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(71) Applicant: **Pajon Permuy, Javier**
21003 Huelva (ES)

(72) Inventor: **Pajon Permuy, Javier**
21003 Huelva (ES)

(74) Representative: **Urizar Anasagasti, Jesus Maria**
Po de la Castellana, 72 - 1o
28046 Madrid (ES)

(54) PRESSURE STOPPER FOR BOTTLES AND THE LIKE

(57) Destined to bottles whose neck (1) is of the revolution type and has a smooth internal surface, being constituted as from a cylindrical bushing (2) of a soft material, like, for example, rubber, with an outside diameter less than the inside diameter of the bottle neck (1), linked with what should be its external end in a perimetric flange (3) for leaning over the mouth (4) of said bottle. Inside this bushing (1), there are two rigid parts, an external part (5) likewise finishing externally in a discoidal head (6) and an inside part (9), in turn finishing internally in a trunco-conical head (10), these parts provided with a threaded neck (8) and a threaded and complementary pin (12), which permits the axial level of both parts as a whole to vary, by means of rotation in one or other direction of the discoidal head and externally (6), such that in the axial contraction of said rigid parts, the trunco-conical head (10) radially deforms the lower end of the bushing (2) against the inside surface of the bottle neck (1) causing an airtight and stable closure.

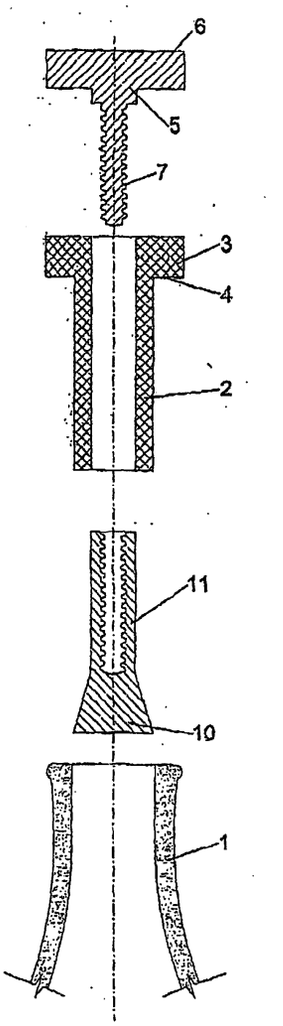

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention refers to a stopper, specially designed for bottles of the type providing sufficient air tightness in the closure by means of radial pressure of the stopper itself over the bottle neck, but may likewise be applied to any container requiring a similar closing system.

[0002] The object of the invention is to obtain a stopper of very easy placement in the bottle neck or container, assuring an airtight closure which also permits easy opening and a stopper that may be continuously used.

BACKGROUND OF THE INVENTION

[0003] In the field of bottles and other similar containers, basically two closing systems have been developed; one in which the bottle and stopper are provided with complementary means of threading or others of axial fastening which in turn, permit the axial deformation of a discoidal or annular component, acting as a seal between the stopper body and the container mouth and another, in which the container lacks coupling and axial retention means for the stopper, so that the latter is kept stable in a closed position by radial and internal pressure over the bottle neck.

[0004] Stoppers normally used in wine, champagne, etc. bottling belong to this type, in which the stopper is a cork cylinder, conveniently oversized with respect to the inside diameter of the bottle neck, requiring a special machine for its insertion in the latter. Said machine has a trunco-conical nozzle which converges in a downwards direction, forcing the stopper, on being axially pressed by its piston, on suffering a significant radial contraction, possible due to its material nature, so that once the stopper passes said nozzle and reaches the bottle neck, it elastically recovers exerting a high pressure over said neck, assuring the stability and tightness of the closure.

[0005] Independently from the difficulty involved in this type of stopper, totally impossible from the manual point of view, assuring optimum closure conditions, the removal manoeuvre thereof is also complex, requiring the use of corkscrews which on many occasions during the opening process break the stopper. To this drawback, we should add that when the degree of stopper deformation is significant during insertion, its expansion after first removal is so large, that it is impossible to manually close the bottle again with the same stopper, in the normal case of not having consumed all the contents of the bottle.

DESCRIPTION OF THE INVENTION

[0006] The pressure stopper proposed by the invention satisfactorily solves the aforementioned problem, it being possible to use it in the first bottling process or as an auxiliary stopper replacing the classical original one, when for the reasons already indicated, the latter cannot be reused for such a purpose.

[0007] More specifically, the stopper being disclosed consists of the functional combination of three parts, one of soft material, like, for example, rubber, shaped as a cylindrical bushing, fitted in correspondence with what should be its upper end of a perimetric flange, acting as a limiting stop for penetration over the bottle mouth, the outside diameter of said bushing being equal or less than the inside diameter of the bottle neck, collaborating with this part of soft material, two parts of rigid material which in their combination define a telescopic shaft finishing the outside part in a discoidal head to activate said part, while the other is finished inside a trunco-conical head, diverging towards its interior and free end, with a maximum diameter closed to that of the inside diameter of the bottle neck, so that in the situation of a maximum distance between the discoidal head and the trunco-conical head, the assembly may be easily placed inside the bottle or container being considered, until the limit situation in which the flange of the soft part acts as a stop over the bottle mouth, since the bushing to which said flange is linked maintains its original cylindrical configuration, whilst when its acts over the rigid parts, according to the axial contraction thereof, the trunco-conical head provokes a radial and elastic deformation of the soft bushing generating a high pressure of said bushing over the internal surface of the bottle neck and assuring both an airtight closure and a perfect stability for the stopper as a whole.

DESCRIPTION OF THE DRAWINGS

[0008] To complete the description being made and to permit a better understanding of the features of the invention according to a preferred example of embodiment thereof, said description is accompanied by a set of drawings in which the following is shown with an illustrative and non-limiting nature:

Figure 1 shows a side elevation exploded view and sectional view of the components integrating the pressure stopper constituting the object of the prescnt invention, in which the neck of a bottle specifically destined to receive said stopper is also shown.

Figure 2 shows, according to a side elevation view, and in diametric section, the same assembly as above, duly assembled, according to another embodiment in which the plug component of the threaded coupling is linked to the trunco-conical head, instead of the discoidal and external head, as in the case above.

Figure 3 finally shows, according to similar representations to that of the previous figure, the different process sequences of introducing the stopper in the

bottle neck.

PREFERRED EMBODIMENT OF THE INVENTION

[0009] In the light of the above figures, it may be observed that the stopper being considered is destined to bottles or other types of container having a revolution neck (1) and is shaped as a cylindrical bushing (2) of a soft material of appropriate length, at its upper end finished in a flange or outside perimetric ring (3), destined to lean over the mouth (4) of said bottle neck (1), with the double purpose of acting as a limiting stop for penetration of said bushing (2) and in turn as an airtight closure area, as will be seen later, collaborating with said bushing (2) a pair of parts of a rigid material, like for example, plastic, specifically an outside part (5) in turn externally finished in a discoidal head (6), whose diameter should at least coincide with that of the soft bushing (2) flange (3), said rigid part (5) being provided with an axial and threaded pin (7) as shown in figure 1 or with a hollow neck (8), internally threaded, as shown by the embodiment in figure 2, anyway being completed with the other rigid part (9), at its lower or internal end also provided with a trunco-conical head (10), evidently diverging towards its free end, and with an internal and axially threaded neck (11), when the part (5) has the threaded pin (7) of figure 1 or a threaded pin (12) when the part (5) has an internally threaded neck (8) as in the case of figure 2.

[0010] Anyway, the complementary threads (7-11) or (8-12) permit the axial and telescopic shifting of a rigid part (5) with respect to the other (9) and also in any case the maximum diameter of the trunco-conical head (10) of the rigid part (9) will be suitable for introducing it through the bottle neck (2).

[0011] According to this arrangement, the manoeuvre to incorporate the stopper in the bottle is as follows:

[0012] According to the first sequence of figure 3, we start from a situation of maximum distance between the rigid parts (5) and (9), meaning that the trunco-conical head (10) is totally located beyond the bushing (2) maintaining it in its original cylindrical configuration.

[0013] As from this situation, and as shown by the second sequence of figure 3, the stopper is totally inserted in the bottle neck (1) not requiring excessive force.

[0014] Then, an initial small adjustment pull is made over the discoidal head (6) of the rigid part (5), so that with its raising movement the latter drags the rigid part (9) whose trunco-conical head (10) provokes a radial and complementary deformation of the lower end of the soft bushing (2), which is adapted to the anatomy of the bottle neck (1) as shown in the third sequence of figure 3, the discoidal head (6) remaining significantly distanced from the flange (3) of the soft part (2).

[0015] Then, and according to the fourth sequence of figure 3, the discoidal head (5) is rotated so that it progressively approaches the flange (3) as its threading is produced over the internal rigid part (9), which is kept stable by the friction coefficient established between its own trunco-conical head (10) and the soft cylindrical bushing (2).

[0016] In a limit approach situation of the discoidal head (6) to the flange (3), a final tightening is carried out which, as observed in the fifth and last sequence of figure 3, produces the definite deformation of the lower end of the bushing (2), assuring a totally airtight closure over the bottle neck (1) wall and over the trunco-conical head (10), in turn producing an axial pressure of the discoidal head (6) over the flange (3), also deforming the latter in this direction, enhancing the tightness of the stopper as a whole.

[0017] Evidently, a manoeuvre in the opposite direction permits an easy uncoupling of the stopper which may be indefinitely reused.

Claims

1. A pressure stopper for bottles and similar containers, provided with a revolution neck of internal and smooth surface, **characterised by** being constituted by means of the functional combination of three parts, one part (2) of soft material, configuring a cylindrical bushing with an external diameter according to the internal diameter of the bottle neck (1), a bushing which finishes in what should be the external or upper end of a flange (3), radially emerging outwards and destined to lean over the bottle mouth (4), collaborating with this soft part (2), a pair of parts (5) and (9) of rigid material, like, for example, plastic, coaxially intercoupled and with relative adjustable positioning, the external part (5) finishing at its end, also external, in a discoidal head (6), for leaning over the flange (3) of the soft part (2), while the inside part (9) of rigid material in turn finishes in a trunco-conical head (10), diverging towards its free end and with a maximum diameter suitable to permit its passage through the bottle neck (1), having foreseen that in the situation of maximum extension for the assembly consisting of the two rigid parts (5) and (6), the trunco-conical head (10) does not affect the cylindrical bushing (2) of the soft material part, while the axial contraction of the assembly consisting of said rigid parts provokes a radial deformation of the lower area of said bushing (2) against the internal wall of the bottle neck (1) and an axial deformation of the flange (3) against the front (4) of said bottle mouth.

2. A pressure stopper for bottles and similar containers according to claim 1, **characterised in that** the two rigid parts (4) and (5) are telescopically related to each other, with the possibility of varying the axial level of both parts as a whole by means a thread coupling (7-11), (8-12).

3. A pressure stopper for bottles and similar containers according to the previous claims, **characterised in that** the rigid external part (5) is provided with a threaded pin (7) whilst the rigid internal part (9) is provided with an internally threaded neck (11) receiving said pin (7).

4. A pressure stopper for bottles and similar containers, according to claims 1 and 2, **characterised in that** the rigid external part (5) is provided with an internally threaded neck (8) whilst the rigid internal part (9) is provided with a threaded pin (12) corresponding with said neck (8).

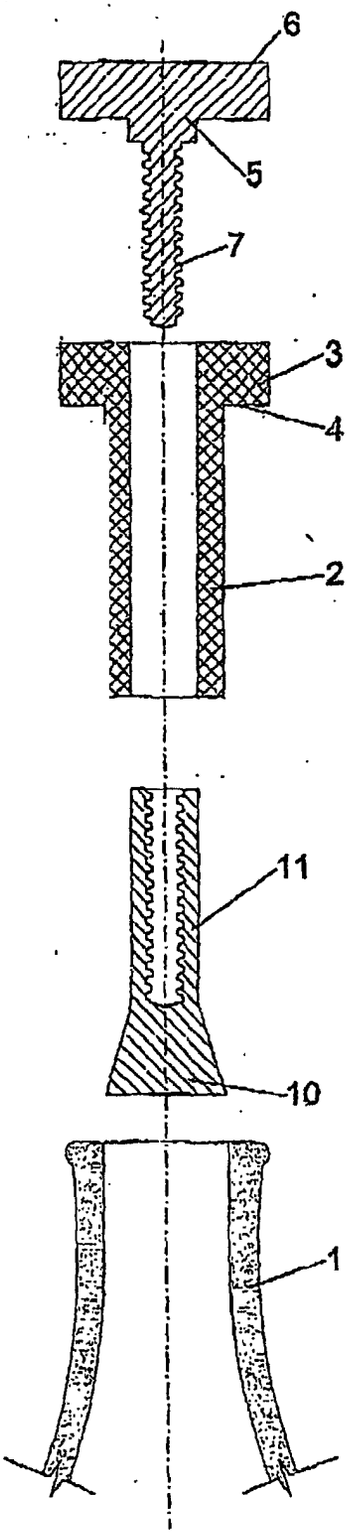


FIG. 1

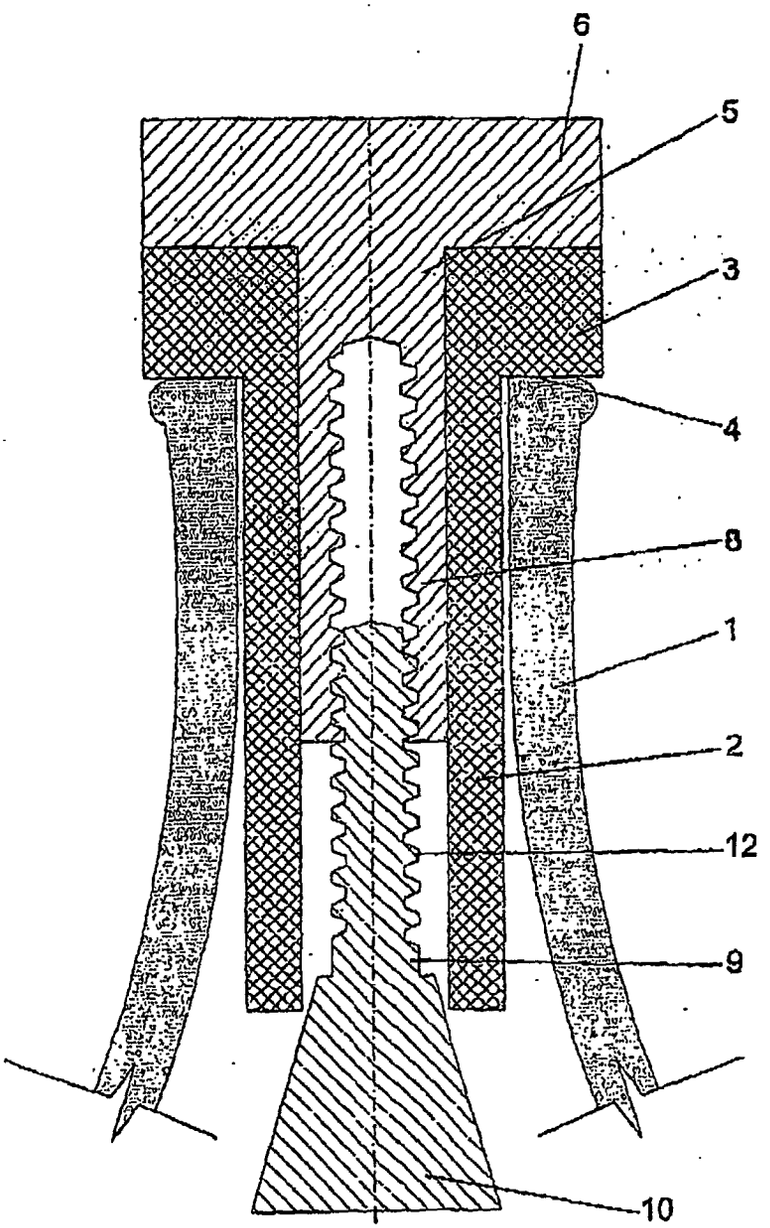
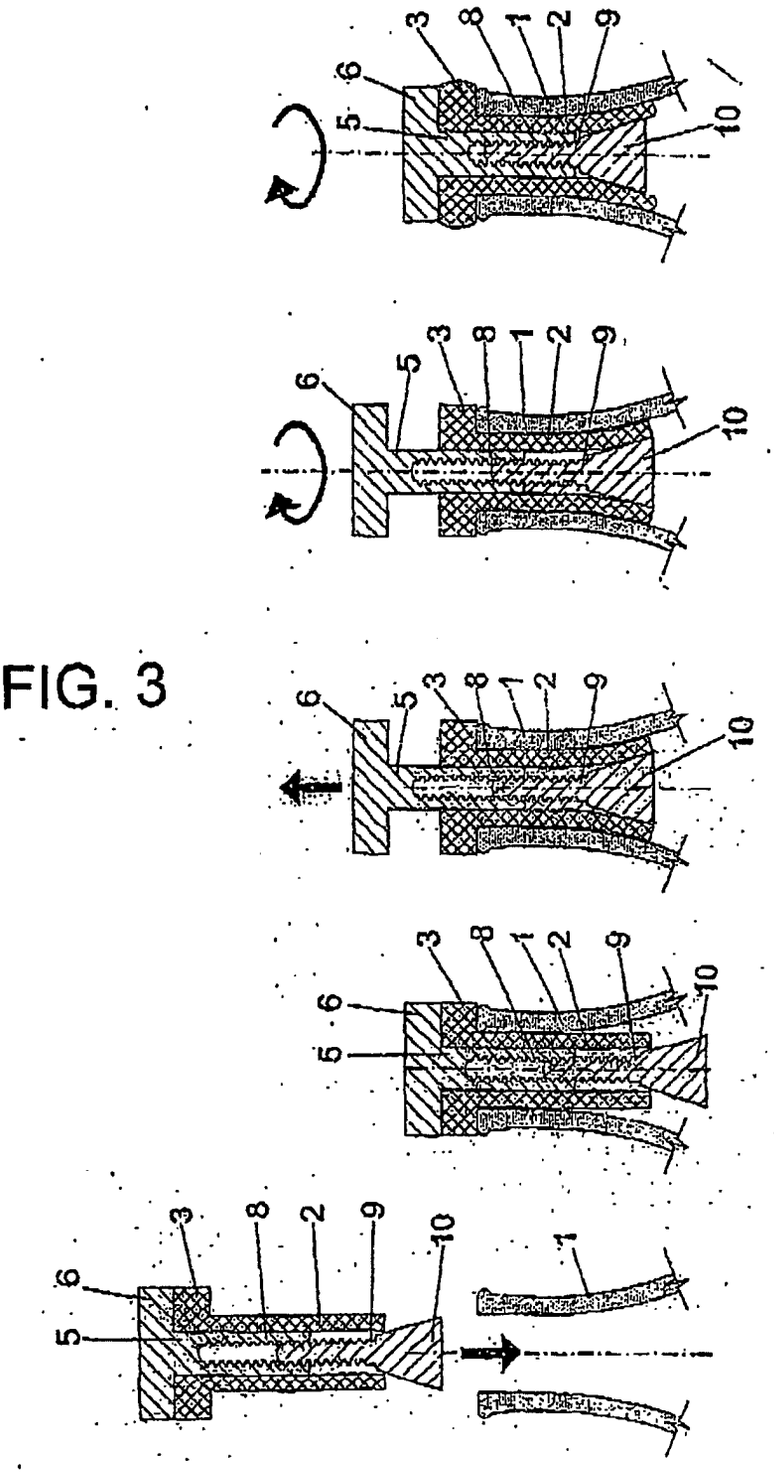


FIG. 2

FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES01/ 00181

A. CLASSIFICATION OF SUBJECT MATTER

IPC[7] B65 D 45/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[7] B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

ES

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT, EPODOC, WPI, P

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	DE- 19630729-A (Weis Guenther) 05.02.1998, drawings	1 3,4
Y A	FR- 1066502- A (M. Kaiser) 08.06.1954, drawings	1 2,3
Y A	EP- 304253- A2 (Jednotne) 22.02.1989, abstract, drawings	1 3,4
Y A	ES- 2004043- A6 (Juan Antonio Abad Martín) 01.12.1988, see the whole document	1 4
A	GB- 2190072- A (Guala Angelo S.p.A) 11.11.1987, page 1, line 73- page 3, line 33; drawings	1-4

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
04 September 2001 (04.09.01)	07 September 2001
Name and mailing address of the ISA/ Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES01/ 00181

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR- 2572719- A (Roddier Roger) 09.05.1986, abstract, drawings	1
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Information on patent family members

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