

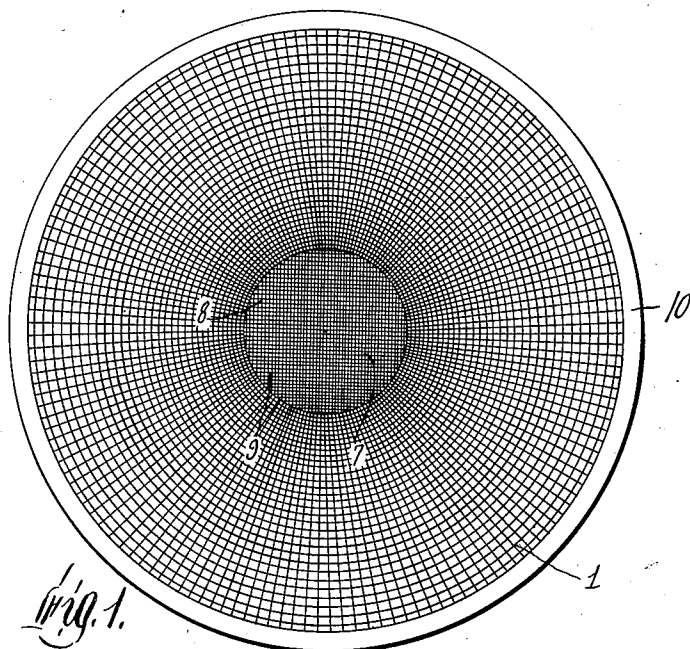
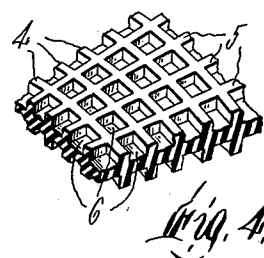
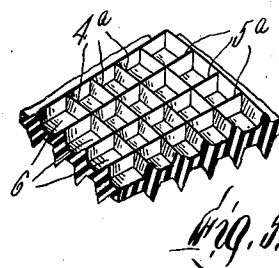
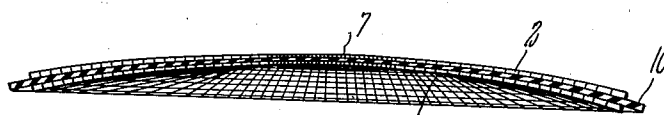
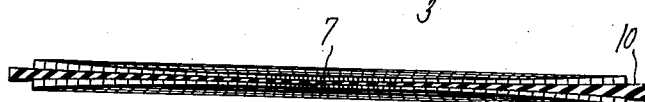
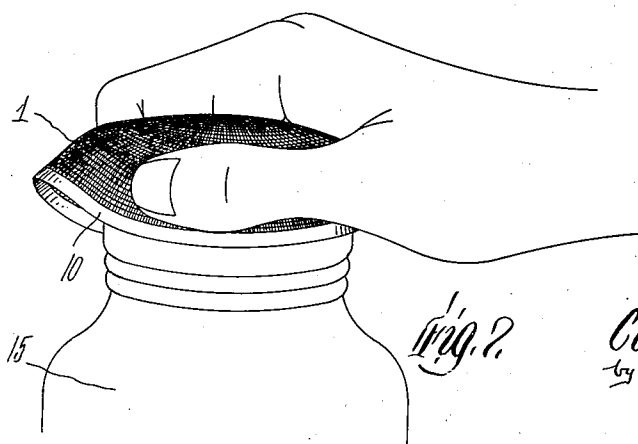
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GRIPPING DEVICE

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GRIPPING DEVICE

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4 Claims. (Cl. 81—3.1)

This invention relates to devices for facilitating the grasping of objects and by which a more effective grip may be had thereon than is possible by the unaided hand. Such a device is useful, for example, in removing and tightening screw type jar covers and bottle caps, screw type watch fronts and backs, electric bulbs, water hose connections, salt and pepper shaker tops, smokers' pipe stems, for separating gun-cleaning rods and fishing poles, removing pens from pen holders and snouts from oil cans, for pulling needles through heavy materials, and for a great variety of other uses.

One object of the invention is to provide such a device in the nature of a pad which may be interposed between the hand and the object to be grasped, and so surfaced as to exert strong frictional resistance to relative motion between it and the object to be grasped and between it and the hand.

A further object is to provide such a device which may be conformed easily to the surface of the object to be grasped of whatever shape or size and which also is yielding and flexible to the hand and which in every condition conforms closely to the concave contour of the palm of the hand.

Still another object is to provide such a device having a part light and flexible for grasping small objects and heavier and more rugged elsewhere for affording a more positive hold on larger objects.

For a more complete understanding of this invention, reference may be had to the accompanying drawing in which

Figure 1 is a plan view of a device embodying the invention.

Figure 2 is an edge elevation of the same.

Figure 3 is a diagrammatical section.

Figure 4 is a fragmentary perspective to a much larger scale.

Figure 5 is a view similar to Figure 4, but showing a modification.

Figure 6 is a view similar to Figure 3, but showing a modification.

Figure 7 is a fragmentary perspective view showing one manner of using the device.

Referring first to Figures 1, 2 and 3, the device as shown comprises a flexible sheet in the form of a disk 1 of rubber, or the like. As shown in Figures 2 and 3, this disk may be dished to form a convex face 2 and a concave face 3. Due to the flexible nature of the material the dishing may be transferred in direction, the convex face becoming the concave face and vice versa. Both

of these faces are so formed as to provide strong frictional resistance against relative motion between the sheet material and the hand or objects against which a face is pressed. One manner of doing this is to form the surfaces of the device with suction cups. These may be formed by a series of circumferentially and radially arranged ridges 4 and 5 which increase in width and height as they approach the outer edge of the disk and define between them suction cups 6 (Figure 4) of increasing size as they approach the outer edge of the disk. Since the radial ribs if extended to the center of the disk would come together into a solid structure, leaving no room for the formation of suction cups or depressions, the circumferential ribs 4 as shown terminate at some distance outwardly from the center of the device, leaving a circular area 7 (see Figure 1) which can be divided off by a series of ribs 8 and 9, preferably arranged at right angles to each other, defining between them a plurality of depressions forming suction cups of uniform or substantially uniform size over this central area. Due to the varying thickness of the material, the larger sized suction cups are found on the thicker peripheral portions of the device, while the smaller suction cups in the central area are on the thinner stock.

In Figure 4 the tops of the ridges 4 and 5 are shown as flat, presenting a substantial width of the material into engagement with either the hand or the object to be grasped. In Figure 5, these ridges 4a and 5a are tapering toward their extremities. Either of these arrangements may be used as desired, and, of course, the cups could be round or of any other shape as desired.

While it is deemed preferable to dish the device as shown in Figures 2 and 3, if desired, the disk may be formed flat as shown in Figure 6. Here, however, the suction cups may be arranged as shown in Figures 1 or 4 or 5. The central thickness portion of the device may be extended beyond the outer edges of the suction cups to form an annular shoulder 10 extending circumferentially around the center of the device. This shoulder 10 forms a convenient place for advertising or other insignia to be placed thereon where it will be visible but will not interfere with the proper manipulation of the device.

In use the device is placed in wrapping engagement with the object upon which it is desired to exert a gripping force and the hand of the user is likewise brought into engagement with the outer face of the device, whereupon by exerting a twisting movement of the hand a severe torque may be exerted on the article which it is desired

to move. For example, as shown in Figure 7, the concave side of the device is placed over the top of the screw cap of the bottle 15, the hand engaging and pressing against the outer face of the device so that as the hand is turned, a heavy frictional drag will be imparted to the cap which will usually be found sufficient to start unthreading it so that the bottle or jar may be opened. Similarly any other article may be grasped by interposing the device between the article to be grasped and the hand.

The progressive thickening and enlargement of the suction cups away from the center of the disk forms an important feature of this invention, since it insures a greater flexibility for the inner portion of the device than in the outer portion so that it is an easy matter to wrap the device about the top of a small bottle or jar, the material flexing readily to permit this, while when a larger object is to be engaged, the larger suction cups are contacted therewith and the bending of the material of the device is not as sharp and a more rugged gripper is provided for handling such larger sized objects. It will thus be seen that the device is adaptable to a great variety of articles while retaining the gripping effect of the device both on the hand of the user and on the article which it is desired to grasp.

From the foregoing description of an embodiment of this invention, it should be evident to those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. A device of the class described, consisting

of a sheet of flexible material for wrapping engagement with an article to be grasped and having suction cups on opposite faces thereof, the suction cups toward the center of the sheet being smaller than those nearer the margin of said sheet.

2. A device of the class described, consisting of a sheet of flexible material for wrapping engagement with an article to be grasped, said sheet being thinner adjacent to its central portion than nearer to its margins, and having suction cups on opposite faces thereof, the suction cups toward the center of the sheet being smaller than those nearer the margin of the sheet.

3. A device of the class described, consisting of a disk of flexible sheet material for wrapping engagement with an article to be grasped, said sheet being thinner toward its central portion than toward its edges, the face of said disk having depressions therein forming suction cups, the cups near to the center of said disk being smaller than those more remote from said center.

4. A device of the class described, consisting of a disk of flexible material for wrapping engagement with an article to be grasped, said sheet being thinner toward its central portion than toward its edges, the faces of such disk having circumferentially and radially projecting ridges thereon throughout an annular area spaced from the center thereof and forming suction cups of increasing size between the inner and outer margins of said area, and other ridges defining suction cups inwardly of said area.

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