F. M. FURBER.

CEMENTING MACHINE.

APPLICATION FILED JUNE 4, 1904.

1,043,083.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

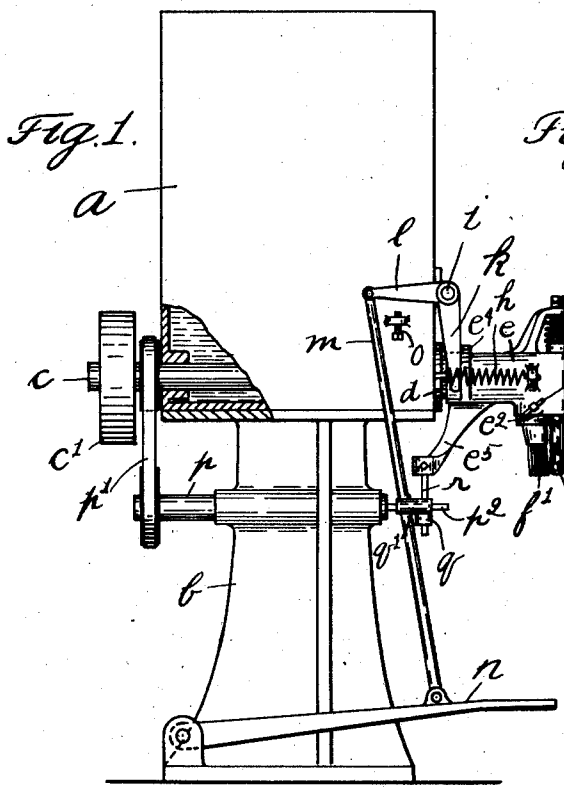
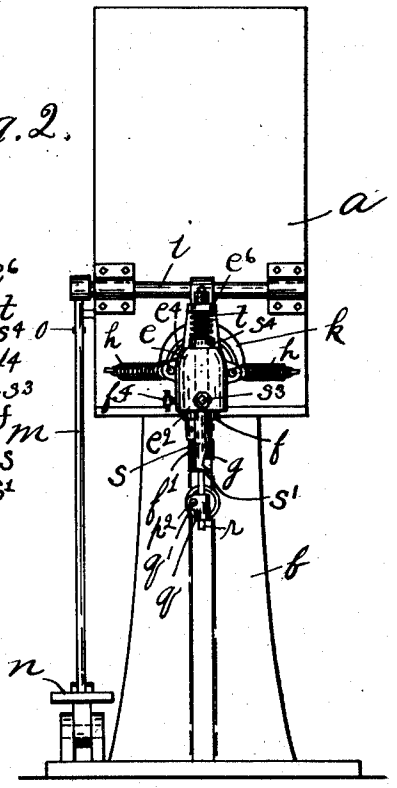


Fig. 2.



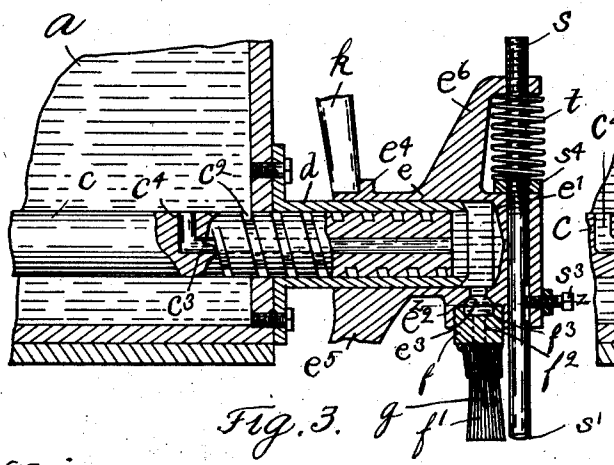


Fig. 3.

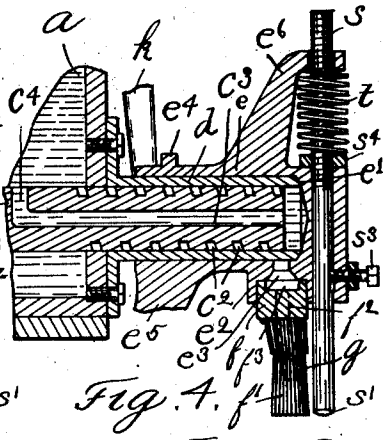


Fig. 4.

Witnesses:

H. B. Davis.

M. M. Piper

Inventor:

Frederick M. Furber

by Noyes & Kaminaar

F. M. FURBER.

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2 SHEETS—SHEET 2.

Fig. 5.

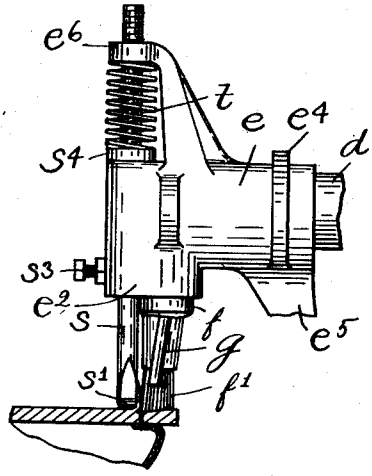


Fig. 6.

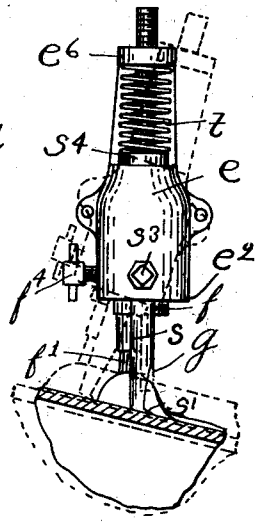


Fig. 7.

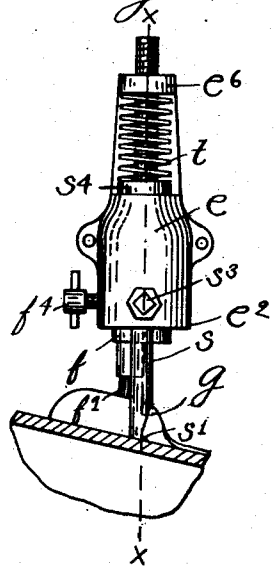


Fig. 8.

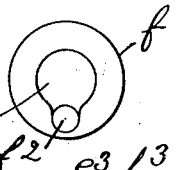


Fig. 9.

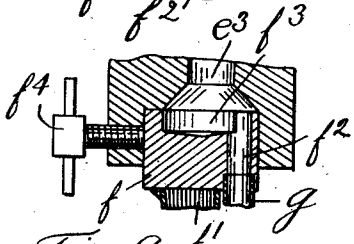


Fig. 11.

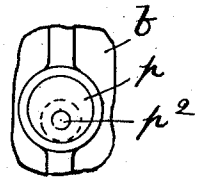


Fig. 10.

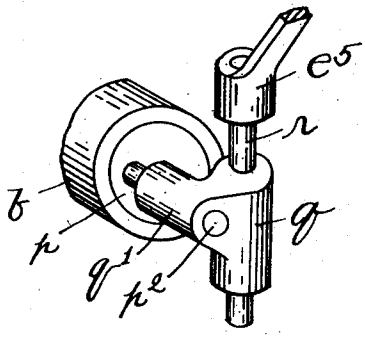


Fig. 12.

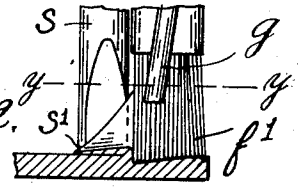


Fig. 14.

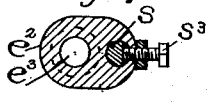
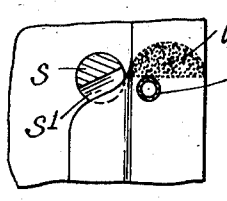


Fig. 13.



Witnesses:

H. B. Davis.

M. M. Piper

Inventor:

Frederick M. Furber

by Noyes & Kerriman

Attys

UNITED STATES PATENT OFFICE.

FREDERICK M. FURBER, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CEMENTING-MACHINE.

1,043,083. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed June 4, 1904. Serial No. 211,215.

To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Cementing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a form of cementing machine to be employed in cementing down the channel flaps of boots and shoes, and more particularly the channel flaps of McKay sewed shoes, but which is also adapted to be employed in applying cement in various other relations.

When the outer soles of McKay sewed shoes are channeled, previous to sewing, the channel flap is usually turned over and laid flat with its grain side resting upon the outer surface of the sole. The operation of turning these flaps back by hand and cementing them in place, after the shoe is sewed, is a source of much difficulty and inconvenience; for, in addition to the time consumed in performing this operation, the flaps are often broken off, particularly if they become dry, and the workman often cuts his fingers. Moreover, it is very difficult to apply cement to the inner surface of the flap while it is lying flat on the surface of the sole, without also applying more or less to the surface of the sole, so that stains are often caused thereon which it is impossible to remove effectively by buffing. In addition to this difficulty a channel flap of ordinary width is usually pressed into folds when it is turned back onto the sole about the curved portions of the shoe, as the toe, with the result that the inner surface of the flap is imperfectly cemented.

My invention has for its principal object to produce a cementing machine of the above described character which is adapted to apply an even coating of liquid cement to various surfaces, and particularly such surfaces as those above referred to, and which will, at the same time, work the cement thoroughly into the fiber of the leather.

Further objects of my invention are to produce a machine of the above character which is simple in construction and is unlikely to become clogged with cement or to get out of order in ordinary usage; to provide a simple and effective means for feeding the cement regularly; to provide means for turning the channel flap up from the sole, so that it may be easily pressed down in place and to apply a coating of cement to the entire inner surface thereof without applying it to the outer surface of the sole or flap; and to provide a means whereby the shoe may be fed rapidly beneath the brush while it is being cemented, without any more effort on the part of the operator than is necessary to hold the shoe against the cementing and flap-turning devices.

I accomplish these objects by the means shown in the accompanying drawings, in which,

Figure 1 is an elevation of the left hand side of a cementing machine made according to my invention. Fig. 2 is a front elevation thereof. Figs. 3 and 4 are central vertical sectional views on the line x—x of Fig. 7, showing the parts in different positions. Fig. 5 is an elevation of the right hand side of the applying devices. Figs. 6 and 7 are enlarged front elevations of the cementing devices. Figs. 8 and 9 are respectively end and central sectional detail views of the brush holder. Fig. 10 is a perspective, and Fig. 11 a front detail view of a part of the oscillating mechanism. Figs. 12 and 13 are detail views showing the operation of the flap-engaging devices, Fig. 13 being a sectional view on the line y—y of Fig. 12. Fig. 14 is a sectional view on the line z—z of Fig. 3.

The cement-containing tank a may be uncovered, or provided with a suitable cover, said tank being supported upon a base b. A horizontal shaft c, having a driving pulley c' thereon, is journaled in the rear wall of the tank, near its bottom, and extends therethrough to its front side into a tubular spout d, which is secured to the front side of the tank in register with an aperture therethrough, and forms a liquid tight connection therewith. Said shaft c fits as closely into the bore of the spout as possible without interfering with the free rotation thereof. Said shaft c is provided with a square screw thread c^2 which extends from the front end thereof to a point within the tank, and it is also provided with a longitudinal bore c^3 which extends from the front end thereof to a point within the tank, said bore being connected to the tank by a radial passage c^4. A nozzle e, having a longitudi-

nal bore extending from the rear end thereof and terminating near the front end thereof, is telescopically mounted on spout d the latter fitting closely therein and yet permitting longitudinal movement of the nozzle thereon, and swinging movement of the nozzle about the longitudinal central line thereof, as an axis. A valve seat e' is provided at the end of the bore of said nozzle, and said seat is normally held against the end of said spout by springs h, thereby tightly closing the same, as shown in Fig. 4.

The nozzle e is provided with a radially extending socket e^2, in which a cylindrical brush holder f is longitudinally and rotatably adjustable, said holder being clamped in place by a set screw f^4 and being provided with a brush f'. Said brush is preferably flat on its right hand side, the plane of which side is approximately radial to the axis of said nozzle. A discharge pipe g is secured in the holder f, said pipe being connected to the end of a passage f^2 through the holder, and said passage f^2 leading into a centrally arranged recess f^3 in the upper end thereof. The nozzle is provided with a radially extending passage e^3 which leads from the bore thereof at a point a short distance from seat e', thereby providing communication between said bore and said recess f^3. The pipe g extends downward closely adjacent the flat side of the brush and slightly obliquely toward the front edge of the brush.

A rod i is journaled in lugs on the side of the tank, and a forked arm k is secured to said rod and extends on opposite sides of the nozzle e, as shown in Fig. 2, in a position to engage a shoulder or rib e^4 formed on the rear end of the nozzle. An arm l is also connected to the rod i, and said arm is in turn connected by link m to a treadle or foot lever n, so that when the treadle is depressed the nozzle may be moved longitudinally on the spout to the position of Fig. 3. A stop screw o is provided in a lug on the tank, and is adapted to limit the downward movement of arm l. A shaft p is journaled in the base b, and is adapted to be driven by a belt p' from the shaft c, the shafts p and c being parallel, and the front end of the shaft p being provided with an eccentric longitudinally extending crank pin p^2. An arm e^5 is formed integral with the nozzle e, and extends downwardly and rearwardly from the under side thereof, said arm having a rod r secured to the lower end thereof, the longitudinal central line of which is perpendicular to the axis of nozzle e. A sleeve q is slidably mounted on said rod r, and has an ear q' at one side thereof through which the crank pin p^2 passes, and in which it is adapted to rotate. By this means rotation of the shaft p will cause the nozzle e to oscillate about the central longitudinal line of the spout d as an axis, said means also permitting longitudinal movement of the nozzle on the spout.

A channel-flap turning arm or rod s is slidably mounted in the front end of the nozzle e, in such a position that its center line is approximately perpendicular to the axis of the nozzle, and in the plane of the flat side of the brush, although the exact position in which it is held is not absolutely essential. The lower end of said rod is provided with a transversely extending flap-lifting and turning lip s' and the side of said rod, above said lip, is obliquely beveled with relation to the flat side of the brush, as shown in Figs. 5, 6, 12 and 13. The end of the rod is beveled from the edge of the lip s' next the brush, so that this portion of the lip is the lowest point of the rod. The rod is held from turning by a screw s^3 the inner end of which is held close to a longitudinally extending flattened surface formed on the rod. A spring t is mounted on the rod s between a lug e^6 on the nozzle, and a collar s^4, which is threaded on said rod, and said spring normally holds said collar against a seat formed on a portion of the nozzle through which the rod passes. Said collar is preferably adjusted so that the lower end of said rod is on a level with the face or lower end of the brush, the collar being screwed down on the rod to raise it when the end of the brush becomes worn.

The operation of my device is as follows: The shaft c is rotated in such a direction that the screw c^2 will act in the manner of an ordinary screw pump, or "water screw" and will force the cement in the tank forwardly through the spout d at a uniform rate. When the spout is closed, that is, when the springs h draw the seat e' of the nozzle against the end of the spout, the cement which is discharged into the chamber at the end of the shaft c cannot pass through passage e^3, and passes back into the tank through the relief passages c^3, c^4 of the shaft. If the relief passages were not provided the pressure against the seat e' would be so great that the nozzle would be forced away from the end of the spout, so that the cement would pass through the passage e^3 into the discharge pipe, necessitating the stopping of the shaft when it was desired to stop the flow of cement. By providing the relief passages, however, the pressure against the nozzle cannot become sufficient to overcome the tension of the springs h, so that the end of the spout will be tightly closed when the pressure on the treadle is relieved.

As the shaft p is rotated, the nozzle and rod will rapidly oscillate, the parts being so arranged that the brush and rod will be swung from a point in which the flat side of the

brush and center line of the rod are in a vertical plane through the axes of the nozzle, see the full line position of Fig. 6, to the left or rearwardly with relation to the brush, to the dotted line position of Fig. 6. The treadle being depressed, the nozzle will be forced forward to the open position shown in Fig. 3, so that the cement will be discharged freely from the tube *g* at the right side of the brush, and within its plane of oscillation, adjacent the middle thereof, or between its middle and its front edge.

As previous to sewing, the channel flap has usually been laid over flat on the surface of the sole, in order to turn the flap back and cement it down over the stitches, the lip *s'* of the turning arm or rod *s* is caught under the flap, as indicated in Fig. 12, and as the shoe is fed to the left said flap will be turned by the lip of the rod into a vertical position with relation to the sole, so that it will pass between the side of the rod, and the adjacent edge of the brush, as shown in Figs. 12 and 13. The end of the tube *g* extends a short distance below the edge of the flap when the flap is held in said vertical position, and the tube *g* is held in such a position, or at such an inclination, that the stream of cement which is forced therefrom will be directed into the inner, or lowest portion of the channel. As the brush is moved back from the vertical position to the dotted position of Fig. 6, a quantity of cement will be discharged into the channel, and as the brush is moved forward again, opposite the direction in which the shoe is fed, it will sweep the cement into a wave which will extend from the edge of the flap to the outer edge of the channel. As the end of the brush sweeps over the entire bottom of the channel, and its front or outer edge bears against the entire flesh side of the flap, the flap being held against the brush by the rod, an even coating of cement will be applied to the bottom of the channel and flesh side of the flap, and superfluous cement will be carried on in front of the brush. The brush holder is made circularly adjustable and the tube *g* is arranged eccentrically with relation to the axis of adjustment thereof, so that the discharge end of the tube may be moved to an extent toward and away from the rod *s* by rotating the holder *f* into different positions in the socket e^2. It is usually found necessary to set the brush in one position for a wide channel, and into another for a narrow channel, but the exact position in which the tube and brush shall be held is a matter depending on this, and various other conditions, which need not be defined.

While the end of the arm, or rod *s* is preferably normally even with the end of the brush to permit the lip thereof to be passed under the channel flap conveniently, this arrangement is not essential, although preferably the brush should not extend below the end of the rod. After the brush has passed into the channel the rod will be pressed upward as shown in Fig. 12, the sole being held up closely against the brush and rod and also in a slightly inclined position, so that the surface of the sole will rest against the inclined end of the rod when the latter is in a vertical position. When the brush and the rod *s* are swung to the left from this position, they will also push or move the shoe in the same direction, see dotted position of Fig. 6, then as they are swung to the right again, they will be moved out of contact with the sole, and will not tend to move the shoe back in the other direction. But the operator is all the time pressing the shoe upward, so that he moves the shoe up against the end of the brush and rod again by the time the latter has been moved to the vertical position. The feeding movement will then be repeated, and the shoe will thus be rapidly fed along without special effort on the part of the operator. The feeding of the shoe is thus materially assisted by reason of the oscillating movement of the above described parts, the particular formation of the lower end of rod *s* being of special importance in this connection. The object of having the side of the rod above its lip *s'* inclined with relation to the face of the brush is so that the channel flap will be turned up easily as it is drawn between the rod and brush. As the flap is turned up to a vertical position, all the folds or plaits will be removed, so that the entire surface of the flap will be exposed to the action of the brush.

The result of the above described operation is to apply an even coating of cement to the bottom of the channel and the entire inner side of the flap, leaving the latter so that it may be readily pressed down and cemented in place, without applying cement to any of the exposed surface of the sole. This operation is, moreover, performed as rapidly as the shoe can be handled.

The arrangement of the central line of the rod in the plane of the flat side of the brush is of advantage, as it is thus difficult to hold the shoe so that the channel-flap will be lifted too far in advance of the brush and will not be held against its side as it passes the same. This feature is of special importance when applying the cement about the toe of the shoe. The oscillating action of the flap turning arm or rod is also of special importance, as the flap is raised by a rapid succession of blows thereon by said arm, which are resisted by the inertia of the shoe. As the shoe is pushed back by the turning arm and brush after each blow, it will be evident that the flap will be raised without special effort on the part of the operator.

Inasmuch as the end of the guard rod s, or the underside of its lip s' is inclined with relation to the rod and face of the brush, it will be apparent that the face or bottom of the shoe may be held at any desired inclination with reference to the brush, the edge and under side of the lip s' providing a surface about which the shoe may be readily rocked to vary the force with which the brush is pressed against the work and the proportion of the work which shall be engaged by the brush, and to meet the varying conditions encountered when cementing different portions of the channel.

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

1. A cementing machine comprising a tank having a delivery spout, a discharge nozzle telescopically mounted on said spout, and movable about the longitudinal center thereof, said nozzle having a seat for closing the end of said spout, a brush connected to said nozzle and extending at an angle to the axis thereof, means for moving said nozzle longitudinally of the spout and means for moving it about its longitudinal center, substantially as described.

2. A cementing machine comprising a tank, a spout connected thereto having a discharge port, a nozzle mounted on said spout and having a discharge port, said nozzle being movable longitudinally on said spout to connect and disconnect said ports, a transversely projecting brush connected to said nozzle and disposed to receive the cement from the discharge port thereof, and means for moving said brush transversely of said spout, substantially as described.

3. A cementing machine comprising a tank, a spout connected thereto having a discharge port, a nozzle on said spout and having a discharge port, said nozzle being movable longitudinally of said spout to connect and disconnect said ports, a brush connected to said nozzle and disposed to receive the cement from the discharge port thereof, and means for moving said brush about the longitudinal center of said spout, substantially as described.

4. A cementing machine comprising a tank having a delivery spout, a discharge nozzle telescopically mounted on said spout and having a seat closing the end thereof, a brush connected to said nozzle and extending at an angle to said spout, means for oscillating said nozzle, and means for moving it longitudinally of said spout, substantially as described.

5. A cementing machine comprising a tank having a delivery spout, a discharge nozzle telescopically mounted on said spout, and having a transversely extending discharge passage and a seat at the end of the longitudinal passage in the nozzle for closing the end of said spout, means for moving said nozzle longitudinally and for pressing its seat against the end of said spout, a transversely extending brush on said nozzle, means for supplying cement to said brush from said nozzle and means for oscillating said brush substantially as described.

6. A cementing machine comprising a tank, a spout leading therefrom, a tube telescoping with said spout and having a seat at one end of its longitudinal passage adapted to close the end of said spout, means for moving said tube longitudinally, a brush connected to and extending at an angle from said tube, a delivery pipe leading from said tube to a point adjacent said brush, and means for oscillating said brush, substantially as described.

7. A cementing machine comprising an oscillating brush, and a cement delivering tube arranged to deliver cement at one side of said brush and adjacent the middle of the path of oscillation thereof, substantially as described.

8. A cementing machine comprising an oscillating brush, a cement delivering tube connected thereto and oscillating therewith, said tube having its discharge end arranged to deliver cement at one side of said brush and within its path of oscillation, substantially as described.

9. A cementing machine comprising an oscillating brush and a cement delivering tube arranged to deliver cement within the path of oscillation of said brush and adjacent one side thereof, substantially as described.

10. A cementing machine comprising an oscillating brush, a tube arranged to discharge cement in the path of oscillation of said brush, and means whereby said tube may be adjusted transversely of said path, substantially as described.

11. A cementing machine comprising an oscillating brush having a circularly adjustable holder, a cement discharging tube having its discharge end eccentric to the axis of adjustment of said holder, and means for clamping said holder while said tube is in different positions in the path of oscillation of said brush, substantially as described.

12. A cementing machine comprising a brush, means for delivering cement in front thereof, and a channel-flap turning device closely adjacent said brush at one side thereof, said turning device having a transversely extending, flap-engaging lip at its end, substantially as described.

13. A cementing machine comprising a brush, means for delivering cement thereto, and a channel-flap turning device held adjacent one side of the brush and extending longitudinally thereof, said turning device having a transversely extending flap-engaging lip at its lower end, an obliquely dis-

posed flap-turning face arranged to direct the flap between said brush and the turning device, substantially as described.

14. A cementing machine comprising a brush having an approximately flat side, a channel flap turning device supported adjacent one edge of said side and acting to hold the flap against said edge as it passes between the brush and the turning device, and a cement discharging pipe having its discharge end adjacent the flat side of said brush and below the edge of said flap when lifted, substantially as described.

15. A cementing machine comprising a brush, a channel-flap turning device at one side thereof, means for oscillating said turning device, said turning device having a flap turning lip at its extreme end extending approximately in the direction of its path of movement, substantially as described.

16. A cementing machine comprising a brush, a channel-flap turning device at one side thereof, means for oscillating said turning device, said turning device having a flap turning lip at its extreme end extending approximately in the direction of its path of movement, the outer side of said lip being beveled inwardly from its edge with relation to the path of movement thereof, substantially as described.

17. A cementing machine comprising a tank, a discharge spout connected to the bottom portion thereof, means for closing said spout, a shaft journaled in said tank and having one end portion rotatably fitted in said spout, said shaft having a helical groove and a longitudinal passage leading from said end into the tank, and means for rotating said shaft to force the cement through said spout, substantially as described.

18. A cementing machine comprising, in combination, a cement delivery member, distributing means arranged behind said delivery member to act upon the cement as delivered from said delivery member, means for imparting motion to said distributing member to cause it to distribute cement upon the work, and a flap turning device.

19. A machine for applying cement to a portion of the bottom of a shoe having, in combination, cement supplying means arranged to deliver cement directly to the sole, a spreader and means for actuating the spreader to spread the cement, there being a free and unobstructed space beneath said supplying means and spreader to permit manual presentation of a shoe.

20. A cementing machine having, in combination, a receptacle for cement having an outlet, means for continually forcing the cement toward the outlet, means for delivering cement to the stock and means for spreading upon the stock the cement so delivered.

21. A channel cementing machine comprising a receptacle for cement, a spout leading therefrom, a nozzle movable thereon to open said spout to deliver cement to the channel, a brush arranged to spread the cement, and a lip-lifting device.

22. A machine for applying cement to a portion of the bottom of a shoe having, in combination, cement supplying means arranged to deliver cement directly to the sole, a brush, and means for actuating the brush to spread the cement, there being a free and unobstructed space beneath said applying means and brush to permit manual presentation of a shoe.

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

FREDERICK M. FURBER.

Witnesses:
L. H. HARRIMAN,
H. B. DAVIS.