

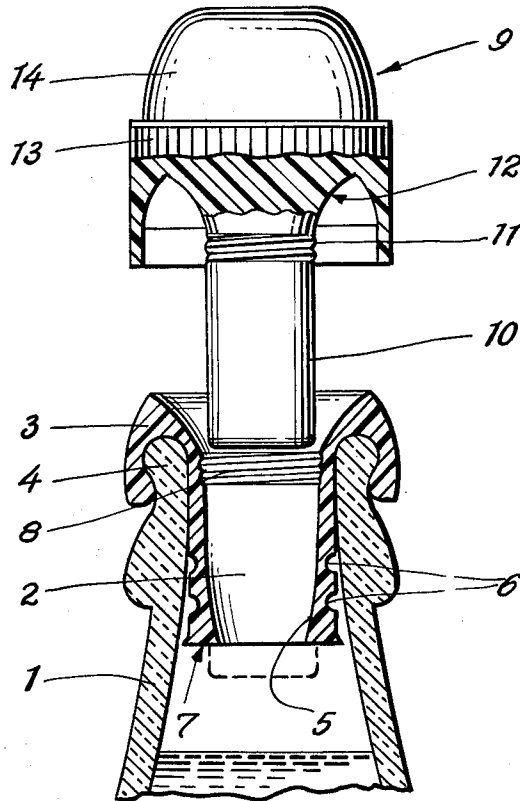
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H. ESSICH

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BOTTLE STOPPER ARRANGEMENT

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INVENTOR

Helmut Essich

BY

Michael S. Stricker
ATTORNEY

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BOTTLE STOPPER ARRANGEMENT

Helmut Essich, Hanau (Main), Germany
(Pferdslache 18, 645 Hanau, Hesse, Germany)

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The present invention relates to a bottle stopper arrangement and more particularly to a bottle stopper arrangement to be advantageously used in connection with champagne bottles or other bottles in which a fluid is maintained under pressure.

Generally, champagne bottles are closed in such a manner that a cork stopper is inserted into the mouth of the bottle and the stopper is held in place by a metal band which extends, substantially U-shaped, from one side of the neck of the bottle over the head of the stopper to the other side of the neck of the bottle. The metal band is held in place by means of a wire loop which engages a bead around the mouth of the bottle whereby the ends of the loop-forming wire are twisted together. In order to open the champagne bottle, the wire is untwisted so that the loop becomes wider and the metal band may be slipped out of the same or the entire loop may be slipped over the bead at the mouth of the bottle. In this manner the stopper is freed for subsequent removal. However, frequently, due to the carbon dioxide pressure in the interior of the champagne bottle, the cork stopper is ejected from the neck of the bottle before the removal of the metal band or the like has been completed.

Due to the difficulty in controlling the removal of the stopper and the manipulative steps involved, many people are reluctant to open champagne bottles.

It is therefore an object of the present invention to overcome the above discussed difficulties and disadvantages.

It is a further object of the present invention to provide a bottle stopper arrangement which may be advantageously used in connection with champagne bottles and the like and which permits an easy control of the opening of the bottle.

It is another object of the present invention to provide a bottle stopper arrangement which can be produced in a simple and economical manner and is easy to manipulate.

It is still a further object of the present invention to provide a bottle stopper arrangement which after opening of the champagne bottle or the like will also be suitable to close the same so as to again form a hermetic seal.

Other objects and advantages of the present invention will become apparent from a further reading of the description and of the appended claims.

With the above and other objects in view, the present invention contemplates a bottle stopper arrangement, comprising, in combination, a tubular insert adapted to be secured at the outer end thereof in the mouth of a bottle and projecting with the inner end thereof into the bottle to be closed, the tubular insert having an inner face defining a passage the cross-sectional area of which decreases in the direction from the one end to the other end thereof, the inner face having a screw-threaded annular surface portion in the region of the outer end of the insert, and a bottle stopper adapted to be inserted into the tubular insert through the outer end thereof, the stopper having a screw-threaded annular surface portion located in the region of the outer end thereof and adapted to engage the screw-threaded annular surface portion of the inner face of the tubular insert, the stopper having in the region of the other end thereof a cross-sectional area greater than the cross-sectional area of the inner face of the passage in the tubular insert at the inner end thereof and having from the screw-threaded surface portion to the other end thereof

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a length greater than the length of the passage in the insert from the screw-threaded surface portion to the inner end thereof, whereby when the stopper is unscrewed from the insert the other end of the stopper will still be located within the inner end of the passage in the insert, forcing the same outwardly.

According to a preferred embodiment, the bottle stopper arrangement comprises, in combination, a tubular insert adapted to be secured at one end of the mouth of a bottle and projecting with the other end thereof into the bottle to be closed, the tubular insert consisting of resiliently deformable material and having an outer face, an inner face defining a passage the cross-sectional area of which decreases in the direction from the one end to the other end thereof, the inner face having a screw-threaded annular surface portion in the region of the one end i.e. the outer end of the insert extending in axial direction of the passage for a predetermined distance, and the outer face being formed with at least one annular suction groove which when pressed against the inner face of the neck of the bottle will tend to adhere the tubular insert thereto, and a bottle stopper adapted to be inserted into the tubular insert through the one end thereof, the stopper having a screw-threaded annular surface portion located in the region of one end thereof and adapted to engage the screw-threaded annular surface portion of the inner face of the tubular insert, the stopper having in the region of the other end thereof a cross-sectional area greater than the cross-sectional area of the inner face of the passage in the tubular insert at the other i.e. the inner end thereof and having from the screw-threaded surface portion to the other end thereof a length greater than the predetermined distance than the length of the passage in the insert from the screw-threaded surface portion to the other end thereof, whereby when the stopper is unscrewed from the insert the other end of the stopper will still be located within the other end of the passage in the insert, forcing the same outwardly.

Thus, according to the present invention a bottle stopper or closure arrangement for champagne bottles and the like is provided which will serve to firmly close the bottle without requiring a wire or metal band, which can be easily opened and nevertheless will provide the traditional "popping" noise during expelling of the stopper. Furthermore, the stopper arrangement according to the present invention, according to which the tubular insert remains fixed to the mouth of the bottle and only the bottle stopper is removed therefrom, will permit without difficulties repeated opening and closing of the champagne bottle or the like.

In order to achieve the unobvious advantages of the present invention, it is essential that the length of the stopper when the same is screwed into the tubular insert is such that the free end portion of the stopper extends beyond the inserted end portion of the tubular insert for a length which is at least equal to the width or axial length of the screw-threaded portion of the tubular insert. In this manner it is achieved that upon unscrewing the bottle stopper, the free end portion of the same will still be located in the area of the inserted end portion of the tubular insert and will press the same outwardly against the inner face of the bottle neck, thereby forming a tight seal.

According to the present invention, the closure remains fully effective during the unscrewing of the bottle stopper. Only immediately after the unscrewing is completed, i.e. when the threads of the tubular insert and the bottle stopper are disengaged, is it possible to have the bottle stopper expelled by the superatmospheric pressure prevailing in the interior of the bottle. This generally will require only a quick loosening movement of the unscrewed bottle stopper.

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The bottle stopper portion which is inserted into the tubular insert is of cylindrical shape and preferably has throughout its entire length from the screw-threaded portion thereof to its free end a circular cross-section of constant diameter.

The lower or free end portion of the cylindrical stopper will press the inserted end portion of the tubular insert outwardly into firm contact with the inner face of the neck of the bottle. As illustrated and described above, the cross-sectional area of the tubular insert decreases in the direction toward its inserted free end portion to such an extent that in the inserted end portion of the bottle stopper arrangement the tubular insert when not under stress cannot accommodate the corresponding end portion of the cylindrical bottle stopper and thus the insert will be resiliently pressed outwardly.

According to preferred embodiments of the present invention, the outer face of the portion of the tubular insert which will be pressed outwardly by the inserted bottle stopper is formed with at least one, preferably with two parallel, annular suction grooves. By pressing this outer face portion of the tubular insert against the inner face of the neck of the bottle, the suction grooves will be resiliently flattened and thereby form a very tight seal between the tubular insert and the neck of the bottle. Furthermore, the outer edge of the inserted end portion of the tubular insert may be formed as a sealing lip which, upon insertion of the stopper, will be pressed against the neck portion of the bottle.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

The figure is a schematic elevational cross-sectional view of an embodiment of the present invention.

Referring now to the drawing, it will be seen that tubular insert 2 is fixed with its upper end portion to bottle neck 1, and the outer end of upper end portion 3 grips bead 4 of the bottle neck. The inserted part 5 of tubular insert 2 is of frustoconical configuration and formed at its outer face with two annular suction grooves 6 as well as with an annular sealing lip 7.

The upper portion of insert 5 is formed with screw threads 8.

Stopper 9 includes a cylindrical shaft 10 which is formed at its upper portion with screw threads 11 adapted to engage screw threads 8 of insert 5. The ring portion 12 of the stopper is adapted upon closing of the bottle to engage the corresponding part of upper portion 3 of the tubular insert.

It is preferred to provide stopper 9 in a manner known per se with a knurled surface portion 13 and with a somewhat rounded head 14.

Upon engaging screw thread 11 of stopper 9 and screw thread 8 of the tubular insert 2, the cylindrical shaft 10 of the stopper will press the frustoconical wall 5 of tubular insert 2 into engagement with the neck of the bottle. Thereby, particularly due to suction grooves 6, the frustoconical insert portion 5 will adhere to the bottle neck by suction and additionally will be firmly held in sealing position by the inserted stopper portion 10.

Upon opening of the bottle, the stopper is unscrewed until the screw threads 8 and 11 are disengaged from each other. In this position, cylindrical stopper portion 10 still presses the frustoconical portion 5 of insert 2 against bottle neck 1 as long as the stopper is held in this position. Upon releasing, i.e. no longer holding, the stopper, or possibly slight movement of the head portion, the stopper will be expelled from the bottle neck due to the overpressure maintained in the bottle and the "popping" of the stopper will be accompanied by the

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expected noise. However, it is also possible to remove the stopper slowly by hand without popping.

Tubular insert 2 and stopper 9 preferably are formed of synthetic plastic materials well known in the art for similar purposes, for instance polyethylene or polystyrene. At least the portions of the bottle stopper arrangement which are deformed during closing or opening of the bottle, particularly frustoconical insert portion 5, must be resiliently deformable or compressible and expandable.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of a bottle stopper arrangement differing from the types described above.

While the invention has been illustrated and described as embodied in a bottle stopper arrangement for a champagne bottle or the like, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A bottle stopper arrangement, comprising, in combination, a tubular insert adapted to be secured at the outer end thereof in the mouth of a bottle and projecting with the inner end thereof into the bottle to be closed, said tubular insert having an inner face defining a passage the cross-sectional area of which decreases in the direction from said outer end to said inner end thereof, said inner face having in the region of said outer end of said insert a screw-threaded annular surface portion of predetermined width; and a bottle stopper adapted to be inserted into said tubular insert through said outer end thereof, said stopper having a screw-threaded annular surface portion located in the region of the outer end thereof and adapted to engage said screw-threaded annular surface portion of the inner face of said tubular insert, the length of said stopper from said screw-threaded surface portion to the inner end thereof being greater than the length of said passage in said insert from said screw-threaded surface portion to said inner end thereof by a distance at least equal to said predetermined width and a portion of said stopper, extending from said inner end of said stopper at least said distance, having a cross sectional area greater than the cross sectional area of the inner face of said passage in said tubular insert at said inner end thereof, whereby when said stopper is unscrewed from said insert said inner end of said stopper will after unscrewing still be located within said inner end of said passage in said insert, forcing the same radially outwardly.

2. A bottle stopper arrangement as set forth in claim 1 wherein said tubular insert consists of resiliently deformable material.

3. A bottle stopper arrangement as set forth in claim 2 wherein said tubular insert has an outer face being formed with at least one annular suction groove, which when pressed against an inner face of a neck of a bottle will tend to adhere said tubular insert thereto.

4. A bottle stopper arrangement as set forth in claim 2 wherein said tubular insert has an outer face and formed with two parallel annular suction grooves respectively extending in planes substantially perpendicular to the axis of said passage, and which when pressed against the inner face of a neck of a bottle will tend to adhere said tubular insert thereto.

5. A bottle stopper arrangement as set forth in claim 2 wherein said tubular insert has an outer face, said outer

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face being formed in the region of the outer end of said tubular insert with an annular outwardly extending sealing lip which when pressed against an inner face of a neck of a bottle will form a seal between the neck of the bottle and said tubular insert.

6. A bottle stopper arrangement as set forth in claim 2 wherein the length of said stopper from said screw threaded surface portion to said inner end thereof is greater than the length of said passage in said insert from said screw threaded surface portion to said inner end thereof by a distance greater than said predetermined width.

7. A bottle stopper arrangement as set forth in claim 2, wherein said tubular insert has an outer face, said outer face being formed in the region of the outer end of said tubular insert with an annular outwardly extending sealing lip which when pressed against an inner face of a neck of a bottle will form a seal between the neck of the bottle and said tubular insert and wherein said tubular insert is formed with at least one annular suction groove,

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which when pressed against an inner face of a neck of a bottle will tend to adhere said tubular insert thereto and wherein the length of said stopper from said screw threaded surface portion to said inner end thereof is greater than the length of said passage in said insert from said screw threaded surface portion to said inner end thereof by a distance greater than said predetermined width.

References Cited by the Examiner

UNITED STATES PATENTS

2,735,566	2/1956	Bramming	215—54
3,015,403	1/1962	Fuller	215—54
3,141,586	7/1964	Wetterek	215—49

FOREIGN PATENTS

679,266 2/1964 Canada.

JOSEPH LECLAIR, *Primary Examiner.*

V. A. TOMPSON, D. F. NORTON, *Assistant Examiners.*