Feb. 5, 1952 C. K. WOODMAN 2,584,313

PAD BOX

Filed April 13, 1949 2 SHEETS—SHEET 1

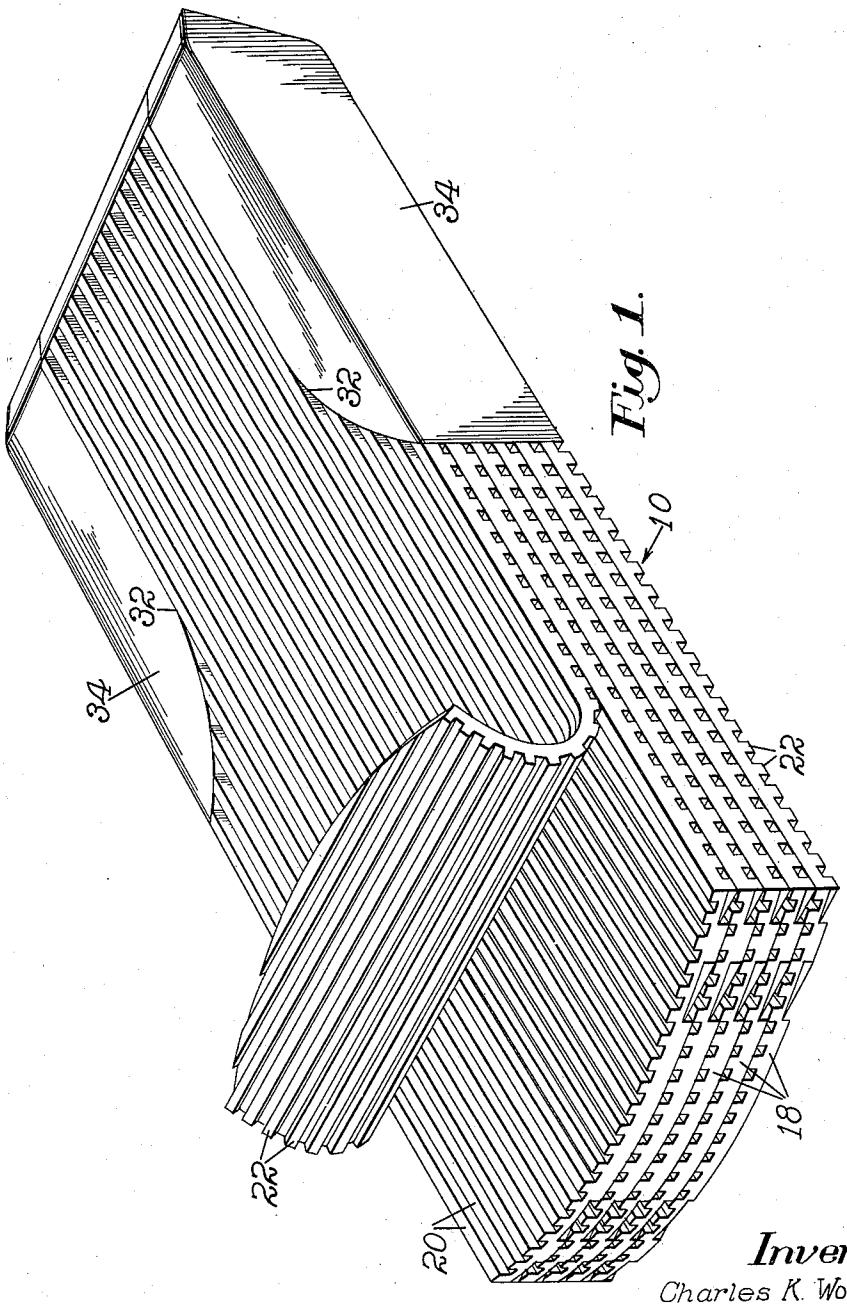

Fig. 1.

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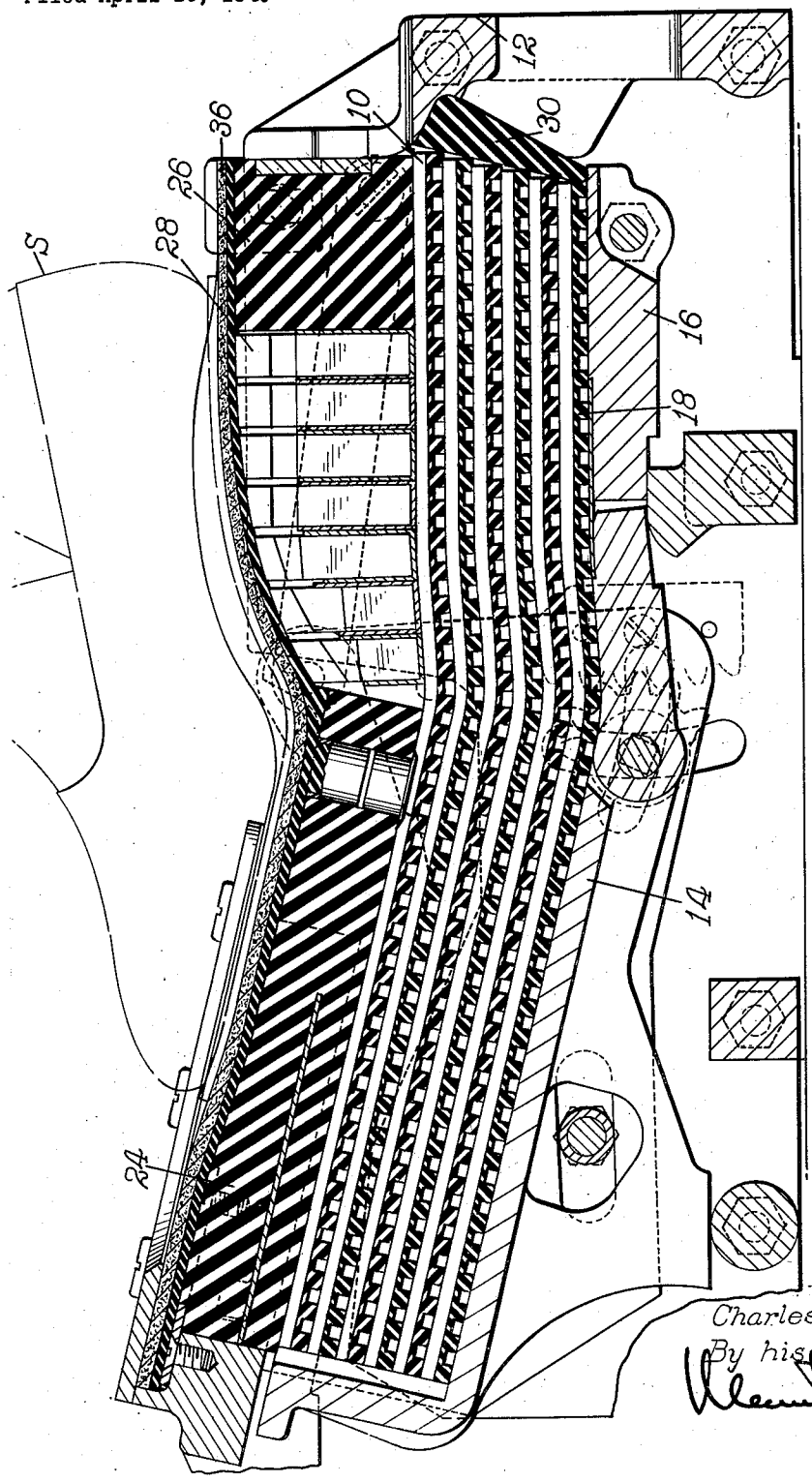

Fig. 2.

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UNITED STATES PATENT OFFICE

2,584,313

PAD BOX

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Application April 13, 1949, Serial No. 87,227

2 Claims. (Cl. 12—38)

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This invention relates to apparatus for operating on shoes and more particularly to pads for applying pressure to shoe bottoms. The invention is illustrated as embodied in a pad of the type shown and described in Letters Patent of the United States No. 2,205,400, granted June 25, 1940, on an application filed in the name of Sidney J. Finn for use in a cement sole attaching machine, although it will be understood that the invention is not thus limited in its application.

In pads of the type illustrated by the Finn patent the pressure-applying pad members are supported by a water bag which permits relative yielding movements of the pad members during the pressure-applying operation to conform to the shoe bottom. The pad members and the water bag are contained in a box, the bottom of which is formed of parts which are angularly adjustable for varying heel heights. The usual water bag in such constructions has been found satisfactory but it is somewhat expensive and its life is limited.

It is an object of the present invention to provide a pad construction having the advantages of the usual water bag but which is less expensive and has a longer life. To this end and in accordance with a feature of the invention the pad member is formed of resilient material such as rubber, the pad member having a plurality of voids of uniform size which are uniformly spaced throughout the pad. More specifically the pad member is formed of a plurality of rubber sheets the opposite faces of each sheet being provided with spaced ribs, the ribs on one face extending at right angles to the ribs on the other face. Preferably, although not necessarily, the ribs cross each other in such manner as to form continuous vertical columns of rubber each of which has spaces therearound into which the rubber can flow during the pressure-applying operation whereby the pad readily conforms to the curvature of the shoe bottom. Even if the sheets are not superposed in a manner to form the vertical columns of rubber it will be understood that the spaces between the ribs form voids into which the rubber can flow during the pressure-applying operation in much the same manner as water flows in the conventional water bag. By choosing rubber of the proper durometer the pad member may be made to conform to the bottom of the shoe to the same degree as, or more or less than, that of the usual water bag. The degree of wrap of the pad member along the margins of the shoe bottom is thus readily controlled by a choice of rubber of the proper durometer and also by a choice of the number of sheets employed.

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Further to control the degree of wrap and in accordance with another feature of the invention the pad member may be recessed at desired locations in its periphery such as at opposite sides of that portion which is to underlie the shank of a shoe and these recesses may be filled by solid rubber blocks of the desired durometer thereby limiting the flow of rubber adjacent to the blocks and stiffening the pad member at these locations.

In using such a member on a pad box having a bottom of relatively movable parts for adjustment for shoes of different heel heights the sheets of the pad member can slide relatively to one another so that the adjustment of the pad box is easily made.

It is to be understood that the term "rubber" is used here in an illustrative rather than in a restrictive sense and is intended to include all substances, the physical properties of which approximate rubber sufficiently to permit them to operate as herein disclosed.

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 accompanying drawings and pointed out in the claims.

In the drawings,

Fig. 1 is an angular view of one form of pad member in which the invention is embodied, and

Fig. 2 is a vertical longitudinal section through a pad box employing a pad member of the type shown in Fig. 1.

The invention is illustrated as embodied in a pad member 10 for use in a pad box 12 having angularly adjustable bottom parts 14 and 16, the pad box being of the type shown in the Finn patent mentioned above. The pad member 10 is formed of a plurality of rubber sheets 18 each of which sheets is provided on one face with spaced ribs 20 extending lengthwise of the pad box, the other face of each of the sheets being provided with transversely extending spaced ribs 22. These ribs are preferably substantially square in cross section and are spaced from each other approximately the same distance as the thickness of the ribs although it will be understood that the shape and spacing of the ribs may be varied. The sheets of rubber carrying the ribs are relatively thin so that the pad member is made up principally of alternate layers of transverse and longitudinal spaced ribs. This pad member may be used as a substitute for the water bag of the pad box shown in the Finn patent to support the shoe-supporting pad made up of the forepart block of rubber 24, the heel block 26 and the separate blocks 28 which underlie the

shank portion of the shoe. A block of rubber **30** forms an abutment for the rearward portions of the sheets as shown in Fig. 2.

The sheets of rubber of the pad member **10** can slide relatively to one another in the adjustment of the bottom parts **14**, **16** of the pad box thus facilitating this adjustment for shoes of different heel heights. The sheets **18** may be so disposed in the pad box that the transversely extending ribs and the longitudinally extending ribs lie directly above one another, as shown in Fig. 1, thereby to provide continuous columns of rubber for sustaining the pressure applied to the bottom of the shoe. The spaces between the columns of rubber or between the different ribs permit the rubber to flow as required in the pressure-applying operation so that the pad member readily conforms to the shape of the shoe bottom. The degree of flow of rubber and consequently of conformation of the pad member to the shoe bottom is readily controlled by varying the number of sheets of which the pad member is composed, by employing rubber of the proper durometer, and by varying the relative sizes of the ribs and the spaces between the ribs.

In order that heavy pressure may be exerted in the shank of the shoe it is desirable that there will be less opportunity for the rubber of the pad member **10** to flow in this locality. Accordingly, the sheets **18** are cut away to form recesses **32** in the pad member **10** in the sides of that portion of the pad member which is to underlie the shank of the shoe. These recesses are then filled with blocks **34** of solid rubber of whatever hardness is desired thereby stiffening these portions of the pad member.

When pressure is applied to the bottom of a shoe S which rests on a cover **36** of the pad members **24**, **26**, **28**, the pad member **10** assumes the shape required by the relative movements of the pad members **24**, **26**, **28** to support these latter members in accordance with the shape of the shoe bottom, greater pressure being applied by reason of the use of the solid rubber blocks **34** in the vicinity of the shank of the shoe.

Although the invention has been illustrated herein as a substitute for the usual water bag of a pad box for a cement sole attaching machine, it will be understood that it may be used to advantage in other types of pad boxes such as those intended for sole-laying operations. One form of pad box with which the pad member of the present invention is particularly useful is in combination with the flexible metal blanket of United States Letters Patent No. 2,497,195, granted February 14, 1950, as the joint invention of N. S. Ferland and myself. In such a combination the pad member of the present invention would provide the support for the flexible metal blanket of this copending application. When used as a substitute for the usual water bag of a pad box of the type shown in the Finn patent a saving in the cost of the pad box is effected and the pad member will outlast the usual water bag. Furthermore, because the individual sheets of which the pad member is formed can slide relatively to one another, adjustment of the bottom members **14**, **16** of the box to accommodate shoes of different heel heights is made with less effort than is the case when the usual water bag is employed. By a choice of rubber of the proper durometer the flow characteristics of the pad member can be made to duplicate those of the water bag, or can be increased or decreased to any extent desired.

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 pad for use in applying pressure to shoe bottoms, a plurality of substantially rectangular superposed rubber sheets the opposite faces of each of which are provided with spaced ribs, the ribs on one face extending at right angles to the ribs on the other face of each sheet and at right angles to the contiguous ribs of the adjacent sheet, that portion of the pad which is to underlie the shank of the shoe being operated upon being provided with vertical recesses at the opposite sides of the pad, and solid rubber blocks filling said recesses.

2. Apparatus for use in applying pressure to the bottoms of shoes comprising a pad box having relatively adjustable bottom walls, a substantially rectangular pad member supported by said walls, said pad member comprising a plurality of superposed rubber sheets the opposite faces of each of which are provided with spaced ribs, the ribs on one face extending at right angles to the ribs on the other face and to the adjacent ribs of the contiguous sheet, said pad member having vertical recesses in the sides at that portion of the pad which is to underlie the shank of a shoe being operated upon, solid rubber blocks filling said recesses thereby to reduce the capacity of the rubber in the shank portion to flow under applied pressure, and a conformable shoe-engaging member supported by said pad member.

CHARLES K. WOODMAN.

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