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(54) Corkscrew with height-adjustable supporting plate for the bottle

(57) A bottle uncorking apparatus comprises: an uncorking unit (2) having a holding mouth (3) for the upper end of a bottle (4) provided with a cork (4a) to be pulled out, a guide bar (8) to be fixedly positioned relative to the uncorking unit (2) and close thereto, a base (17) , a slider (14) supporting said base (17) and slidable on the guide bar (8) parallelly of a trajectory (18) passing through the base (14) and the holding mouth (3), translation means (19) supported by the guide bar (8) and adapted to translate the slider (14) towards the holding mouth (3), and operating members (20) to be manually actuated against the action of the translation means (19) in a manner adapted to position the base (17) along said trajectory (18).

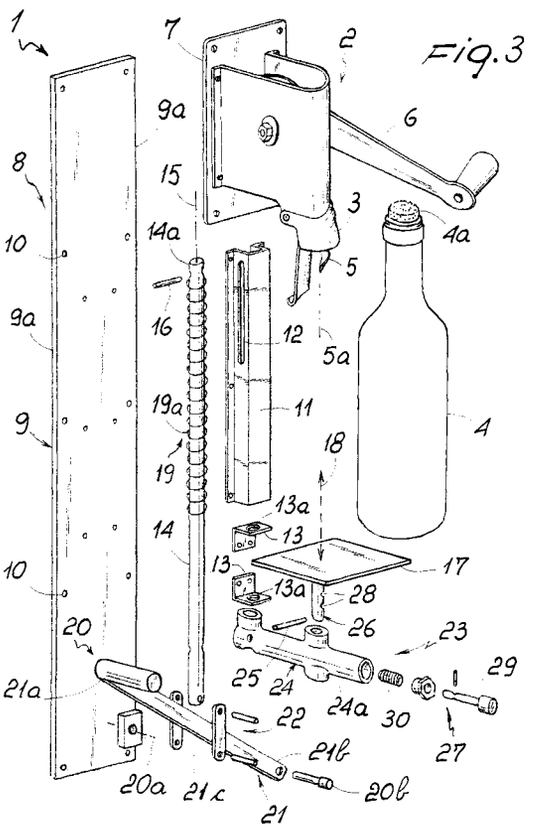

Fig.3

EP 0 997 431 A1

Description

[0001] The invention relates to a bottle uncorking apparatus for restaurants, bars and the like, of the type defined in the preamble of the appended claim 1, capable of easily and readily pulling out corks or stoppers from bottles, flasks, large bottles. It is known that presently there are different means for uncorking bottles and the like, going from the completely manual means of occasional use to the more professional means, typically fastened to a wall and employed in premises where bottle-opening work is more frequent.

[0002] The last mentioned means consists of bottle uncorking units utilised through two specific members; a drive lever by rotation of which a spiral puller to be fitted into the cork is moved in an appropriate manner and a holding mouth into which the upper end of a bottle or the like with its cork fitted therein is to be inserted. The weak point in use of these bottle uncorking units resides in the effort to be exercised with one hand for supporting the bottle and keeping it fitted in the holding mouth, whereas with the other hand said drive lever is actuated as shown in **Fig. 1**.

[0003] In fact the effort is of such a degree that female staff is practically unable to carry out these operations and above all this effort becomes too heavy when a great number of bottles are to be uncorked quickly and while somebody is waiting.

[0004] A typical case is that of convivial meetings for marriages: on these occasions, a restaurateur must uncork dozens of bottles with great rapidity. The cork pulling out operations become then more difficult if bottles are externally moist and/or if they have been stored in a refrigerator, as in the case of white wines, which will give rise to stiffening of the corks.

[0005] In these cases it is difficult to counteract the downward stroke exerted by the spiral puller operated by the drive lever, and bottles can slip out of the hand holding them, as can be understood from Fig. 1.

[0006] Therefore, the spiral puller does not succeed in entering the cork in an appropriate or correct manner, so that often said cork is not sufficiently pulled out of the bottle, or tends to break , which will jeopardise a subsequent attempt to withdraw it and at all events will greatly slow down uncorking operations. Briefly, the present art supplies efficient uncorking units adapted to bottles of all sizes, but substantially does not solve the above mentioned users' problems connected with bottle support.

[0007] Under this situation, the technical task underlying the present invention is to devise a bottle uncorking apparatus capable of obviating the drawbacks of the prior art.

[0008] Within the scope of this technical task it is an important aim of the invention to devise a bottle uncorking apparatus capable of enabling precise and careful uncorking operations to be carried out without any important effort being required during all steps involved in pulling out corks, and therefore capable of allowing a prolonged use of the apparatus itself.

[0009] Another important aim of the invention is to devise a bottle uncorking apparatus of the universal type, i.e. adapted to bottles, flasks and large bottles of different sizes and also adapted for use of uncorking units of various types. The technical task mentioned and the aims specified are attained by a bottle uncorking apparatus for restaurants, bars and the like, as claimed in claim 1. Preferred embodiments of the invention are set forth in the appended subclaims.

[0010] Details and advantages of the invention are highlighted by the following description given with reference to the accompanying drawings, in which:

- **Fig. 1** diagrammatically shows the efforts to be made for uncorking a bottle, when said bottle is supported manually;
- **Fig. 2a** is a partial diagrammatic front view of an embodiment of the apparatus in accordance with the invention;
- **Fig. 2b** is a partial diagrammatic front view of another embodiment of the apparatus of the invention;
- **Fig. 3** is an exploded view in detail of the apparatus shown in Fig. 2a, with a bottle to be uncorked;
- **Fig. 4** is a front view of the apparatus shown in Fig. 3, at two work positions, one of which is in chain line;
- **Fig. 5** is a sectional side view of the apparatus shown in Fig. 4, the maximum-lifting and maximum-lowering positions of the bottle-supporting base being shown in chain line;
- **Fig. 6** is a sectional side view of the apparatus shown in Fig. 2b; and
- **Fig. 7** is a front view of a detail in Fig. 6.

[0011] With reference to the drawings, the apparatus in accordance with the invention is generally identified by reference numeral 1.

[0012] It comprises an uncorking unit 2 provided with a holding mouth 3 adapted to receive the upper end of a bottle 4 or the like, provided with a cork 4a to be pulled out.

[0013] The uncorking unit 2 is known per se and can be of any type, on the condition that it is provided with the holding mouth 3. In the example shown the uncorking unit has a spiral or helix puller 5 defining a work axis 5a. The spiral puller 5 is operated in a manner known per se by a drive lever 6 and the uncorking unit 2 is then provided with a plaque 7 enabling fastening thereof.

[0014] In apparatus 1, plaque 7 is mounted on a fixed guide bar 8 comprising a plate 9 having a major extension direction substantially defined by vertically-disposed main edges 9a,

[0015] Said extension direction is substantially parallel to the work axis 5a located in the middle of the spiral puller 5.

[0016] The guide bar 8 then has elements for wall attachment 10 and a box-shaped case 11 extending pipe-

like, which is fastened to plate 9 and positioned parallelly of the major extension direction of the plate 9 itself and the work axis 5a. Practically, the uncorking unit is fastened to plate 9 at the upper edge thereof.

[0017] Referring now in particular to the embodiment shown in Figs 2a, 3, 4, 5, it is to be pointed out that the box-shaped case has its upper end, which is close to the uncorking unit 2, provided with side slots 12a, whereas the opposite end in the particular example shown faces a pair of angle brackets 13 provided with holes 13a, which are fastened to plate 9 too.

[0018] A slider 14 is at least partly and slidably inserted in the box-shaped case 11; it has a main extension direction with the respective central axis 15 parallel to the work axis 5a.

[0019] In the embodiment shown in Figs. 2a, 3, 4, 5 slider 14 is a rod 14a of circular section passed through by holes 13a. Rod 14a has an upper end passed through by a peg 16 projecting from the rod itself to be fitted into the side slots 12a, and a lower end projecting beyond holes 13a.

[0020] Apparatus 1 further comprises a base 17 connected to rod 14a through a crosspiece 24 and consisting of a platform to be engaged by contrast with the lower end or bottom of a bottle 4, at an opposite position relative to said upper end provided with a cork.

[0021] Base 17 is movable relative to the guide bar 8, together with rod 14a, along a trajectory 18 extending in a direction approaching the holding mouth 3. In the embodiment shown trajectory 18 is a direction of movement of base 17 substantially parallel to the work axis 5a.

[0022] Translation means 19 and operating members 20 are arranged for displacement of base 17. The translation means 19 is active in the direction of the holding mouth 3 and comprises at least one helical compression spring 19a wound up on rod 14a and placed inside the box-shaped case 11, between peg 16 and an angle bracket 13. Spring 19a is preferably selected of a rather stiff type, so that it may be adapted to counteract both the weight of base 17 with a bottle 4, and the downward thrust of the spiral or helix puller 5 of the uncorking unit 2, when the drive lever 6 is lowered.

[0023] The operating members 20 can be actuated manually against the action of the translation means 19 and comprise an operating bar 21 rotating about a rotation axis 20a defined by a pivot 20b.

[0024] In Figs. 2a, 3, 4, 5, the rotation axis 20a passes through plate 9 perpendicularly thereof at an offset position relative to rod 14a, and the operating bar 21 is a second class lever extending between a handle section 21a and a pivoting section 21b where the rotation axis 20a is provided.

[0025] Between the handle section 21a and pivoting section 21b the operating bar 21 has an intermediate section 21c articulated on rod 14a. The intermediate section 21c is close to the pivoting section 21a, to define a very advantageous lever.

[0026] In addition, in order to avoid jamming, the operating bar 21 is movable in a plane including the central axis 15 of rod 14a. Furthermore, it is articulated relative to rod 14a through a connecting-rod connection 22.

[0027] Also provided is means 23 for adjustment of the position of base 17 relative to rod 14a. This adjustment means 23 is disposed close to said crosspiece 24 which is fastened to rod 14a by means of a plug 25. It comprises a stem-like element 26 integral with base 17 and passing through the crosspiece 24 which is preferably defined by a sleeve 24a, and elements 27 for snap locking of the stem-like element 26.

[0028] The stem-like element 26 is substantially parallel to rod 14a and provided with a series of cavities 28 to be engaged by the snap locking elements 27. The last-mentioned elements are partly located in sleeve 24a and comprise a stud 29 to be fitted into one of cavities 26 and adapted to be disengaged against the action of a spring 30.

[0029] The adjustment means 23 can be omitted and actually in Fig. 2a base 17 is substantially fixed to crosspiece 24.

[0030] Shown in Figs. 2b, 6 and 7 is another embodiment of the apparatus of the invention. In this embodiment the apparatus still has a base 17 connected with the guide bar 8 and movable along trajectory 18, means 19 for translation of base 17 towards the holding mouth 3 and operating members 20 to be actuated against the action of the translation means 19.

[0031] In addition, base 17 is still supported by a slider 14, partly housed in a slidable manner in the box-shaped case 11 and the translation means 19 still comprises a helical spring 19a active on slider 14, and the operating members 20 to be manually operated by means of the operating bar 21 are also active on slider 14, In more detail, the box-shaped case 11 slidably houses a slider 14 defined by a tubular post 14b and in addition has a single front slot 12b.

[0032] Fitted in the front slot 12b is a crosspiece 24 defined by a threaded pin 24b fastened on one side to the tubular post or slider 14b and on the other side to base 17. The translation means 19 has a helical compression spring 19a placed within the tubular post 14b and wound up on a threaded element 31 provided with a head 31a. The threaded element 31 slidably passes through the upper end of the tubular post 14b and is secured to the top of the box-shaped case 11 by means of a nut 31b.

[0033] Spring 19a is thus enclosed between the upper end of the tubular post 14b and the head 31a of the threaded element 31. Spring 19a wound up on the threaded element 31 preferably has a lower resistance to compressive stress than the spring wound up around rod 14a.

[0034] For instance, the spring stiffness is such selected that it substantially balances the weight of base 17 and a bottle 4 placed on the base, but not the downward thrust action of the uncorking unit 2 when the drive

lever 6 is operated for pulling cork 4a out.

[0035] The operating members 20 have the operating bar 21 fitted on the threaded pin 24b and rotating thereon. At the threaded pin 24b the operating bar 21 is in engagement with an expanded body 32 provided with a disc-shaped element 33 having a greater radial width than the front slot 12b.

[0036] In addition, the expanded body 32 is movable for screwing down on the threaded pin 24b. Practically, a rotation of the operating bar 21 in the screwing direction of the expanded body 32 gives rise to locking of the box-shaped case 11 between the tubular post 14b and disc-shaped element 33.

[0037] Figs. 2b and 7 show a particular structure of the expanded body 32, in a front view.

[0038] The expanded body 32 in fact has a plurality of radial threaded holding mouths 32a for fitting of the operating bar 21 therein, which bar is threaded as well. The holding mouths 32a that are not engaged by the operating bar 21 are closed by covering screws 34.

[0039] Operation of apparatus 1 is as follows.

[0040] When uncorking of a bottle or the like is required, it is first of all necessary to position said bottle between base 17 and the holding mouth 3. This is achieved by getting hold of the operating bar 21 and driving slider 14 more or less downwards, against the action of the compression spring 19a.

[0041] In the instance shown in Fig. 2a, such an operation takes place by partial rotation of the operating bar 21 around the rotation axis 20a. Being the arm of the operating bar 21 very favourable for an operator, displacement of slider 14 is made easy even in the presence of a relatively stiff spring 19a.

[0042] In the example in Fig. 2b such an operation takes place by rotating and pulling the operating bar 21 downwards. This operation can be in this case made easier by selecting a low-strength spring 19a.

[0043] Slider 14 moves downwards as much as allowed by the side slots 12a or the front slot 12b and lowering of the slider causes base 17 to move downwards thereby creating the necessary space for insertion of bottle 4 or the like between the holding mouth 3 and base 17.

[0044] Stabilisation of bottle 4 to this position merely takes place by releasing the operating bar 21 and enabling lifting of base 17.

[0045] In the embodiment in Figs. 2a, 3, 4, 5 all movements of the operating bar 21 are made easier by the presence of a connecting-rod connection 22 co-ordinating movements of the operating bar 21 and slider 14, thereby avoiding jamming. In the embodiment in Figs. 2b, 6 and 7 the optimal position of the operating bar 21, from the point of view of its efficiency and comfortable use in operation, is merely obtained by selecting the most appropriate holding mouth 32a in the expanded body 32.

[0046] If a prolonged use leads to modify the screwing modalities, it is always possible to modify the position of the operating bar 21 by varying its attachment to the expanded body 32.

[0047] If the bottle has very reduced sizes or on the contrary is very big, as compared with common bottles approximately having a one litre capacity, position of base 17 can be previously displaced.

[0048] For performing this operation use of the adjustment means 23 is needed: tensioning of stud 29 must be carried out so that the stem-like element 26 is set free, then it is necessary to position said stem again and release the stud, thereby enabling insertion of the stud itself into a cavity 28.

[0049] Once the position of bottle 4 has been stabilised, in the embodiment in Fig. 2 a no other operation is required for final locking of the bottle itself: the spring, which must possibly be selected of a stiff type, is sufficient to keep the bottle immobile during the uncorking operations.

[0050] In the embodiment in Fig. 2b, on the contrary, rotation of the operating bar 21 is required in the direction leading the expanded body 32 to be screwed down on the crosspiece 24 defined by a threaded pin 24b. In this way position of slider 14 is completely locked and all movements of bottle 4 are inhibited.

[0051] Therefore, the drive lever 6 of the uncorking unit 2 can be operated in full freedom. This lever in known manner operates the spiral or helix puller 5 which penetrates through the cork 4a and then moves upwardly pulling the cork out. When uncorking is over the drive lever 6 is left free and the operating lever 21 is operated again so as to displace base 17 and release bottle 4 that can be grasped and removed.

[0052] The invention achieves important advantages.

[0053] In fact, while a simple apparatus utilising known uncorking units has been provided, the technical problem of reducing the operators' efforts has been completely solved, as well as that of maintaining the bottles to a steady position during uncorking.

[0054] As a matter of fact, it is well apparent that operators do not make any effort for bottle support during the uncorking operations: once bottle 4 has been positioned, they can concentrate their attention on the drive lever 6 of the uncorking unit 2.

[0055] Steady positioning of the bottles between the holding mouth 2 and base 17 is then of quick accomplishment and with very reduced or substantially zero efforts.

[0056] In fact, if the solution in Figs. 2a and 3 to 5 is adopted, the effort is very reduced because the operating bar 21 acts on slider 14 against spring 19a, with a wide lever arm in favour of the operator. In addition, the operator's action on the bar is carefully synchronised with the movements of slider 14 by means of the connecting-rod connection 22.

[0057] The operator's effort however cannot be almost zero, in spite of the strong advantage of the lever, since steadiness in the uncorking position preferably completely relies on spring 19a which therefore must

have some stiffness. On the contrary, in the instance shown in Figs. 2b, 6, 7, the operator's effort can be almost zero and spring 19a can be only provided for supporting base 17 when it is clear of a bottle, since steadiness in the uncorking position is achieved by a screwing action of the expanded body 32, through the operating bar 21.

[0058] Screwing down appears as an additional operation, but it can be greatly facilitated by positioning the operating bar 20 in the holding mouth 32a of the expanded body 32 which is placed in a vertical direction and turned downwards, as in Fig. 2b, when screwing down is about to start or has been just completed. Then, in view of achieving a complete locking, a short rotation of the bar, for reaching the position in Fig. 7 for example, is sufficient.

[0059] In addition, with the apparatus of the invention, the cork removal operations are not limited or conditioned by the sizes of the bottles and the like. In fact, the natural adaptability of the compression spring is combined with the possibility of carrying out immediate adjustment of the position of the bottle base.

Claims

1. A bottle uncorking apparatus for restaurants, bars and the like, comprising an uncorking unit (2) having a holding mouth (3) adapted to house an upper end of a bottle (4) or the like having a cork (4a) to be pulled out, characterised in that it comprises:

- a guide bar (8) to be fixedly positioned relative to said uncorking unit (2) and close thereto,
- a base (17) connected with said guide bar (8) and movable relative to said uncorking unit (2) along a trajectory (18) extending in alignment with said holding mouth (3), said base (17) being adapted to be a rest for a lower end of said bottle (4) opposite to said upper end closed by said cork (4a),
- translation means (19) supported by said guide bar (8) and adapted to translate said base (17) towards said holding mouth (3), along said trajectory (18), and
- operating members (20) to be manually operated against said translation means (19) in a manner adapted to position said base (17) relative to said holding mouth (3), along said trajectory (18).

2. An apparatus as claimed in claim 1, wherein provision is made for a slider (14) supporting said base (17) and slidable along said guide bar (8) parallelly of said trajectory (18), and wherein said translation means (19) is active on said slider (14).

3. An apparatus as claimed in claim 2, wherein said guide bar (8) comprises a box-shaped case (11) extending parallelly of said trajectory (18), and wherein said slider (14) is at least partly and movably housed in said box-shaped case (11).

4. An apparatus as claimed in claim 3, wherein said translation means (19) comprises at least one helical spring (19a) placed within said box-shaped case (11) and extending parallelly of said slider (14).

5. An apparatus as claimed in claim 2, wherein said slider (14) and base (17) are jointed to each other by a crosspiece (24) extending transversely of said slider (14) and fastened thereto.

6. An apparatus as claimed in claim 2, wherein provision is made for means (23) for adjusting the position of said base (17) relative to said crosspiece (24).

7. An apparatus as claimed in claim 6, wherein said adjustment means (23) comprises a stem-like element (26) integral with said base (17) and substantially parallel to said trajectory (18), and elements (27) for snap locking of said stem-like element (26) with respect to said crosspiece (24).

8. An apparatus as claimed in claim 2, wherein said operating members (20) are active on said slider (14) and comprise an operating bar (21) connected with said slider (14) and extending between a rotation axis (20a) and a handle section (21a) to be manually grasped.

9. An apparatus as claimed in claim 8, wherein said slider (14) is articulated on an intermediate section (21c) of said operating bar (21), said intermediate section being included between said handle section (21a) and rotation axis (20a), and wherein said intermediate section (21c) is close to said rotation axis (20a) in a manner adapted to define a very advantageous second-order lever.

10. An apparatus as claimed in claim 9, wherein said translation means (19) comprises at least one helical spring (19a) having a stiffness adapted to resist thrusts from said uncorking unit (2) during pulling out of a cork (4a).

11. An apparatus as claimed in claim 9, wherein said intermediate section (21c) is articulated on said slider (14) through a connecting-rod connection (22).

12. An apparatus as claimed in claim 9, wherein said slider (14) has a central axis (15) parallel to said trajectory (18), and wherein said intermediate section (21c) is movable in a plane passing through said central axis (15).

13. An apparatus as claimed in claim 2, wherein said slider (14) is a rod (14a) of substantially circular section, and wherein said translation means (19) comprises a compression spring (19a) wound up on said rod (14a).

14. An apparatus as claimed in claim 5, wherein said crosspiece (24) is a threaded pin (24b) fixedly engaged with said slider (14).

15. An apparatus as claimed in claims 8 and 14, wherein said operating bar (21) is pivotally mounted to said threaded pin (24b) and rotates for screwing down thereon, and wherein said slider (14) can be locked against the action of said guide bar (8) by screwing down of said operating bar (21).

16. An apparatus as claimed in claim 15, wherein said translation means (19) comprises at least one helical spring (19a) having a stiffness substantially proportioned to the weight of said base (17) and a bottle (4) resting on the base (17) itself.

17. An apparatus as claimed in claim 15, wherein said operating bar (21) has an expanded body (32) at said threaded pin (24b).

18. An apparatus as claimed in claim 17, wherein said expanded body has a plurality of radial holding mouths (32a) for said operating bar (21).

19. An apparatus as claimed in claim 2, wherein said slider (14) is a tubular post (14b), and wherein said translation means (19) comprises at least one compression spring (19a) placed within said tubular post (14b).

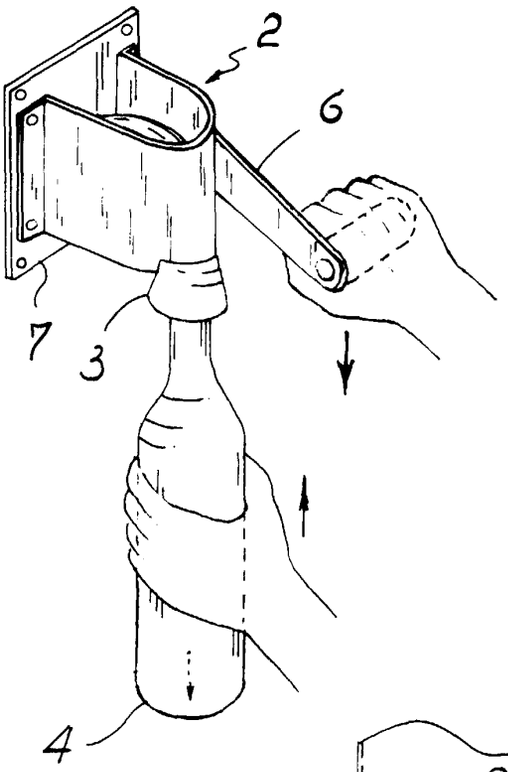

Fig.1

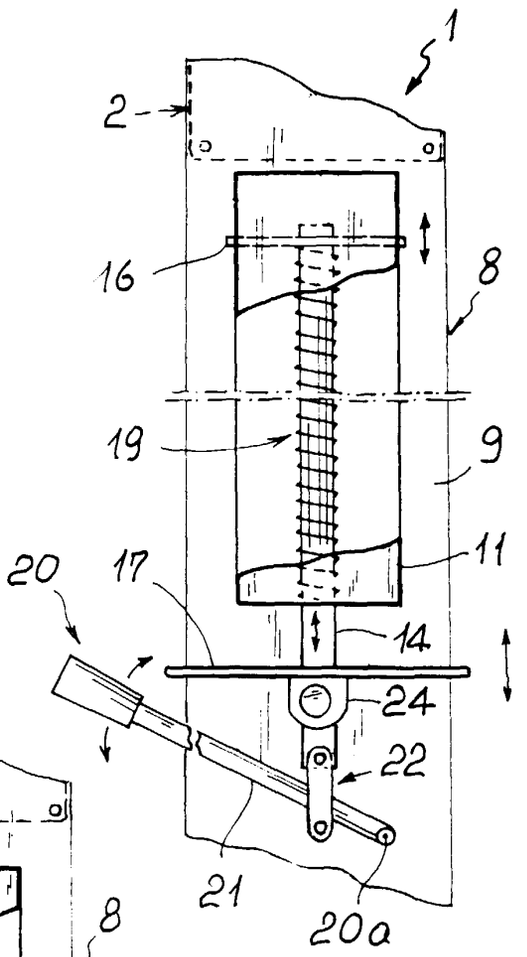

Fig.2a

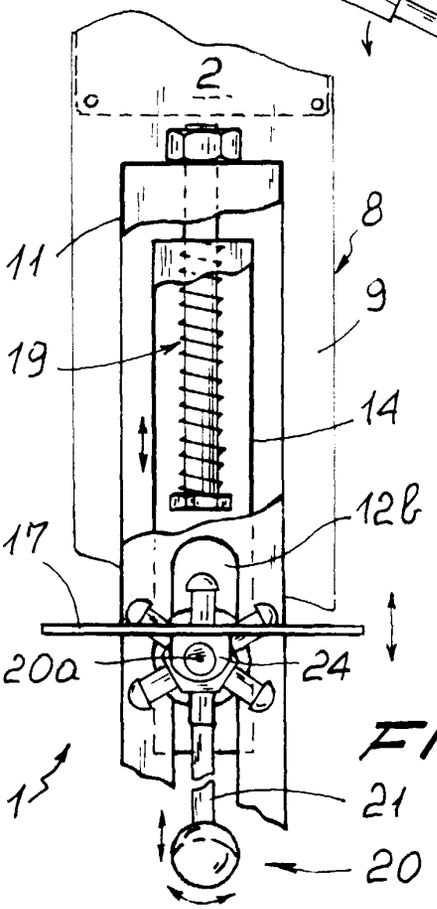

Fig.2b

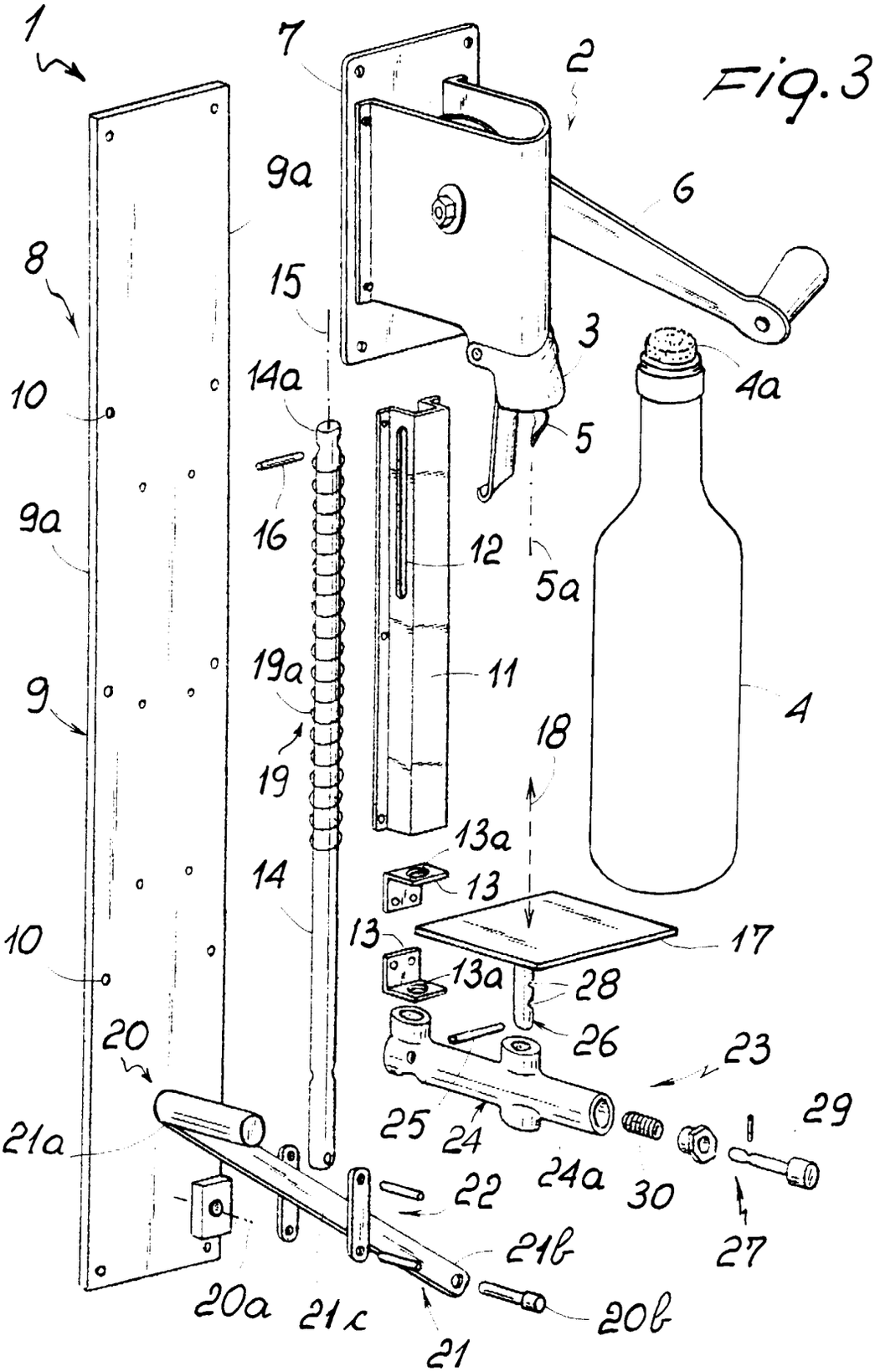
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Fig.3

Fig. 4

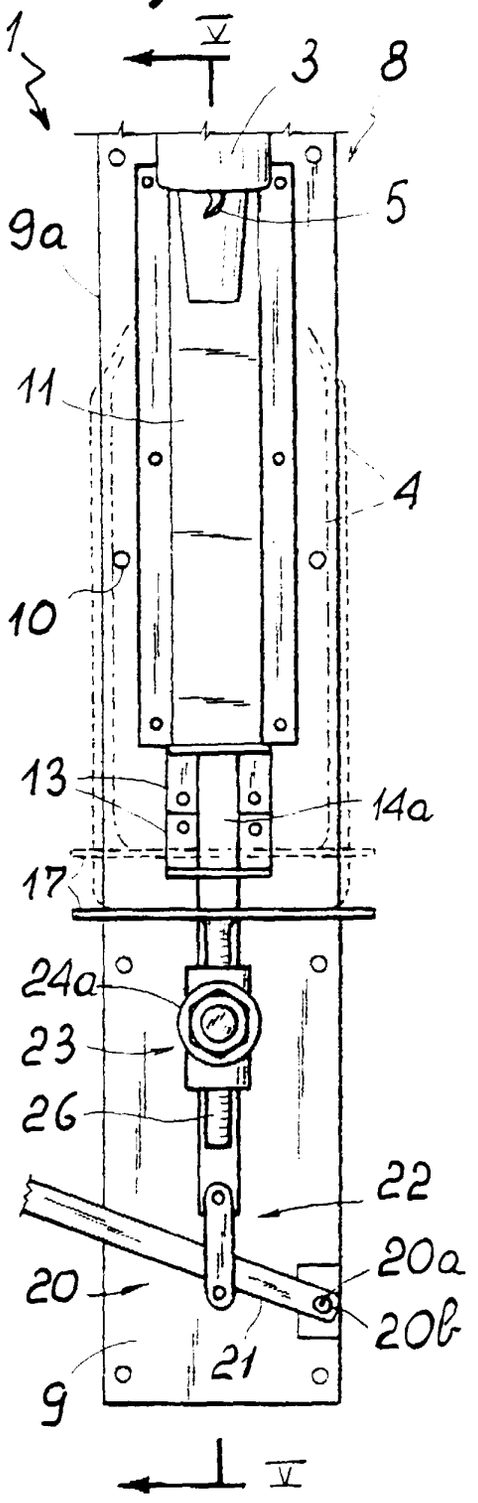
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Fig. 5

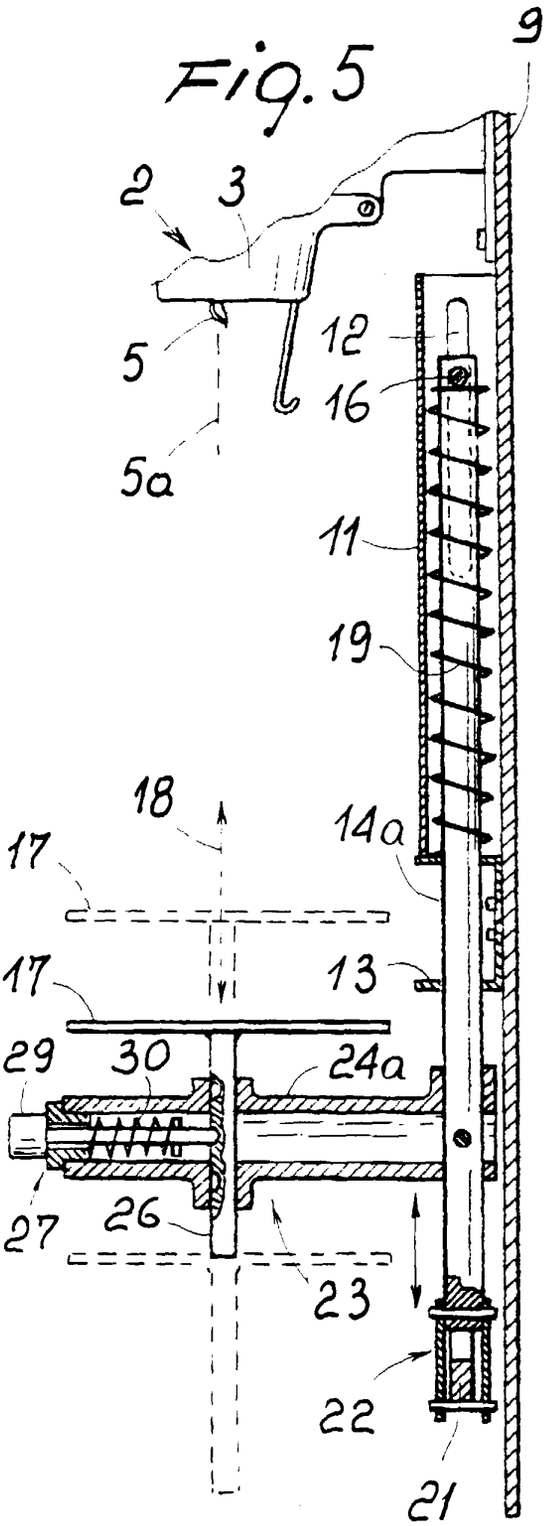
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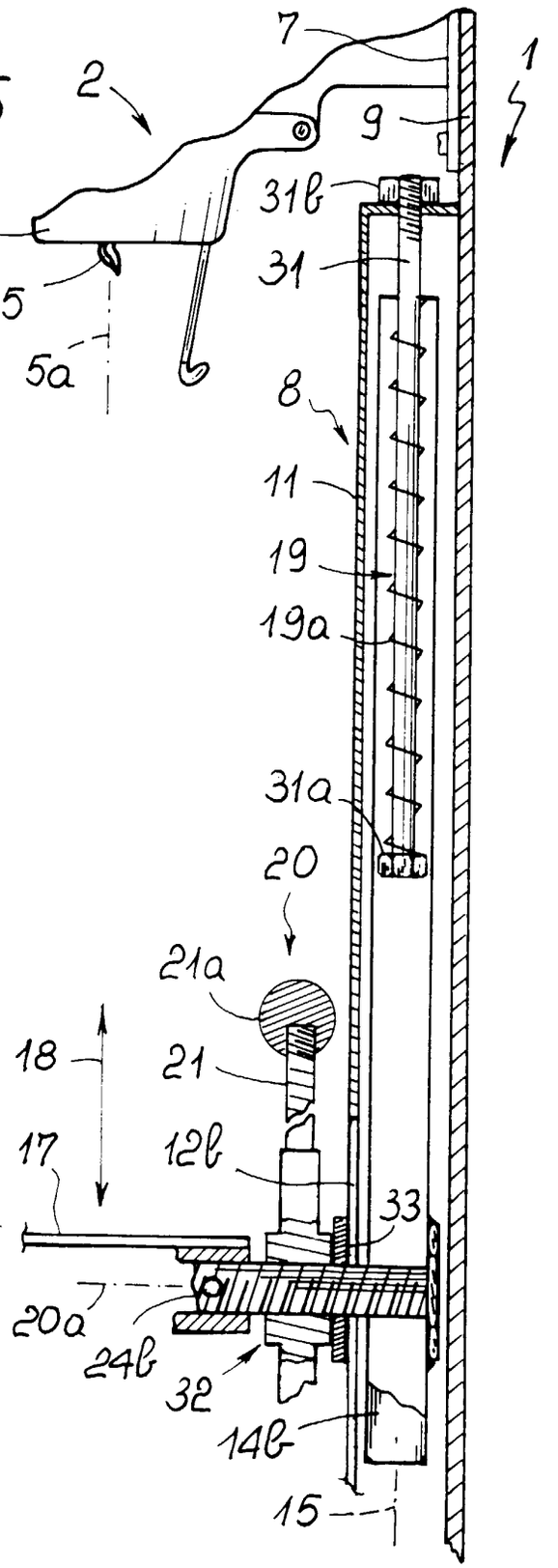
Fig. 6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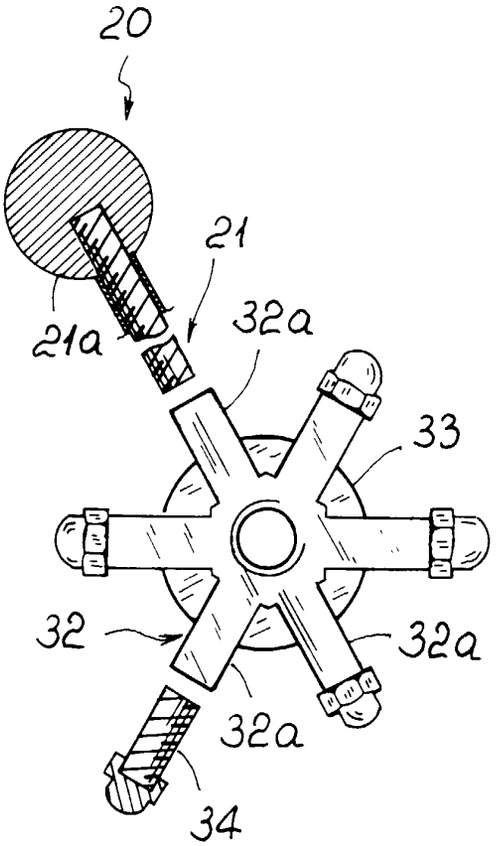
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Fig. 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 12 1338

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 53 428 C (WRETLING) * claims 1,2; figures 1-3 *	1-4	B67B7/04
X	FR 356 523 A (MÖLLER) * the whole document *	1	
A	DE 34 636 C (SCHULZ)		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B67B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 January 2000	Deutsch, J.-P.

CATEGORY OF CITED DOCUMENTS

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 53428 C		NONE	
FR 356523 A		NONE	
DE 34636 C		NONE	

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