

CAP PIECE OF A VESSEL

The present invention relates to a cap piece of a vessel and, more particularly to a cap piece of a vessel which is easy to open and can be operated by only one finger.

5 In general, vessels for containing tissue, shampoo, and other products comprises a cap piece. The cap piece is composed of a body and a cover jointed with the body. The joint between the body and the cover is accomplished by a strip extending therebetween. The cover has a drawbar disposed thereon for pulling by a user. This kind of cap piece
10 has a disadvantage that it is the vessel must be gripped in one hand while the drawbar is pulled by the other hand of the user. Therefore, it is inconvenient for the user, particular to the user with disabled hands, to gain access to use the products in such a vessel.

The present invention provides an improved cap piece of a vessel
15 to mitigate and/or obviate the aforementioned problems. One object of the present invention is to provide a cap piece of a vessel which is easy to open and can be operated by only one finger.

In accordance with one aspect of the present invention, the cap piece of a vessel comprises a body disposed on the vessel, a surface of
20 the body defining an collar at an position corresponding to an opening of the vessel, at least one cavity for pressing, a notch at an edge behind the outer collar, and a pair of slits respectively defined at opposite sides of the notch, wherein the outer collar defines a groove in an outer periphery thereof; a cover jointed with the body, an undersurface of the cover
25 providing a flange, a ridge formed on an inner periphery of the flange corresponding to the outer collar of the body and the groove, a recessed projection defined at a position corresponding to the notch, and a pair of ribs each formed near the recessed projection on opposite sides thereof, and each rib having formed on an outer face thereof a small boss, said

ribs being received by the slits of the body so as to join one edge of the cover with a corresponding edge of the body; and a flexure strip having two ends respectively engaged with the notch of the body and the recessed projection of the cover so as to urge open the cover by an elastic
5 force.

In accordance with another aspect of the present invention, the body is made of flexible plastic.

In accordance with a further aspect of the present invention, the cavities for pressing of the body may be arranged in front of the collar.

10 In accordance with still a further aspect of the present invention, the cavities for pressing of the body may be arranged at both sides of the collar.

In accordance with still a further aspect of the present invention, the flexure strip is made of a semi-flexible material.

15 Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

IN THE DRAWINGS:

FIG. 1 is a perspective view showing the cap piece of a vessel in
20 accordance with a first embodiment of the present invention;

FIG. 2 is a schematic view showing an open state of the cap piece of FIG. 1;

FIG. 3 is a schematic view showing a closed state of the cap piece of FIG. 1;

25 FIG. 4 is a cross-sectional view showing the closed cap piece of FIG. 1;

FIG. 5 is a cross-sectional view showing the operation of opening the cap piece of FIG. 1;

FIG. 6 is a perspective view showing the cap piece of a vessel in

accordance with a second embodiment of the present invention;

FIG. 7 is a schematic view showing an open state of the cap piece of FIG. 6;

FIG. 8 is a schematic view showing a closed state of the cap piece
5 of FIG. 6;

FIG. 9 is a cross-sectional view showing the closed cap piece of FIG. 6; and

FIG. 10 is a cross-sectional view showing the operation of opening the cap piece of FIG. 6.

10 FIG. 1 and FIG. 6 are perspective views showing a first and a second embodiment in accordance with the present invention, respectively. Since the two embodiments are of the same construction, except for the shapes, for illustrative purpose, the two structures are described together hereinafter.

15 Referring to FIG. 1 and FIG. 6, a cap piece of a vessel in accordance with the present invention comprises a body 10/40 disposed on the vessel (not shown) and a cover 20/50 pivotally mounted on the body 10, 40. The body 10/40 is of a single piece construction and made of flexible plastic. On a top face of the body 10/40, there is provided a
20 collar 11/41 at a position corresponding to a periphery of an opening 12/42 of the vessel. The collar 11/41 defines a groove 13/43 in an outer periphery thereof. In the first embodiment, i.e., in FIG. 1, a cavity 14 for pressing is defined in front of the collar 11, while in the second embodiment, i.e., in FIG. 6, a pair of cavities 44 for pressing are defined
25 at both sides of the collar 41. A notch 15/45 is defined at one edge of the body 10/40 behind the collar 11/41. A pair of slits 16/46 are respectively defined at opposite sides of the notch 15/45. On an undersurface of the cover 20/50, there is provided a flange 21/51 and a ridge 22/52 on an inner face of the flange 21/51 corresponding to the collar 11/41 of the

body 10/40 and the groove 13/43, respectively. The ridge 22/52 is sufficiently deformable and resilient that it can be removably yet firmly received in the groove 13/43 to retain closed the cover 20/50. A recessed projection 23/53 is formed on the undersurface of the cover 20/50 and
 5 corresponds to the notch 15/45. A pair of ribs 24/54 is formed respectively on either side of the recessed projection 23 and each rib 24/54 has a small boss 242/542 formed on an outer face thereof. The ribs 24/54 are respectively received by the slits 16/46 of the body 10/40 so that the cover 20/50 can be opened and closed. To provide the cover
 10 20/50 with an elastic force for automatically opening it, a flexure strip 30/60 joins the cover 20/50 with the body 10/40 by means of two ends thereof respectively engaged with the notch 15/45 and the recessed projection 23/53. A stopper 231/531 is disposed within the recessed projection 23/53 to retain the flexure strip 30/60 in position. The flexure
 15 strip 30/60 has a cross-section substantially shaped as the numeral "7" and is made of a stiff yet still resilient material. A deforming line is defined across the flexure strip 30/60 such that the flexure strip 30/60 will always deform by bending at a predetermined point while remaining sufficiently resilient to urge upward the cover 20/50 when engagement
 20 between the ridge 22/52 and the groove 13/43 is release.

Figs. 3, 4 and Figs. 8, 9 are schematic views showing the closed state of the cap piece of FIG. 1 and FIG. 6, respectively. Under the closed state, it can be seen that only the cavity 14/44 remains exposed. The flexure strip 60 is bent and the ridge 22/52 of the cover 20/50 is
 25 securely received in the groove 13/43 to engage with the body 10/40. FIG. 5 and FIG. 10 are cross-sectional views showing the operation for opening the cap piece of FIG. 1 and FIG. 6. From the figures, to open the cap piece, pressing down of the cavity 14/44 by only one finger is possible, as shown by the downward arrow in the left of FIG. 5, and FIG.

10. Since the body 10/40 is made of flexible plastic, the applied downward force will drive the collar 11/41 of the body 10/40 to displace downwardly, as shown by the smaller downward arrow in the right of FIG. 5 and FIG. 10. Thereby the groove 13/43 of the body 10/40 will be urged away from the ridge 22/52 of the cover 20/50 during the displacement. With the elastic force from the flexure strip 30, 60, the cover 20, 50 will be rapidly ejected to a designed position (as shown in FIG. 2 and FIG. 7) so that the user can gain access to the product in the vessel.

10 The first embodiment and the second embodiment above mentioned are of the same construction, except for the shapes. The cover 20 in the first embodiment is substantially rectangular in plan and the cavity 14 is arranged in front of the collar 11, while the second embodiment has a substantially tri-lobic cover 50 and a pair of cavities 15 44 are respectively arranged at both sides of the outer collar 41. It is to be appreciated the embodiments are given by way of illustration only, and thus are not limitative of the present invention.

 It is also to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the 25 appended claims are expressed.



CLAIM:

1. A cap piece of a vessel comprising:

5 a body disposed on the vessel, a surface of the body defining an collar at an position corresponding to an opening of the vessel, at least one cavity for pressing, a notch at an edge behind the outer collar, and a pair of slits respectively defined at opposite sides of the notch, wherein the outer collar defines a groove in an outer periphery thereof;

10 a cover joined with the body, an undersurface of the cover providing a flange, a ridge formed on an inner periphery of the flange corresponding to the outer collar of the body and the groove, a recessed projection defined at a position corresponding to the notch, and a pair of ribs each formed near the recessed projection on opposite sides thereof, and each rib having formed on an outer face thereof a small boss, said ribs being received by the slits of the body so as to join one edge of the
15 cover with a corresponding edge of the body; and

a flexure strip having two ends respectively engaged with the notch of the body and the recessed projection of the cover so as to urge open the cover by an elastic force.