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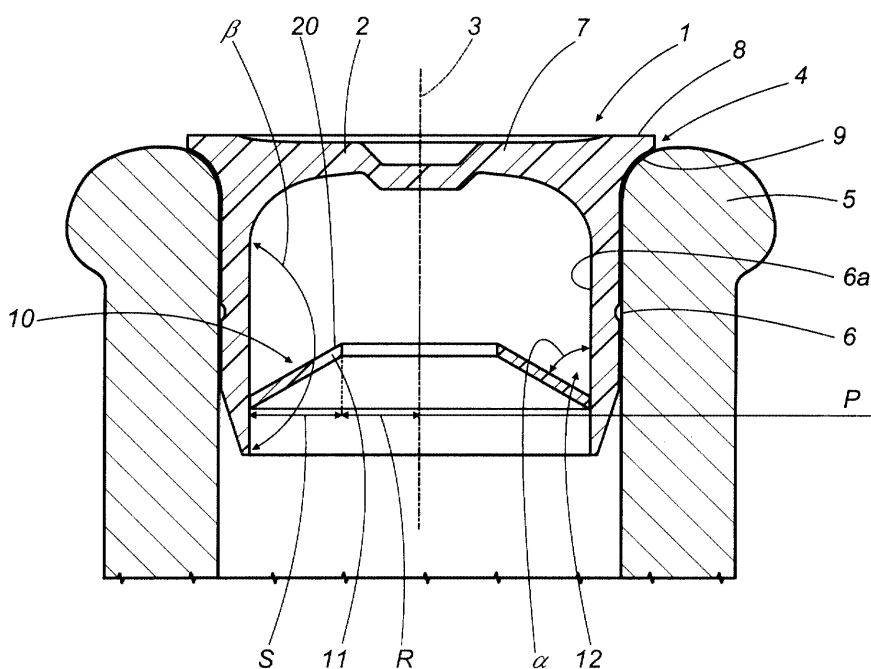
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(54) **A stopper for bottles containing liquids, in particular champagne and similar products**

(57) A stopper for bottles containing champagne or similar products comprises a hollow, substantially cylindrical element (2) with a longitudinal axis (3) and a side wall (6), which can be inserted according to the direction of the longitudinal axis (3) into the opening (4) in the neck (5) of a bottle and sealed by a transversal wall (7)

which has a ring-shaped projection (8) resting on the ring-shaped end face (9) of the neck (5). At the internal surface (6a) of the side wall (6), the cylindrical element (2) has means (10) for retaining any residues, designed to hold the residues inside the hollow cylindrical element (2).

FIG. 1



Description

[0001] The present invention relates to a stopper for bottles containing liquids, such as champagne or similar products.

[0002] It is known that the production of sparkling wines, such as champagne, includes an ageing step, during which gas is formed inside the bottle.

[0003] For this reason, the bottle must be fitted with a suitable sealing device, which is normally temporary, since the bottle may have to be reopened to allow suitable processing of its contents.

[0004] Such sealing devices normally involve the insertion of a hollow, cylindrical stopper, closed at the top by a transversal wall which extends beyond the side surface of the cylinder, forming a contact surface. The stopper is made of a synthetic material and is pressed into the opening in the neck of a bottle until it rests against the contact surface on the edge of the opening.

[0005] A metal sealing capsule, whose edge, generally crown-shaped, is designed to be clamped on the external ring-shaped edge of the neck of the bottle, is then applied over the stopper and holds it in position.

[0006] Connected to the internal face of the capsule and inserted between the latter and the assembly consisting of the neck of the bottle and the stopper, there is a seal, designed to press against the end ring-shaped face of the neck and against the transversal wall of the stopper. This seal, together with the stopper, is designed to guarantee a seal which prevents the gas and liquid escaping.

[0007] As well as contributing to the bottle closing seal, the stopper is also designed to collect ageing residues in the liquid bottled and to remove them from the bottle when the latter is opened.

[0008] However, when the bottle is picked up for opening, the liquid inside is agitated and this may result in mixing of the residues which collected towards the upper transversal wall of the stopper, which then tend to drop down again or simply spread throughout the liquid in the bottle.

[0009] Before the stopper is removed, the neck of the bottle is normally frozen in order to capture all of the residues and prevent them mixing with the liquid. However, this conventional method does not guarantee that part of the residues will not fall back into the liquid in the bottle.

[0010] Moreover, since the bottle may be opened and the stopper extracted several times during the wine ageing process, the technique which involves repeated freezing of the bottle neck may on the one hand alter the characteristics of the wine and, on the other, may weaken or even break the bottle.

[0011] The aim of the present invention is, therefore, to overcome the above-mentioned disadvantages by providing a stopper which allows all residues formed during the ageing process to be retained.

[0012] Another aim of the present invention is not to

require additional treatments, for example thermal treatments, on the bottle and its contents.

[0013] Accordingly, these aims and others, which are more clearly illustrated in the description which follows are achieved in accordance with the present invention by a stopper for bottles containing champagne or similar products, comprising a hollow, substantially cylindrical element with a longitudinal axis and a side wall. The stopper may be inserted, according to the direction of its longitudinal axis, in the opening in the neck of a bottle and closed by a transversal wall which has a ring-shaped projection resting on the ring-shaped end face of the neck. The stopper is characterised in that, at the internal surface of the side wall, the cylindrical element has means for retaining any residues, designed to keep the residues inside the hollow cylindrical element.

[0014] Further technical features and the advantages of the present invention are more clearly shown in the detailed description below, with reference to the accompanying drawings which illustrate preferred embodiments of the invention without limiting its scope of application and in which:

- Figure 1 is an axial cross-section of a first embodiment of the stopper made according to the present invention, inserted in the neck of a bottle;
- Figure 2 is a perspective view of a second embodiment of the stopper;
- Figures 3 and 4 are perspective views of further embodiments of the stopper according to the present invention.

[0015] With reference to the accompanying drawings, the numeral 1 denotes a stopper for bottles containing a pressurised liquid, such as champagne or similar product.

[0016] The stopper 1 comprises a hollow, substantially cylindrical element 2, which can be inserted, according to the direction of its longitudinal axis 3, in the opening 4 in the neck 5 of a bottle.

[0017] The size of the cylindrical element 2 is such that some force must be exerted in order to insert it in the opening 4, so that its side wall 6 is in close contact with the internal surface of the neck 5 of the bottle.

[0018] The cylindrical element 2 is closed at the top by a transversal wall 7 with a ring-shaped projection 8 which rests on a ring-shaped end face 9 of the neck 5, creating a stop which halts the insertion of the cylindrical element 2.

[0019] At the internal surface 6a of the side wall 6, the cylindrical element 2 has retaining means 10, which allow the residues which form during the ageing process to be held inside the cavity in the cylindrical element 2 of the stopper 1.

[0020] The retaining means consist of a projection 11 extending towards the longitudinal axis 3 of the cylindrical element 2.

[0021] In the embodiment illustrated in Figure 1, the

projection 11 consists of a single tab 20 having the shape of a substantially flat continuous ring.

[0022] The tab 20 may be integral with the internal surface 6a of the side wall 6 of the cylindrical element 2, or it may be part of the element 2.

[0023] The extension of the tab 20 towards the longitudinal axis 3 has a depth S, measured on a plane P perpendicular to the longitudinal axis, which is less than the radius R of the cylindrical element.

[0024] The S/R ratio is between 0.2 and 0.8, preferably being 0.5.

[0025] Advantageously, the tab 20 extends longitudinally towards the transversal wall 7 of the stopper, forming a recess 12 together with the internal surface 6a of the side wall 6.

[0026] When the bottle is picked up, the residues which accumulated around the upper transversal wall 7 of the cylindrical element 2 of the stopper 1 are mixed and tend to slip along the side wall 6 of the stopper 1 towards the bottom of the bottle. The tab 20 stops the descent of the residues towards the bottom of the bottle, causing them to be deposited in the recess 12 formed between the tab 20 and the internal surface 6a of the side wall 6.

[0027] When the bottle is opened, all of the residues are in the zone between the tab 20 and the transversal wall 7 and are, therefore, eliminated by simply removing the stopper 1 from the bottle.

[0028] The tab 20 is set at an angle to the longitudinal axis 3 such that it forms a convex angle α to the internal surface 6a of the side wall 6, creating the recess 12.

[0029] The convex angle α measures between 5 degrees and 90 degrees, preferably being around 45 degrees.

[0030] The tab 20 may have a curved profile, not illustrated in the accompanying drawings, or it may be straight, as illustrated in Figure 1.

[0031] In the embodiment illustrated in Figure 2, the projection 11 consists of a tab 21 which extends substantially in the shape of a continuous ring, with corrugations 21a to facilitate the collection of the residues, which tend to slip towards the bottom of the bottle.

[0032] In Figure 3, the projection 11 consists of a plurality of flat elements or tabs 22 distributed in a ring shape and side by side, in such a way as to allow the passage of the liquid but not the residues.

[0033] In the embodiment illustrated in Figure 4, the projection 10 consists of a plurality of hair-like elements or cilia 13 which extend towards the longitudinal axis 3 of the stopper 1.

[0034] The cilia extend in what is substantially a ring shape and, advantageously, are set at an angle to the internal surface 6a of the side wall 6 such that they extend longitudinally towards the transversal wall 7.

[0035] The configuration of the cilia 13 allows the liquid to be filtered when the bottle is picked up, retaining the residues in the recess 12 formed by the cilia 13 together with the internal surface 6a. Although not illus-

trated, in the various embodiments presented, during the injection and moulding process, the projection 11 is not necessarily set at the angle illustrated. This obviously depends on the moulding process and apparatus used. In order to facilitate the moulding process, the projection 11, when extracted, is preferably set at a very different angle, which may even vary over 180 degrees, labelled β in Figure 1. Subsequently, in order to bring the projection to the final operating angle, a machine is used, designed specifically to bend the projection formed immediately after injection, so as to guarantee that the projection is positioned towards the transversal wall 7.

[0036] The invention described can be subject to numerous modifications and variations without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. A stopper for bottles containing champagne or similar products, comprising a hollow, substantially cylindrical element (2), with a longitudinal axis (3) and a side wall (6), it being possible to insert the stopper, according to the direction of the longitudinal axis (3), in the opening (4) in a neck (5) of a bottle and the stopper being sealed by a transversal wall (7) with a ring-shaped projection (8) which rests on the ring-shaped end face (9) of the neck (5), the stopper being characterised in that, at the internal surface (6a) of the side wall (6), the cylindrical element (2) has means (10) for retaining any residues, said means keeping the residues inside the hollow cylindrical element (2).
2. The stopper according to claim 1, characterised in that the retaining means (10) consist of at least one projection (11), extending towards the longitudinal axis (3) of the cylindrical element (2).
3. The stopper according to claim 2, characterised in that the projection (11) extends in a longitudinal direction towards the transversal wall (7) of the cylindrical element (2), forming a recess (12) for depositing the residues.
4. The stopper according to claim 2 or 3, characterised in that the projection (11) extends in a substantially flat continuous ring shape.
5. The stopper according to claim 2 or 3, characterised in that the projection (11) extends in a substantially continuous ring shape with corrugations (21a).
6. The stopper according to claim 2 or 3, characterised in that the projection (11) consists of a plurality of

flat elements (22) distributed substantially in a ring shape.

7. The stopper according to claim 2 or 3, characterised in that the projection (11) consists of a plurality of hair-like elements (13) distributed substantially in a ring shape, allowing the residues to be filtered out. 5
8. The stopper according to any of the foregoing claims from 2 to 7, characterised in that the extension of the projection (11) towards the longitudinal axis (3) has a depth S, being measured on a plane P which is perpendicular to the longitudinal axis (3), which is less than the radius R of the cylindrical element, the S/R ratio being between 0.2 and 0.8. 10 15
9. The stopper according to claim 8, characterised in that the S/R ratio is around 0.5.
10. The stopper according to any of the foregoing claims from 3 to 9, characterised in that the projection (11) has a profile which is set at an angle to the longitudinal axis (3), in practice forming a convex angle (α) with the internal surface (6a) of the side wall (6). 20 25
11. The stopper according to claim 10, characterised in that said convex angle is between 5 degrees and 90 degrees. 30
12. The stopper according to claim 11, characterised in that said convex angle is between 20 degrees and 80 degrees.
13. The stopper according to claim 12, characterised in that said convex angle is around 45 degrees. 35
14. The stopper according to claim 10, characterised in that said profile is substantially straight. 40

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FIG. 1

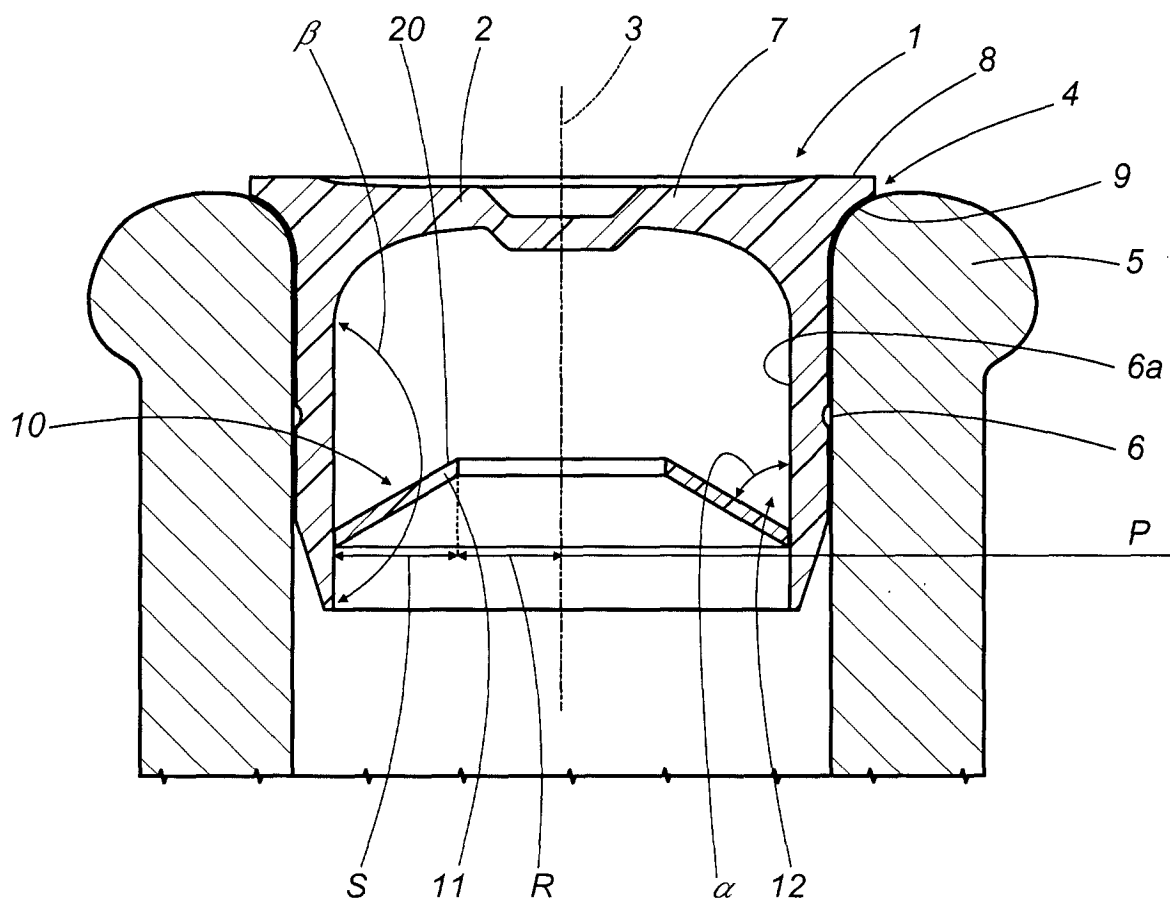


FIG. 2

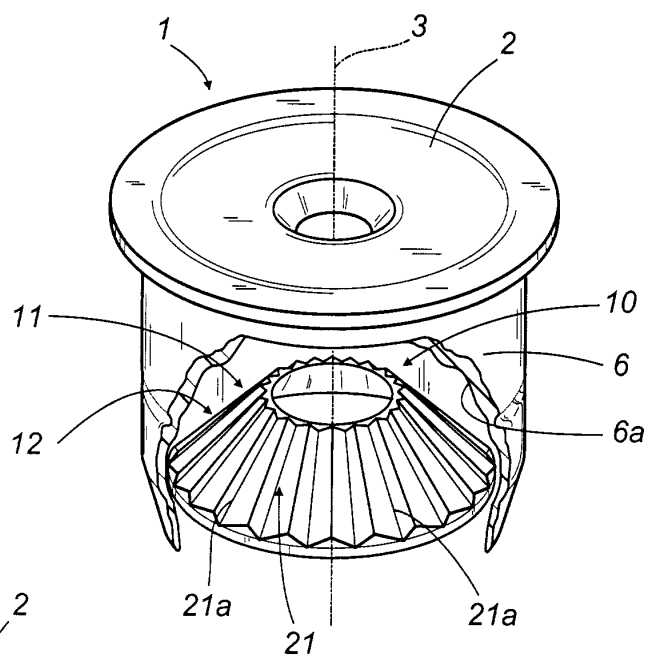


FIG. 3

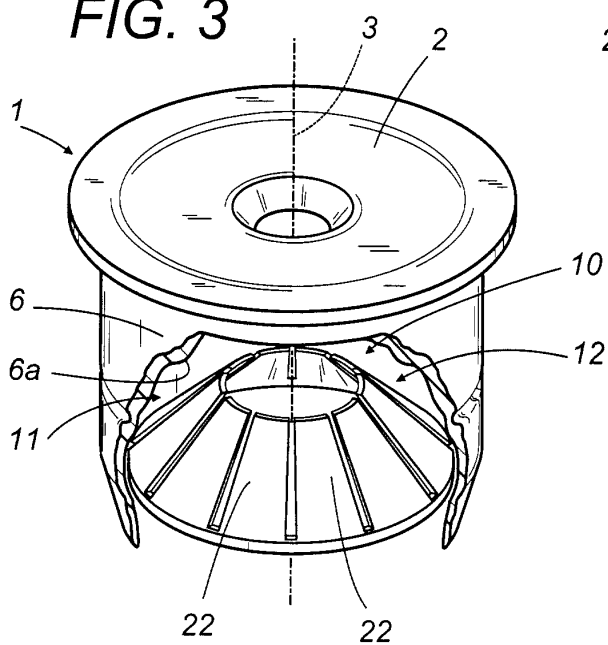


FIG. 4

