United States Patent

Young

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[54] LIQUID DISPENSER WITH SEPARABLY ATTACHED MEASURING DEVICE

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[52] **U.S. Cl.** **222/569,** 222/181

[51] **Int. Cl.** **B65d 5/72**

[58] **Field of Search** 222/147, 153, 569, 385, 181, 222/545

[56] **References Cited**

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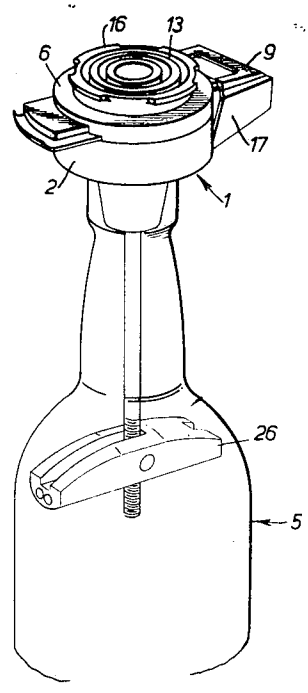
[57] **ABSTRACT**

The connecting means has adapter means for attachment to the measure and include a resilient seal for engagement within the mouth of the bottle. A tension rod passes through the seal and is threaded adjacent one end to carry clamping means. The other end of the tension rod has means which limit insertion of the rod into the adapter means and enable the rod to be turned and tightened by a cooperating key, whereupon the clamping means clamp against the inside of the bottle and provide positive retention to prevent withdrawal of the seal from the mouth of the bottle except by releasing the clamping means using said key.

4 Claims, 4 Drawing Figures



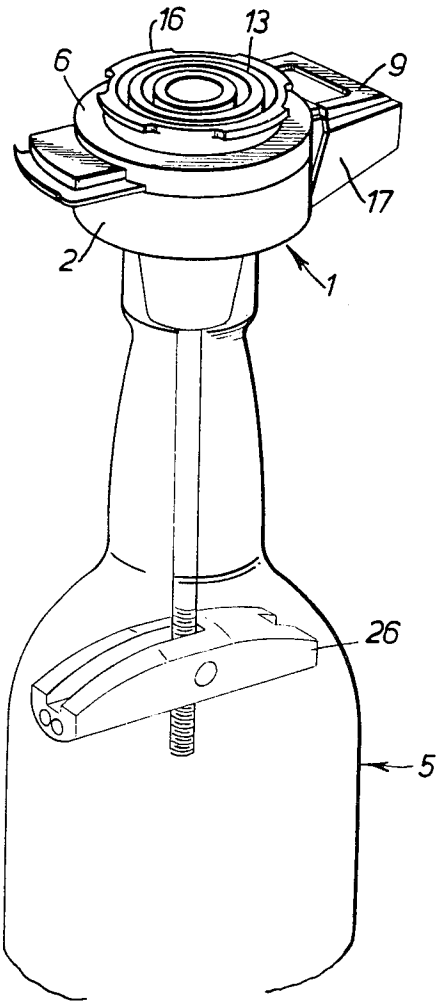


FIG. 1.

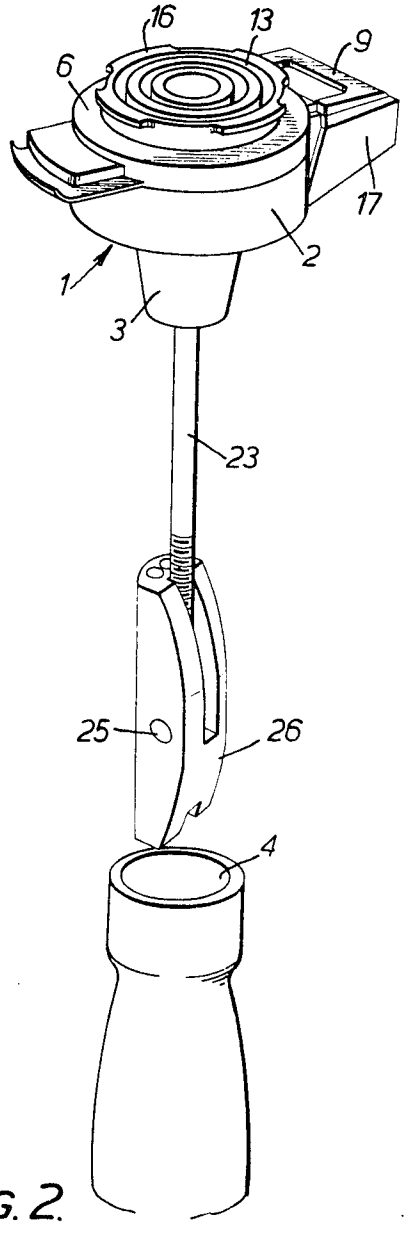


FIG. 2.

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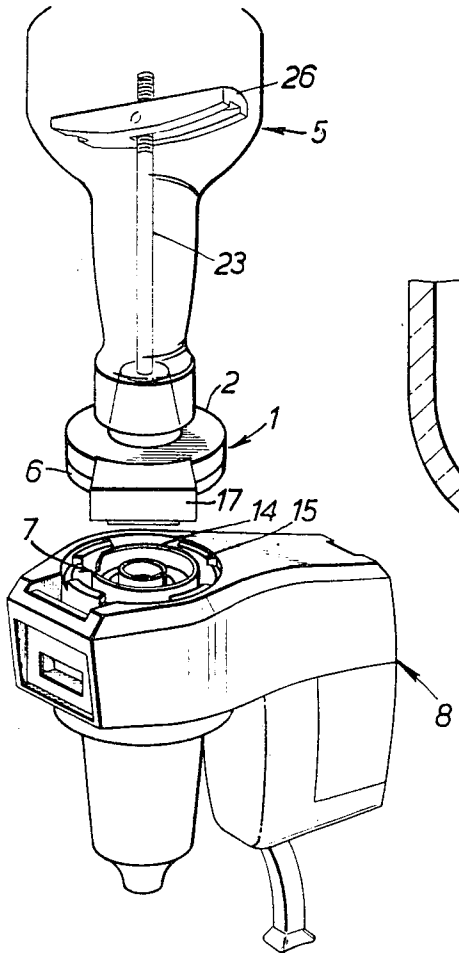


FIG. 3.

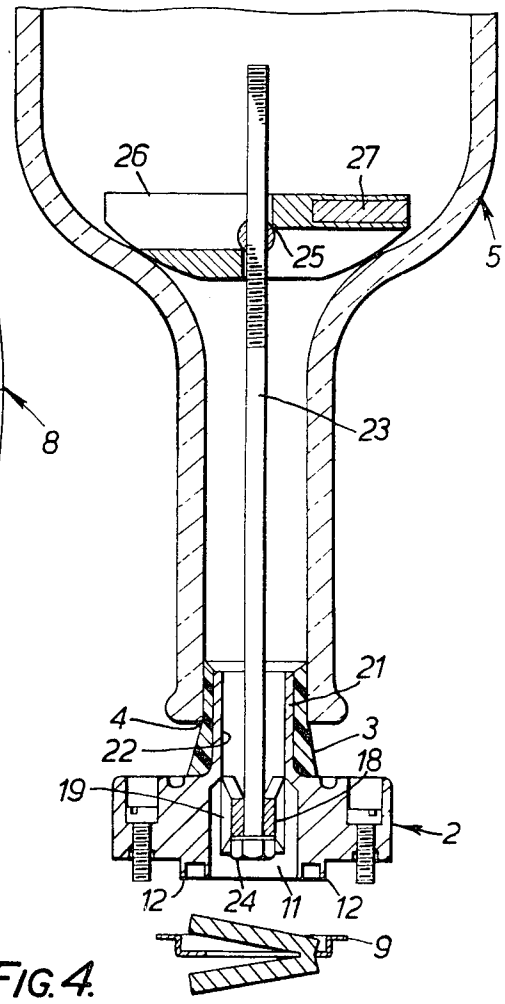
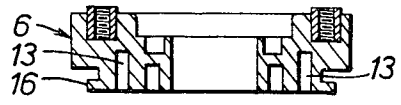


FIG. 4.



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LIQUID DISPENSER WITH SEPARABLY ATTACHED MEASURING DEVICE

This invention relates to liquid measures and, in particular, to means for connecting a liquid measure to a bottle so that the bottle can be mounted in an inverted position above the measure so that the bottle forms a reservoir for the measure. It is of particular, but by no means exclusive, application to arrangements in which the bottle is in use supported by the measure itself.

The connecting means of the present invention comprises adapter means for connection of the bottle to the measure, toggle means for engagement with the internal shoulder of the bottle and screw tensioning means operable for clamping the toggle means against the bottle shoulder and the adapter means against the bottle mouth. The arrangement is such that rotation of the adapter means relative to the bottle will not act to release the clamping action of the toggle means.

An embodiment of the invention in the form of connecting means for mounting a bottle in an inverted position on a liquid measure will now be described, by way of example, with reference to the accompanying drawings. In the drawings:

FIG. 1 is a perspective view of the connecting means inserted and clamped in the mouth of a bottle,

FIG. 2 is a similar view of the connecting means before insertion into the bottle,

FIG. 3 is a different perspective view showing the connecting means clamped to the bottle immediately prior to mounting on the liquid measure, and

FIG. 4 is sectional and partly exploded view of the connecting means fitted to the bottle.

The adapter means **1** have a cap **2** supporting a tubular resilient seal **3** for engagement within the mouth **4** of the bottle **5**. The cap **2** is detachably secured to an attachment ring **6** which provides bayonet type attachment to a cooperating socket **7** of the measure **8**. A manually operable slide **9** is positioned between the cap and the attachment ring **6** and is movable between two positions in which it respectively closes and opens a central liquid flow passage **11** through the adapter means. The underside of the cap **2** has an elongated rib **12** on either side of which are disposed two blind bores (not shown) for the respective reception of spring loaded locking pins or wards each of which has a reduced diameter neck. Each pin passes into a corresponding aligned bore formed in the attachment ring **6** and the bases of these bores break into an annular groove **13** into which a key **14** passes when the adapter means **1** is fitted in the measure **8** with twisting motion in which the castellated rim **15** engages corresponding arcuate projections **16** on the attachment ring **6**.

The slide **9** has a finger grip **17** at one end and is disposed between the cap **2** and attachment ring **6**. The slide **9** has a flow aperture and is formed along each larger side edge with two spaced notches (not shown). The arrangement is such that when the adapter means **1** is not attached to the measure **8** the slide **9** closes the flow path through the adapter means **1** and is not slidable to the open position because the side edges engage the normal diameter portions of the locking pins. However, when the adapter means **1** is attached to the measure **8** the key **14** in the latter passes into the annular groove **13** and engages the bases of the locking pins so that the latter are displaced to a position in which the reduced diameter neck portions thereof enable the slide **9** to be moved to the open position so that liquid in the bottle may pass through the aperture. Furthermore the engagement of the slide **9** with the locking pins ensures that the adapter means **1** can only be detached from the measure **8** when the slide **9** is in the closed position, thus preventing leakage from the bottle.

The seal **3** surrounds a plain cylindrical portion **21** of the cap **2** and the internal bore **22** of the portion **21** is cylindrical throughout its length.

A boss **18** has a central aperture and three radially projecting vanes **19** and is formed integrally with the cap **2**. Liquid flowing from the bottle **5** passes through the bore **22** of the portion **21** of the cap **2** and through the holes formed between

the vanes **19**. A tension rod **23** has a hexagonal head **24** at one end and passes through the aperture of the boss **18** and the portion **21**, and at the other end the rod is threaded and connected with a pivot **25** on which is mounted a channelled clamping member **26**.

The clamping member **26** has channels extending over more than half its length at the top and bottom of the clamping member. On one side of the pivot **25** the clamping member **26** has inserted in one of its arms a weight **27** which causes the clamping element **26** to act in the manner of a gravity toggle. Thus the clamping member **26** may be generally aligned with the rod **23** so that the rod is disposed in the channels of the clamping member **26** in order that the rod **23**, with the clamping member **26** attached, may be inserted into and through the neck of the bottle **5**. Slight tilting of the bottle **5** then causes the channelled clamping member **26** to pivot to a position in which it is disposed transversely of the rod **23**.

A master key which reproduces the action of the key **14** may be inserted into the groove **13** to enable the slide to be opened to allow access to the head **24** of the rod **23**.

The rod **23** is turned and tightened by means of a key. When the rod **12** is tightened and the clamping member **26**, which has sloping ends for engagement with the sloping surface of the shoulder of the bottle **5**, is in clamping engagement with the shoulder the seal **3** is held in the mouth of the bottle **5**, the clamping reaction being taken by the engagement of the boss **19**.

The slide **9** is then pushed to the closed position whereupon the spring-loaded locking pins engage with the slide and prevent it being moved to the open position until the adapter **1** has been properly engaged on to the measure.

A washer (see FIG. 4) is positioned between the head **24** of the rod **23** and the boss **18** and the arrangement is such that, if the cap **2** is rotated relative to the bottle **5**, such relative rotary movement will not be transmitted to the rod **23**. Rotation of the cap **2** relative to the bottle **5** therefore does not release the clamping action of the toggle means afforded by the clamping member **26**.

I claim:

1. Means for connecting a liquid measure to a bottle comprising:

1. adapter means including:
   a. a body formed with a fluid flow passage and having means for connection to the measure, said body including an annular part having a through-bore,
   b. a resilient seal surrounding said annular part of said body for engagement with the mouth of the bottle:
2. toggle means for engagement with the internal shoulder of the bottle;
3. screw tensioning means operable to clamp the toggle means against the bottle shoulder and the adapter means against the bottle mouth, said tensioning means comprising a rod passing through the bore of said annular part and having a screw threaded shank for engagement with the toggle means, said rod having an enlarged head portion adjacent said annular part of the body, and
4. means permitting free rotation of said head portion relative to said annular part in each direction whereby said annular part can be rotated relative to the bottle without causing rotation of the rod.

2. Means according to claim **1** in which the body includes a boss which is formed with an aperture coaxial with the bore of said annular part, vanes extending between said boss and the wall of the fluid flow passage in the body and the rod passing through said aperture in the boss, a washer being disposed between the head portion of the rod and the adjacent surface of the boss.

3. Means according to claim **2** wherein the fluid flow passage in the body is constituted by a first portion in which the head portion of the rod is received and a second reduced diameter portion constituted by the bore of the annular part.

4. Means according to claim **1** in which the toggle means includes a toggle member freely pivotable relative to the rod,

said clamping member including a pair of channel-section arms one of which includes a counterweight, the clamping member being pivotable relative to the rod between a position in which the channels of the arms receive portions of the rod and a position in which the arms extend subsequently at right angles to the axis of the rod.

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