This invention relates to apparatus for applying pressure to shoe bottoms and illustrated herein as embodied in a pad box adapted particularly for use in attaching soles to shoe bottoms by cement although it will be understood that in its broadest aspects the invention is not so limited in its use.

An object of the invention is to provide an improved pad of simplified construction by which the pressure is concentrated along the marginal portion of the shoe bottom.

To this end and in accordance with a feature of the invention the pressure-applying pad is formed of soft resilient material such as rubber having a shape similar in plan to that of a shoe bottom from the heel breast line forwardly, the shoe-facing surface of the pad having a margin-pressing portion and a central recess which is defined by abrupt shoulders at the inner edge of the margin-pressing portion. By reason of this recess no substantial pressure is applied to the central portion of the shoe bottom but the major portion of the pressure is concentrated along the marginal area.

In order properly to distribute the pressure along different portions of the marginal area, the marginal portions of the pad at the forepart slope inwardly toward the recess and slope upwardly lengthwise of the pad in that portion which is to underlie the Shank portion of the shoe.

In accordance with a further feature of the invention the pad is formed of a shoe-supporting pad member of soft rubber surrounded on the sides and bottom by a unitary block of relatively hard rubber. By thus confining the soft pad member, excessive wrap of the margin of the sole is prevented because the rubber can flow outwardly, due to the yielding nature of the harder rubber block. The soft rubber pad member is removable from the rubber block to facilitate substitution of one pad member for another if desired. An additional advantage of mounting the pad member in a rubber block is that adjustments of the shape of the pad member to accommodate shoes of different heel heights is facilitated.

The heel portion of the rubber block underlies the heel portion of the shoe to present a substantially flat surface thereto and is preferably of harder rubber than the remainder of the block to insure the formation of a substantially flat heel seat on the shoe being operated upon.

The above and other features of the invention including various details of construction and novel combinations of parts will now be described by reference to the drawings and pointed out in the claims.

In the drawings,

Fig. 1 is a longitudinal vertical section through one form of pad box in which the invention is embodied, showing a shoe thereon but no pressure applied:

Fig. 2 is a section on the line II—II of Fig. 1 but showing pressure being applied to the shoe bottom; and

Fig. 3 is an exploded view of the pad and associated parts which are carried by the box.

The pad of the present invention is adapted to be carried by a pad box of the type illustrated and described in Letters Patent of the United States No. 2,047,185, granted July 14, 1938, on an application filed in the name of M. E. Ballard et al., although it will be understood that the invention is not limited to this particular type of pad box. A pad box 10 having angularly adjustable bottom walls 12, 14 is provided. Carried by the bottom walls are metal blocks 16, 18 which fill the space occupied by the water bag of the Ballard et al. pad box. As shown in Fig. 2 the upper surface of the block 16 which underlies the forepart of a shoe being operated upon is inclined at 20, in accordance with the lateral inclination of the shoe bottom so that when a shoe is pressed on the pad supported by the block 16 there will be no tendency for the shoe to rock about an axis extending lengthwise of the shoe. The rear end of the block 16 is rounded as shown in Fig. 1 and abuts a flat inclined front face of the block 18, the arrangement being such that the plates 12, 14 may be readily adjusted with respect to each other in accordance with the particular heel height of the shoe to be operated upon by mechanism of the type illustrated in the Ballard et al. patent.

Carried by the metal blocks 16, 18 is a block 22 of resilient material having transversely extending grooves 24 extending partially through the block from the undersurface, these grooves enabling the block to conform to the supporting surface provided by the metal blocks 16, 18 irrespective of their relative positions as determined by the positioning of the plates 12, 14. The block 22 is preferably formed of rubber and is provided in its upper face with a recess 26, the recess being shaped somewhat like the outline of a shoe bottom but being larger than the largest shoe to be operated upon.

Removably carried by the block 22 in the recess 26 is a resilient pad 28 which has a shape similar to that of the recess 26 but is preferably
made slightly smaller so that it may be easily removed and replaced by a different pad should it be desired to make such a substitution. The pad is somewhat larger than the largest shoe to be operated upon and has a central recess which is somewhat smaller than the smallest shoe to be operated upon. This recess is defined by abrupt shoulder 32 at the inner edge of a margin-pressing portion 34 of the pad. As shown most clearly in Figs. 1 and 2, the marginal portions of the pad at the forepart slope inwardly toward said recess so that the margin of the sole during the pressing operation is conformal properly to the bottom of the shoe. By reason of the recess 30 in the central portion of the pad the pressure in the central portion of the forepart is minimized and the pressure is substantially all concentrated along the margin where it is needed in a sole-attaching operation.

The shank portion of the pad 28 is inclined upwardly lengthwise of the pad as illustrated in Fig. 3 so as to conform generally with the shank portion of a shoe bottom. It may be desirable to make the shank portion of the pad of harder rubber than that of the forepart because of the degree of pressure required in shaping the shank portion of the outsole in the sole-attaching operation or for some types of work, where a very flat forepart is desired, the forepart portion of the pad may be of harder rubber than the shank. The recess 30 extends throughout the shank portion of the pad so that the pressure is likewise concentrated along the margins of the outsole at the shank.

Preferably, although not necessarily, the block 22 in which the pad 28 is supported is of harder rubber than that of the pad, the primary function of the block being to support the pad on the bottom and sides thereof and providing the required flexibility to permit adjustment of the pad for different heel heights of shoes to be operated upon. The resiliency of the block 22 further permits, however, some lateral flow of the rubber of the pad 28 during the pressure-applying operation thereby facilitating flattening of the upper surface of the pad to that of the shoe bottom without excessively bending the edge portions of the outsole upwardly.

It will be noted that the recess in the block 22 and consequently the rear end of the pad 28, terminate forwardly of the rear end of a shoe to be operated upon. The heel end of the block 22 has a flat pressure-applying surface 36 as shown in Figs. 1 and 3 so as to facilitate the formation of a flat heel seat on the shoe bottom. The heel portion of the block may be of harder rubber than the remainder of the block so that the heel end of the shoe will not distort it appreciably during the pressure-applying operation, thus further insuring the formation of a flat heel seat.

A pad cover 35 is located on top of the pad 28. This cover is illustrated as being formed of a lower layer of rubber 40 united with an upper layer of leather 42. The rubber of the cover is preferably, although not necessarily, harder than that of the pad 28 and of the block 22. It is to be understood that the cover may be formed of other materials or combinations of materials. The cover is held in position by a metal plate 44 which is received in grooves 46 (Fig. 2) of the U-shaped gage plate 42 such as illustrated in the Ballard et al. patent. Pins 52 pass through holes 54 in the cover 35 to maintain the cover and mask plate in assembled relation.

So that the pad may be employed with shoes having a wide range of heel heights, a block 56 of rubber or other suitable material may be interposed between the heel end of the block 22 and the metal block 18 to raise the heel end of the pad beyond that which is possible by adjustment of the plates 12, 14, when operating upon shoes of extreme heel heights. When operating upon shoes of lower heel heights the block 56 will not be employed.

In the use of the apparatus the plates 12, 14 will be adjusted in accordance with the heel height of the shoe to the bottom of which a sole is to be adhesively attached, the block 56 being employed in the case of a shoe of extreme heel height. A shoe S is then placed on the pad cover 38 in a position in which it is generally central of the pad 34, after which pressure is applied through a toe abutment 60 and a heel abutment (not shown) to force the shoe and cover 38 downwardly into the pad as shown in Fig. 2. By reason of the yadable construction of the pad 28, the contour of its marginal portion, and the central recess 30 defined by the abrupt shoulders at the inner edge of the marginal portion, the pressure is concentrated along the margin of the shoe bottom where it is most needed in the sole-attaching operation and the margin of the outsole is bent upwardly around the forepart and shank thus imparting a good appearance to the shoe. The recess 30 is sufficiently deep so that even under maximum pressure there is a space between the cover 38 and the bottom of the recess so that relatively little pressure is applied throughout the central portion of the forepart and shank. It will be noted that the pad 28 extends somewhat above the surface 36 of the block 22 so that no pressure is applied to the heel end of the shoe bottom until considerable pressure has been applied along the shank and forepart. By reason of the cover 36 being flat and preferably of harder rubber than the rest of the block 22 there is no tendency to produce a round heel seat thus facilitating subsequent attachment of a heel to the shoe.

The construction described above eliminates the necessity of fluid pressure bags and the like, is simple in construction during use, of the rear end of the pad 28, and concentrates the pressure along those portions of the shoe bottom where it is most needed.

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

1. A pad for applying pressure to shoe bottoms comprising a rubber block having a recess in its shoe facing surface, and a rubber pad member removably carried in and substantially filling said recess, said pad member being shaped to apply pressure only to the marginal portions of a shoe supported thereon.

2. A pad for applying pressure to shoe bottoms comprising a hard rubber block having in its shoe facing surface a recess shaped to conform to the bottom of a shoe, and a soft rubber pad member substantially filling said recess and having a margin-pressing portion and a central recess defined by abrupt shoulders at the inner edge of said margin-pressing portion, said central recess being of substantial size but smaller than the smallest said recess be operated upon whereby the pressure on the shoe bottom is concentrated along its marginal area.
3. Apparatus for applying pressure to shoe bottoms comprising a box, a rubber block in said box having in its upper face a sole shaped recess larger than the Shank and foreparts of the largest sole to be operated upon, and a rubber pad member substantially filling said recess and providing a pressure-applying surface effective only along the marginal portions of the shoe bottom.

5. Apparatus for applying pressure to shoe bottoms comprising a box, a rubber block in said box having in its upper face a sole shaped recess larger than the Shank and foreparts of the largest sole to be operated upon, and a rubber pad member in said recess, the shoe-facing surface of said pad member having a margin-pressing portion and a central recess defined by abrupt shoulders at the inner edge of said margin-pressing portion, said central recess being of substantial size so that the pressure is concentrated along the marginal portions of the shoe bottom, the marginal portions of said pad member at the forepart sloping inwardly toward said recess, said pad member being relatively soft in comparison with the block.

5. Apparatus for applying pressure to shoe bottoms comprising a box, a rubber block in said box having in its upper face a sole shaped recess larger than the Shank and foreparts of the largest sole to be operated upon, and a rubber pad member in said recess, the shoe-facing surface of said pad member having a margin-pressing portion and a central recess defined by abrupt shoulders at the inner edge of said margin-pressing portion, the marginal portions of said pad member at the forepart sloping inwardly toward said central recess, said pad member being relatively soft in comparison with the block, the rear portion of said block being arranged to underlie the heel end of the shoe and being of harder rubber than the rest of the block.

6. Apparatus for applying pressure to shoe bottoms comprising a pad box having angularly adjustable bottom parts, a solid rubber block contained in the box, said block having transversely extending slits in its lower portion to enable it to conform to the positions of said bottom parts and having a recess in its upper face, and a rubber block substantially filling said recess and being shaped to concentrate the pressure along the marginal portions of a shoe bottom.

7. Apparatus for applying pressure to shoe bottoms comprising a pad box having angularly adjustable bottom parts, a solid rubber block contained in the box and having transversely extending slits in its lower portion to enable it to conform to the positions of said bottom parts and having a sole shaped recess in its upper face, and a relatively soft rubber pad member substantially filling said recess, the shoe-facing surface of said pad member having a margin-pressing portion and a central recess defined by abrupt shoulders, the recess in said pad member being of substantial size but smaller than the smallest shoe to be operated upon whereby the pressure on the shoe bottom is concentrated along its marginal area.

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