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(54) **Automatic self-locking bottle cap**

(57) This invention regards a cap for bottles featuring a calotte type frame which holds a capsule able to regulate the opening (13) that connects the inside of the bottle with the outside and a stopper-device (16) trig-

gered by gravity which plugs the opening (13) when the bottle is in an upright (vertical) position and unplugs it when the bottle is tilted to pour out the liquid it contains.

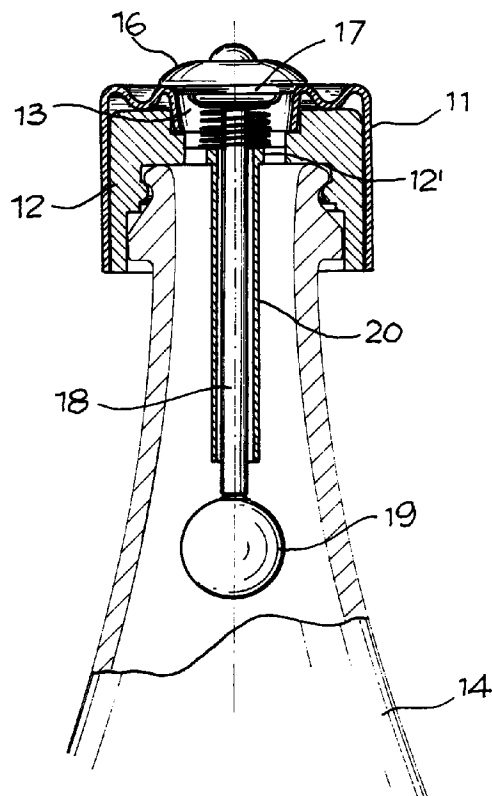


Fig. 3

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Description

This invention regards caps for wine, champagne, and water bottles as well as bottles of other beverages; more specifically it refers to calotte-type caps which snap onto the neck of the bottle.

Different kinds of Snap-On caps for bottles are already available, including some which are designed to seal off the bottle so as to keep the carbonation of the beverage within the container. These caps were designed to store sparkling wine and other carbonated drinks. However, all the known caps need to be removed to pour out the drink and afterwards replaced on the bottle they were snapped onto.

This is why the present invention aims at providing a new cap which, once applied, does not have to be removed from the container, in this case a bottle, and allows the respective beverage to be poured out without having to remove the cap from the bottle.

Another aim of this invention is to provide a cap with an integrated automatic stopper-unit which allows a beverage to be poured out and then the cap closes. All this without having to remove the cap from the bottle.

Yet another aim of this invention is to provide a cap which automatically allows the fluids contained in a bottle to flow through it when the bottle is tilted but prevents the same from happening when the bottle is in an upright position.

These aims have been achieved by a cap for bottles which consists of a calotte type frame with a capsule on the inside which allows it to snap onto the neck of a bottle by gently applying pressure on it. The cap's hallmarks are the above mentioned calotte that features an opening at the center of its top and a perforated section aligned with this opening so as to create a conduit connecting the inside of the bottle with the outside. Furthermore by the fact that this conduit is linked to an automatic stopper-unit triggered by gravity thus opening the conduit when the bottle is tilted and closing it when it is in an upright (vertical) position. The following description of the cap refers to the illustrations attached which as mere orientation should not be considered as limiting in any way.

Fig. 1 shows an enlarged model of the cap with a cross-section of some of its components.

Fig. 2 shows a view in perspective of the assembled cap.

Fig. 3 and 4 shows the cap applied on a bottle in the closed and open position respectively.

This cap is made up of a calotte type frame (11) with a sealing capsule on the inside (12). The frame (11) may be metal or plastic and at the center of its top it features an opening (13) preferably countersunk. The inner capsule (12) is designed to snap onto the neck of a bottle (14) by exerting a light pressure, resting on the top of the neck of the bottle itself. This way the capsule (12) has a dual function: to lock onto the neck of the bottle and to keep the cap in place. Furthermore, the capsule

can be snapped onto the necks of all bottles or at least most of them, guaranteeing universal applicability.

At its center the capsule (12) features a perforated section (12') perfectly aligned with the opening (13) at the very top of the frame (11) and designed to create a conduit (15) through the cap connecting the inside of the bottle with the outside.

The cap so far depicted features a disc or mushroom-shaped stopper-unit (16) which plugs the opening (13) from above by means of a sealing device (17) in order to open and close the conduit (15).

The stopper-unit (16) is located on the top of the shaft (18) which passes through the perforated section (12') of the capsule (12) and which reaches into the inside of the bottle. A counterbalance (19) of spherical or other shapes is located on the lower end of the shaft (18). The shaft (18) slides inside a tubular portion of the capsule (20) which extends down from the perforated section onward (12') for almost all of its length. The length of the tubular portion (20) is calculated to make the counterbalance (19) limit the sliding stroke of the shaft when it comes into contact with the lower end and as a result it also prevents the stopper-unit (16) from shifting in the conduit (15). Finally, a spring (21) (optional) partially counteracting the gravitational forces of the counterbalance (19) can be applied in order to facilitate the opening of the stopper-unit.

According to this invention, the cap is snapped onto a bottle using light pressure taking advantage of the flexibility of the sealing capsule (12) on the inside of the calotte type frame (11). When the bottle is in an upright position as shown in Fig. 3, the counterbalance (19) is in a vertical position because of gravity. This way it holds the stopper-unit (16) in the closed position on the opening (13) via the shaft (18), thus plugging the conduit (15). The bottle remains sealed and is perfectly suitable for the storage of liquids and for conserving carbonation.

When the bottle is tilted in order to pour a drink, as shown in Fig. 4, the movement of the counterbalance (19) causes the shaft (18) to slide towards the outside of the bottle and thus a shifting of the stopper-unit away from the opening (13). The (optional) spring (21) facilitates this process. The conduit (15) is automatically opened to let the liquid flow through. As soon as the bottle is placed in an upright position the stopper-unit (16) returns to the closed position because of the gravitational forces exerted by the counterbalance and it is at no time necessary to manually put on or take off the cap.

Claims

1. Cap for Bottles featuring a calotte type frame (11) with a locking-capsule (12) on the inside designed to be snapped onto the neck of a bottle by gently exerting pressure onto it. The invention is characterized by the fact that the above mentioned calotte

features a central opening (13) in its top and that the above mentioned capsule features a perforated section (12') perfectly aligned with the opening (13) so as to create a conduit (13) connecting the inside of the bottle with the outside. This conduit is linked to an automatic stopper-unit (16) triggered by gravity thus opening the conduit (15) when the bottle is tilted in order to pour a drink and closing it when it is in an upright (vertical) position.

2. Cap for bottles as described in claim 1 in which the opening (13) of the calotte type frame (11) is preferably widened and in which the stopper-unit (16) plugs this opening because of the gravitational force exerted by the counterbalance (19)
3. Cap for bottles as described in claims 1 and 2 in which the stopper-unit (16) is located on the top of a shaft (18) which passes through the perforated section (12') of the capsule (12) and which features a counterbalance (19) on its lower end. This counterbalance keeps the stopper-unit in a closed position thus plugging the opening when the bottle is in an upright position and in an opened position when the bottle is tilted.
4. Cap for bottles as described in claims 3 in which the above mentioned Shaft (18) is able to slide into a sleeve (20) which reaches down from the perforated section (12') of the internal capsule (12). The end of the sleeve limits the sliding of the shaft and the shifting of the stopper-unit thus regulating the flow of the liquid.
5. Cap for bottles as described in claims 3 and 4 in which a spring (21) exerts pressure on the stopper-unit counteracting the force exerted by the counterbalance (19) thus facilitating the shifting of the stopper-unit away from the opening, allowing liquid to flow through.
6. Cap for bottles as described in claim 5 in which the stopper-unit features a sealing device (17).

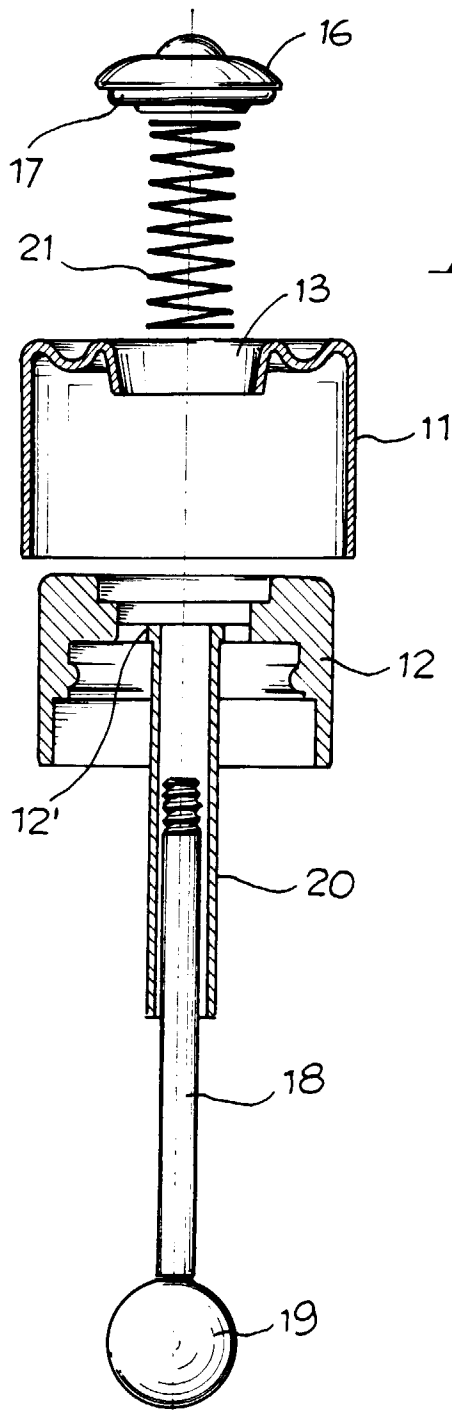


Fig. 1

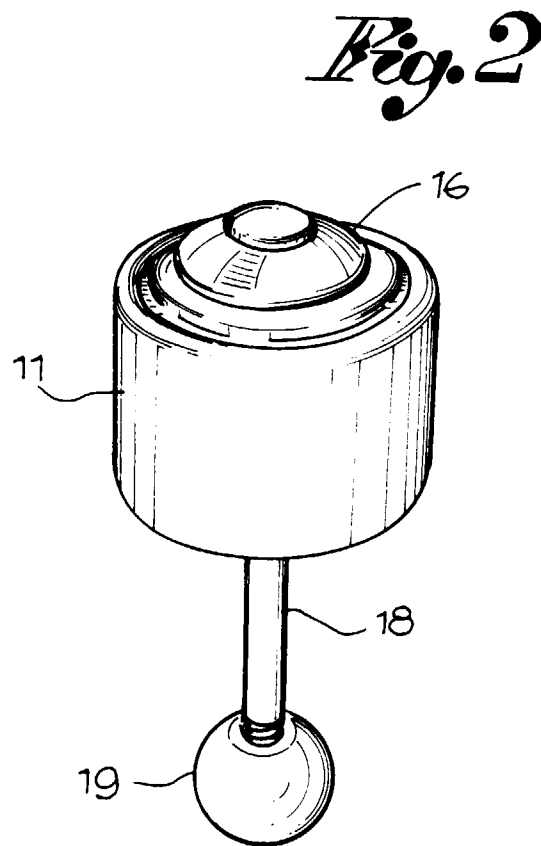


Fig. 2

