

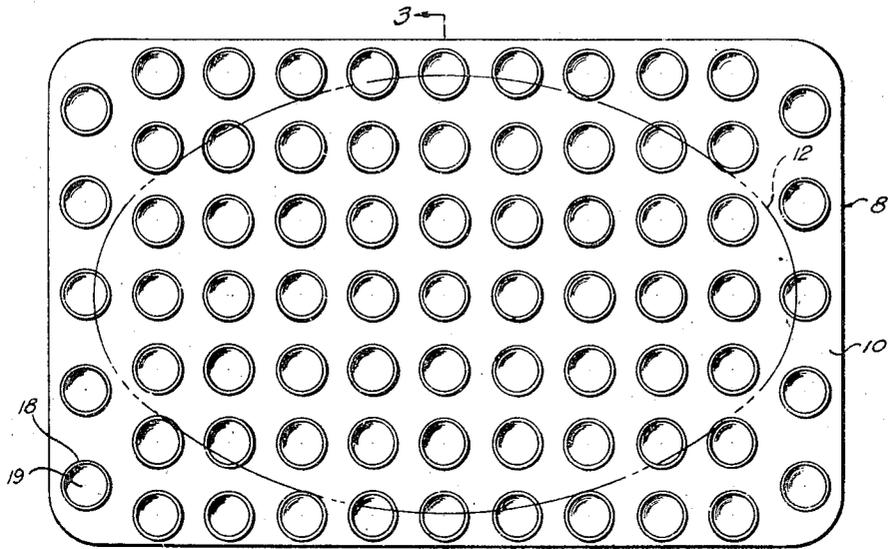
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B. STILLER

2,466,502

VACUUM CUP HOLDING DEVICE

Filed Aug. 30, 1948



3-3 *Fig 1*



Fig 2



Fig 3

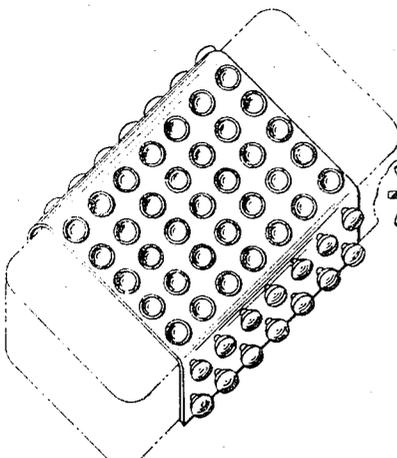


Fig 5

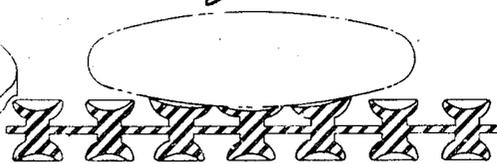


Fig 4

INVENTOR
BENJAMIN STILLER

BY

Ely + Frye

ATTORNEY

UNITED STATES PATENT OFFICE

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VACUUM CUP HOLDING DEVICE

Benjamin Stiller, Akron, Ohio

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6 Claims. (Cl. 45—28)

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This invention relates to a holding device employing the principle of the vacuum or suction cup. Numerous devices have employed this principle and have had for their prime purpose a mounting for articles which mounting may be readily made to adhere to a structure closely adjacent the point of desired use without fastening devices, and which may be readily transferred from place to place.

According to the present invention the principle is employed in a dual manner in that the article supporting medium employs vacuum cups on a plurality of separate surfaces whereby to accomplish its own fixation to a structure and, additionally to retain an article by means of the respective surfaces.

It is therefore an object of the invention to achieve a simplified article-supporting device which employs the vacuum cup principle in its own support and in the transmitted support of another article. More particularly, it is an object to provide contact-attaching means on a plurality of non-coplanar surfaces and in still greater particular wherein the surfaces are the opposed surfaces of a sheet-like member.

These and other objects, which will be in part apparent and in part made manifest as the description proceeds are attained by the invention as exemplified by the preferred embodiments described in the specification to follow and illustrated in the drawings, in which:

Fig. 1 is a plan view of a holder, with an oval bar of soap shown in phantom,

Fig. 2 is an end view of the holder of Fig. 1,

Fig. 3 is a section taken on the line 3—3 of Fig. 1,

Fig. 4 is a view similar to Fig. 3 showing a modification, and with the vacuum cups distorted in holding a curved bar of soap shown in phantom, and

Fig. 5 is a perspective view showing a holder wrapped around a rectangular bar of soap.

Referring to the drawings by characters of reference, there is shown, generally at 8, a pad comprising a body member 10 in sheet form substantially rectangular as shown, and which, for one important use of the invention will have surface dimensions comparable to a bar of soap such as shown at 12, in broken lines. The sheet member may be formed from a synthetic plastic or any suitable pliable material.

As shown in Fig. 3, the sheet 10 has a series of perforations 14 provided in any suitable or convenient array which each snugly receive a reduced neck portion 16 of an element comprising,

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at each of its ends, cup members 18, 20 with their respective concavities 19, 21 facing outwardly away from the neck portion. Preferably the vacuum cup elements and neck portions will be formed from rubber or rubber-like material.

The sheet 10 is preferably of a low order of thickness in relation to its surface dimensions so as to be flexible, and this thickness is also related to the size, shape and distribution of the cup members since the flexibility of the pad as a whole will depend upon all such factors, the flexibility assuming an importance in respect to the use of the device both in regard to a curved or otherwise irregular nature of a supporting structure, and in regard to similar properties in an article to be held. For instance in the use as a soap-holder, it may be desirable to secure the pad 8 to the curved side-wall of a wash bowl. The relative proportions of the various parts of the pad are indicated in the drawing in a general arrangement which has proved most suitable among existing developments of the invention, and such proportions are therefore definitive, within limits, of a specific embodiment of the preferred forms.

In particular, for use with soap, I have found that cups of $\frac{1}{4}$ inch diameter and $\frac{1}{8}$ in overall height, and spaced $\frac{3}{8}$ of an inch on centers, joined by necks $\frac{1}{8}$ inch long and $\frac{1}{8}$ inch in diameter, and carried in a sheet $\frac{1}{8}$ inch in thickness whereby $\frac{1}{2}$ of an inch of necks may be exposed on either side of the sheet, offer desirable proportions for the intended functions. Such a structure, variable within certain limits is ideal for adhering to soap and curved supporting surfaces by virtue of the flexibility of the sheet, necks and cups, and the cups are adequate to support soap or hold to a wall even though comparatively few are in engagement.

In use, the pad is merely moistened in any convenient manner and one surface applied with slight pressure at a region in the desired location of support. This may be a vertical wall, horizontal surface, ceiling, floor or any curved, irregular, rough or smooth surface, of any material, within wide limits. It is then merely necessary to present the article to be held to the outward surface of the pad with slight pressure to secure the article thereto. Obviously, either the outer surface of the pad, i. e. the cups, may be wet, or the article to be held. In general, a bar of soap will be in good condition for adherence.

Whereas the utility of the pad as adapted to engage a wall, etc. has been emphasized the device has other utilities apart therefrom. For in-

stance it affords a convenient means for rendering a bar of soap non-slipping when attached to the soap during use of the latter. Incident to such employment the pad may be attached to a wall together with the soap, and the pad and soap removed as a unit from the wall for use. This is illustrated in Fig. 5 wherein the pad is applied transversely of a bar of soap and the ends folded down into engagement with the sides of the soap. The folded sides of the pad can be grasped in the fingers and the whole assemblage applied to or removed from a wall as a unit. The pad also serves as a wash cloth, especially when adhered to the soap as shown in Fig. 5. In this case, the long dimension of the holder will be applied transversely of the bar of soap so that it not only adheres to a broad face thereof, but also overlaps the sides with its end portions, and these adhere to the side faces. Thus, not only is the adherence accomplished throughout the extent of the pad but involves holding forces in two different planes so that even the chance of side slippage, which is low in any event, is further reduced. In this form of use, one face of the cake of soap is available for soaping and an improved grip is provided. On turning the assemblage over, the pad is available for scrubbing.

In the Fig. 4 modification the pad is simplified in that the cups are molded or otherwise formed integrally with the sheet member thus simplifying manufacture and inducing longer life in the pad by avoiding regions susceptible to tear or liable to unduly premature aging consequent upon the presence of regions inaccessible for cleaning.

The invention, in employing true vacuum cups on both surfaces of the pad is effective to secure and be secured in any orientation thereof, and it is not to be confused with any device having a surface comprising merely non-slip features.

The prime function of the sheet is to integrate the various pairs of cups and is thus susceptible of wide variation in form and structure. Likewise, whereas the cups are shown as occurring in pairs oppositely disposed, they may be arranged other than in such relation.

In the employment of the pad of this invention it is highly desirable that the individual cup members have a degree of freedom for flexing, as shown in Fig. 4 for instance, in order to be adapted for varying demands in usage, including however, the application to a strictly plane surface, in which case, as in all others, the cup rims undergo radial expansion. Thus, where the claims recite the cups as "separate" it is intended to mean that they are mutually untrammelled, that is to say, disconnected, to a degree which permits such flexibility; and, further, it is desirable that the spaces between the cups be substantially clear for drainage purposes.

While certain embodiments have been shown, modifications are possible and the invention should not be deemed as limited except as shall appear from the spirit and scope of the appended claims.

What is claimed is:

1. A holding device comprising a pliable body portion of sheet form, a plurality of separate, flared cup members carried by the body portion on each of the opposite faces thereof, and with their concavities facing outwardly of the respective opposite faces, the combination of said cup members and pliable body portion being adapted

to grip objects and supporting surfaces of various shapes.

2. A holding device comprising a pliable sheet-like body portion, shank members extending from the opposite surfaces of said body portion, and separate, flared cup members carried by the opposite ends of said shank members, respectively, the concavities of the respective cup members facing outwardly of the adjacent surface of said body member, the combination of said cup members and pliable body portion being adapted to grip objects and supporting surfaces of various shapes.

3. A holder for soap or the like comprising a pliable sheet member having perforations, a plurality of shank members in two-dimensional array engaged in said perforations, and separate, flared vacuum cups carried at the opposite ends of said shank members, respectively, and with their concavities facing outwardly of the adjacent surface of the sheet member, the combination of said pliable sheet member and cups being adapted to grip objects and supporting surfaces of various shapes.

4. A holder for soap or the like comprising a pliable sheet member having perforations and a plurality of separate, flared vacuum cups in oppositely disposed pairs received in said perforations, the combination of said pliable sheet member and cups being adapted to grip objects and supporting surfaces of various shapes.

5. A holding device comprising a body portion of sheet form, shank members carried by said body portion and extending from opposite faces thereof, and separate, flared cup members carried by the ends of said shank members, respectively, the concavities of said cup members facing outwardly of the adjacent surface of said body member, with the rims of the cup members in their normal condition defining a pair of planes on either side of the center of the sheet, the combination of said body portion, shank members and cup members being adapted to grip objects and supporting surfaces of various shapes.

6. A soap-holding device comprising a pliable sheet member having opposite parallel faces, and a plurality of separate, flared vacuum cups carried by and facing outwardly of the respective faces of said sheet member in extended relation thereto, the combination of said sheet member and said cups being adapted to grip objects and supporting surfaces of various shapes.

BENJAMIN STILLER.

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