

R. J. BURNS.
CEMENTING MACHINE.
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1,017,507.

Patented Feb. 13, 1912.

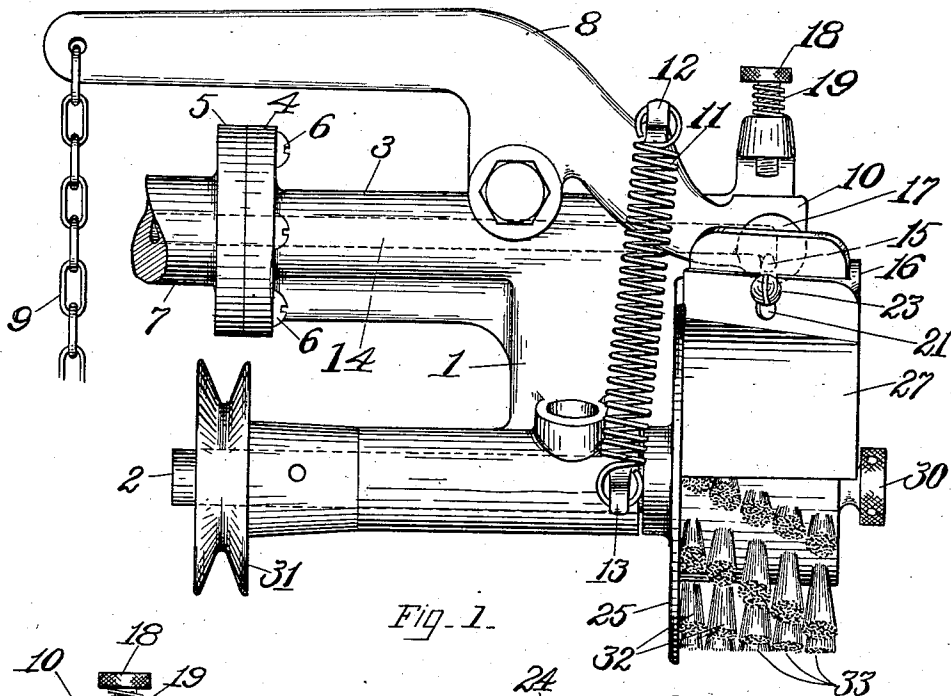


Fig. 1.

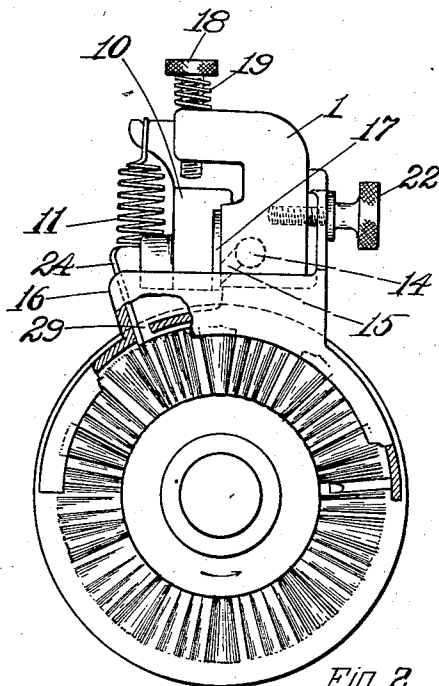


Fig. 2.

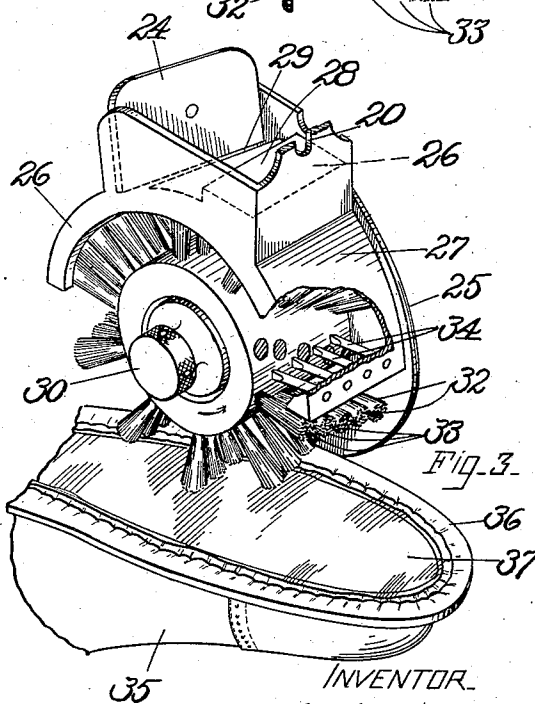


Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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CEMENTING-MACHINE.

1,017,507.

Specification of Letters Patent.

Patented Feb. 13, 1912.

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To all whom it may concern:

Be it known that I, ROBERT J. BURNS, a citizen of the United States, residing at Avon, in the county of Plymouth and Commonwealth of Massachusetts, have invented certain Improvements in Cementing-Machines, 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 machines for applying coating material to stock.

The invention is herein shown as embodied in a machine for applying cement to the bottoms of Goodyear shoes preparatory to laying the outer sole, the cement being employed for the purpose of holding the outer sole temporarily on the shoe and for forming a tight joint between the outer sole and the welt, inseam and filling after the outer sole has been permanently attached by the usual line of stitches. The cement applying means or distributor is commonly a rotary brush, as herein shown, to which the cement is delivered intermittently usually by opening a gate or valve and allowing a desired quantity to flow by gravity.

Hitherto it has been usual to allow the cement to fall upon the distributor at some given point in its width and to employ spreaders to work the cement across the face of the distributor and spread it in a layer of as uniform thickness as possible. Although various types and combinations of types of spreaders have been employed, the result obtained has not been satisfactory where wide brushes were employed. These distributors or cement applying means are run at considerable speed and it has been demonstrated that when cement is delivered in such a manner that if undisturbed it would tend to accumulate entirely on one section or in one locality of the surface of the distributor, the spreaders are inadequate, owing for one reason to the rapidity with which they must act, to work the cement across the surface of the distributor so as to produce a coating of uniform thickness. It seems clear, then, that better results would be obtained by delivering the cement in such a manner that it would be fed directly to all points in the width of the distributor, and one object of my invention is to provide for feeding the cement obliquely in a stream

or sheet to the whole width of the distributor whereby a coating of substantially uniform thickness will be immediately applied to the distributor and the necessity for spreaders will cease to exist.

Preferably means are provided for delivering the cement in a comparatively thin sheet, the plane of which is approximately perpendicular to the working face of the distributor and extends obliquely across said face; and this means may take the form of a slot or elongated opening communicating at its delivery side with the distributor and at its reverse side with a source of supply of cement. The immediate source of supply may be a receptacle, which is supplied intermittently from a main reservoir, and said receptacle may conveniently be of trapezoidal outline in cross section and have an inclined bottom, at the lower end of which the obliquely placed delivery means may be situated.

Although the preferred means for supplying the distributor with cement delivers said cement in a sheet, it is obvious that any means for delivering cement obliquely across the face of the distributor—for example, an ordinary nozzle properly placed—would fall within the scope of this invention.

The obliquity of the cement delivery means is an important feature of this invention since it has been found that, whatever the form of distributor used, better results are obtained by delivering the cement obliquely across its working face. This is particularly noticeable where the distributor takes the form of a brush. In this case the cement delivery means is placed at a slight angle to the rows of bristles so that the individual tufts as they come into operative relation with the cement delivery means take their loads of cement almost but not quite simultaneously and tend thereby to draw the cement from the receptacle in a sheet of approximately uniform thickness which forms an even coating on the brush. A very satisfactory form of brush is one of the rotary type in which the bristles are set in rows which are oblique to the axis of rotation, this arrangement of bristles having the advantage, among others, that the outline of the brush conforms more nearly to a circle than does that of a brush in which the rows of bristles are arranged parallel with the axis, since in the latter case the intervening

spaces tend to give the brush a polygonal outline. And since the outline of the brush is a true circle the hood can be fitted to it with nicety and precision so that all escape
 5 of cement except by the desired path will be prevented. With a brush of this kind, as with others, it is advantageous that the cement should be delivered obliquely to the rows of bristles, and attention is directed to
 10 the fact that with this form of brush it is possible that the cement delivery means may be parallel to the axis of rotation of the brush. It should, therefore, be understood that the phrase "obliquely across the work-
 15 ing face of the distributor" is intended to cover the construction just referred to and is not limited to the relation which the cement delivery means may bear to the axis of rotation of the brush.

20 In connection with this oblique delivery means a further object of the invention lies in the provision of means for regulating the thickness of the coating of cement applied, and this means may conveniently be an ad-
 25 justable gate or regulator which may extend parallel to the cement delivery means, the degree of obliquity of the delivery means and the position of the regulator depending upon the viscosity of the cement and the
 30 thickness of the desired coating.

These and other features of the invention including certain details of construction and combinations of parts will be explained in
 35 connection with the following description of a machine and will be pointed out more definitely in the claims.

In the accompanying drawings like reference characters are used to indicate like parts throughout the several figures in
 40 which—

Figure 1 is a side view of a cementing device, the conduit leading from the reservoir being broken off; Fig. 2 is an end view looking toward the left in Fig. 1 a part of the
 45 hood being broken away to show the cement delivery means and the cleaning member, and Fig. 3 is a perspective view of the cement applying means or distributor and its associated parts, the distributor being
 50 shown in operative relation to the stock to be coated, and one row of bristles being removed to show the cleaning member more clearly.

A main casting 1, which is practically a
 55 part of the frame of the machine, is provided with a bearing for a shaft 2 and with a hollow arm 3 which is fastened by suitable means as flanges 4 and 5 and screws 6 to a conduit 7 which leads from the cement reser-
 60 voir. The cement commonly used is a quick drying one having a volatile solvent, such as naphtha for example, and hence it is desirable to deliver the cement only in small quantities as it is needed. For this purpose a
 65 lever 8 carrying a chain 9 at one end and an

enlargement 10 at the other is pivoted by a bolt or cap screw to the main casting 1. A spring 11 hooked over projections 12 and 13 on the lever and the casting respectively tends to keep the enlarged end of the lever in its
 70 lowest position and hence, as will presently appear, to shut off the flow of cement from the reservoir. The bore 14 of the hollow arm 3 terminates a little short of the outer end of
 75 said arm, and from the extremity of the bore a passage 15 leads diagonally downward into the receptacle 16. The enlarged end of the lever 8 carries a plate 17 of steel or other
 80 suitable material which is ground so as to fit closely over the mouth of the passage 15, the lever 8 forming in effect a valve which is operated against the tension of the spring 11 by means of a treadle or other suitable
 85 device to which the chain 9 is connected. A set screw 18 threaded through a lug on the main casting and held in adjusted position by a spring 19 regulates the extent to which the valve may be opened and hence the amount of cement which can be delivered
 90 in any given time.

The receptacle 16 which may be of trapezoidal outline in horizontal cross section has slots 20 and 21 formed respectively in the
 95 opposite non-parallel walls. The slot 20 is adapted to accommodate a screw bolt 22 by which receptacle 16 and its associated parts is adjustably supported, the screw bolt 22 being seated in a socket in the main casting. The opposite slot 21 is adapted to accommo-
 100 date a set screw 23 which is screwed into a regulating member or gate 24, the gate being adjustable to the extent of the slot and being held in adjusted position by the screw.

One of the parallel walls of the receptacle is extended to form a disk 25, which con-
 105 forms to the outline of the distributor. The other parallel wall is extended to form a segmental flange 26 while between the flange and disk extends an approximately semi-cylindrical member 27. The disk, the flange
 110 and the semi-cylindrical member form together a hood which covers substantially the upper part of the distributor, and in the illustrated embodiment of the invention these three parts are shown as integral with
 115 each other and with the receptacle, although such a construction is not a necessary one. The hood has been described as of a particular form but it will be understood that this has been done merely because the distributor
 120 has been illustrated as of circular outline. One object of the hood is to prevent the escape of cement by any other path than the desired one, and it is evident that the form of the hood may be greatly varied and will
 125 depend largely upon the shape of the distributor which it covers.

At one end of the receptacle the floor is raised to form a seat 28 to receive that part
 130 of the main casting 1 which receives the

screw bolt 22, while the remainder of the floor of the receptacle is formed by the upper side of the semi-cylindrical member 27. Leading from the receptacle is the cement
 5 delivery means which may lead from any desired part and be of any desired form, as a nozzle for instance, but which is herein shown as a slot 29 extending through the floor of the receptacle at its lower end and
 10 parallel to the wall through which the screw 23 extends. The position of the cement delivery means with respect to the receptacle is, however, immaterial so long as its desired position with relation to the working face of
 15 the distributor is obtained. The distributor, which may be of any desired form, is herein shown as a rotary brush which is held in place by the shaft 2, the disk 25, the screw bolt 30 and certain internal parts not
 20 shown. It is sufficient for the purposes of this description to state that the brush may be connected to the shaft 2 which is rotated by connecting the pulley 31 to any suitable source of power. In the particular machine
 25 illustrated, the bristles of the brush are set in rows which are oblique to the axis of rotation of the brush, the advantage of this arrangement having been explained above; and the cement delivery means or slot 29 is
 30 also oblique to said axis, but the obliquity of these two elements with respect to the axis of rotation is not the same, the rows of bristles being at a slightly different inclination than that of the delivery means. As
 35 has been stated the position of the cement delivery means with regard to the axis of the brush is immaterial, and it is quite within the scope of the present invention to arrange the delivery means parallel to the
 40 axis, provided only that the rows of bristles are oblique, the only necessary requirement being that the cement shall be delivered obliquely across the working face of the distributor. The embodiment illustrated has
 45 been chosen because it has been found that a brush of more clearly circular outline can be obtained by setting the rows of bristles at a considerable angle to the axis of the brush, and that by arranging the cement delivery
 50 means at a very slightly different angle the best average results are obtained with ordinary cement.

The filling material which is applied to the insoles of shoes between the inseams is
 55 soft when applied and is made in part of particles which are liable to be picked up by the distributor or cement applying means. To prevent such picking up as far as possible the cement applying brush has been
 60 constructed of bristles of different degrees of coarseness and flexibility. The rows of bristles on the inside, indicated by the numeral 32, are comparatively coarse and stiff so as to work the cement thoroughly into the
 65 welt and to dislodge from the welt particles

of filler that may have adhered to it. The rows of bristles on the outside, indicated by the numeral 33 are fine and comparatively flexible so as to avoid as far as possible stripping any particles of filler from the
 70 soft central portion of the bottom of the shoe. In spite of these precautions, however, a certain amount of filler is picked up by the distributor and unless removed tends to destroy the desirable qualities of the brush
 75 and to clog the flow of cement. To insure the breaking up of any aggregated particles and their removal from the distributor a cleaning means has been provided which preferably takes the form of a tooth or
 80 finger or a series of teeth or fingers 34 which in the illustrated form extend well into and among the bristles and form in effect a comb. These teeth are shown as fast to the hood, but the manner of holding them is imma-
 85 terial so long as they are so held that relative motion between them and the brush is accomplished. And in this connection it should be understood that relative movement is the essential feature and that it is quite
 90 within the scope of this invention to employ a stationary distributor and movable cleaning means or to move both the distributor and cleaner but at different speeds.

In operation the regulator 24 having been
 95 properly adjusted and power applied to the pulley 31 to cause the distributor to revolve, the chain 9 is given a downward pull. This opens the valve 17 to an extent determined by the position of the set screw 18
 100 and allows a predetermined amount of cement to flow into the receptacle 16. From here the cement is delivered by the cement delivery means 29 obliquely across the working face of the distributor. As soon as the
 105 distributor is properly coated with cement a filled shoe 35 is presented to the under side of the distributor, the edge of the shoe being guided against the rim of the disk 25. In this manner the coarse bristles 32 come
 110 into contact with the welt 36 while the fine bristles contact with the filled part 37, the distributor revolving as indicated by the arrow in Fig. 3 and being applied to the shoe as there shown. Any particles of filler
 115 picked up by the bristles are removed by the teeth or fingers 34 which in the illustrated form are preferably a comb. These teeth are preferably pointed and their distance apart is determined according to the nature
 120 of the filling material and the quality of the cement used, it being evident that if the cement is lumpy or too viscous the comb will break up the lumps and tend to spread the viscous cement more evenly over the
 125 distributor.

While for convenience the invention has been described as embodied in a machine for applying cement and the coating material has been referred to as cement in the speci-
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fication and claims it should be understood that the invention is not limited to the application of cement but may be used with any granular, liquid or viscous material.

5 The invention has been set forth in connection with a specific machine but it should be understood that the machine described is only illustrative, that various changes other than those already suggested may be
10 made and that nothing herein contained is to be construed as limiting this invention and the scope of its application to the specific machine shown and described.

Having thus set forth my invention what
15 I claim as new and desire to secure by Letters Patent is:—

1. In a machine of the class described, the combination of a distributor and means for delivering coating material obliquely across
20 the face of said distributor.

2. In a machine of the class described, the combination of a distributor and means for delivering a sheet of coating material obliquely across the face of said distributor.

3. In a machine of the class described, the combination of a distributor and means for delivering a sheet of coating material to the face of the distributor, the plane of
25 said sheet being oblique to said face.

4. In a machine of the class described, the combination of a distributor, means for delivering coating material obliquely across the face of said distributor and means for
30 regulating the thickness of the coating.

5. In a machine of the class described, the combination of a rotary distributor and means for delivering coating material obliquely across the face of said distributor.

6. In a machine of the class described, the combination of a rotary distributor and means for delivering a sheet of coating material to the face of the distributor the plane of
40 said sheet being oblique to said face.

7. In a machine of the class described, the combination of a rotary distributor, means for delivering coating material obliquely across the face of said distributor and means for regulating the thickness of
45 the coating.

8. In a machine of the class described, the combination of a distributor and means
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extending obliquely across the face of the distributor for delivering coating material to said distributor.

9. In a machine of the class described, the combination of a rotary distributor and means extending obliquely across the face of the distributor for delivering coating material to said distributor. 55

10. In a machine of the class described, the combination of a rotary distributor and means extending obliquely across the face of the distributor for delivering a sheet of coating material to said distributor. 60

11. In a machine of the class described, the combination of a rotary distributor, means extending obliquely across the face of the distributor for delivering coating material to said distributor and means regulating the thickness of the coating. 65 70

12. A cementing machine comprising a brush and means for delivering cement obliquely across the face of said brush.

13. A cementing machine comprising a rotary brush having bristles set in rows which are oblique to the axis of said brush and means for delivering cement obliquely to the rows of bristles. 75

14. A machine of the class described, having, in combination, a distributor provided with a cylindrical working face, and means for delivering coating material obliquely across said face. 80

15. A machine of the class described, having, in combination, a distributor of approximately the form of a cylinder, and means for delivering a sheet of coating material, the plane of said sheet being at an angle to the elements of said cylinder. 85

16. A machine of the class described, having, in combination, a rotary distributor, and means for delivering to said distributor a sheet of coating material, the plane of which is oblique to the axis of rotation of said distributor. 90 95

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

ROBERT J. BURNS.

Witnesses:

ARTHUR L. RUSSELL,
FRED. W. GUIBORD.