Feb. 15, 1938. I. L. KEITH 2,108,674

CEMENTING MACHINE

Filed Dec. 13, 1935

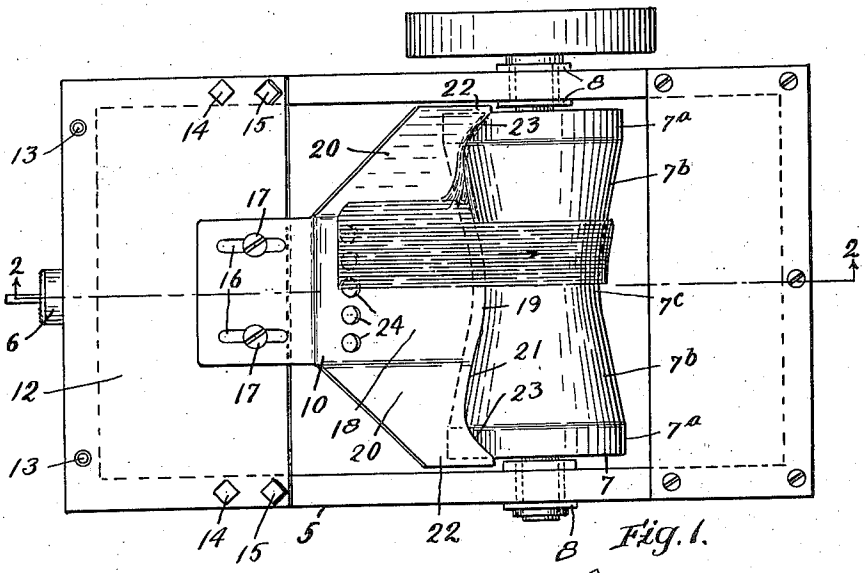


Fig. 1.

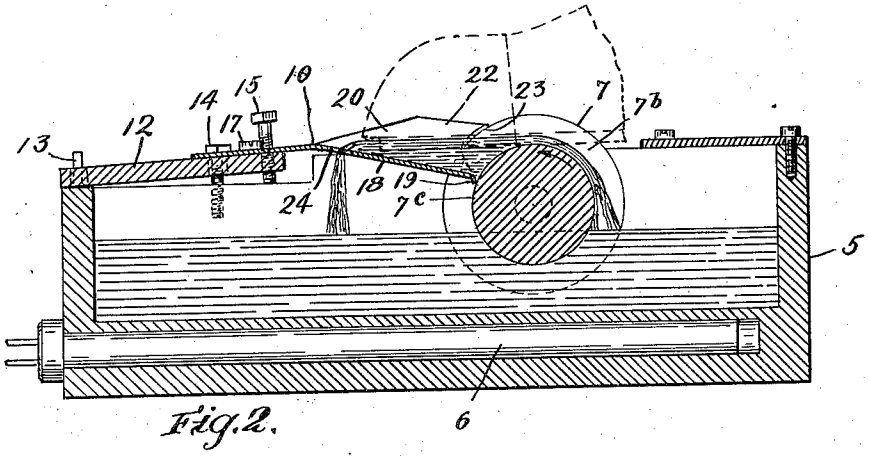


Fig. 2.

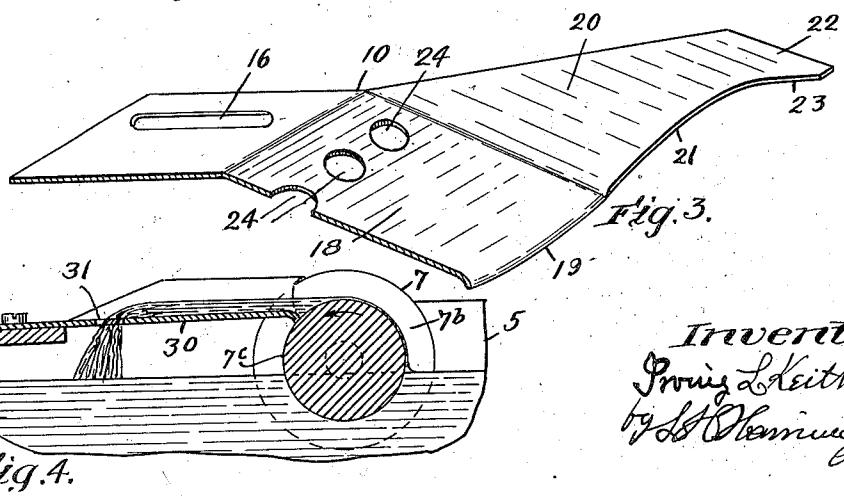


Fig. 3.

Fig. 4.

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CEMENTING MACHINE

Irving L. Keith, Haverhill, Mass.

Application December 13, 1935, Serial No. 54,188

3 Claims. (Cl. 12—80)

This invention relates to an improved or modified form of the invention disclosed in my application, Serial No. 24,883, filed June 4th, 1935, in which means are provided for forming a pool or stream of liquid adhesive, in which the parts to be cemented may be dipped, the adhesive employed consisting of melted wax, which is maintained in liquid state by heating the tank which contains it and which hardens almost instantly on cooling, so that it is essential that the liquid, which is lifted from the tank in which it is heated to form the pool or stream of adhesive, be immediately returned to the tank before it can harden, and that a constant circulation of the adhesive be maintained.

As explained in said prior application, the primary purpose of the invention is to provide means whereby the projecting edge portions, upper, lining, etc. of the toe portion of a shoe, to which a welt is to be attached, may be dipped in the quick setting adhesive prior to the welting operation, so that the latter operation may be more conveniently performed, and the use of a binding wire or staples may be made unnecessary. In some instances temporary lasting tacks are employed in the shoes which protrude to such an extent that they interfere with the above described dipping operation, when the construction described in my said prior application is employed, and one of the objects of my present invention is to provide a construction which, while it functions in a somewhat similar manner to the previous construction, is so arranged that the protruding lasting tacks do not interfere with the dipping operation and a pool of the liquid of the desired length, width and depth is provided, thru which a constant circulation is maintained.

I accomplish these and other objects by providing a form of scraper which is similar in many respects to that disclosed in my said prior application, but is disposed in a more nearly horizontal position and is only slightly inclined upwardly from the downgoing side of the roll, so that the liquid adhesive which is scraped from the roll flows onto the scraper and over the same away from the roll, thereby forming a pool of the liquid on the top side of the scraper and the adjacent top portion of the roll, into which the portion of the shoe to be cemented may be conveniently dipped, even though it may have a number of protruding tacks, and to provide for a constant circulation of the liquid, through the pool thereof thus formed, a discharge opening is formed in the scraper at a distance from its roll engaging edge, so that the liquid is simultaneously discharged from the pool over the top of the roll, in the opposite direction to its direction of rotation, and also through the scraper opening at a point somewhat remote from the roll, a pool of the liquid of ample width and length and of the exact depth required being thus provided through which a constant circulation is maintained.

For a more complete disclosure of the invention, reference is now made to the following specification, in connection with the accompanying drawing in which:—

Fig. 1 is a plan view of a machine embodying a form of my invention.

Fig. 2 is a sectional view on a line 2—2 of Fig. 1.

Fig. 3 is a combined perspective and sectional view of a preferred form of scraper which is employed.

Fig. 4 is a sectional view similar to Fig. 2, illustrating a modification.

As shown in the drawing, a tank 5, having an electrical heating element 6 in its bottom, has a roll 7 mounted in bearings 8 in the sides of the tank, to rotate about a horizontal axis, means being provided to rotate the roll constantly in the direction of the arrow in Fig. 2. The roll, which is preferably of solid metal having a smooth surface, is formed to provide short cylindrical portions 7*a* and oppositely disposed conical intermediate portions 7*b*, which taper from said end portions to the opposite ends of a relatively short nearly cylindrical or slightly concave portion 7*c*, the connecting surface portions between said conical portions and said middle portion being concavely curved, so that each surface merges into the other, and the connecting surface portions between the conical portions and the end portions being rounded, as shown. The tank is filled with an adhesive, which is maintained in liquid form by the heating element, to such an extent that the lower portions of the roll are submerged. In practice the tank may be filled to such an extent that the roll is submerged approximately to the level of its axis, but the operation hereafter described will be performed if the middle portion 7*c* is partly submerged.

A scraper 10 is provided, which is formed of heavy sheet metal, and is supported on a cover plate 12 mounted on the edges of the sides of the tank, said plate 12 being arranged for adjustment to different inclinations by any suitable means, the means shown consisting of pins 13 which are set in the end of the tank and pass

loosely through holes in the plate, and screws 14, which pass through the plate and are threaded in the sides of the tank and screws 15 which are threaded in the plate and engage the top edges of the sides. The shank portion of the scraper is provided with slots 16 and screws 17 pass therethrough and are threaded in the plate 12, so that the scraper may be adjusted towards and from the roll. The scraper is formed to provide a substantially flat middle portion 18, which extends at an angle to the shank portion, said middle portion having its edge 19 shaped to conform to the surface of the middle portion 7c of the roll, and side portions 20, which extend upwardly from the middle portion 18 at a slight angle, the edges 21 of said side portions being adapted to engage the surface of the conical portions 7b of the roll, and being arranged to extend upward thereon in a slightly oblique relation to the longitudinal elements of the roll. The scraper is also provided with tip portions 22, the edges 23 of which are arranged to engage the end portions 7a of the roll at an oblique angle. The middle portion 18 is provided with a row of openings 24 adjacent its point of connection with its shank portion.

The scraper is usually so adjusted that its edge 19 engages the roll middle portion 7c at its downgoing side and at a point approximately midway between the level of the axis of the roll and the top of the roll at its middle portion 7c, and the edges 21 of the side portions extend obliquely upward from the middle portion towards the top and ends of the roll. As thus arranged the middle portion 18 of the scraper extends upwardly from the roll at a slight inclination from the horizontal.

In operation, a film of the liquid in the tank will be carried up on the surface of the roll, and the tip portions 22 of the scraper will remove the greater portion thereof from the end portions 7a, and the side portions 20 will remove it from the conical portions 7b, so that the liquid thus removed will flow down on the scraper and on the roll to the middle portions thereof and the middle portion of the scraper will also remove the film of liquid from the middle portion of the roll, so that liquid thus accumulated will flow onto the middle portion of the scraper and will soon accumulate to a sufficient extent to overflow through the holes 24 and drain back into the tank. At the same time the liquid will accumulate on the scraper in sufficient quantity to rise above the level of the top of the roll, so that a stream of liquid will flow over the same back into the tank in the direction opposite the direction of rotation of the roll. In consequence under normal conditions, liquid will be discharged into the tank from both ends of the pool of liquid simultaneously and there will be no dead spaces therein through which the liquid is not constantly circulated, so that there will be no opportunity for any portion thereof to become hardened, and a pool of the liquid will be constantly maintained which extends from the top portion of the roll to the discharge openings 24 in the scraper, as shown in Fig. 2. The width of the pool will be determined by the width of the middle portion 18 and its depth by the position vertically of said middle portion.

A pool of liquid of sufficient length, width and depth is thus provided in which the entire projecting edge portion of the shoe upper to which the adhesive is to be applied may be conveniently dipped at the same time, so that the work may be quickly and effectively performed without applying the liquid to parts of the shoe from which it must subsequently be removed.

The formation and position of the scraper is also such that protruding tack heads will not interfere with the operation, and, in this connection it is noted that the edge 19, which engages the roll, is downturned so that the tack heads are unlikely to be caught thereon.

In Fig. 4 I have shown a slight modification, which is practically an illustration of a different adjustment of the scraper which may be employed, under some conditions, but which ordinarily would not be as desirable as the construction already described.

As indicated, the scraper 30 is arranged at a slight downward inclination as it extends from the roll, so that the liquid which is collected merely flows down the scraper and is discharged through openings 31 therein. As the liquid employed is heavy and slow flowing, the stream which accumulates on the scraper will be of sufficient depth for the purpose, it being understood that the particular adjustment of the scraper shown is merely illustrative and may be exactly horizontal or even slightly upwardly inclined, without having the liquid accumulate thereon to a sufficient extent to cause it to flow back over the roll. On account of the fact that the fluidity of the liquid varies somewhat with its temperature, different adjustments may be necessary, and for this reason the arrangement shown in Fig. 2 is preferable, as the depth and length of the stream in which the work is dipped is not varied by variations in fluidity within reasonable limits and is, for several other reasons, more desirable.

In practice the shoe will usually be dipped in the liquid while held approximately in the position indicated by dotted lines in Fig. 2, but the operation may be satisfactorily performed by holding the shoe in a position opposite to that indicated.

I claim:

1. In a machine for the purpose described, a liquid containing tank, a roll mounted to rotate therein about a horizontally disposed axis, with its lower portion submerged in the liquid, means to rotate said roll continuously in one direction, to provide a film of liquid on an unsubmerged portion of its surface, and a scraper comprising a horizontally extending plate having its edge in operative engagement with the downgoing side of the roll and arranged to extend from the roll at an upward inclination in position to remove liquid from the roll and direct the flow thereof away from the roll and toward the top side of the scraper in a stream of substantial depth, said scraper being arranged to provide a discharge passage back into the tank at a substantial distance from the roll.

2. In a machine for the purpose described, a liquid containing tank, a roll mounted to rotate therein about a horizontally disposed axis with its lower portion submerged in the liquid, means to rotate said roll continuously in one direction, to provide a film of liquid on an unsubmerged portion of its surface, and a scraper comprising a horizontally extending plate having its edge in operative engagement with the downgoing side of the roll and arranged to extend from the roll at an upward inclination in position to remove liquid from the roll and direct the flow thereof away from the roll and toward the top side of the scraper in a stream of substantial depth, said

scraper being arranged to provide a discharge passage therefor back into the tank at a substantial distance from the roll, and at a level substantially with that of the top of the roll, whereby a portion of the liquid may flow over the top of the roll in the opposite direction to the direction of rotation thereof and thereby provide a pool of the liquid on the scraper and roll from each end of which the liquid is discharged into the tank.

3. In a machine for the purpose described, a liquid containing tank, a roll mounted to rotate therein about a horizontally disposed axis, with its lower portion submerged in the liquid, means to rotate said roll continuously in one direction, to provide a film of liquid on an unsubmerged portion of its surface, and a scraper comprising a plate having a horizontally extending middle portion and side portions extending upwardly therefrom at an inclination to the horizontal, the edge of said middle portion being engaged with the middle portion of the roll at its downgoing side and the edges of said side portions being engaged with the end portions of the roll and extending continuously with the edge of the middle portion and said middle portion of the plate being arranged to discharge liquid into the tank at a substantial distance from the roll, whereby liquid removed from the roll by the scraper will flow over the middle portion of the scraper in a stream of substantial depth and be returned to the tank.

IRVING L. KEITH.