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RECEPTACLE TAP

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1 Claim. (Cl. 221—23)

This invention relates to receptacle taps, and more particularly to taps which can be applied to such receptacles as cans, bottles and the like containing fluids.

Objects

The objects of the invention are to provide an improved tap capable of use with various types of receptacles; to provide a tap which punctures the container top or other part of the container and is retained in the puncture; to provide a tap which may be used with containers the contents of which are under pressure; to avoid loss of pressure in the container by application of the tap; to avoid opening the container prior to application of the tap thereto; to obtain convenient means for releasing the fluid through the tap and closing the flow at will; to provide for ready pouring of the container contents through the tap; to prevent inadvertent release of the tap from the container; to secure simplicity of construction and operation; and to obtain other advantages and results as may be brought out in the following description.

Drawing

Figure 1 is an elevation of a receptacle tap embodying my invention looking at what may be termed for convenience the side of the same;

Figure 2 is a vertical central section of the tap about to be applied to a receptacle;

Figure 3 is a similar section showing the tap applied to the receptacle;

Figure 4 is a similar sectional view of the tap with a modified form of flexible protector;

Figure 5 is an enlarged elevation of the piercing end portion of the punching and retaining element; and

Figure 6 is a fragmentary sectional view similar to Figure 4 and showing a modified form of actuating the valve.

Description

In the specific embodiment of the invention illustrated in said drawing, the tap is shown in Figs. 2 and 3 in association with one type of container 10, illustrative of a conventional can or the like made of sheet metal and usually sealed with a substantially flat top or cover 11, whereas Fig. 4 is illustrative of a conventional bottle 10A having a crown seal cap or cover 11A of sheet metal. In either or both cases, the contents of the container may be under pressure, although not necessarily so. The invention has particular merit in use with containers where

the contents are under pressure in that the tap, as will be herein subsequently made more evident, is applicable to such containers without depreciating that pressure. In any event, the contents are of a fluid character and the tap is constructed to permit pouring thereof whether the fluid be under pressure or not.

The tap comprises essentially a body portion 12 from the bottom of which protrudes a punching and retaining element 13 surrounded by a flexible protector designated in Figs. 1, 2, and 3 by reference numeral 14 and designated in Figure 4 by a reference numeral 14A. The details of construction of these several primary elements of the tap may be considerably varied, and the drawings merely show one embodiment of the invention and are to be considered illustrative thereof rather than restrictive except as claimed hereinafter. For convenience in manufacture, the body portion 12 and element 13 are shown as made separately and assembled by screwing the element 13 into a threaded socket provided for that purpose in the bottom of body portion 12. After the assembly is accomplished, the body portion 12 and element 13 are never separated in use, and for all practical purposes may be considered an integral assembly. The particular structure shown utilizing a body portion 12 and element 13 of separate parts is especially adapted to manufacture of the body portion of such materials as molded "Bakelite" and yet enabling the punch to be of metal. The body portion may, however, be of any suitable material of which metal is another example, and in which event the body portion and punch element may be of the same metal and integrally formed. The body portion is made with a vertical channel 15 therein and a transverse channel 16, said channels intersecting and the transverse channel having a discharge opening through a snout 17 at one side of the body portion. At the opposite side of the body portion is provided a threaded neck 18 for receiving a stuffing box 19 through which protrudes a threaded shank 20 of a valve stem at the outer end of which is knurled finger piece 21 and on the inner end of which is a tapered needle valve 22 adapted to engage and seal with respect to a tapered seat 23 formed in transverse channel 16. Threaded shank 20 has a threaded engagement with the walls of the transverse channel 16 so that the valve may be manipulated back and forth into and out of engagement with seat 23 as found desirable in use. When the valve is retracted, flow of liquid will be permitted from vertical passage 15 to transverse

passage 16, thus permitting escape of fluid from snout 17 of the body portion and when is no longer desired valve stem 20 is screwed in again so that tapered needle valve 22 seats against tapered seat 23 and completely seals the discharge against exit of the fluid.

The punching and retaining element 13 is shown as having its end next the body portion screw threaded for introduction and retention of that element within the body portion, and is shown with its lower end tapered and terminating in a relatively sharp point 24 sufficiently to permit the element to be forced through a lid or other thin metallic wall 11 or 11A. This lower tapered end of the element 13 is likewise preferably screw threaded, the threading being shown as having a considerable taper on the lower side or surface 25 of the convolutions and having a shouldered upper side 26 which is normal or more nearly normal to the central axis of the element than the surface 25. It will accordingly be seen that the element after being punched into a cover may be screwed further into the stem, spreading the material of the cover at the puncture and obtaining both a threaded and retaining engagement therewith preventing leakage and preventing an inadvertent withdrawal of the element from the puncture. As close as practical to the pointed end 24 of the element is provided a transverse inlet or aperture 27, and the element is provided with a central channel or bore 28 from its upper end as far as said inlet 27, thereby admitting fluid from the container up through element 13 to the channel 15 of the body portion almost immediately upon puncturing the container. It is through this aperture 27 and channels 28, 15 and 16 that the container contents are permitted to escape as desired by virtue of the pressure of the container contents accompanied by appropriate tilting and pouring of the container and attached tap.

The body portion preferably has mounted thereon a flexible protector 14 or 14A, depending upon the type of container to which the tap is being applied. This protector is preferably of rubber or some similar material enabling it to distort, stretch, flex and be removed and replaced by the operator as desired. As here shown, the body portion has an annular groove 29 in its outer surface near the bottom, this groove receiving a flange 30 projecting radially inward at the top of the protector. The protector preferably has a depending skirt portion 31 (Figures 2 and 3) or 31A (Figure 4), for engagement with the container as tap is being applied thereto. As shown, the skirt portion 31 preferably is extended downward to a plane below the pointed end 24 of the punch element. The tap may therefore be rested upon a plane surface without engagement of the point 24 against that surface, and when it is desired to use the tap it will effect a seal with respect to the container top or surface before the punch becomes effective to puncture the container top. The flexibility and elasticity of the protector permits the punch to be depressed at the same time stretching the protector into more intimate contact with the container and thus obtaining even better sealing as the puncturing proceeds. In Figure 3, it will be observed that skirt 31 spreads laterally, and in doing so the flange 30 will be pressed with greater force into the groove 29. However, when the tap is not pressed down, as in its position of Figures 1 and 2, the protector is relatively loose with respect to the body portion 12, and may be

snapped on and off the body portion as above indicated. In Figure 4 the protector normally depends when off the bottle in substantially the position shown upon the bottle, the elasticity of the protector enabling the lower bead thereof to pass over the crown seal cap and peripheral bulge 32 of the bottle and to seal against the neck of the bottle and immediately below the bulge mentioned. This protector likewise may be snapped on or off the body portion 12 when not upon a container, and thus the user requires only one of the body portion and a selection of protectors for using the device on different types of containers. It is particularly noted that crown cap 11 is retained upon the bottle and does not have to be removed in order to apply the tap of the present invention. I am accordingly enabled to retain the pressure of the contents of the bottle while applying my improved tap thereto, and do not relieve the pressure until ready to pour the contents through the tap. It is furthermore to be noted that in use, whether with flat top engaging protector 14 or the bottle neck engaging protector 14A, the body portion may be rotated with respect to the protector, enabling the protector to tightly engage the container while the tap is being screwed into the puncture made in the container lid. Furthermore, the tap is made with a projecting snout 17 at one side and neck 18 and valve stem 20 at the other side thus giving an ample leverage for the operator to grasp and rotate the body portion for screwing the tap into a container, and said body portion furthermore provides a flat top enabling the operator to apply necessary pressure for obtaining initial puncturing of the container top.

It is to be understood that while I have specifically described the puncturing and retaining element as provided with a lower point 24 above the plane of the lower edge of the protector, it is within the scope of the invention to vary the position of this point to project to or beyond the plane of the lower edge of the protector, if so desired. With regards to the particular protector shown in Fig. 4, the projection of the protector considerably beyond the point 24 is especially desirable in order that the protector may serve to center the punching element with respect to the crown sealed cap 11A. I furthermore wish to point out that in connection with both types of protectors, a space is left between the top of the container and the under wall of the protector around the punch. This space, by virtue of the flexibility and resiliency of the protector 11, will tend to create a vacuum and thereby hold the tap more securely in place upon the container.

It has been found advantageous to utilize a slightly modified form of tap in the construction of the body portion 12 of Figure 6. In this connection it may be said that the construction is similar throughout with the exception of the shank 20 and the body portion which receives the shank for actuating the valve 22 for permitting flow of liquid and closing the valve. Instead of using a threaded shank as heretofore, and to assure positive closing of the valve when a desired amount of liquid has been removed from a container, it is preferable that the shank have its stem without threads. The body portion at the part enclosing the stem of the shank and extending inward from the farthest end of the valve is provided with a bore hole 33. Within said bore hole and enclosing the stem of shank 20 is a non-corrosive coil spring 34, and held in place by the stuffing box 19. The end of said

spring nearest the valve 22 is held fast to the stem of the shank within a hole 35 therein. In operation it will be readily observed that by pulling the shank in an outwardly direction clutching the finger piece 21 the valve will be opened and liquid permitted to flow out through passage 16. Immediately upon releasing the hold on the finger piece 21 the shank thereupon will be forced inwardly and the valve return to its closing position by virtue of the pressure exerted by the spring 34 and its secured end to the stem of the shank.

I claim:

A receptacle tap comprising in combination a body portion having a threaded tapering punch protruding therefrom, and a hollow protector carried by the body portion and flaring around the punching element, said punching element and protector being substantially axially concentric, said punch having a point at its lower end positioned above a plane of the lower edge of the protector.

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