A dose cap for an additive for adding to a liquid contained in a container having a neck suitable for receiving a screw cap that includes a first part in the form of a cover possessing an end wall and a side skirt having its end remote from the end wall provided with an inside thread, and a second part in the form of a cup with an end wall and a side skirt, the cup and the cover possessing first snap-fastener device that co-operates to hold the cup in the cover in a first relative axial position with leaktight peripheral contact between them, a spacer extending inside the skirt of the cup from the end wall thereof towards the end wall of the cover to form an abutment limiting penetration of the cup into the cover beyond said first position, and said spacer including a device for breaking the end wall of the cup when the cap is forced to penetrate into the cover beyond said first position by thrust from the rim of the neck.
CONTAINER CAP FORMING A RESERVOIR FOR ADDITIVE

[0001] The present invention relates to closure means for packaging—a bottle—for a liquid—typically a beverage—suitable for delivering an organoleptic, mineral, coloring, or taste complement to the liquid.

BACKGROUND OF THE INVENTION

[0002] There exist numerous devices enabling an additive to be introduced into a liquid, in particular a beverage, which additive is contained in a cup suitable for being placed on the neck of the bottle containing the beverage.

[0003] Mention can be made for example of document FR 2 158 142 that discloses a hollow cap constituting a reservoir of flavoring, the base of the cap being formed by a wall that can be punctured and that constitutes the end wall of said reservoir, and the top of the cap constitutes a pusher suitable for pushing a perforator member contained inside the reservoir towards said base wall.

[0004] Mention is also made of document WO 2007/006414 in which a dose is shaped as a hollow cap in which a pusher actuated from the outside (the top of the cap) serves to tear a membrane retaining the additive that is thus released into the container that is suitable for receiving the hollow cap.

[0005] In all of the known devices, the additive is released by acting on a pusher. That action can take place in untimely manner and without sufficient control to enable the cap to be sold separately from the liquid container and to guarantee that it remains intact all the way from the manufacturer to the user.

OBJECT OF THE INVENTION

[0006] The present invention seeks to mitigate that drawback by providing the market with a dose of additive in packaging that is entirely identical to a screw cap.

SUMMARY OF THE INVENTION

[0007] The invention thus provides a dose cap for an additive to be added to a liquid contained in a container having a neck provided with an outside portion in relief suitable for receiving and retainer the cap. The cap is remarkable in having the following structure:

[0008] it comprises a first part in the form of a cover possessing an end wall and a side skirt with the end thereof remote from the end wall being provided internally with fastener means for cooperating with the outside portion in relief on the neck;

[0009] it comprises a second part in the form of a cup with an end wall and a side skirt, the cup and the cover possessing first snap-fastener means that cooperate to hold the cup in the cover in a first relative axial position with leaktight peripheral contact between them; and

[0010] it comprises a spacer extending inside the skirt of the cup from the end wall thereof towards the end wall of the cover to form an abutment limiting penetration of the cup into the cover beyond said first position;

[0011] said spacer constituting means for breaking the end wall of the cup when the cup is forced to penetrate into the cover;

[0012] The reservoir of additive is thus constituted by leaktight engagement of two half-shells that is easy to achieve, fill, and assemble in automatic manner after filling. The invention constitutes effective packaging for the additive that is capable of maintaining its integrity throughout the distribution system. The resulting cap is suitable for closing the container with which it co-operates in leaktight manner.

[0013] In a preferred embodiment, the outside portion in relief on the neck and the inside means on the side skirt of the cover are threads. It would not go beyond the ambit of the invention to provide a shoulder on the neck (beneath a ring for example) and to crimp or snap-fasten the skirt on said ring.

[0014] In order to make opening the reservoir and releasing the additive easier, the spacer is adjacent to the skirt of the cup, the end wall having a line of weakness in the vicinity of said location, the line of weakness extending along the junction between the end wall and the skirt. It is even possible to add a hinge line at the junction between the end wall and the skirt of the cup, opposite from said line of weakness, thus enabling the disk formed by the end wall once it has become detached from the skirt to remain connected thereto.

[0015] An important detail of the invention lies in the fact that the outside diameter of the skirt of the cup is substantially identical to the diameter at the crest of the thread at the end of the skirt of the cover. By this arrangement, it can be understood that when the dose cap is screwed onto the threaded neck of the main container, the rim of the neck pushes the cup in line with the skirt thereof, while the spacer prevents the end wall from moving with the skirt, thereby causing the end wall to separate from the skirt along the line of weakness.

[0016] Preferably, when the cup is in its above-mentioned first position, the periphery of the outside surface of the end wall of the cup is surrounded by the end edge of the skirt of the cover, and furthermore it is level therewith. The cup is then practically inaccessible from the outside, thereby ensuring that the dose cap responds well to the impact, shock, and forces it might suffer between being manufactured and being used.

[0017] In more secondary manner, it is preferable for the cover and the cup to possess corresponding second snap-fastener means that co-operate to hold the cup in the cover in the second relative axial position thereof when the end wall of the cup has been broken. The pierced cup is then held captive at the end of the cover, thereby enabling it to be moved with the cover when the cap serves only for closure purposes, and providing sealing between the cover and the cap when the liquid contained in the neck container is in a position to penetrate into the reservoir between the cup and the cover.

[0018] These second snap-fastener means are constituted by a groove formed at the end of the skirt of the cover close to its end wall and by an outside bead bordering the free end of the skirt of the cup.

[0019] In a particular embodiment of the invention, the skirt of the cup possesses a first axial section extending from its end wall, having a first outside diameter that is less than the outside diameter of a second axial section that surmounts the first section up to the free end of said skirt. The difference between the diameters of the two sections of the skirt of the cup is substantially equal to twice the thickness of the wall forming the skirt, with the smaller diameter being substantially equal to the inside diameter of the above-mentioned neck of the container and the length of the above-mentioned first section is sufficient to enable the thread of the skirt to engage with the thread of the above-mentioned neck of the container prior to the rim being thrust against the cup.
[0020] Other characteristics and advantages of the invention appear from the following description of an embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Reference is made to the accompanying drawings, in which:
[0022] FIG. 1 is a section view of a dose cup of the invention in its first state prior to use;
[0023] FIG. 2 is an identical view of the cap in its second state after use;
[0024] both views showing the cap co-operating with the threaded neck of a container such as a bottle.

DETAILED DESCRIPTION OF THE INVENTION

[0025] In the figures, the cap shown comprises a first part 1 forming a cover with an end wall 2 and a side skirt 3 that is cylindrical or very slightly frustoconical, flaring downwards, with its end 3a remote from the end wall 2 being provided with inside tapping 4 having one or two threads. This end 3a is defined by an end edge 3b. Near the top, the skirt 3 of the cover is provided with an inside portion in relief 5 of sawtooth section with a downwardly-directed tip, that constitutes a first retaining means forming a role that is described below. At the junction between the end wall and the skirt, the cover possesses a second inside portion in relief 6 that defines a slope 6a and a groove 6b that likewise form second retaining means.

[0026] The dose cap also has a second part 11 in the form of a cup having an end wall 12 that is substantially plane and a side skirt 13. Perpendicular to its plane, the end wall 12 carries a stud 14 that extends inside the skirt 13 and goes beyond the end edge 13b of its free end 13a. The axis of the stud 14 is off-center relative to the general axis XX of the cup.

[0027] The end wall 12 of the cup possesses a line of weakness 15 that extends at the junction between the end wall and the skirt and that passes close to the foot of the stud 14. The arc followed by this line of weakness is practically equal to the circumference of the bottom, with the exception of a connection 16 that forms a flexible hinge tongue to the skirt of the disk constituted by the end wall 12 once the line of weakness has been broken.

[0028] The free end 13a of the skirt is provided on the outside with two superposed beads 17 and 18 that form both means for snap-fastening the cup 11 in the cover 1 and means for providing leaktight contact between the skirt 13 of the cup and the skirt 3 of the cover. As shown in FIG. 1, the bead 17 co-operates with the portion in relief 5 to snap-fasten the cup in the cover in a first relative axial position of these two elements. The stud 14 constitutes an abutment against the cup 11 penetrating into the cover 1, thereby limiting such penetration to the value needed for achieving snap-fastening.

[0029] FIG. 2 shows the co-operation between the top bead 18 and the groove 6b in the cover when the penetration of the cup into the cover has been forced sufficiently to detach the end wall 12 in part from the skirt 13 as a result of the spacer being blocked by the end wall 2 of the cover. This is the second snap-fastening of the cup and the cover in a second relative axial position of these elements.

[0030] It should also be observed that the skirt 13 of the cup 11 has two sections 13c and 13d. The section 13c, closer to the end wall 12, has an outside diameter d that is less than the outside diameter D of the section 13d located thereabove. The diameter d is preferably equal to the inside diameter of the threaded neck C of the main container having content to which it is desired to incorporate a liquid or powder additive. The outside diameter D of the section 13d of the skirt 13 is substantially equal to the inside diameter of the end 3a of the skirt 3 at the crest of the tapping 4. The difference between the corresponding radii is substantially equal to the thickness of the wall of the skirt 13. This serves to create a shoulder 19 for bearing against the rim of the neck C under the section 13d of the skirt 13.

[0031] Finally, in the member shown, the end wall 12 of the cup 11 is substantially level with the edge 3b of the skirt 3 when the skirt and the cover are in their first relative position, and the axial length l, of the section 13c is such that the thread 4 of the cover can engage with the outside thread of the neck C before any contact is made between the rim of the neck and the shoulder 19.

[0032] The two components of the dose cap of the invention are made of injection-molded plastics material. Before assembling them together, the additive in question is placed in one or other of the cup and the cover and they are snap-fastened together in their first relative position (FIG. 1). The cap can then be handled as a single part for packaging in the manner appropriate to the sales strategy adopted as a function of the people for whom the product is intended.

[0033] After removing the original cap from the neck C, the user screws the dose cap onto the neck starting from the position shown in FIG. 1. After the threads have engaged, screwing the skirt 3 onto the neck C causes the rim to penetrate into the cover, forcing the skirt 13 to penetrate towards the end wall 2. The end wall 12 of the cup cannot follow the movement of the skirt 13 because the stud 14 comes into abutment against the end wall 2, and the end wall 12 becomes detached from the skirt along the line of weakness 15. The additive contained in the cup then pours into the container. At the end of screw-tightening, the dose cap has the shape shown in FIG. 2 where it is completely empty. It nevertheless continues to act as an effective stopper member for the container since sealing relative to the outside of the container is provided by the portion 13c of the skirt 13 that has penetrated into the neck and by the bead 18 snap-fastening in the groove 6b in leaktight manner. Furthermore, since the cup is snap-fastened in the cover in the second position, moving the cover causes the cup to move in to and out from the neck of the container.

What is claimed is:

1. A dose cap for an additive for adding to a liquid contained in a container having a neck suitable for receiving and retaining a cap via an external portion in relief, wherein the cap comprises a first part in the form of a cover possessing an end wall and a side skirt with the end thereof remote from the end wall being provided internally with fastener means for co-operating with the outside portion in relief on the neck and a second part in the form of a cup with an end wall and a side skirt, the cup and the cover possessing first snap-fastener means that co-operate to hold the cup in the cover in a first relative axial position with leaktight peripheral contact between them, a spacer extending inside the skirt of the cup from the end wall thereof towards the end wall of the cover to form an abutment limiting penetration of the cup into the cover beyond said first position, said spacer constituting means for breaking the end wall of the cup when the cap is forced to penetrate into the cover beyond said first position by thrust from the rim of the neck.
2. A cap according to claim 1, wherein the outside portion in relief on the neck and the fastener means of the skirt of the cover are formed by screw threads.

3. A cap according to claim 1, wherein the spacer is adjacent to the skirt of the cup, the end wall having a line of weakness in the vicinity of said location, the line of weakness extending along the junction between the end wall and the skirt.

4. A cap according to claim 2, wherein the outside diameter of the skirt of the cup is substantially identical to the diameter at the crest of the thread at the end of the skirt of the cover.

5. A cap according to claim 1, wherein when the cup is in its above-mentioned first position, the periphery of the outside surface of the end wall of the cup is surrounded by the end edge of the skirt of the cover and furthermore it is level therewith.

6. A cap according to claim 1 wherein the cover and the cup possess corresponding second snap-fastener means that cooperate to hold the cup in the cover in the second relative axial position thereof when the end wall of the cup has been broken.

7. A cap according to claim 6, wherein the second snap-fastener means are constituted by a groove formed at the end of the skirt of the cover close to its end wall and by an outside bead bordering the free end of the skirt of the cup.

8. A cap according to claim 1, wherein the skirt of the cup possesses a first axial section extending from its end wall, having a first outside diameter that is less than the outside diameter of a second axial section that surmounts the first section up to the free end of said skirt.

9. A cap according to claim 8, wherein the difference between the diameters of the two sections of the skirt of the cup is substantially equal to twice the thickness of the wall that forms the skirt, with the smaller diameter being substantially equal to the inside diameter of the above-mentioned neck of the container.

10. A cap according to claim 9, wherein the outside portion in relief on the neck and the fastener means of the skirt of the cover are formed by screw threads, and wherein the length of the first above-mentioned section is sufficient to enable the thread of the skirt of the cover to engage with the thread of the above-mentioned neck of the container.

* * * * *