Jan. 2, 1951 T. H. SULLIVAN 2,536,108

OPEN-END CEMENTING MACHINE

Filed Feb. 13, 1948 3 Sheets-Sheet 1

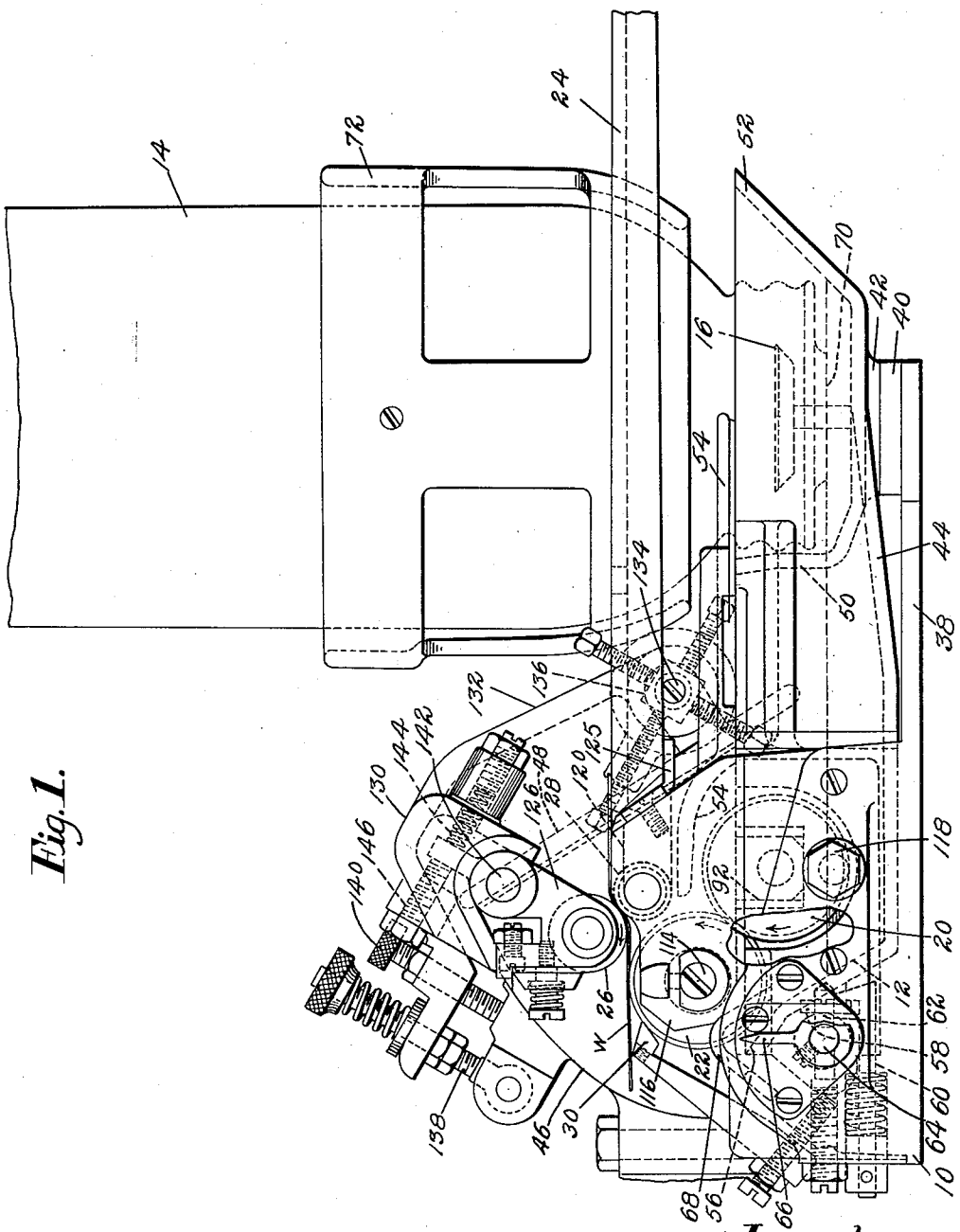


Fig. 1.

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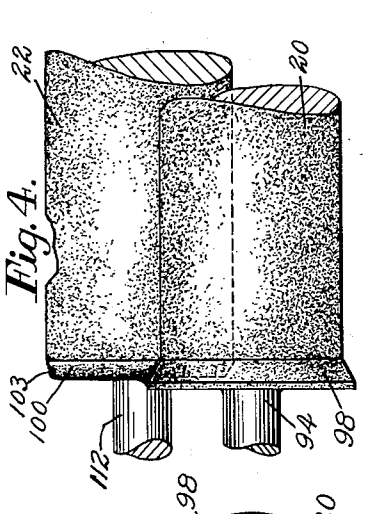


Fig. 4.

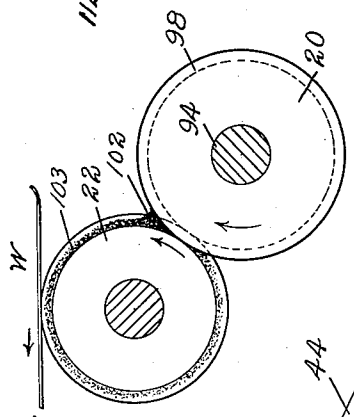


Fig. 3.

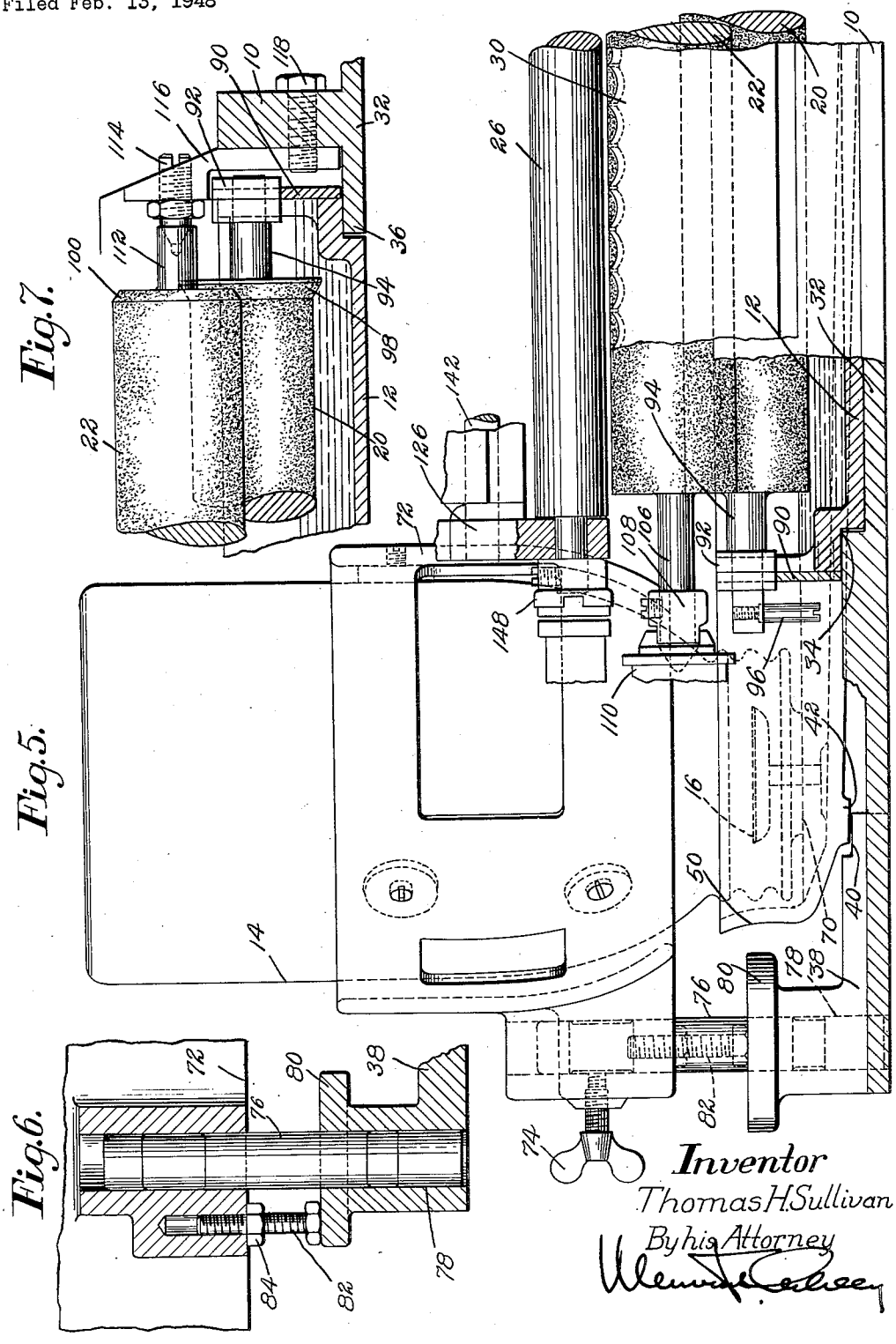
Fig. 2.

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UNITED STATES PATENT OFFICE

2,536,108

OPEN-END CEMENTING MACHINE

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3 Claims. (Cl. 91—50)

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This invention relates to cementing machines designed for applying a coating to only a portion of a piece of sheet material and is herein illustrated as embodied in an open-end machine such as that shown in Letters Patent of the United States No. 2,318,600, granted May 11, 1943, on the application of Paul H. Dixon.

The problem of successfully applying a coat of latex or other adhesive, hereinafter referred to as cement, to pieces of thin material was successfully solved in the machine of the Dixon patent. There the work is presented to the upper surface of an applying roll by means of coacting feed rools which are spaced from the applying roll and the cement is brushed onto the work by driving the applying roll considerably faster than the work is moving under the action of the cooperating feed rolls. This avoids any transfer of cement to the feed rolls such as would inevitably occur were the work pressed against the applying roll by a feed roll which must be spaced only a small distance therefrom. In the patented machine, cement is delivered to the applying roll from a coacting pick-up roll which dips in a pan of cement and rotates oppositely to and at considerably less speed than that of the applying roll. Control of the quantity of cement is effected by adjusting the spacing between said rolls.

This machine has been found particularly useful for the application of cement to shoe parts of sheet material such as doublers, sock linings, etc., and in some instances it has been desired to employ the machine for the application of cement to only a portion of a piece of work such, for example, as the toe end of a vamp. For such work a difficulty has arisen in that a bead of cement was formed at the intersection of the periphery of the applying roll with its end surface and thence was transferred to the work at the edge of the coated area. This is highly undersirable in certain classes of work, as, for example, where the shoe upper is made of thin leather, because the thickened bead can be seen and felt as a ridge on the outside of the shoe.

Accordingly, the object of the invention is to provide a machine of this class in which the applied coating of cement will have a substantially uniform thickness and no bead will appear.

To this end, and in accordance with a feature of the invention, a special construction of the coacting pick-up and applying rolls is employed in which the collected bead is carried on a portion of the applying roll which is of reduced diameter so that it is out of contact with work presented to the periphery of the roll. As illustrated, the applying roll has a frusto-conical end portion of

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diminishing diameter, while the cooperating pick-up roll has a frusto-conical end portion of increasing diameter.

These and other features of the invention will best be understood from a consideration of the following specification, taken in connection with the accompanying drawings, in which

Fig. 1 is an end elevation of the machine with a portion broken away;

Fig. 2 is a plan view of the machine, on a smaller scale, with the upper feed roll carrier not shown;

Fig. 3 is a diagrammatic view, on a larger scale, looking at the ends of the pick-up and applying rolls in the same direction as in Fig. 1;

Fig. 4 is a front elevation looking at the end portions of these rolls from the front side, considered with relation to the direction of movement of the work;

Fig. 5 is a fragmentary vertical section looking from the rear and showing the support for the cement pan and the relation thereto of the bottle cage;

Fig. 6 is a vertical section through the bottle cage support; and

Fig. 7 is a fragmentary vertical section through the rear end of the machine of Fig. 1 and showing the coacting rolls in elevation as viewed from the rear.

The machine has a frame 10 supporting a cement pan 12 which is supplied from an inverted bottle 14 provided with the usual control valve 16. In the pan is a pick-up roll 20 which delivers cement to an applying roll 22, the upper periphery of which moves with a piece of work W which the operator, facing the end of the machine shown in Fig. 1, slides over a table 24 to the bite of feed rolls 26 and 28 which present it to the upper surface of the applying roll. The work is prevented from following the applying roll back into the machine by means of a work stripper 30.

The frame 10 comprises a bottom plate 32 extending lengthwise of the applying rolls and on this plate are shoulders 34 (Fig. 5) and 36 (Fig. 7) which serve as guides to position the cement pan 12 as it is introduced from the front, considered with respect to the direction of movement of the work. This bottom plate also has an extension 38 (Fig. 2) having a ledge 40 to support a boss 42 (Fig. 5) on the underside of a trough 44 extending laterally from the cement pan. The frame also serves as a support for a gear casing 46 in which the driving mechanism of the machine is encased and which is provided with a removable cover 48.

At the end of the trough 44 is an enlarged

portion 50 (Fig. 2) to receive the neck of the inverted bottle 14 and a pouring lip 52 is provided for convenience in emptying the pan. The trough 44 is provided with a removable cover 54. The cement pan at the left side, as viewed in Fig. 1, is extended to form a lip 56 which underlies the downgoing side of the applying roll and catches any drip of cement from this roll or from the stripper 30. As in the Dixon patent, the pan is provided with plates 58 which are engaged by the hooked ends of spring-pressed bolts 60 to urge the pan rearwardly to its operative position. An adjustment of this position is effected by eccentrics 62, on a shaft 64, bearing against the plates 58 and adapted to be adjustably positioned by moving the shaft 64 to a degree indicated by a pointer 66 thereon. Any up-tilting of the rear side of the cement pan is avoided by means of overhanging hook-like abutments 68.

Inasmuch as the level of cement in the pan 12 is determined by the position of the outlet lip 70 (Fig. 5), forming a part of the valve 16, it is desirable to arrange for easy vertical adjustment of the bottle 14. To this end the bottle is supported in a cushioned cage 72. This cage is clamped by a setscrew 74 (Fig. 5) to a pin 76 which is supported in a socket 78. The latter is in the frame extension 38 and has a top flange 80. Resting on this flange is an adjusting stud 82 (Fig. 6), which is threaded in the portion of the bottle cage which surrounds the pin 76, and the stud is held in adjusted position by a locknut 84. The head of this stud 82 rests on the flange 80 and when the cement pan is to be cleaned, the bottle cage and the pin 76 may be lifted in the socket 78, turned around the axis of the pin and then again dropped to allow the stud 82 to rest on the flange 80, without changing the height adjustment.

The ends of the cement pan 12 are formed by plates 90 (Figs. 5 and 7) which are notched to receive bearing members 92 in which there are journaled gudgeons 94 on the pick-up roll 20. One of these gudgeons 94 extends outside the pan and is provided with a transverse pin 96 (Figs. 2 and 5) which cooperates with a driving mechanism (not shown) contained in the gear casing 46 and by means of which it is driven at a speed about one-tenth that of the applying roll 22. Inasmuch as this pick-up roll is journaled in the pan it will be seen that adjustment of the eccentrics 62 engaging the plates 58 on the pan serves to adjust the space between the pick-up roll and the applying roll 22. At its outer end at the right in Fig. 2 the pick-up roll has an enlarged frusto-conical end portion 98 and the periphery of this portion closely cooperates with a reduced frusto-conical end portion 100 on the applying roll 22.

With the rolls rotating in opposite directions as indicated by the arrows in Figs. 1 and 3, there is a tendency for a web of cement 102 to form at the point where the rolls separate and this slight surplus forms a bead which travels around on the adjacent corner of the applying roll. When the two rolls were made strictly cylindrical, as in the Dixon patent, it was found that this bead was positioned at the corner formed by the intersection of the periphery of the applying roll with its end surface. Consequently, it projected beyond the periphery and was transferred to the work.

With the improved construction, a bead 103 of cement (Fig. 4) is formed upon the frusto-conical, reduced end portion 100 of the applying roll near the intersection between that frusto-conical surface and the end surface of the roll and hence does not project beyond the confines of the peripheral surface, extended. Consequently a piece of work W traveling as in Fig. 3 in contact with the largest periphery of the applying roll does not touch the bead 103. This makes it possible to apply cement to only a portion of a piece of work without forming a bead at the edge of that portion.

It will be noted from Fig. 2 that a left-hand gudgeon 106 on the applying roll 22 is provided with a pointed end portion 108 which is received in a spring-pressed sleeve 110 forming part of the driving mechanism (not shown) in the gear box 46. The other gudgeon 112 on roll 22 is supported by a conical screw 114 threaded in an upright plate 116 attached to the frame 10 by means of a machine screw 118 (Fig. 7). Also supported in this upright plate 116 is a gudgeon at one end of the fluted lower feed roll 28 while the other end of the roll is connected to a driving shaft 120 (Fig. 2) in the gear casing. In order to prevent work from adhering to this lower feed roll a guide 122 is provided which has fingers 124 extending through the flutes of the lower roll and has a rearwardly extending portion 125 (Fig. 1) which supports one end of the table 24. This guide is supported on the plate 116 and on the gear casing.

As in the patented construction, the upper feed roll 26 is journaled in hangers 126 (Figs. 1 and 5) pivoted on a rod 142 in an arm 130 which extends lengthwise of the rolls from a position adjacent to the gear casing 46 and which is itself tiltable so that it may be swung away from the applying roll. To this end the arm 130 has forks, one of which is shown at 132 (Fig. 2) and is pivoted on the cover 48 of the gear casing by means of a screw 134. Another fork on the arm is pivoted on an adjustable square bearing block 136 which is adjustable to the desired position to bring the feed rolls into parallelism by the four screws shown in Fig. 1. Normally the arm 130 is held in the position shown in Fig. 1 by means of a swinging eye-bolt 138 and its exact position is determined by an adjustable stud 140. The hangers 126 for the feed roll 26, pivoted on the rod 142, may yield against springs 144 in accordance with varying thicknesses of work or return the feed roll 26 to a position closely adjacent to but not touching the fluted roll 28, this position being determined by a stop screw 146. This upper feed roll 26 is driven through an Oldham coupling 148 (Fig. 5).

In using the machine, cement will be supplied from the inverted bottle to the pan 12 with the level of cement in the pan determined by the adjustable stud 82 (Fig. 6). It will be removed from the pan by the pick-up roll 20 and delivered to the applying roll 22, the quantity being determined by moving the eccentric-carrying shaft 64 to a position indicated by the pointer 66. The operator will use his right hand to slide the piece of work W along the table 24 until it is grasped by the feed rolls 26 and 28 and is carried onto the upper surface of the applying roll 22 which will brush a coat of cement on the under surface of the work. The work will be removed from the applying roll by the stripper 30. If, taking advantage of the open-end construction of the machine, it is desired to apply cement to only a portion of the piece of work, then no bead of cement will be transferred to the work at the

edge of the coated portion for reasons already set forth.

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

1. In a cementing machine, a source of supply of cement and substantially parallel, elongated, coacting pick-up and applying rolls, one of which is supplied from said source and transfers the cement to the applying roll which has its upper periphery exposed for the application thereto of a piece of work, said rolls having lengths several times their diameters and having coacting terminal sections, that on the applying roll being smaller than the diameter of the roll and that on the supplying roll being larger whereby a bead of cement formed on the terminal section of the applying roll lies within its periphery, extended, so that it is untouched by the work.

2. In a cementing machine, an applying roll, said roll having a reduced diameter where its periphery intersects its end surface, means for presenting sheet material to the periphery of the applying roll, a source of cement below said roll and a pick-up roll dipping therein and arranged to lift cement from said source and to

transfer it to the applying roll, said pick-up roll having an enlarged end portion coacting with the reduced diameter of the applying roll.

3. In a cementing machine for sheet material, an applying roll, a pan for cement beneath it, a pick-up roll to lift the cement from the pan to the applying roll, said rolls being journaled in a support extending downwardly therefrom, and open-end work-feeding means for presenting pieces of work to the applying roll in a position above and overlying the end of the applying roll, said applying roll having a frusto-conical end portion leading to an end surface of reduced diameter, said pick-up roll having a coacting frust-conical portion terminating in an end surface of increased diameter.

THOMAS H. SULLIVAN.

REFERENCES CITED

The following references are of record in the file of this patent:

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