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S. NICKO
COMBINATION CAP AND TAPPING PLUG FOR
SPOUTS, BOTTLES OR THE LIKE
Filed Feb. 9, 1966

3,343,699

FIG. 1

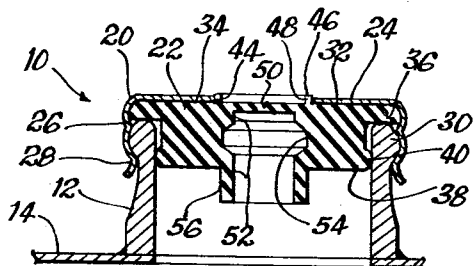


FIG. 2

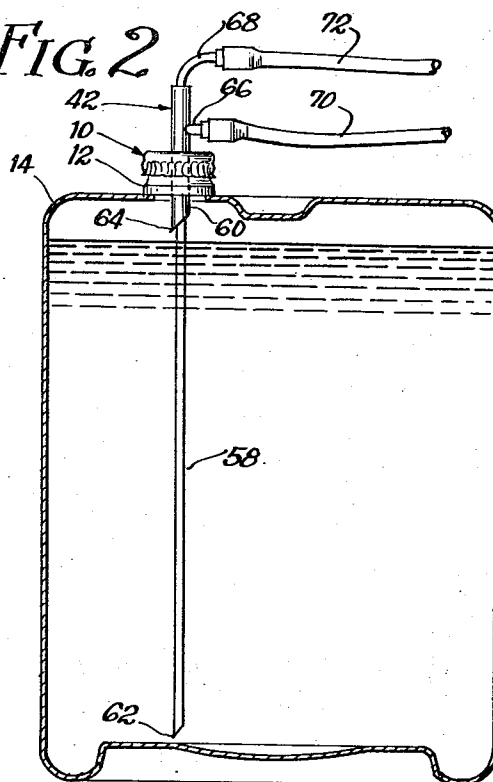


FIG. 3

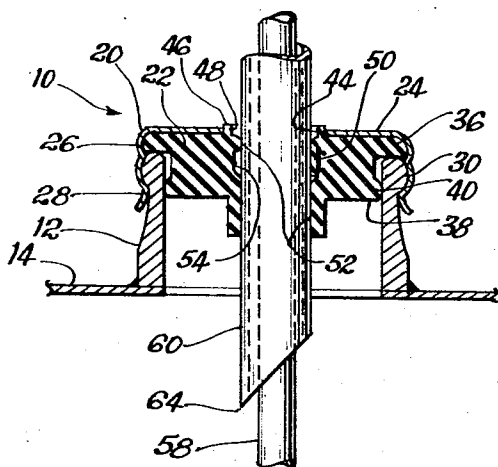
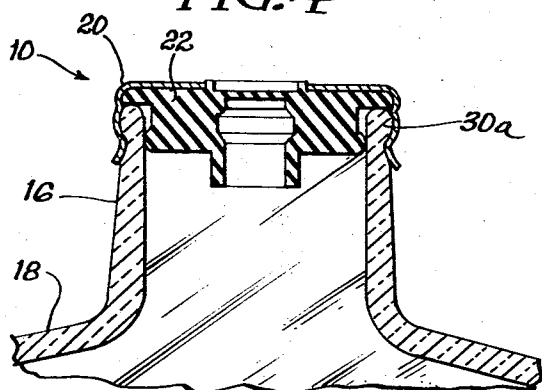


FIG. 4



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COMBINATION CAP AND TAPPING PLUG FOR SPOUTS, BOTTLES OR THE LIKE

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1 Claim. (Cl. 215—38)

ABSTRACT OF THE DISCLOSURE

A closure comprising a sheet metal cap having a disc-shaped top wall and an annular skirt with a crimped lower portion for securing the cap to the spout of a can or bottle, a rubber plug mounted against the underside of said top wall, said plug having an outwardly projecting flange adapted to form a seal between the cap and the spout, said plug having a downwardly projecting stopper portion with a central diaphragm of reduced thickness and adapted to be penetrated by a tapping pipe, said stopper portion having a cylindrical opening therein below said diaphragm for tightly receiving the tapping pipe, the top wall of the cap having a central opening affording access to the diaphragm, the plug having an upwardly projecting annular flange extending around the diaphragm and received in the opening in said cap, and a layer of adhesive between the upper side of the plug and the top wall of the cap.

This invention relates to closures for bottles, cans or other containers.

One object of the present invention is to provide a new and improved closure which will serve as a cap for a beverage container, while also providing a tapping plug through which a tapping pipe may be inserted into the container, so that the beverage may be dispensed therefrom.

A further object is to provide a new and improved closure of the foregoing character in which the tapping plug is employed in a new and improved manner to form the sealing member for the cap which closes the beverage container or the like.

Another object is to provide a new and improved closure which combines a tapping plug with a closure cap, at a cost only slightly exceeding the cost of a conventional crown cap.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawings, in which:

FIG. 1 is a vertical section taken through a combination cap and tapping plug, to be described as an illustrative embodiment of the present invention.

FIG. 2 is a central vertical section of a can fitted with the combination cap and tapping plug, a tapping pipe being shown in its operative position, inserted through the tapping plug.

FIG. 3 is a sectional view similar to FIG. 1, but showing the tapping pipe inserted through the tapping plug.

FIG. 4 is a view similar to FIG. 1, but showing the combination cap and tapping plug mounted on a bottle.

As already indicated, the drawings illustrate a closure 10 for use on bottles, cans, kegs or other containers. In FIGS. 1-3, the closure is mounted on a spout 12 which projects upwardly from a can or keg 14. FIG. 4 shows a modified arrangement in which the closure 10 is mounted on the neck 16 of a bottle 18.

The closure 10 comprises the combination of a cap 20 and a tapping plug 22. The cap 20 is similar in shape and appearance to an ordinary crown cap, of the type widely used to close bottles and other containers. Thus, the cap 20 comprises a generally disc-shaped upper wall

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24 which is formed with a downwardly projecting annular skirt 26. Along its lower edge, the skirt 26 has a crimped portion 28 which is formed inwardly, in the process of mounting the cap on the container, so that the crimped portion is securely retained under the overhanging annular lip or bead 30 which is formed on the upper end of the spout 12. A similar annular bead or lip 30a is formed on the neck 16 of the bottle 18, shown in FIG. 4.

The cap 20 is preferably made of thin sheet metal. However, the cap may be made of plastics or other suitable materials.

The plug 22 serves not only as a tapping plug, but also as the sealing member for the cap 20. It is preferred to make the plug 22 of natural or synthetic rubber. However, the plug may be made of various plastics or other suitable materials.

The plug 22 is generally in the form of a soft resilient disc, adapted to close the upper end of the spout 12. The illustrated plug 22 has an upper surface 32 which fits snugly against the underside of the upper wall 24 on the cap 20. A layer of adhesive material 34 is preferably employed between the wall 24 and the upper surface 34 to retain the plug 22 within the cap 20. Thus, the plug will not fall out of the cap when it is being handled, prior to the time when it is mounted on the container.

The plug 22 is preferably formed with an outwardly projecting annular flange 36 which is compressed between the cap 20 and the upper end of the spout 12, so as to form a tight seal therebetween. The illustrated plug 22 also has a stopper portion 38 which fits within the spout 12. An annular bead or rib 40 may be arranged to project outwardly from the stopper portion 38, for sealing engagement with the inside of the spout 12.

As shown in FIGS. 2 and 3, a tapping device 42 may be inserted through the tapping plug 22. To provide for the insertion of the tapping device 42, a central opening 44 is formed in the top wall 24 of the cap 20. The tapping plug 22 is preferably formed with an upwardly projecting annular flange 46 which is fitted into the opening 44. Within the flange 46, the tapping plug 22 has a cylindrical opening 48 which guides the tapping device 42, into and through the tapping plug.

Insofar as its tapping function is concerned, the illustrated tapping plug 22 is generally of the construction disclosed and claimed in the Nicko Patent No. 3,195,779, patented July 20, 1965. The illustrated tapping device 42 is disclosed and claimed in the copending Nicko application, Ser. No. 363,195, filed Apr. 28, 1964, now Patent No. 3,240,392, patented Mar. 15, 1966.

Thus, the illustrated tapping plug 22 comprises a central diaphragm or web 50 which is adapted to be pierced by the tapping device 42. The cylindrical opening 44 is disposed above the diaphragm 50. Below the diaphragm 50, the plug 22 is formed with another cylindrical opening 52 through which the tapping device is inserted into the container, after the diaphragm has been pierced.

An annular recess or enlargement 54 is formed in the cylindrical opening or bore 52, a short distance below the diaphragm 50. As shown to best advantage in FIG. 3, the recess 54 is adapted to receive the remnants of the diaphragm 50 after it has been pierced by the tapping device 42. Thus, the remnants of the diaphragm 50 are retained in the recess 54, rather than being severed from the tapping plug 22 and pushed downwardly into the container. If allowed to fall into the container, the pieces of the diaphragm might cause trouble by clogging the tapping device or getting into the dispensed beverage. Of course, if dispensed with the beverage, the severed pieces of the diaphragm would appear to be undesirable foreign bodies.

The tapping device 42 forms a seal within the cylindrical bore or opening 52. To provide improved retention of the tapping device 42, the illustrated tapping plug 22

is formed with a sleeve portion 56 which projects downwardly below the stopper portion 38 of the plug. The bore 52 extends within the sleeve portion 56. When the tapping device 42 is inserted, it stretches the sleeve 56 so that a tight seal will be formed around the tapping device. The resilient force exerted by the stretched sleeve 56 is effective to retain the tapping device in the bore 52, against the pressure normally present in the beverage due to carbonation of the beverage. The downwardly projecting sleeve 56 greatly improves the retention of the tapping device, because the carbon dioxide pressure is applied against the outside of the sleeve 56. Such pressure increases the squeezing force exerted by the sleeve against the tapping device 42, so that it will be securely retained within the bore 52.

The illustrated tapping device 42 comprises inner and outer tapping pipes or tubes 58 and 60. The inner tapping pipe 58 extends coaxially within the outer tapping pipe 60. Sharp points or edges 62 and 64 are formed on the lower ends of the tapping pipes 58 and 60, for piercing the diaphragm 50.

The inner tapping pipe 58 is preferably employed for withdrawing the beverage or other liquid from the container 14. Thus, the inner pipe 58 extends to a point near the bottom of the container. The outer tapping pipe 60 is preferably employed for introducing carbon dioxide or some other gas under pressure into the container 14, so as to replenish the initial carbonation of the beverage, while also providing additional pressure to cause the beverage to flow out of the container through the inner pipe 58. Suitable connections 66 and 68 are provided with the upper ends of the tapping pipes 58 and 60, above the closure 10. As shown, the connections 66 and 68 are in the form of laterally extending tubes to which hoses or other conduits 70 and 72 may be connected.

In use, the closure 10 is mounted on the can, bottle or other container in the same manner as an ordinary crown cap. The cap portion 20 of the closure is placed over the spout 12 or bottle 16, while the stopper portion 38 is inserted into the spout or bottle. The sealing flange 36 is brought into engagement with the upper end of the spout or bottle. To fasten the closure in place, the lower portion 28 of the cap 20 is crimped, while downward pressure is being exerted on the cap.

The flange 36 of the rubber plug 22 forms a perfect seal with the upper end of the spout or bottle, so that the beverage or other fluid in the bottle cannot leak out. The closure may be removed in the same manner as in the case of an ordinary crown cap, by prying up on one side of the crimped portion 28. However, the normal practice is to remove the beverage from the container by inserting the tapping device 42 through the rubber plug 22, without removing the closure. The tapping device 42 is inserted through the plug by causing the sharp point 62 of the inner plug 58 to penetrate the diaphragm 50. The tapping device 42 is pushed downwardly until the sharp point 64 of the outer pipe 60 also penetrates the diaphragm. The flap or flaps which remain after the diaphragm has been penetrated are folded downwardly within the recess 54 in the rubber plug 22. In this way, the remnants of the diaphragm are retained within the plug, rather than dropping into the beverage in the container.

The downwardly projecting sleeve portion 56 of the rubber plug 22 grips the outside of the outer pipe 60. In the case of a carbonated beverage, the carbon dioxide pressure above the beverage presses the sleeve 56 inwardly against the outer pipe. In this way, the tapping device 42 is retained in the container against the outward pressure exerted by the carbon dioxide,

If the closure is removed from the container, rather than being used in connection with the tapping device, the closure may be employed to re-seal the container after a portion of the beverage or other liquid has been poured out of the container. When the closure is replaced on the container, the stopper portion 38 of the rubber plug 22 provides a good seal with the inside of the spout or neck on the container.

With all of its advantages, the illustrated closure is only slightly more expensive than an ordinary crown cap. This is due to the fact that the rubber tapping plug 22 serves not only as a tapping plug, but also as the sealing device for the closure. The provision of the tapping plug makes it possible to insert a tapping pipe directly through the plug, so that the beverage or other liquid may be removed from the container without removing the closure.

Various other modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claim.

I claim:

A closure for a can, bottle or other container, said closure comprising the combination of a sheet metal cap having a disc-shaped top wall and an annular skirt projecting downwardly from the periphery of said top wall, said skirt having a crimped lower portion for securing the cap to the neck of the container, a soft resilient plug mounted in said cap and engaging the underside of said top wall, said plug having an outwardly projecting annular sealing flange engaging the underside of said top wall adjacent said skirt and adapted to form a seal with the upper end of the neck of the container, said plug having a downwardly projecting stopper portion adapted to form a seal with the inside of the neck of the container, said stopper portion being of smaller diameter than said skirt, said plug having a central diaphragm adapted to be penetrated by a tapping pipe or the like, said central diaphragm being of reduced thickness, said stopper portion having a cylindrical opening therein below said diaphragm for tightly receiving and gripping the tapping pipe, said top wall of said cap having a central opening affording access to said diaphragm, said plug having an upwardly projecting annular flange extending around said diaphragm and received in said opening in said cap for guiding the tapping pipe through the diaphragm, and a layer of adhesive between the upper side of said plug and the lower side of said stopper for securing said plug to said cap.

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