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APPARATUS FOR USE IN PRESSING SOLES

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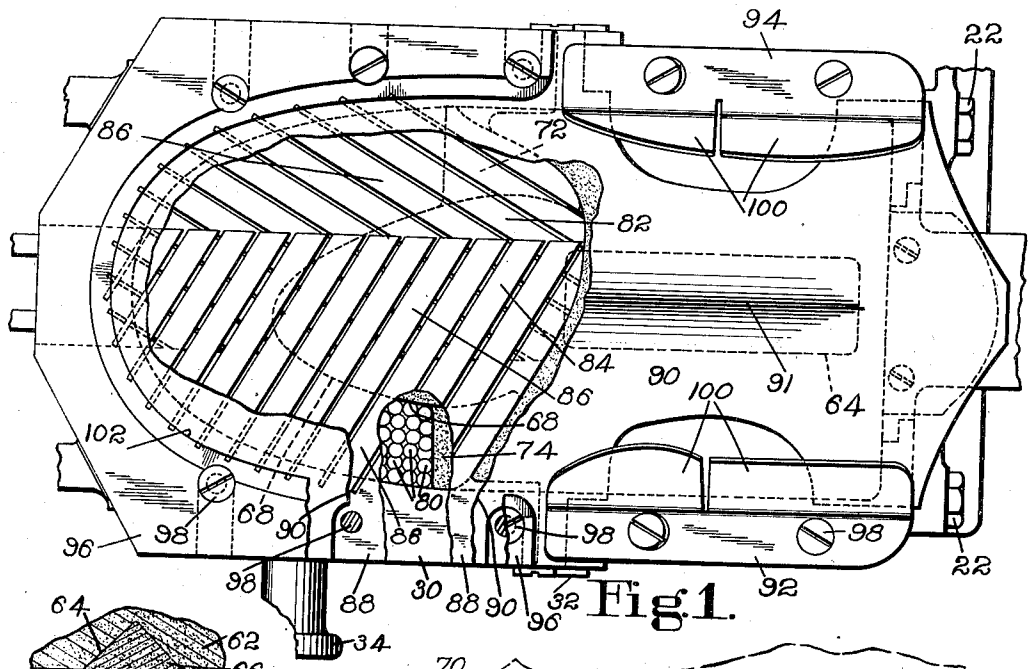


Fig. 1.

Fig. 3.

Fig. 2.

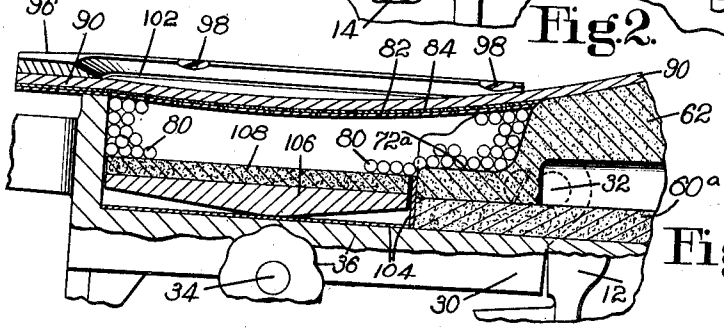


Fig. 4.

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APPARATUS FOR USE IN PRESSING SOLES

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9 Claims. (Cl. 12—38)

The present invention relates to apparatus for pressing soles of shoes and is disclosed as embodied in a so-called pad box for use in cement-attaching soles to the bottoms of compo shoes. The illustrated pad box is intended for use in connection with a cement sole-attaching machine, such for example as is shown in United States Letters Patent No. 2,047,185, granted July 14, 1936, on the application of Milton H. Ballard et al.

A fundamental desideratum in devices of this character is that the pad box shall exert sufficient pressure to cement the sole firmly to the shoe, and that irregularities in the cemented surface of the shoe bottom to which the sole is attached shall not be transmitted through the sole and appear on the bottom thereof, a difficulty which has given much trouble, since with some kinds of work it has heretofore been impossible to apply adequate pressure without marring the lower surface of the sole because of roughnesses in the shoe bottom above the sole. This difficulty arises especially in the forepart of the shoe. I have found that a mass of round rigid balls will, under pressure, flow to a certain extent to conform to the contour of a sole bottom, and that the balls will lock upon one another when the pressure reaches a certain intensity, thus forming a rigid pressing surface which is sufficiently rigid as not to "find" the minor irregularities of the shoe bottom through the sole and thus reproduce them on the lower outside surface thereof. I have found, however, that the balls tend to retain their locked condition when the pressure is removed, and that they will then not adapt themselves to fit succeeding shoes.

An important object of the present invention is to remedy this difficulty. I have found that the presence of a block of soft rubber in contact with the rigid balls is efficacious in this regard. The rubber is compressed as the pressure is applied, and resumes its original volume when the pressure is released, and this movement of the rubber breaks up the locked condition of the balls, and loosens them so that they flow under a succeeding shoe as they did under the first one treated.

It is sufficient for satisfactory work to utilize the described structure in the front part only of the pad box, a soft rubber block, alone, in the rear part being quite satisfactory. Accordingly, I have provided a pad box having a soft rubber block filling its rear end, the block having a shoe forepart shaped projection extending into the front end of the pad box, but not extending far enough to underlie the edge of a shoe forepart on the box. The space between the soft rubber projection and the walls of the front end of the box is fitted with a mass of small rigid balls.

Advantageously, the bottom of the front end of the box may be lined with a soft rubber plate, which assists in breaking up the "set" condition of the balls when the pressure on the box is released.

In accordance with another feature of the invention, I have provided a soft rubber covered rocker plate in the front end of the box, the space above which is entirely filled with the rigid balls, having found that, under some conditions, the resilience of the soft rubber rear block and the soft rubber cover of the rocker plate is sufficient to dislodge the balls. The rocker plate is of advantage in fitting the pad to the shoe bottom.

These and other features of the invention comprising certain combinations and arrangements of parts will be apparent from the following description of a preferred embodiment of the invention shown in the drawing, in which

Fig. 1 is a plan view of the pad box;

Fig. 2 is a side elevation, partly in section, of the pad box as seen from the position of the operator;

Fig. 3 is a detail of the pad; and

Fig. 4 is a sectional side elevation, from the same position as in the case of Fig. 2, of an alternative form of pad box and pad.

The pad box and the pad of my invention are illustrated herewith as embodied in a cement sole-attaching machine of the type disclosed in the above-mentioned United States Letters Patent No. 2,047,185. The pad box itself is substantially as shown in an application for United States Letters Patent, Serial No. 678,457, filed June 30, 1933, in the name of Lloyd G. Knowles. Accordingly, the main casting 12 of the pad box is shown (Fig. 1) as secured by screws 14 to a forwardly projecting portion of a shelf or bracket 16 which projects radially of the rotary turret of the machine. The right-hand end (as viewed in Fig. 1) of the casting 12 is provided with guideways in which an end wall carrying an outwardly extending bracket 18 is mounted for vertical sliding movement, the bracket being maintained in its uppermost position when the pad box is idle by a pair of compression springs 19 the upper ends of which are seated in holes drilled in the bracket 18 and the lower ends of which are supported by a second bracket 20 secured by bolts 22 to the casting 12 of the pad box.

The left-hand end of the pad box structure consists chiefly of a casting 30 approximately

U-shaped in plan view and adjustably pivoted at 32 to the casting 12. The casting 30 is held in adjusted position by mechanism more particularly described in the Knowles application above mentioned. This includes a shaft 34 mounted in bearings toward the left-hand end of the casting 30 and provided exteriorly of the casting 30 with a hand wheel 36, the purpose of which is to operate a latch (not shown) which locks the casting 30 in angularly adjusted position about the pivotal axis 32. The latch engages teeth (not shown) in a block 54 mounted fixedly on arms 56 extending from the casting 12.

The castings 12 and 30 thus form an open-topped box with joints in the bottom and sides to permit the casting 30 to swing up and down about the pivot 32. The rear end of the box has a slight slope forward and downward, as shown at 56.

The bottom of the box is covered (Fig. 2) by a plate of soft rubber 60 extending the full length of the box. Above the plate 60 is placed a soft rubber block 62 which fills the rear half of the box and a part of the front half. The block 62 has a V-shaped cut-out 64 in its under side, extending under the shank portion of a shoe, and fillable, if desired, by a plug 66 (Fig. 3) of the same material when it is desired to make the longitudinal central line of the pad under the shank more resistant to pressure than it would be with the block 66 removed.

The front end of the block 62 is provided with a tongue 68, shaped like the front end of the sole of a shoe much smaller than the shoes that are to be handled on the pad box. It is contemplated that the edge of the extension 68 will lie a half inch or so within the sole edge of a shoe 70 located on the pad. The wings of the main body of the pad, at each side of the extension 68, are preferably reduced vertically at 72, 74, forming steps on each side of the rubber block 62, extending back to sloping walls 76, which rise to the upper surface 78, of the main body of the block 62. All the space in front of the walls 76 above the steps 72, 74, and at each side of and in front of the extension 68, is filled with small steel balls 80, preferably about $\frac{1}{16}$ inch in diameter.

Two thin steel plates 82, 84, each consisting of a number of parallel fingers 86, joined by a rim 88 at the outside edge of the plate, are located above the space occupied by the balls 80. These plates overlap an inch or so at the center of the pad, as shown in Fig. 1, and the fingers 86 are cut on angles of about 30° and 60° with the longitudinal axis of the pad in the two plates 82, 84, respectively.

The rubber block 62 and the plates 82, 84 are completely covered by a cover 90, made of pliable tough material. I have found that molded sole leather is a satisfactory material for this purpose. The cover 90 is preferably molded to conform roughly to the shape of the bottom of a sole and may be provided with a longitudinal ridge 91 at its rear end to accentuate pressure at the corresponding part of the sole. The cover 90 extends over the entire pad box with its edges flush with the outside faces of the walls of the box. It is held in place by plates 92, 94, 96 fastened to the walls of the box by screws 98. The plates 92, 94 have curved upturned flanges 100 shaped to lie generally parallel to the shank edge of the sole of the shoe 70. The plate 96 is flat and has an internal U-shaped outline at 102, arranged to lie generally parallel to the forepart edge of the shoe 70.

The modified form of pad shown in Fig. 4 lacks the extension tongue 68, the steps 72, 74 being continuous from side to side as indicated at 72*a*. The rubber plate 60 is shortened as shown at 60*a* and a steel plate 104, bent at right angles, is located in front of the rubber block 62 with its bent edge located against the front ends of the plate 60*a* and the block 62. A metal rocker plate 106 is located above the plate 104, fitting between the front wall of the box and the upturned edge of the plate 104, and a plate of soft rubber 108 is located on top of the plate 106. The space above the plate 108 is filled with balls 80, as before.

When the pad box shown in Figs. 1, 2 and 3 is in use in the machine of the Ballard patent cited, pressure is applied between the shoe and the pad box as described in the specification of the Ballard patent. The rubber block 62 is distorted by this pressure, and the balls 80 flow a little under the pressure, but cease rolling upon one another and lock in position after the pressure reaches a certain value. The plates 82 and 84 yield generally to conform to the shape of the shoe bottom, but will not conform to minor departures from an even surface, so that small irregularities in the shoe bottom are not transferred through the sole of the shoe to become visible in the finished shoe. When the pressure is released, and the shoe 70 removed the rubber block 62 returns immediately to its normal shape and this movement disturbs the balls 80, thus releasing the locked condition into which they were brought by the pressure, when applied. The box is then in normal condition, ready for another shoe.

The box and pad shown in Fig. 4 act similarly as far as the effect of the recovery of the rubber block 62 upon the balls 80 is concerned. In this box, however, the rocker plate 106 accommodates itself and the balls 80 above it to the shape of the forepart bottom of the shoe, to a certain extent, the plate 104 acting as a guard for the joint between the plate 106 and the rubber members 60*a* and 62, so that these latter cannot get cramped and torn owing to the movement of the rocker plate 106.

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

1. An apparatus for pressing soles comprising an open-topped box having rigid bottom, end and side walls, and a filler comprising a soft rubber member, and a mass of rigid spherical balls in contact with the soft rubber member.

2. An apparatus for pressing soles comprising an open box having rigid walls, a soft rubber block filling one end of the box, and a mass of rigid spherical balls located in the other end of the box and extending from its bottom to its top.

3. An apparatus for pressing soles comprising an open box having rigid walls, a soft rubber block filling the rear end of the box and having a projection shaped like the toe end of a shoe extending into the front end of the box, there being a substantial space between the projection and the walls of the box, and a mass of rigid spherical balls filling said space.

4. An apparatus for pressing soles comprising an open box having rigid bottom, side and end walls, said box being formed in two pieces pivotally joined at a point midway of the length of the

box, the axis of the pivot lying widthwise of a shoe on the apparatus, that portion of the box lying to the rear of the pivot being filled with soft rubber, and that portion of the box lying to the front of the pivot being filled partially with soft rubber and partially by a mass of metallic spherical balls in contact with the soft rubber last mentioned.

5. A pad box for pressing soles having its rear portion filled with a resilient block, said block having a groove extending along the under side of its longitudinal central portion to relieve the pressing action of said block upon the center line of the shank portion of a shoe on the box, in combination with a plug of the same material as the block for filling said cavity to render the pressing action of the block uniform, when desired.

6. An apparatus for pressing soles comprising a metal box having rigid bottom, side and end walls, and an open top, a soft rubber block filling the rear end of said box, a rocker plate located in the bottom of the front end of said box arranged to rock about an axis extending widthwise of a shoe on the apparatus, and substantially fitting between the front end of the box and the front end of the soft rubber block, the front end of the block being reduced in vertical thickness to lie substantially flush with the top of the rocker plate, and a mass of rigid spherical balls filling the space above the rocker plate and the front end of the rubber block.

7. An apparatus for pressing soles comprising a metal box having rigid bottom, side and end walls, and open top, a soft rubber block filling the rear end of said box, a rocker plate having a soft rubber upper facing located in the bottom of the front end of said box arranged to rock about an axis extending widthwise of a shoe on the apparatus, and substantially fitting between the front end of the box and the front end of the soft rubber block, the front end of the block being reduced in vertical thickness to lie substantially flush with the top of the rocker plate, a mass of metallic spherical balls filling the space above the rocker plate and the front end of the rubber block, and a sheet metal guard plate located between the rocker plate and the soft rubber block to avoid interference between them as the rocker plate rocks.

8. A pad box for pressing soles having a portion filled with a central soft rubber member, and a mass of spherical metal balls located between the said member and the walls of the box, in such manner as to underlie the peripheral portion of the forepart of a shoe on the pad box, a flexible cover extending over the box, and a plurality of plates having their inner edges collectively shaped like the edge of a sole, located above the cover and arranged to clamp the cover to the walls of the box.

9. A pad box for pressing soles having a filling arranged to transmit pressure to a sole on the box, and a cover located between the filling and the sole, the cover comprising a plurality of overlapping slotted metallic plates located above the front end of the box, and a molded leather cover extending over the entire top of the box and clamped to its walls.

SIDNEY J. FINN.