Oct. 10, 1939. R. L. KEAYS 2,175,941

BATH MAT AND SUCTION CUP MECHANISM

Filed July 5, 1938

Fig. 1.

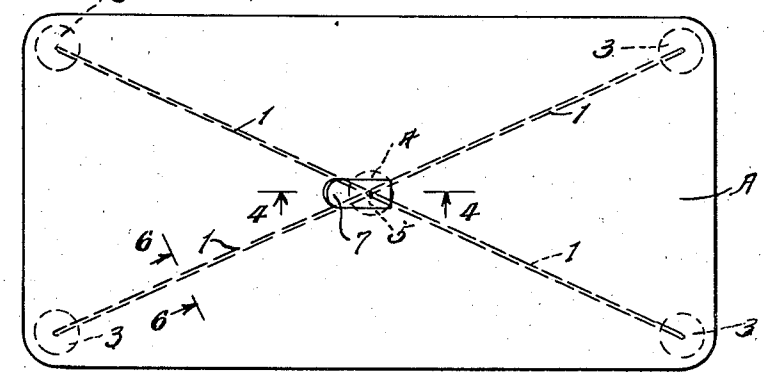


Fig. 2.

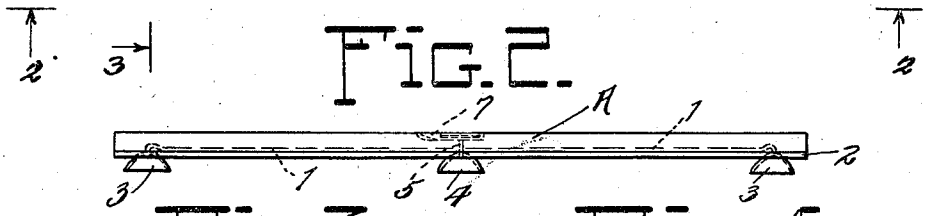


Fig. 3.

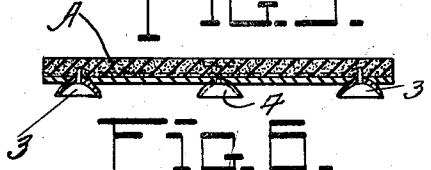


Fig. 4.

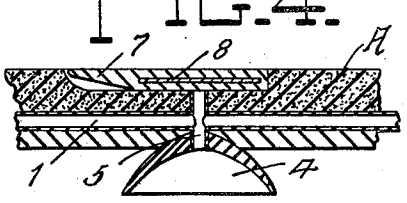


Fig. 6.

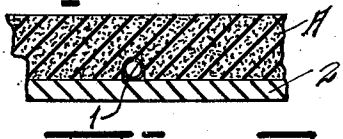
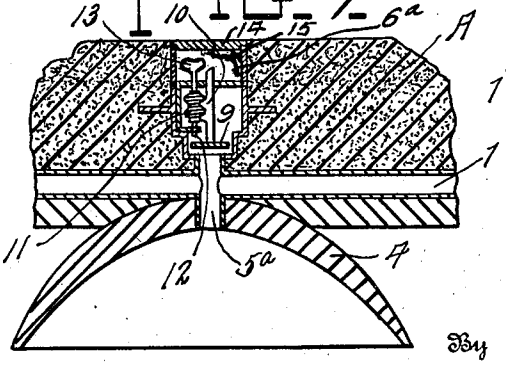


Fig. 7.



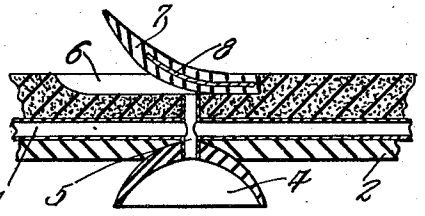


Fig. 5.

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BATH MAT AND SUCTION CUP MECHANISM

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Application July 5, 1938, Serial No. 217,609

8 Claims. (Cl. 4—185)

The present invention embodies certain improvements in bath mats of the type equipped with suction cups for preventing the slipping of the mat in a bath tub over a tile floor or similar surface when the article is in use.

It is customary to provide bath mats of this kind with a plurality of the suction cups by which it is caused to be held from displacement from the base or other part on which it is mounted. The use of these suction cups creates some difficulty in releasing the bath mat from the surface to which it is connected by the suction action of the cups when it is desired to remove the mat from the tub, tile or similar surface to which it is attached.

With the foregoing in view, it is contemplated according to this invention to provide for the mat a series of suction cups, as usual, from which cups, however, lead conduits which terminate at a common central air release opening or compartment, and a central valve is located at the latter point and adapted to be readily manipulated for the purpose of release of the vacuum or suction in all of the cups of the mat simultaneously. In this manner the mat is enabled to be quickly detached from the surface to which it is united.

A further object of the invention has been to produce a mat of the type referred to in which the body of the mat is made from sponge rubber and the conduits or passages leading from the suction cups to the central or common release passage are secured peculiarly to the sponge rubber body, preferably by the employment of rubber tubing vulcanized or otherwise applied to the body in suitable recesses provided therefor.

The use of sponge rubber for the bath mat has a number of advantages particularly in affording a non-skidding or slipping function that will be obvious to those versed in the art.

Another object of the invention has been to provide a conduit assembly of suction cups and conduits or rubber piping which is adapted to be applied as a unit to the sponge rubber or similar body of the mat in the practical making of the article of manufacture.

Still another object of the invention has been to produce a simple and readily operable release valve member for effecting the simultaneous release of vacuum in the various suction cups, as will be more fully shown hereafter.

With the foregoing and other objects in view, preferred embodiments of the invention are illustrated in the accompanying drawing, in which:

Figure 1 is a top plan view of a bath mat embodying the invention.

Figure 2 is a side or edge elevational view.

Figure 3 is a cross sectional view taken about on the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary longitudinal sectional view taken on the line 4—4 of Figure 1 and illustrating the special form of release valve employed as one preferred embodiment of the invention.

Figure 5 is a view somewhat similar to Figure 4, but showing the release valve as when raised by the hand, or fingers thereof, to simultaneously release the suction or vacuum in all the cups of the mat.

Figure 6 is a cross sectional view bringing out more clearly the manner of recessing the sponge rubber body of the mat to receive the rubber conduit leading from a rubber suction cup, and also showing a bottom layer of ordinary rubber applied to the sponge rubber body.

Figure 7 is a cross sectional view similar to Figures 4 and 5 but showing a modified operating means for the suction release valve.

Describing the invention in detail, A in the drawing designates the body of the mat which is preferably made of sponge rubber. In the under side of the body A are formed a series of recesses, preferably arranged according to the preferred form of the invention so that they radiate from the central portion of the body A. In these recesses are located the conduits 1 which are preferably made of rubber hose. Since the recesses referred to are formed in the under side of the body portion A, the rubber hose of the conduits 1 may be inserted in the said recesses, vulcanized therein, if desired, or merely retained therein by means of a bottom layer 2 of rubber suitably applied, as by vulcanization, to the underside of the body A.

At their outer ends and at their inner ends, which approach a common center, the conduits 1 are connected with suction cups 3 and 4. The cups 3 are located near the corners of the mat body A and the cup 4 is disposed near its central portion. The conduits 1 connect with the hollow portion of the suction cups 3 and 4 and if desired the central suction cup 4 may be provided with tubular coupling pipe 5 extending from the central portion of the cup 4 and passing through the central juncture point of the conduits 1 and through the body A of the mat so as to communicate with the release recess or chamber 6.

Vulcanized to the body A of the mat is a flap

valve 7 made of ordinary solid rubber instead of the sponge rubber, and this flap valve 7 is received in the recess or chamber 6 so that its upper surface lies approximately flush with the general upper surface of the mat body A. Embedded in the flap valve 7 is a metal spring 8 which normally tends to hold the flap in the closed position of Figure 4 but will bend or yield upwardly when the flap valve 7 is raised as in Figure 5 to permit access of air to the chamber 6 and to the tubular coupling member 5 which communicates with the conduits 1 and with the interior of the member 4.

The operation of the invention, from the foregoing description, will be clear. After the bath mat has been in use so that the body A is attached to the bath tub bottom, tile surface, floor, or the like, through the suction action of the cups 3 and 4, when the operator wishes to detach the mat he presses slightly down on the free end of the flap 7 with the finger to engage and bend the flap rearwardly and to bend the spring 8 upwardly as seen in Figure 5. This will open the upper end of the coupling member 5 to the atmosphere and the admission of air thereto will release the suction or vacuum at the various cups 3 and 4 thus permitting ready disengagement of the cups from the surface to which they are attached.

In Figure 7 an alternative construction is used for the release valve 9, which is an upwardly movable valve having a stem 10 provided with teeth. The teeth of the stem 10 engage the worm 11 on a worm shaft 12. By operating the worm 11 by a handle 13 the valve 9 may be lowered to close the upper end of the coupling member 5*a*, or raised to open the upper end of the coupling member, thus to control the connection of the conduits 1 and interior of the suction cups 3 and 4 with the atmosphere.

The manner of arranging of mounting the parts 9, 10, and 11 is not material to the invention and may take different forms within the provision thereof.

A cover 14 may afford access to the release chamber 6*a* to operate the handle 13. The cover 14 may be pivoted at an edge and held closed by a spring 15.

Any part generally equivalent to the mat body A may be substituted therefor.

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

1. As a new article of manufacture, a bath mat of the class described comprising a body of rubber, yielding suction cups applied to the under side of the body, the mat having conduits on the body thereof leading from the suction cups to a common point of connection whereby air may be admitted to the cups simultaneously for releasing their gripping action on a surface, and a release valve carried by the mat and adapted to close and open to the atmosphere the said conduits at their common point of connection.

2. A bath mat as claimed in claim 1, in which the release valve comprises a flap valve on the upper side of the body adjacent to the common connecting point for the conduits, and spring means embedded in said valve and normally tending to hold the conduits closed at the said common point of connection thereof.

3. In a bath mat, the combination of a body, a series of non-porous rubber suction cups applied to the under side of the body, conduits leading from a point of communication with the interior of said suction cups to a common point at the upper side of the body, a valve located at said common point of meeting of the conduits and normally closing the same at such point, and manipulating means on said mat connected to the valve and disposed at the upper side of the mat body for opening the valve.

4. A bath mat as claimed in claim 3 wherein the upper side of the mat is provided with a release chamber receiving the said valve and wherein the said valve is of flap-like form having a manipulating portion for the raising of the same to open the conduits simultaneously, and means for normally holding said valve closed down in the said release chamber so that the upper surface of the valve is flush with the upper surface of said mat body.

5. In a bath mat, in combination, a body made of sponge rubber formed with recesses on the under side thereof, rubber conduits seated in said recesses and attached to the body, yielding suction cups applied to the under side of the body and communicating from within the same with a conduit of those above mentioned, and means on the mat for admitting atmospheric air to said conduits to release suction in the cups.

6. In a bath mat, in combination, a body made of sponge rubber formed with recesses on the under side thereof, rubber conduits seated in said recesses and attached to the body, suction cups applied to the under side of the body and communicating from within the same with a conduit of those above mentioned, and means for admitting atmospheric air to said conduits, comprising a release chamber formed in the upper side of the sponge rubber body, a flap valve of solid rubber seated in said release chamber, the various conduits communicating with the release chamber, a tubular coupling member establishing such communication between the release chamber and the conduits, and spring means coacting with the said flap valve and normally holding the same in a position to close the tubular coupling member and thus maintain the suction action of the suction cups connected with the conduits.

7. In a bath or like mat, a body, a plurality of yieldable suction cups affixed to the body, conduits establishing communication between the cups and leading from the suction sides thereof, means connecting the conduits to establish communication therebetween, and a valve instrumentality connected to the conduits and operable to admit atmospheric air through the conduits to simultaneously release the suction in the suction cups.

8. A bath mat comprising a body of porous sponge rubber, yielding suction cups of non-porous rubber attached to the body to secure it to a surface, a suction release chamber in the body, conduits of non-porous rubber leading from the cups to said chamber, and a release valve controlling admission of atmospheric air to the chamber and said conduits.

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