

[72] Inventor **Richard R. Jung**
Battle Creek, Mich.
 [21] Appl. No. **857,400**
 [22] Filed **Sept. 12, 1969**
 [45] Patented **Apr. 27, 1971**
 [73] Assignee **Clark Equipment Company**

[56] **References Cited**
UNITED STATES PATENTS
 3,313,367 4/1967 Swedburg..... 180/124X
 3,339,654 9/1967 Bertin et al. 180/127
 3,414,075 12/1968 Bertin..... 180/121

Primary Examiner—A. Harry Levy
Attorneys—Kenneth C. Witt, John C. Wiessler, Robert H.
 Johnson and Reginald J. Falkowski

[54] **INFLATABLE AIR PAD WITH EASILY
 REMOVABLE DIAPHRAGM**
2 Claims, 3 Drawing Figs.

[52] U.S. Cl..... **180/124,
 180/127**
 [51] Int. Cl..... **B60v 1/16**
 [50] Field of Search..... **180/124,
 125, 127, 128, 121**

ABSTRACT: An air pad with an easily removable diaphragm. The diaphragm has a bead around the periphery adapted to be disposed in a recess formed by an L-shaped flange and held in place by a snap ring.

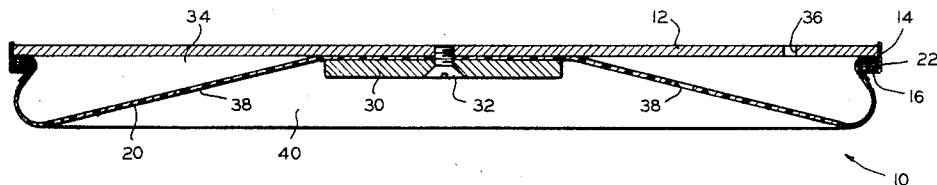


FIG. 1

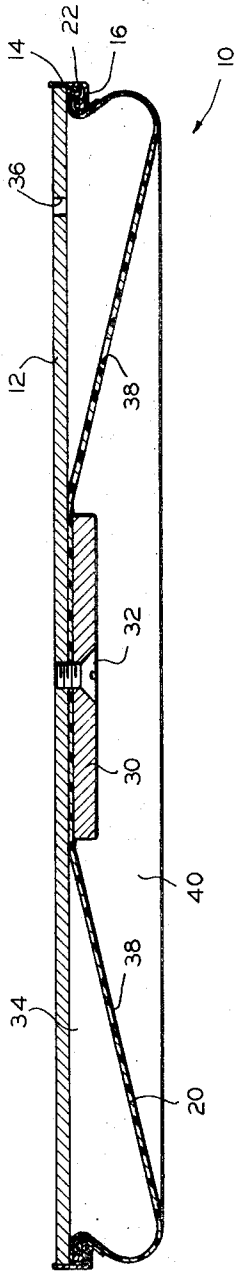


FIG. 2

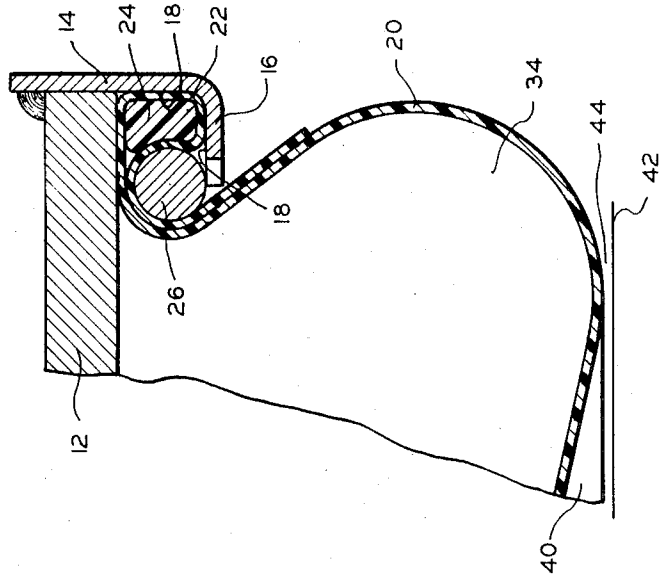
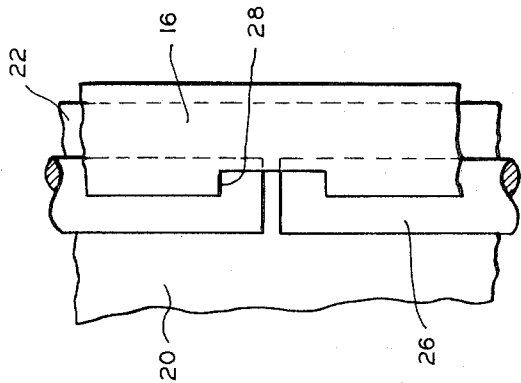


FIG. 3



INVENTOR
RICHARD R. JUNG
BY *Robert H. Johnson*
ATTORNEY

INFLATABLE AIR PAD WITH EASILY REMOVABLE DIAPHRAGM

BACKGROUND OF THE INVENTION

The field of art to which the invention pertains includes motor vehicles, and more specifically special driving devices.

The diaphragm for an air pad is relatively thin sheet plastic, and since it is used on floors is subject to being torn or punctured occasionally. When this occurs, it is necessary to remove the diaphragm from the air pad in order to patch it because the patch must be applied to the inside of the diaphragm. Patching is done in this manner in order to keep the outside of the diaphragm smooth so that an air film can be maintained between the air pad and the floor or other supporting surface. Obviously, it is very desirable that the diaphragm be quickly and easily removable from and replaceable on the air pad for patching or complete replacement of the diaphragm.

SUMMARY OF THE INVENTION

In carrying out my invention in a preferred embodiment, I provide a base to which a flange is connected. The flange is generally L-shaped in cross section and defines with the base a recess. A diaphragm with a bead around the periphery thereof has the bead disposed in the recess and held in place by a snapping. The diaphragm also is attached to the base at approximately the centers of both.

The objects, features and advantages of my invention will become more apparent to persons skilled in the art when the detailed description is taken in conjunction with the drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a cross section of an annular air pad embodying my invention.

FIG. 2 is an enlarged fragmentary view showing to advantage the connection of the diaphragm to the base, and

FIG. 3 is an enlarged fragmentary view showing the notch in the flange.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing, the reference numeral 10 denotes generally an inflatable air pad of the type which is shown and described in detail in U.S. Pat. Nos. 3,161,247 and 3,313,367, and over which the present invention is an improvement. Air pad 10 includes a base 12 which, in this case, is circular, but which may be oval or elongated, if desired. Connected to base 12 by any suitable means, such as welding, is a flange 14 which is generally L-shaped in cross section and which includes an inwardly extending portion 16. As will be apparent, flange 14 defines with base 12 an annular recess 18 which extends completely around the periphery of base 12.

Air pad 10 also includes a flexible plastic sheet or diaphragm 20 with a bead 22 at the periphery thereof which is formed by turning over and sealing the periphery of diaphragm 20 to enclose a compressible ring 24. Bead 22 is adapted to be disposed in recess 18 in order to attach diaphragm 20 to base 12 and is held in place by means of a resilient snapping 26 which tends to spring outwardly, and thus forces bead 22 against flange 14 to form an airtight seal therewith.

A notch 28 is provided in the inwardly extending portion 16 of flange 14 to provide for easy removal of snapping 26 by

simply inserting the end of a screwdriver or similar tool and prying one end of snapping 26 out of recess 18.

Diaphragm 20 is arranged to be attached at the center thereof to the center of base 12 by means of a disc 30 which clamps diaphragm 20 between it and base 12 and which is fastened in position by means of a machine screw 32 or other similar fastener. Consequently, a generally annular chamber 34 is defined by base 12 and diaphragm 20 due to the connection of diaphragm 20 to base 12 at the peripheries and centers of both.

Air pad 10 is arranged to have pressurized air or other suitable fluid supplied thereto through a port 36 which communicates with chamber 34 so that diaphragm 20 is inflated to substantially the configuration shown in FIGS. 1 and 2. Pressurized air can escape from chamber 34 through a plurality of openings 38 in diaphragm 20 to a plenum chamber 40 defined by the underside of diaphragm 20 and the floor or other supporting surface 42 over which air pad 10 is operating. In a properly functioning air pad the air from plenum chamber 40 is continually escaping out from the underside of air pad 10, and so an air film 44 of approximately 0.015 of an inch in thickness is maintained in the area indicated by reference numeral 44 in FIG. 2.

In the event of a puncture or rip of diaphragm 20 and the patching thereof, it is necessary to remove, at least partially, diaphragm 20 from base 12 so that any patch may be applied to the inside of diaphragm 20, whereby a smooth surface on the underside of diaphragm 20 may be maintained. It will be seen that partial removal of diaphragm 20 from base 12 is easily accomplished by simply removing snapping 26 and then pulling bead 22 out of recess 18. If complete removal of diaphragm 20 from base 12 is required for replacement or major repair of diaphragm 20, it is only necessary to additionally remove machine screw 32 which holds disc 30 in place. Attachment of diaphragm 20 to base 12 is accomplished simply by following the reversal of the above-mentioned procedure.

At this point it will be seen that there is provided an air pad construction in which the diaphragm is easily and quickly removable or replaceable.

Although only a single embodiment of my invention has been shown, it will be understood that the detailed description is for purposes of illustration only, and that various modifications and changes can be made to my invention without departing from the spirit and scope of it. Therefore, the limits of my invention should be determined from the following appended claims.

I claim:

1. An inflatable air pad comprising a base, a flange connected to the said base, the said flange being generally L-shaped in cross section, a recess defined by the said base and flange, a flexible diaphragm, the said diaphragm including a bead which is adapted to be disposed in the said recess so as to form a chamber between the said base and diaphragm, a snapping adapted to be disposed in the said recess and hold the said bead in the said recess and means for connecting the said diaphragm to the said base at substantially the centers of both the said diaphragm and base.

2. An air pad as set forth in claim 1 wherein the said flange includes an inwardly extending portion and a notch in the said inwardly extending portion to facilitate removal of the said snapping.