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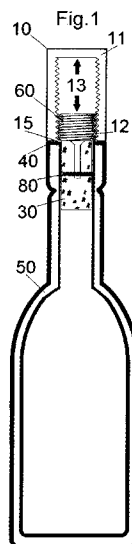
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(54) Title: MANUAL UNCORKING DEVICE THAT INTEGRATES A CORK FOR BOTTLES, WITHOUT THE AID OF A CORKSCREW



(57) Abstract: Manual uncorking device that integrates a cork for bottles (50) with a non-threaded neck, without the aid of a cork-screw. Said composite cork and other cylindrical material (30) is made in its sealing part, by means of cork or another material, which cork or other material is coupled in at least two ways to a threaded internal extractor element (60, 20), made of a non-metallic composite material. Said threaded internal extractor element (60, 20), along with said cork or other material (30), is screwed inside an internally threaded cylindrical external extractor element of containment (11), whose flat lower part (15) rests and levers on the top of the neck of said bottle (50) as it is manually rotated right or left, with respect to said threaded internal extractor element (60, 20), which is integrally coupled to said cork or other sealing material (30), and extracts said cork or other sealing material (30) from the neck of said bottle (50).



MANUAL UNCORKING DEVICE THAT INTEGRATES A CORK FOR BOTTLES,
WITHOUT THE AID OF A CORKSCREW

[0001] This invention relates to a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew. Said
5 manual uncorking device is realized by means of cork or another sealing material, which cork or other sealing material is coupled in at least two ways to an internal threaded extractor element, made of a non-metallic composite material. Said internal threaded extractor element, along with said cork or other
10 sealing material, is screwed inside an open or closed external extractor element of containment, provided with an internal thread whose flat lower part rests as a lever on the flat top of the non-threaded neck of the bottle as it is manually rotated right or left, with respect to said internal threaded extractor element, which is integrally coupled to said cork or other sealing material, and extracts
15 said cork or other sealing material from the neck of the bottle, containing it or expelling it.

Field of the invention

[0002] It is known that the bottle with a non-threaded neck, for high-quality wine and drinks, mainly uses a cork or another material of cylindrical shape pressure-inserted into the neck of the bottle. Nowadays the impossibility of
20 having bottles of high-quality wines is known, sealed with a cork or another material of cylindrical shape pressure-inserted into the neck of the bottle, for example on aircrafts, because the current safety and anti-terrorism measures on aircrafts also forbid the staff on duty to use corkscrews, which are therefore banished, because they are very dangerous tools, like cutlery and other metal
25 tools.

[0003] Specifically in high-quality wines and drinks the cork or another material of cylindrical shape is required because it seems to be an essential element for the organoleptic qualities of the wine. Rapid opening systems, such as bottles

with a threaded neck for receiving screw caps or other, do not enjoy public favour because by now everybody knows that high-quality wine is characterised by the cork or another material of cylindrical shape pressure-inserted into said bottle.

5 [0004] Where high-quality wine and other drinks are not required, other types of metal or plastic caps of easier opening are accepted. It is furthermore known that the operation of opening a bottle of wine with a cork or another material of cylindrical shape is a complex operation that needs a special corkscrew tool, which is not always available or allowed.

10 [0005] At present there is the substantial recourse to solutions in the sector, sometimes original but not exhaustive and economical, this because they do not yet aim at resorting to a bottle with a non-threaded neck, common for high-quality wine or other drinks, sealed by means of a cork or another material of cylindrical shape pressure-inserted into said bottle, which can be opened
15 manually without the use of tools, such as the corkscrew.

[0006] Therefore, the object of the present invention is a manual uncorking device that integrates a cork for bottles with a non-threaded neck or a cap not of the screw type, without the aid of corkscrews.

[0007] Therefore, one can reasonably state that it is certainly known that the
20 bottle with a non-threaded neck, for high-quality wine and other drinks, mainly uses a cork or another material of cylindrical shape pressure-inserted into the neck of said bottle. Today, equally known is the impossibility of having bottles of high-quality wine and other drinks sealed with a cork or another material of cylindrical shape pressure-inserted into the neck of the bottle on aircrafts,
25 because the current safety and anti-terrorism measures also forbid staff to use corkscrews. Known in high-quality wines and drinks is the cork or another material of cylindrical shape that is required because it seems to be an essential element for the organoleptic qualities of the wine. It is also known that the

rapid opening systems, such as bottles with a threaded neck for receiving screw caps or other, do not enjoy public favour because by now everybody knows that high-quality wine and drinks are characterised by the cork or another material of cylindrical shape pressure-inserted into the bottle. It is also
5 known that where high-quality wine and other drinks are not required, other types of metal or plastic caps, of easier opening, are accepted. It is also known that the operation of opening a bottle of wine with a cork or another material of cylindrical shape is a complex operation that needs a special corkscrew tool, which is not always available or allowed.

10 Prior art

[0008] Research was carried out in the field of the devices of a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew, which, although not in depth, has allowed to find at least the following prior documents:

- 15** D1) US6568549 (B1) - MILLER STEPHEN J
D2) WO03099671 (A1) - GARDNER WILLIAM A
D3) US2001013500 (A1) - GILLEY GIL G
D4) WO2006008095 (A1) - SEIBEL ERNST L
D5) US1131985 (A) - BELLOIS FREDERICK W

20 [0009] D1 represents a cork extraction device that comprises a tubular element having a first open end, a second open end and a peripheral wall having a threaded external surface. The tubular element is placed on an upper end of a bottle. A cover element presents an upper wall and a perimeter wall that extends downwards from the upper wall. The perimeter wall has a threaded
25 internal surface. The cover element can be placed over and coupled by screwing to the tubular element when the cover element is rotated in a first direction. A corkscrew is elongated and has a first end and a second end. A disc is fastened to the first end. The corkscrew is rotated in a second direction such

that the second end extends through the upper wall of the cover element and inside a cork. The cover element is rotated in the second direction and the cork is extracted from the bottle.

5 [0010] D2 represents an apparatus for removing a stopper from a bottle by rotating a threaded capsule surrounding the threaded neck of a bottle. The capsule is preferably received over a narrowed neck of the bottle to maintain the appearance of a foil wrapped and cork-closed bottle. The bottle may be sealed with plugs (natural cork, synthetic cork, moulded plugs), planar seals, or a combination thereof. The capsule may engage the stopper directly or by way
10 of a stopper anchor. Aspects of the invention include preventing uncontrolled egress of stoppers from pressurized bottles, the resealing of various forms of bottles after removal of the stopper, locking the closure in place, and providing evidence of tampering.

15 [0011] D3 represents an apparatus for removing a cork from a bottle in which an anchorage is incorporated in the cork and a cork-pulling sleeve is provided to engage the anchor for the removal of the cork. The cork-pulling sleeve comprises internal threads that couple with external threads on the neck of the bottle, and the rotation of the cork-pulling sleeve with respect to the bottle extracts the cork.

20 [0012] D4 represents an invention that relates to a stopper for sealing a bottle, comprising a sealing body and a cap, on which a connecting pin that engages in the sealing body is formed, the sealing body being elastic in comparison to the cap. The aim of the invention is to facilitate the reliable sealing of the bottle, even after repeated re-sealing, without degrading the
25 contents, whilst retaining a comparatively simple production method and a high degree of freedom in terms of the selection of materials. To achieve this, the cap comprises a mounting for the sealing body with a smaller free cross-section than that of the sealing body. The cap is fixed to the sealing body by means of

a non-positive fit between the connecting pin and the surrounding sealing body and a non-positive fit between the mounting and the sealing body.

[0013] D5 represents a combination with a bottle plug of an easily penetrable material of an indented permanent cap, entirely incorporating the plug and
5 engaging the mouth of the bottle, and a helical projection not rotatably connected inside the cap and extending from it to engage the plug, therefore the rotation of the cap serves to lift the plug in the neck of the bottle.

[0014] In conclusion it is reasonable to consider as known:

a) a cork extraction device that comprises a tubular element having a first open
10 end, a second open end and a peripheral wall having a threaded external surface. The tubular element is placed on an upper end of a bottle. A cover element has an upper wall and a perimeter wall that extends downwards from the upper wall. The perimeter wall has a threaded internal surface. The cover element can be placed over and coupled by screwing to the tubular element
15 when the cover element is rotated in a first direction. A corkscrew is elongated and has a first end and a second end. A disc is fastened to the first end. The corkscrew is rotated in a second direction such that the second end extends through the upper wall of the cover element and inside a cork. The cover element is rotated in the second direction and the cork is extracted from the
20 bottle;

b) an apparatus for removing a stopper from a bottle by rotating a threaded capsule surrounding the threaded neck of a bottle. The capsule is preferably received over a narrowed neck of the bottle to maintain the appearance of a foil wrapped and cork-closed bottle. The bottle may be sealed with plugs
25 (natural cork, synthetic cork, moulded plugs), planar seals, or a combination thereof. The capsule may engage the stopper directly or by way of a stopper anchor. Aspects of the invention include preventing uncontrolled egress of stoppers from pressurized bottles, the resealing of various forms of bottles

after removal of the stopper, locking the closure in place, and providing evidence of tampering;

- 5 c) an apparatus for removing a cork from a bottle in which an anchorage is incorporated in the cork and a cork-pulling sleeve is provided to engage the anchor for the removal of the cork. The cork-pulling sleeve comprises internal threads that couple with external threads on the neck of the bottle, and the rotation of the cork-pulling sleeve with respect to the bottle extracts the cork;
- 10 d) a stopper for sealing a bottle, comprising a sealing body and a cap, on which a connecting pin that engages in the sealing body is formed, the sealing body being elastic in comparison to the cap. The aim of the invention is to facilitate the reliable sealing of the bottle, even after repeated re-sealing, without degrading the contents, whilst retaining a comparatively simple production method and a high degree of freedom in terms of the selection of materials. To achieve this, the cap comprises a mounting for the sealing body with a smaller
- 15 free cross-section than that of the sealing body. The cap is fixed to the sealing body by means of a non-positive fit between the connecting pin and the surrounding sealing body and a non-positive fit between the mounting and the sealing body;
- 20 e) a combination with a bottle plug of an easily penetrable material of an indented permanent cap, entirely incorporating the plug and engaging the mouth of the bottle, and a helical projection not rotatably connected inside the cap and extending from it to engage the plug, therefore the rotation of the cap serves to lift the plug in the neck of the bottle.

Drawbacks

- 25 [0015] Considering what has been stated above and what is of public domain, we would like to point out that the devices of composite cork or another cylindrical material for the manual uncorking of a bottle, without the aid of a corkscrew, essentially concern bottles with a threaded neck having different

lengths and thread pitches with single or multiple threads.

[0016] As it is public domain, we also point out that the devices of composite cork or another cylindrical material for the manual uncorking of a bottle with a non-threaded neck, without the aid of a corkscrew, are realized by means of solutions that sometimes considerably increase the diameter of these devices and with a considerable assembly complexity and always maintaining a metal corkscrew part in the whole invention, which therefore makes these devices not usable in aircrafts. Although significantly resorting to similar solutions in the sector, these are to be considered not exhaustive and economical, and this because in principle they do not yet aim at resorting to a system of composite cork or another sealing cylindrical material without the supply of metal materials, for the manual uncorking of a bottle with a non-threaded neck, without the aid of a corkscrew.

[0017] On the other hand, as for a specifically designed combination of a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew, made in its sealing part of cork or another cylindrical material, which cork or another cylindrical material is coupled to a threaded internal extractor element, made of a non-metallic composite material that is screwed inside an internally threaded external extractor element of containment, which rests and levers on the top of the neck of said bottle as it is manually rotated right or left, with respect to the threaded non-metallic internal extractor element, which is coupled to said cork or another cylindrical material, and extracts said sealing part of cork or another material from the neck of said bottle; similar embodiments or embodiments that suggest its use in patents and in general are not to be found in the prior art. Basically, it can therefore be stated that what has been found in the prior art relates to the use of devices of composite cork or another cylindrical material that are made for bottles with a neck provided with a thread and all also contain metal materials

that, once separated from said devices, can be considered not suitable for the safety of aircrafts.

[0018] Considering what has been mentioned above, there is the need for companies, particularly of the sector, to find alternative solutions, more effective than the currently existing solutions. An aim of the present invention is also to avoid and solve the described drawbacks.

Short description of the invention

[0019] This and other aims are achieved by the present invention according to the characteristics as in the enclosed claims solving the mentioned problems by means of the realization of a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew. Said composite cork and other cylindrical material is made in its sealing part, by means of cork or another material, which cork or other material is coupled in at least two ways to a threaded internal extractor element, made of a non-metallic composite material. Said threaded internal extractor element, along with said cork or other material, is screwed inside an internally threaded cylindrical external extractor element of containment, whose flat lower side rests and levers on the top of the neck of said bottle as it is manually rotated right or left, with respect to said threaded internal extractor element, which is integrally coupled to said cork or other sealing material, and extracts said cork or other sealing material from the neck of said bottle.

Aims and advantages

[0020] In this way, by the considerable creative contribution the effect of which has allowed to obtain a considerable technical progress, some aims and advantages are achieved.

[0021] The first aim of the present invention was to allow the realization of a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew.

[0022] A second aim was the realization of a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew, made in its sealing part, by means of cork or another material, which cork or other material is integrally coupled in at least two ways to a threaded
5 internal extractor element, made of a non-metallic composite material.

[0023] A third aim consisted in realizing said threaded internal extractor element, integrally coupled to said cork or other material, which is screwed inside an open or closed internally threaded cylindrical external extractor element of containment.

10 [0024] A fourth aim consists of the realization of said internally threaded cylindrical external extractor element of containment, whose flat lower part rests and levers on the top of the neck of said bottle, as it is manually rotated right or left, with respect to said threaded internal extractor element, which is integrally coupled to said cork or other sealing material, and extracts said cork
15 or other sealing material from the neck of said bottle.

[0025] These and other advantages will appear from the following detailed description of preferred embodiments with the aid of the enclosed schematic drawings, whose details of execution are not to be considered limitative but only illustrative.

20 **Content of the drawings**

Figures 1, 2, 3 and 4, 5, 6, and 7, 8, 9 are top section assembly views and views of the open and closed state, respectively, for at least three solutions of the parts of the manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew,

25 Figures 10, 11, 12, 13 and 14, 15, 16, 17 are top section assembly views rotated by 90 degrees on the vertical axis, respectively, for at least two solutions of the parts of the manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew.

Practical embodiment of the invention

[0026] The object of the present invention (Figures 1, 2, 3 and 4, 5, 6 and 7, 8, 9 and 10, 11, 12, 13, 14, 15, 16, 17) is a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a
5 corkscrew (10) for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of a corkscrew.

[0027] It is a manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of a
10 corkscrew, made in its sealing part, by means of cork or another sealing material (30), wherein said cork or other sealing material (30) is integrally coupled in at least two ways to a threaded internal extractor element (60, 20), made of a non-metallic composite material.

[0028] Furthermore, a manual uncorking device that integrates a cork for
15 bottles with a non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of corkscrew, made in its sealing part, by means of cork or another sealing material (30), wherein said cork or other sealing material (30) is integrally coupled, in a first way (Figures 1-3), to a threaded internal extractor element
20 (60) (Figures 10-13), provided with a stem (70) that enters a vertical hole (32) provided in said cork or other sealing material (30) and, by means of a horizontal hole (31) in said cork or other sealing material (30) which is corresponding and coaxial to a hole (71) situated in said stem (70) of said threaded internal extractor (60), transversely receives a locking pin (80) in
25 such a way as to integrally join the threaded internal extractor element (60), provided with a stem (70) and the cork or other sealing material (30).

[0029] Manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking

of a bottle (50) with a non-threaded neck, without the aid of a corkscrew, made in its sealing part, by means of cork or another sealing material (30), wherein said cork or other sealing material (30) is integrally coupled, in a second way (Figures 4-6 and 7-9), to a threaded internal extractor element
5 (20) provided with a non-metallic helical self-drilling screw part (22) (Figures 14-17) that is screwed until locking at the centre of the flat top of the cylindrical form of cork or other sealing material (30).

[0030] Said Figures 14-17 show some alternative solutions of the manual uncorking device that integrates a cork for bottles with a non-threaded neck,
10 without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of a corkscrew, made in its sealing part, by means of cork or another sealing material (30), wherein said cork or other sealing material (30) is integrally coupled in a second way to a threaded internal extractor element (20) provided with a non-metallic helical self-drilling
15 screw part (22) that is screwed until locking at the centre of the flat top of the cylindrical form of cork or other sealing material (30) by means of various female seats (21, 23) made in correspondence of the head of said threaded internal extractor element (20), such as a female seat for a flat head screwing tool (21) or a female seat for a hexagonal head screwing tool (23), for the
20 purpose of allowing a rapid series assembly.

[0031] Manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of a corkscrew, wherein said threaded internal extractor element (60, 20), integrally coupled to
25 said cork or other sealing material (30), is screwed inside an external extractor element of containment (11, 16) provided with an internal thread (12) and a cylindrical containment chamber (13).

[0032] Manual uncorking device that integrates a cork for bottles with a non-

threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with a non-threaded neck, without the aid of a corkscrew, wherein said external extractor element of containment (11, 16) is provided with an internal thread (12) and with a cylindrical containment chamber (13),

5 rests and levers with its flat lower part (15) on the top of the non-threaded neck of the bottle (40), while said external extractor element of containment (11, 16) is rotated manually by means of a right or left rotation (14), with respect to said threaded internal extractor element (60, 20), integrally coupled to said cork or other sealing material (30), and extracts by a tensile force by

10 means of the rotation of said external extractor element of containment (11, 16) said cork or other sealing material (30) from the top of the non-threaded neck of the bottle (40), inserting it, in a first closed embodiment of the present invention, with the external extractor element of containment (11), into the containment chamber (13), as shown in Figures 2, 3 and Figures 5, 6

15 or extracting it also completely in a second embodiment of the present invention in an open solution, with the external extractor element (16) open, as shown in Figures 8, 9.

[0033] The embodiments represented in the drawings are purely illustrative and not exhaustive.

20

Reference

- (10) manual uncorking device that integrates a cork for bottles with a non-threaded neck, without the aid of a corkscrew
- (11) external extractor element of containment
- 25 (12) internal thread
- (13) cylindrical containment chamber
- (14) right or left rotation
- (15) flat lower part

- (16) open external extractor element
- (20) threaded internal extractor element
- (21) female seat for a flat head screwing tool
- (22) helical self-drilling screw
- 5** (23) female seat for a hexagonal head screwing tool
- (30) cork or another material
- (31) horizontal hole
- (32) vertical hole
- (40) top of the non-threaded neck of the bottle
- 10** (50) bottle
- (60) threaded internal extractor element
- (70) stem
- (71) hole
- (80) locking pin as shown in Fig. 9
- 15**

CLAIMS

1. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with non-threaded neck, without the aid of
5 corkscrew, realized in its sealing part, by means of cork or other sealing material (30), **characterized in that** said cork or other sealing material (30) is integrally coupled to an internal threaded extractor element (60, 20), said internal threaded extractor (60, 20) being made of non-metallic composite material.
- 10 2. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with non-threaded neck, without the aid of corkscrew, realized in its sealing part, by means of cork or other sealing material (30), according to claim 1, **characterized in that** said cork
15 or other sealing material (30) is integrally coupled to an internal threaded extractor element (60), equipped with a stem (70) that can be slipped in the vertical hole (32) provided in said cork or other sealing material (30) and, through a horizontal hole (31) in said cork or other sealing material (30) which is corresponding and coaxial with a hole (71)
20 formed in said stem (70) of said internal threaded extractor (60), so as to receive a locking pin transversely (80) and in such a way as to make integrally joined the internal threaded extractor (60) , equipped with a stem (70) with the cork or other sealing material (30).
- 25 3. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual

uncorking of a bottle (50) with non-threaded neck, without the aid of corkscrew, realized in its sealing part, by means of cork or other sealing material (30), according to claim 1 **characterized in that** said cork or other sealing material (30), is coupled integrally, to an internal threaded
5 extractor element (20) provided by a part of self-tapping screw helix (22) non-metallic which gets screwed up to locking, in the center of the flat top of the cylindrical shape of cork or other sealing material (30).

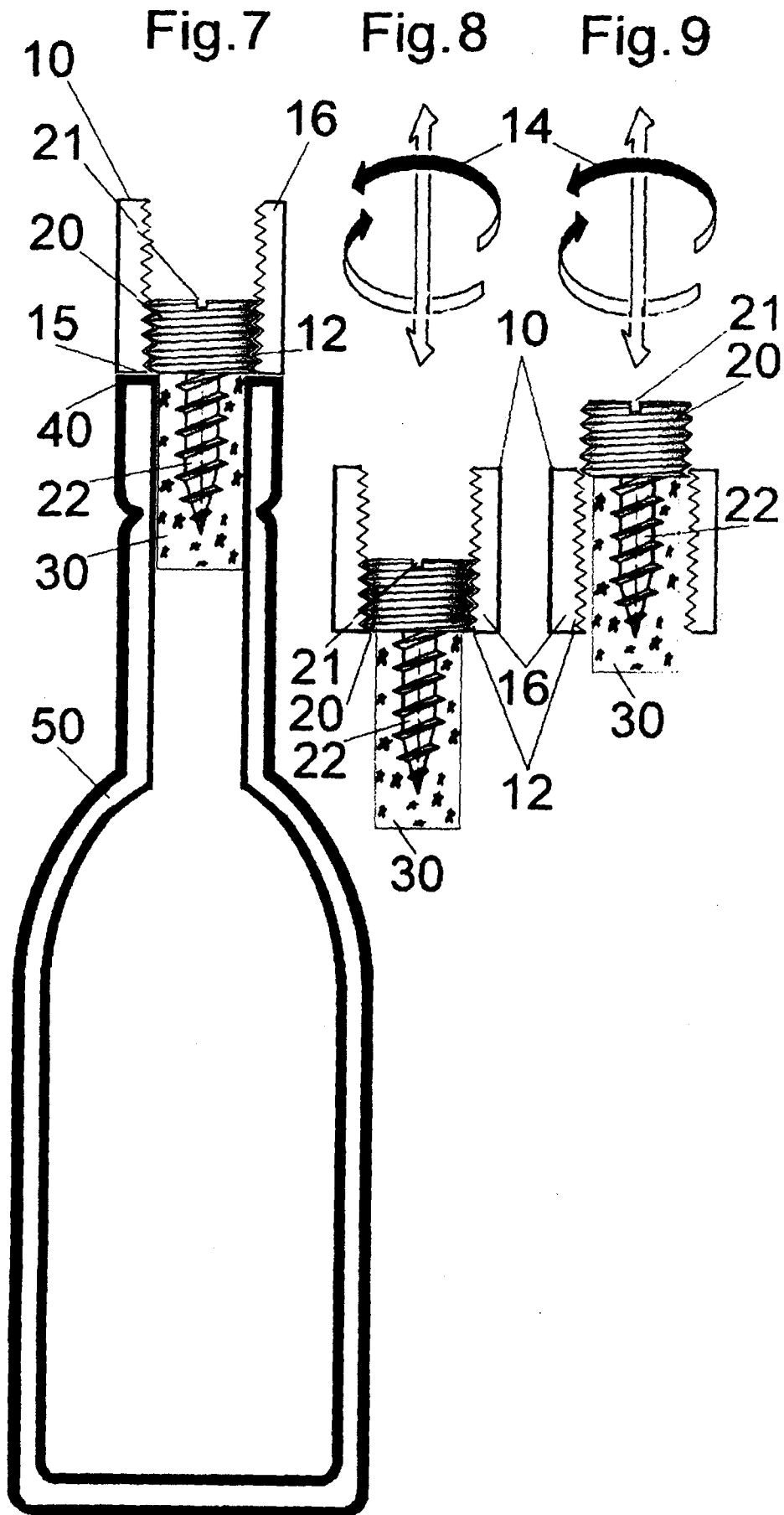
4. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual
10 uncorking of a bottle (50) with non-threaded neck, without the aid of corkscrew, realized in its sealing part, by means of cork or other sealing material (30), according to claims 1 and 3, **characterized in that** said cork or other sealing material (30) is integrally coupled, in a second manner, to an internal threaded extractor element (20) provided by a
15 part of self-tapping screw helix (22) non-metallic which gets screwed up to locking, in the center of the flat top of the cylindrical shape of cork or other sealing material (30) by means of female seats (21, 23) obtained in the head of said internal threaded extractor element (20), these seats (21, 23) being female seats for a flathead screwdriver tool
20 (21) alternatively a female seat for a hex wrench tool (23), in such way so to allow a rapid assembly in series.

5. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual
uncorking of a bottle (50) with non-threaded neck, without the aid of
25 corkscrew, realized in its sealing part, by means of cork or other sealing

material (30), according to claims 1, 3 and 4 **characterized in that** said external extractor element of containment (11) is provided with internal thread (12) and of a cylindrical containment chamber (13), stands and does leverage on the flat top (15) of the non-threaded neck of the bottle (40), while said external extractor element of containment (11) is rotated manually by means of clockwise or anticlockwise rotation (14), with respect to said internal threaded extractor element (60, 20), integrally coupled to said cork or other sealing material (30), and extracts with traction force by rotation of said external extractor element of containment (11), said cork or other sealing material (30) , from the top of the non-threaded neck of the bottle (40), inserting it into the containment chamber (13).

6. Manual uncorking device that integrates a cork for bottles with non-threaded neck, without the aid of a corkscrew (10), for the manual uncorking of a bottle (50) with non-threaded neck, without the aid of corkscrew, realized in its sealing part, by means of cork or other sealing material (30), according to the 1, 3 and 4, **characterized in that** said open external extractor element (16) is provided with internal thread (12), stands and does leverage on the flat top (15) of the non-threaded neck of the bottle (40), while said open external extractor element (16) is rotated manually by means of clockwise or anticlockwise rotation (14), with respect to said internal threaded extractor element (60, 20), integrally coupled to said cork or other sealing material (30), and extracts with traction force by rotation of said open external extractor element (16), said cork or other sealing

material (30), from the top of the non-threaded neck of the bottle (40), extracting it out completely at sight.



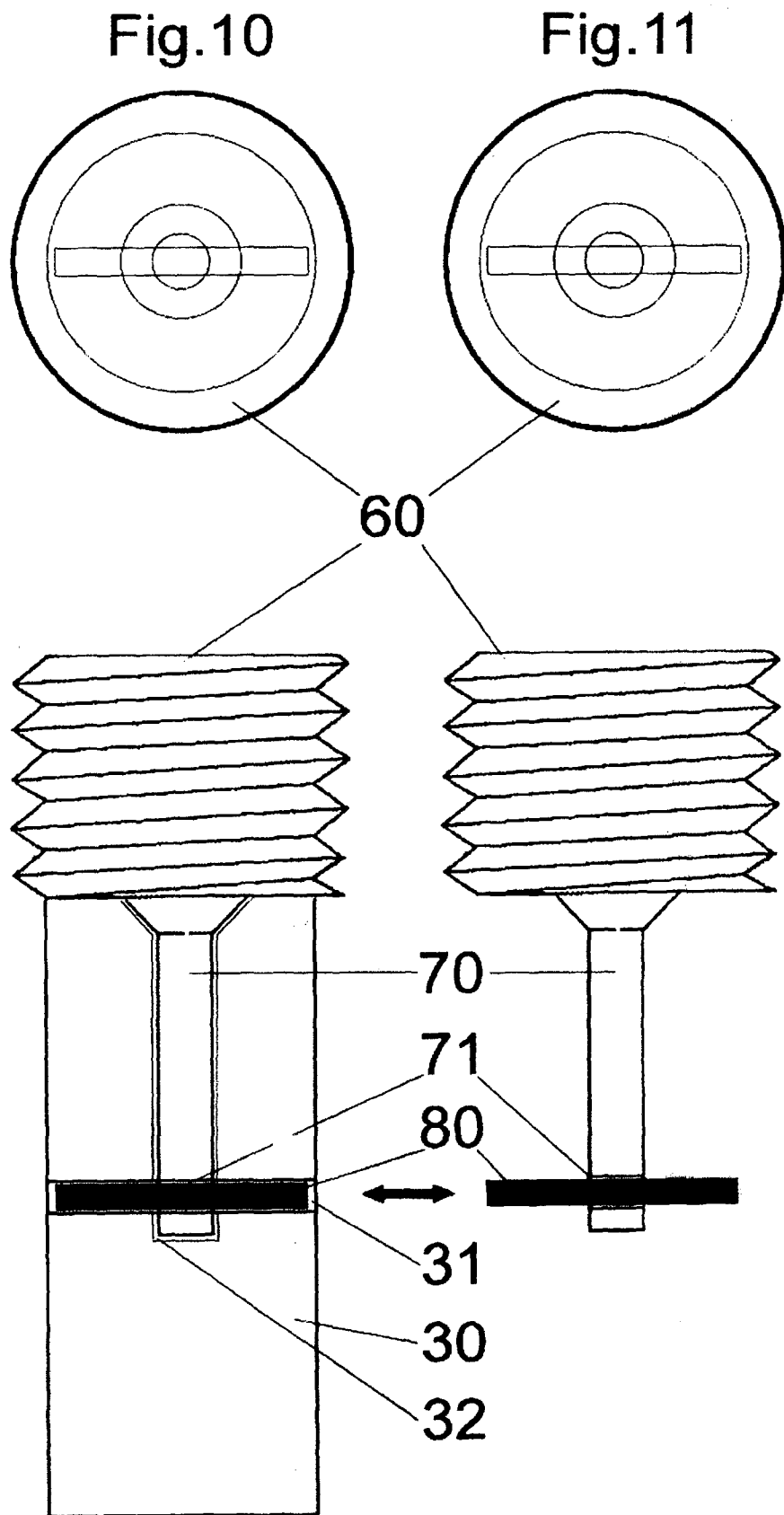


Fig.12

Fig.13

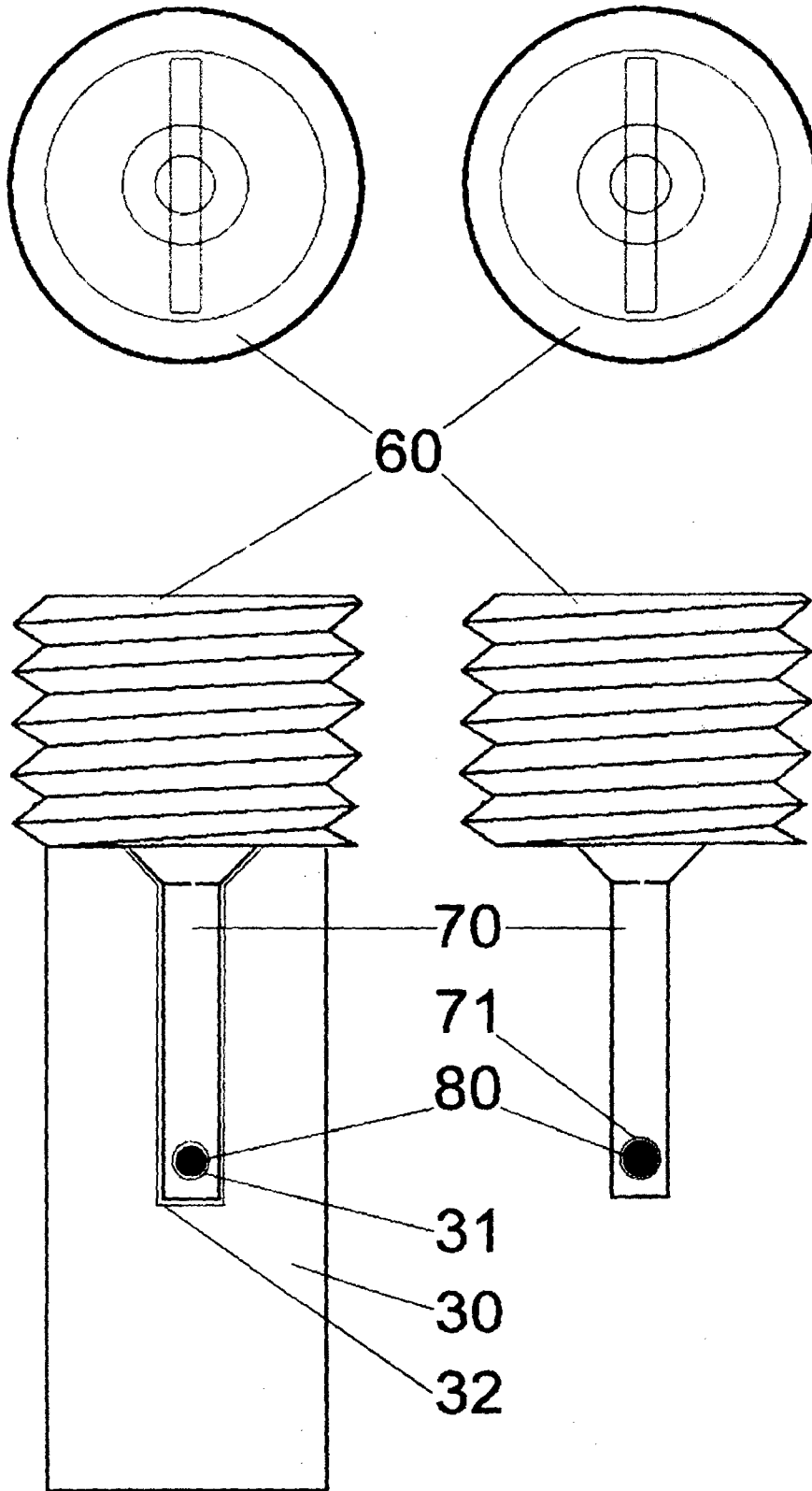


Fig.14

Fig.15

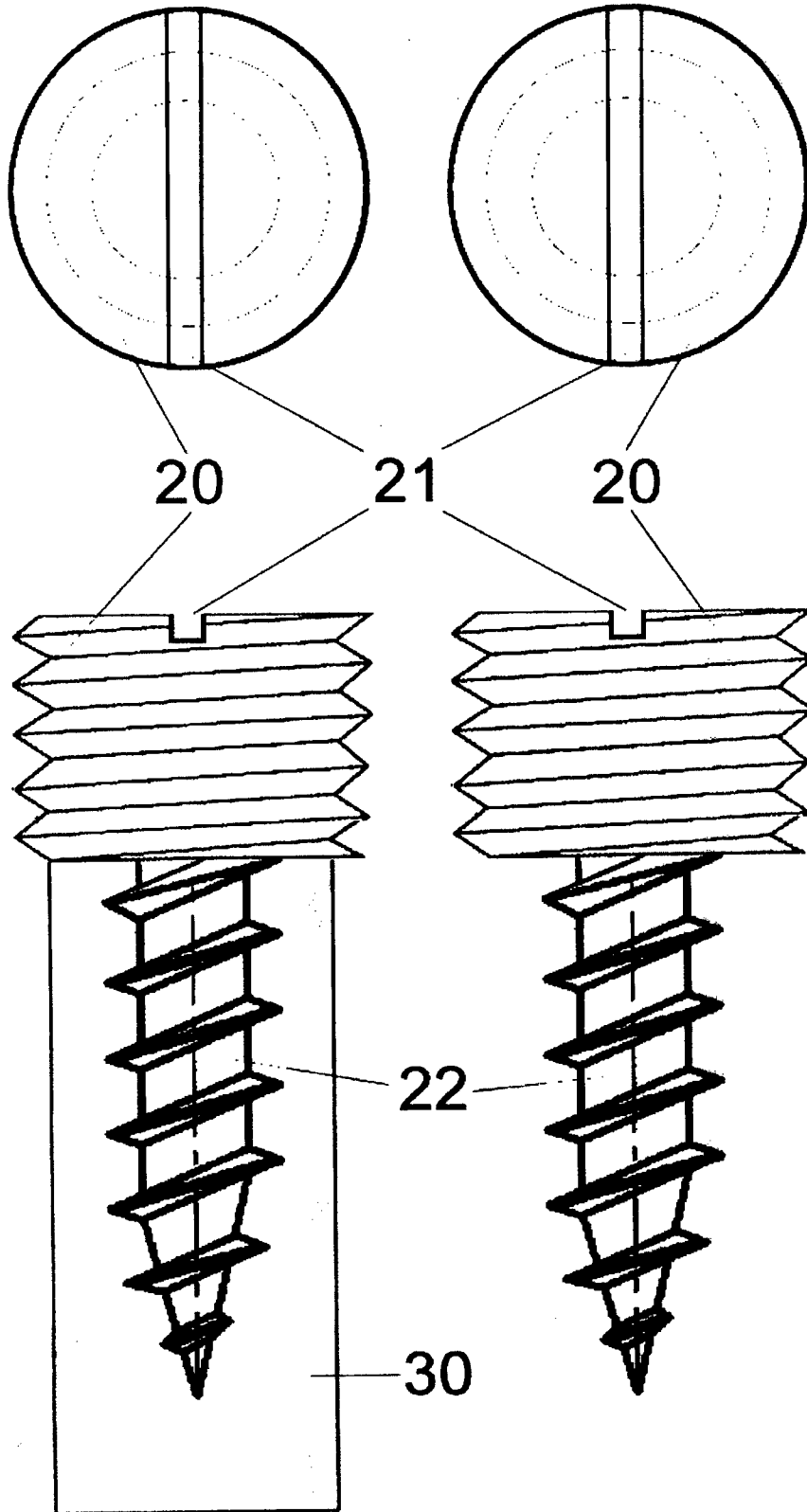
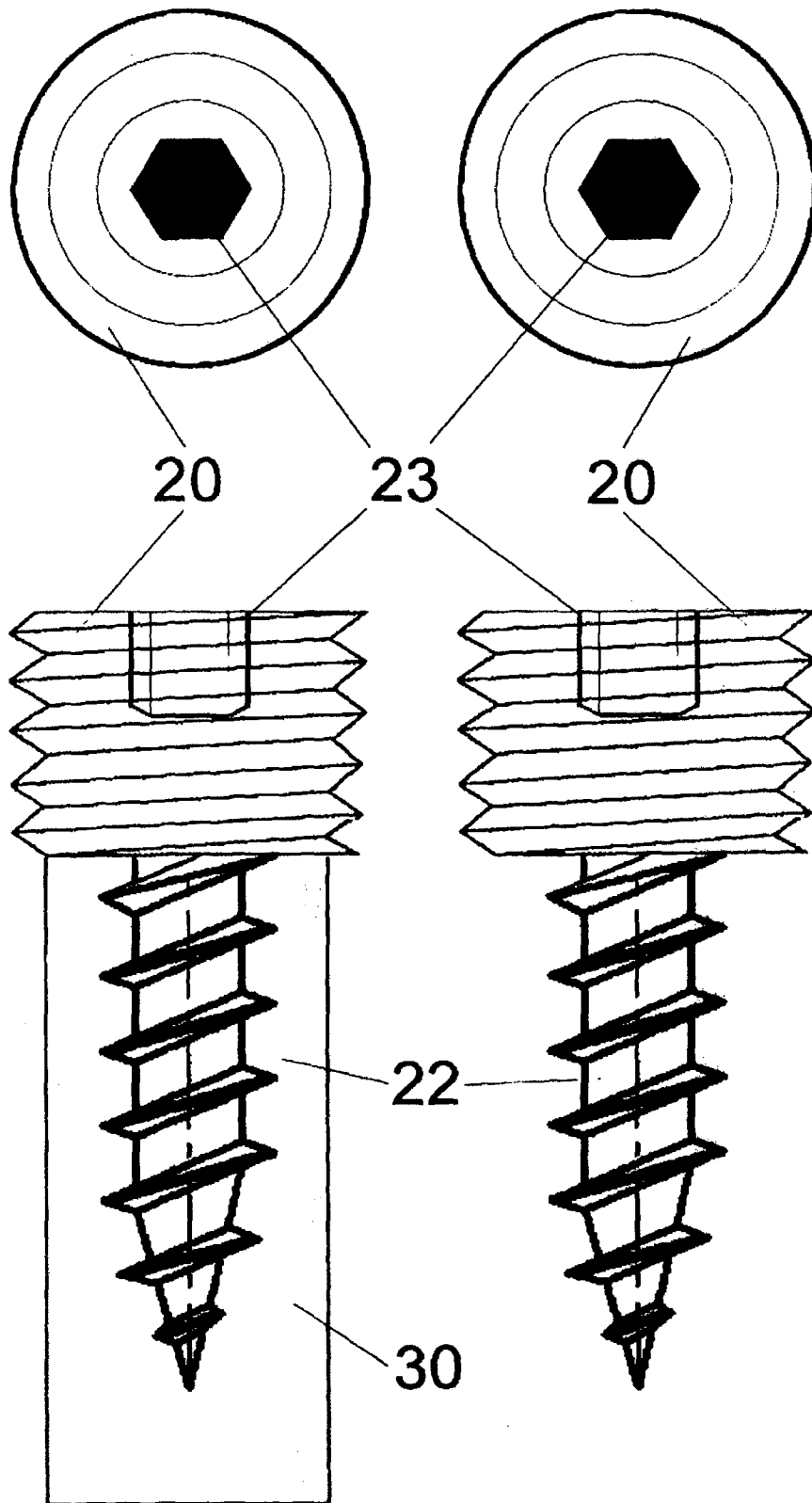


Fig.16

Fig.17



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/000436

A. CLASSIFICATION OF SUBJECT MATTER
 INV. B67B7/06 B65D39/16
 ADD.
 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)
 B67B B65D

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 568 549 B1 (MILLER STEPHEN J [AU]) 27 May 2003 (2003-05-27)	1,3-5
Y	figures 1-2 column 4, line 7 - column 5, line 7	2
X	WO 2004/099021 A1 (MORANDI EZIO [IT]) 18 November 2004 (2004-11-18)	1-6
	figures 1-5C page 2, line 4 - page 3, line 18	
X	WO 2006/077603 A1 (MORANDI EZIO [IT]) 27 July 2006 (2006-07-27)	1
	figures 1,3 page 2, line 18 - page 4, line 25	
Y	CH 241 196 A (BOHABOJ WENZEL [CZ]; LEHMANN AMBROS DIPL ING [CZ]) 28 February 1946 (1946-02-28)	2
	figures 1-3	

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 27 June 2013	Date of mailing of the international search report 26/07/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Pardo, Ignacio
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2013/000436

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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			WO 03018462 A1

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			WO 2004099021 A1

WO 2006077603	A1	27-07-2006	NONE

CH 241196	A	28-02-1946	NONE
