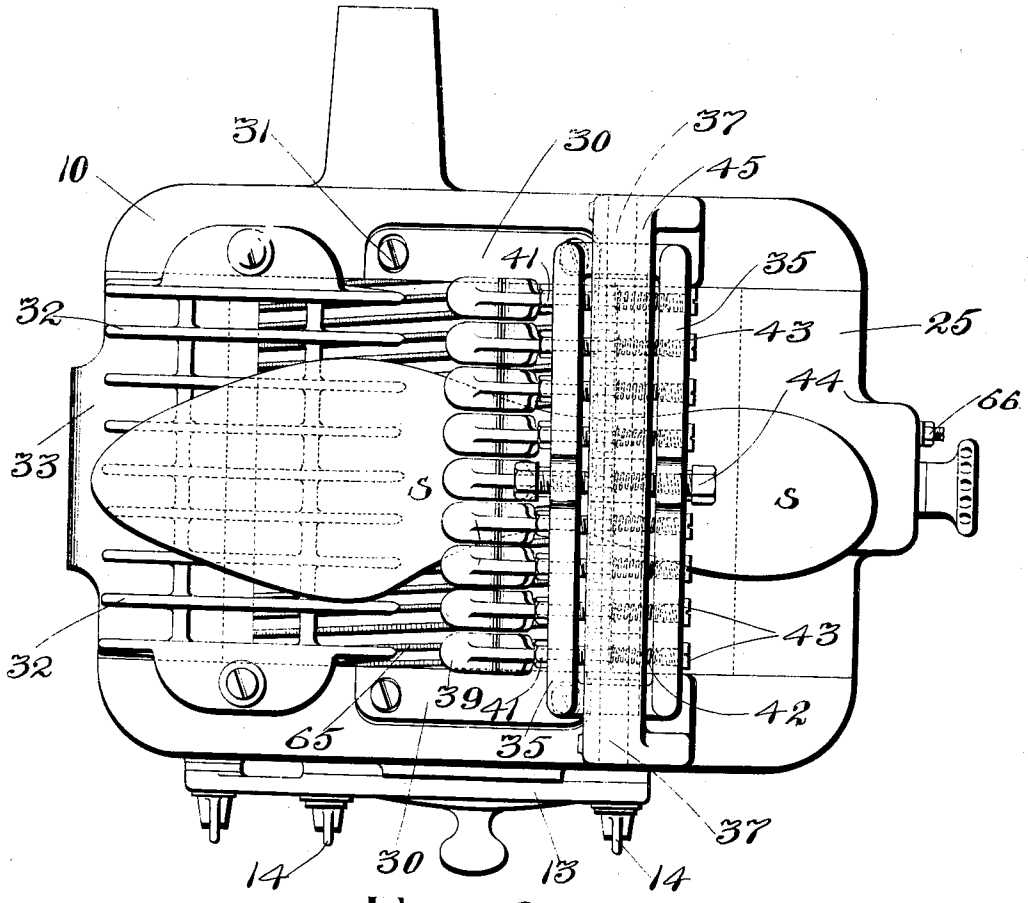


Fig: 2.

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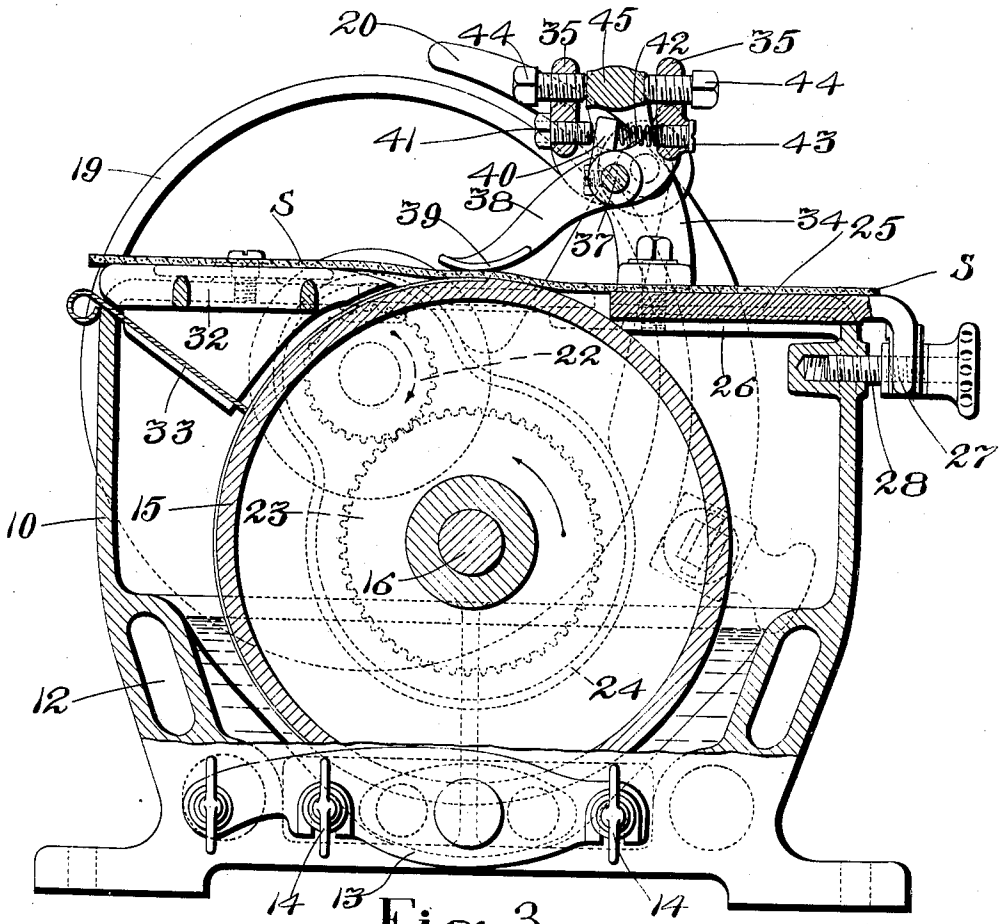


Fig. 3.

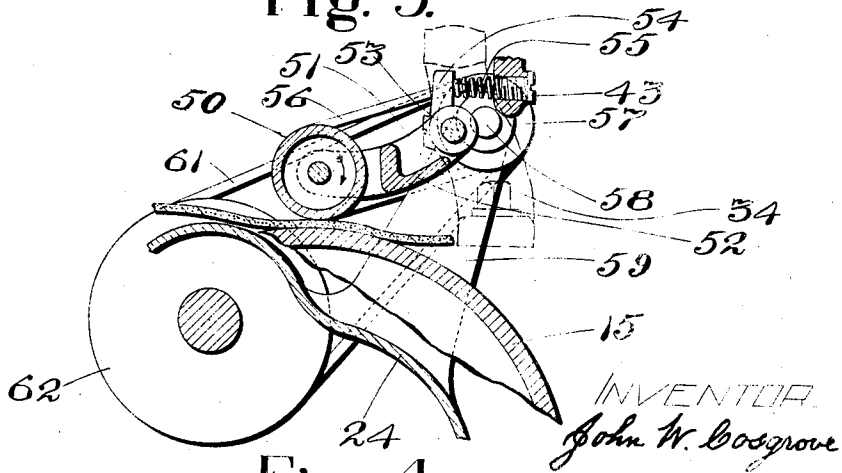


Fig. 4.

UNITED STATES PATENT OFFICE.

JOHN W. COSGROVE, OF MEDFORD, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CEMENTING APPARATUS.

1,325,623. Specification of Letters Patent. Patented Dec. 23, 1919.

Application filed August 16, 1917. Serial No. 186,611.

To all whom it may concern:

Be it known that I, JOHN W. COSGROVE, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Cementing Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to apparatus for applying an adhesive to the surfaces of various objects, it being of especial utility in the manufacture of shoes for coating with cement surfaces of considerable area which may be of different thickness and somewhat irregular and from which particles may be dislodged in the cementing operation.

One feature of the invention which lends itself to the attainment of the desired results is found in a pressure device, preferably consisting of a plurality of independently movable members fulcrumed upon a support which may be adjusted to control the relation of all the members to the work.

Another feature consists of novel means for clearing the cement-applying surface of accumulated particles from the work, this means being carried upon said cement-applying surface. In the form of the invention illustrated, the clearing means is furnished by a spiral projection upon the cement-applying roll. When in contact with a scraper, this causes the particles caught by the roll to travel to one side where they may be readily removed.

An embodiment of the invention illustrating these and associated features appears in the accompanying drawings, in which,—

Figure 1 is a front elevation of my improved apparatus, parts being broken away;

Fig. 2 is a top plan view with the driving mechanism removed;

Fig. 3 is a transverse section on the line 3—3 of Fig. 1, and

Fig. 4 is a transverse sectional detail illustrating an alternative pressure device.

To hold the adhesive, a tank or receptacle 10 is provided, and to maintain the cement in the fluid condition this tank may have in its lower portion electrical heating units 11. Steam may also be utilized to heat the cement, it being introduced through a passage 12 above the openings which receive the units 11. The cement may be withdrawn from the tank, when desired, through openings normally closed by a cover plate 13 pivoted upon the end wall of the tank and held in place by thumb screws 14 passing through slots in the cover plate and being threaded into the tank wall. Journaled in the ends of the tank, passing through stuffing boxes 17, 17 to prevent the leakage of cement, is a shaft 16 upon which is fixed a drum or roll 15 of such diameter that its periphery reaches from a point near the bottom of the tank to its upper edge. Rotatable in a boss projecting from an end wall of the tank is a counter-shaft 18 carrying fast and loose pulleys 19, 19 over which may operate a belt (not shown) driven from any suitable source of power. A shifter 20, mounted to slide upon a rod 21 fixed in a boss on the tank, serves to move the belt from one of the pulleys 19 to the other. The shaft 18 carries a pinion 22 meshing with a gear 23 fixed upon the shaft 16. This gear rotates the cement-applying roll in the tank at a comparatively low speed. The gearing is inclosed in a shield 24, which not only guards it but also provides a support for active members of the apparatus, as will be later described. Upon the cylindrical surface of the roll 15 is a projection 65 by which the cement brought up from the supply at the bottom of the tank is distributed in a comparatively thin layer over the surface of the work. As illustrated, this projection is in the form of a right-handed helix of small pitch. The utility of this helical form will later be stated.

At the front of the tank is a combined work table and scraper 25 upon which may be laid by the operator the object to be coated, as a sole S. The member 25 is mounted to move in ways 26, it having a depending lug 27 at its outer end in which is mounted to turn a screw 28, provided with a grooved head or finger piece, and a smaller stop screw 66. The screw 28 is threaded into an enlargement or thickened portion in the tank wall and by turning it the relation of the inner lower corner of the member 25 to the surface of the roll may be changed, the inward limit of movement being fixed by the contact of the screw 66 with the tank. Thus the thickness of cement upon the sur-

face of the roll brought up into contact with the work may be varied and, when moved sufficiently close to the roll, the member will catch and scrape off particles which have been thrown off from the work. Such particles accumulating tend to clog the scraper and gathering in the cement impair its quality. In my machine, however, as they contact with the edge of the scraper, the inclination of the helical projection 65 causes them to travel to one side of the roll along the edge of the scraper, in the present instance to the right. Here they may be removed by an end scraper 30 mounted upon the top of the tank and being preferably adjustable with relation to the roll by clamping means consisting of screws 31 passing through slots extending in the direction of the axis of the roll. A second scraper 30 may also be provided at the opposite end of the tank from that at which the waste particles are removed to keep this end of the roll free from an excess of cement.

At the opposite side of the tank from the member 25 is a support for the coated object, this being in the form of a grating 32 extending from end to end of the tank and secured to the top of the wall. Through the openings in the grating the cement from the objects S may drip to return to the supply at the bottom of the tank. Beneath the grating is a slide 33 extending over the top of the rear wall and reaching into proximity with the surface of the roll. This furnishes a closure for the tank at this point to prevent evaporation of the cement. At the opposite side of the tank the table 25 is effective for a like purpose.

From the end walls of the tank serving as a supporting frame, near the inner end of the table 25, rise brackets 34 in which is fulcrumed a pressure member serving to force the work into contact with the cement-applying roll. This pressure member preferably consists of a carrier frame, which I have shown as made up of bars 35, 35 lying parallel to the axis of the roll, these bars being connected at their ends and pivoted in the brackets 34 upon a rod 37. This rod also supports a plurality of rocking pressure fingers 38 lying above the roll 15 and having curved contact faces 39 to engage the work as it is advanced by the operator from the table. The opposite ends of the fingers have upturned projections 40 contacting at one side with stop screws 41 threaded through the inner bar 35 of the frame. By these screws the limit of downward movement of the fingers may be changed to bring the contact faces 39 into horizontal alinement. At the opposite side of each projection 40 from the face which contacts with the screw 41 is a boss surrounded by a spring 42, the opposite end of which spring enters a bore in the outer bar 35. Each bore is threaded to receive a screw 43, which may be adjusted toward or from the finger projection 40 to alter the tension of the spring so that all the fingers may be adjusted to press upon the work with equal force or to the extent desired. In the bars 35, 35 above the screws 41 and 43, preferably near the center, is located a pair of opposite contact screws 44, 44 the inner ends of which may be turned into engagement with a bar 45 connecting the upper ends of the brackets 34. By loosening one of these screws and tightening the other, the initial position of the pressure member as a whole may be determined, so that all the pressure fingers may be simultaneously moved toward and from the upper surface of the work to adapt them for proper coöperation therewith when it varies in thickness.

In using the apparatus, the operator lays the article to be coated with cement upon the table 25 and advances it over the roll 15 beneath the pressure fingers. These, yielding to adjust themselves to irregularities in the transverse thickness of the object, press it with practically uniform force against the roll under the influence of the tension of the springs 42. The projection 65 brings up cement from the supply at the bottom of the tank and distributes it in a uniform coating over the object, the engagement of the roll in its rotation drawing the work beneath the fingers and carrying it upon the support 32. To facilitate this feeding movement the contact surface of the projection 65 is preferably knurled. As the work goes on, loose particles from the objects operated upon gather upon the roll, and, if the adjustment of the member 25 is close to the roll, will be continually moved by the action of the helical projection to the right-hand end of the tank, where they are scraped from the roll by the member 30. If the adjustment of the member 25 is farther from the roll 15 and the operator wishes at any time to clear the surface of particles, the scraping edge may temporarily be brought into contact with the projection 65 by the screw 28 and there held until the helix has acted to transfer the accumulated particles to the field of action of the scraper 30.

If the material to be cemented is difficult to feed, a positively driven pressure member may be provided. Such a device is illustrated in Fig. 4 of the drawings, this consisting of a roll 50 rotatably mounted in a frame consisting of side bars 51 joined by a cross bar 52. The frame is fulcrumed upon a rod 53 which may take the place of the supporting rod 37 in the frame 35. From each of the side bars 51 is an upward projection 54 and between these projections and corresponding screws 43 in the outer bar 35 are springs 55, which act upon the

opposite ends of the roll 50 to force it toward the cement-applying roll 15 and against the work thereon. The roll 50 is rotated in the direction of the arrow by a belt 56 passing over a pulley 57 on a counter-shaft 58 journaled in a bracket 59 rising from the gear shield 24. The shaft 58 has fixed upon it a pulley 60 over which runs a belt 61 to a relatively large pulley 62 upon the counter-shaft 18. It will be seen that the roll 50, rotating in the opposite direction from the cementing roll, coöperates therewith to advance the stock from the table 25 to the support 32. The feed roll may be provided with such a surface as to give the best feeding engagement.

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

1. In a cementing apparatus, means for applying cement to the work, a movable carrier, pressure members fulcrumed in the carrier, springs for forcing the members against the work, and means for variably fixing the position of the carrier.

2. In a cementing apparatus, means for applying cement to the work, a movable carrier, pressure members fulcrumed in the carrier, a spring for forcing each member against the work, an adjustable contact member for each spring, and means for variably fixing the position of the carrier.

3. The combination with a frame, of a cement-applying member mounted to rotate therein, a carrier pivoted upon the frame and extending along the member, a support mounted in the carrier, and work-engaging members pivoted upon the support.

4. The combination with a frame, of a cement-applying member mounted to rotate therein, a carrier pivoted upon the frame and extending along the member, a support mounted in the carrier, work-engaging members pivoted upon the support, and a spring extending between each member and the carrier.

5. The combination with a frame, of a cylindrical cement-applying member mounted to rotate therein, a carrier pivoted upon the frame and extending along the member, a support mounted in the carrier, work-engaging members pivoted upon the support, a screw for each member threaded through the carrier, and a spring between each screw and the corresponding member.

6. In a cementing apparatus, the combination with a receptacle, of a roll rotatable therein, a bar extending along the receptacle above the roll, a work-engaging member fulcrumed adjacent to the bar, and a movement-controlling member coöperating with said member and bar.

7. In a cementing apparatus, the combination with a receptacle, of a roll rotatable therein, a bar extending along the receptacle above the roll, a work-engaging member fulcrumed adjacent to the bar, a movement-controlling member coöperating with the member and bar, and a screw threaded through the movement-controlling member and engaging the bar.

8. In a cementing apparatus, a rotatable cement-applying member, and a scraping member coöperating with the cement-applying surface of said member, said surface carrying means for moving to one side material accumulated thereon.

9. In a cementing apparatus, a rotatable cement-applying member, and a scraping member coöperating with the cement-applying surface of said member, said surface carrying cement-distributing means arranged to move to one side material accumulated on the cement-applying surface.

10. In a cementing apparatus, a movable cement-applying roll provided with a helical projection, and a scraper which may coöperate with said projection to move material longitudinally of the roll.

11. In a cementing apparatus, a movable cement-applying roll provided with a helical projection, a scraper which may coöperate with said projection to move material longitudinally of the roll, and means for removing material from the end of the roll.

12. In a cementing apparatus, the combination with a receptacle, of a roll rotatable therein and having a helical projection on its working surface, and a scraper mounted upon the receptacle for coöperation with the projection.

13. In a cementing apparatus, the combination with a receptacle, of a roll rotatable therein and having a helical projection on its working surface, a scraper mounted upon the receptacle for coöperation with the projection, and a scraper coöperating with the end of the roll.

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

JOHN W. COSGROVE.