E. H. BERRY.

DISPENSING DEVICE FOR CONTAINERS.

APPLICATION FILED MAY 29, 1917.

1,429,561.

Patented Sept. 19, 1922.

Fig. 1.

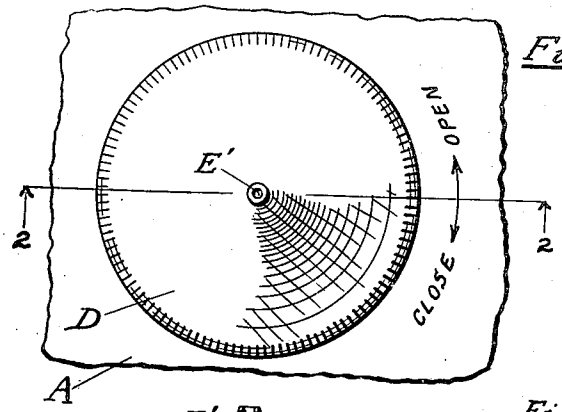


Fig. 2.

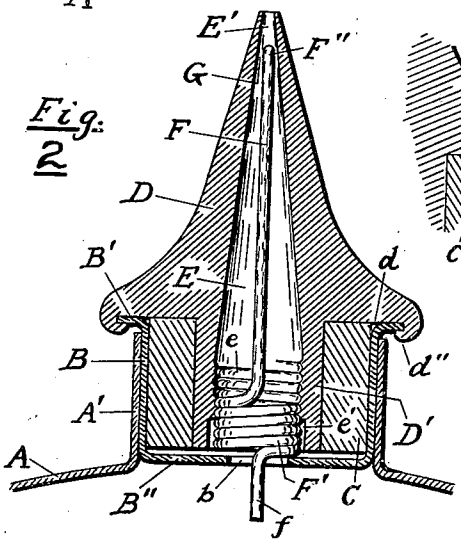
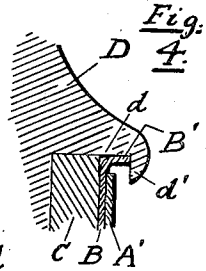


Fig. 4.



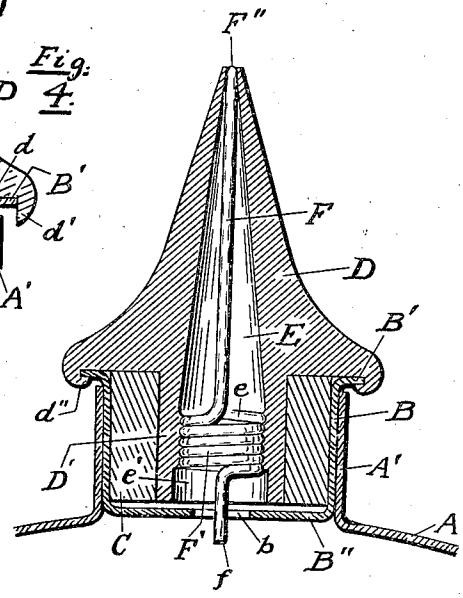


Fig. 5.

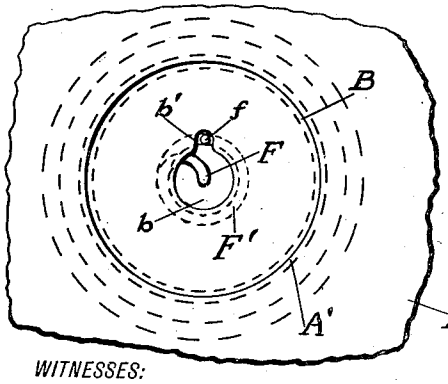


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDGAR H. BERRY, OF NEW YORK, N. Y.

DISPENSING DEVICE FOR CONTAINERS.

Application filed May 29, 1917. Serial No. 171,699.

To all whom it may concern:

Be it known that I, EDGAR H. BERRY, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in a Dispensing Device for Containers, of which the following is a specification.

This invention relates to a device in which the dispensing aperture may be opened or closed at will.

The object of my invention is the provision of a structure adapted to control the dispensing of even the most mobile and volatile liquids without requiring the use of removable parts, such as a cap or the like, and furthermore, to effect the closure of the device at the extreme outlet of the discharge passage, so that the latter will be securely sealed against the accidental entrance of foreign matter.

This invention is illustrated in the accompanying drawings, in which:—

Figure 1 is an external plan view of the device.

Figure 2 is a vertical cross section on the line 2—2 of Fig. 1.

Figure 3 is an inverted plan view of the device.

Figure 4 is a partial section, corresponding to Fig. 2, and illustrating a step in the assembling of the device.

Figure 5 is a vertical cross section, identical with Fig. 2, excepting that the component parts are shown in a different position.

Similar letters refer to similar parts throughout the several views.

Referring to Figures 2 and 5, A is the top head of a container adapted to contain a dispensable liquid. The head A is provided with a neck A′.

The neck A′ contains the cylindrical cup B, the connection between the two being permanent, and liquid-tight. Such a connection can be obtained by making the cup a force fit in the neck, and assembling the two pieces under heavy pressure.

The cup B has a flange B′ and a bottom B″, the latter being pierced by the opening *b*. The cup B carries a cylindrical "shell cork" C, which in turn carries the cylindrical neck D′ of the nozzle D.

The "shell cork" C fits snugly within the cup B and around the neck D′ to prevent leakage, yet not so snugly as to prevent relative rotation of the several cylindrical parts.

The nozzle D has an axial aperture E, tapering to a small, conical, inwardly enlarging, discharge opening E′ at the extreme tip of the nozzle D. At the lower end of the aperture E, its wall is provided with a female thread *e*, adapted to engage as a nut, the helically coiled portion F′ of the plug F, which latter is formed from a single piece of cylindrical wire. This wire is of suitable diameter, and its upper end F″ is of suitable form, to adapt it to plug the discharge opening E′ as indicated in Figure 5.

The plug F has an extension *f*, extending downward from the helically coiled portion F′ and adapted to engage a notch *b′* which forms a part of the opening *b* in the bottom of the cup B as shown in Figure 3. The axial aperture E in the nozzle D is counterbored as shown at *e′*, to provide a working clearance for the extension *f*.

The nozzle D has a shoulder *d*, adapted to engage the upper surface of the cup flange B′, and it is also provided with a projecting lip as shown at *d′* Figure 4, which said lip is adapted to be spun or pressed into engagement with the lower surface of the cup flange B′ as indicated at *d″* Figures 2 and 5. When the lip is spun or pressed as above described, care is taken to leave the engagement sufficiently loose to permit of relative rotation between the nozzle D and the cup flange B′.

After the several parts are assembled as above described, the nozzle D is free to rotate with reference to the cup B, but the plug F is restrained from such relative rotation, owing to the engagement of the extension *f* with the notch *b′* in the cup bottom B″.

If the nozzle is now rotated in the direction of the arrow marked "Close" (Fig. 1) the plug F, restrained from rotating as above described, is constrained to advance axially as a result of its engagement with the female thread *e*. This travel can continue until the discharge opening E′ in the nozzle D is closed by the plug F as shown in Fig. 5. The extension *f* is made long enough to enable it to maintain its engagement with the notch *b′* throughout this action.

By rotating the nozzle in the direction

marked "Open" (Fig. 1) the reverse action occurs, and this may be continued until the helically coiled portion F′ of the plug F seats against the cup bottom B″ as shown in Fig. 2. In this position the tip F″ of the plug F has been drawn back into the inwardly enlarging aperture E′ to provide an annular dispensing passage as indicated at G Fig. 2. This annular dispensing passage communicates freely with the interior of the container, whose contents can pass out through the opening *b* of the cup bottom B″, axially through the helically coiled portion F′ of the plug F, through the axial aperture E of the nozzle D, and through the annular passage G to the final point of discharge E′.

I claim:—

1. A dispensing device for containers, comprising a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, elastic packing means, interposed between the nozzle and the cup, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, substantially as, and for the purpose set forth.

2. A dispensing device for containers, comprising a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, elastic packing means, interposed between the nozzle and the cup, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, the said means comprising a female thread in the nozzle, a thread-engaging plug having an axial projection extending withdrawably outward into an inwardly enlarging portion of the discharge passage, and engaging means on the plug and on the cup bottom respectively, permitting an axially slidable, non-rotatable motion therebetween.

3. A dispensing device for containers, comprising a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, elastic packing means, interposed between the nozzle and the cup, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, the said means comprising a female thread in the nozzle, a plug, formed from a single piece of cylindrical wire into a helically coiled, thread-engaging portion, having at one end an axial projection, extending withdrawably outward into an inwardly enlarging portion of the discharge passage, and having at the other end, a parallel, non-axial extension, and means in the bottom of the cup adapted to engage the said non-axial extension.

4. In a dispensing device for containers, a nozzle support, a nozzle, rotatable and axially non-slidable with respect thereto, a plug, non-rotatable and axially slidable with respect to the nozzle support, and means constraining the relative motion between the plug and nozzle to be one of helical translation, the said plug being formed from a single piece of cylindrical wire, having a helically coiled portion, with an axial extension at one end, and a parallel, non-axial extension at the other end, all substantially as, and for the purpose set forth.

5. In a dispensing device for containers, comprising a nozzle support, a nozzle, rotatable and axially non-slidable with respect thereto, a plug, axially slidable and non-rotatable with respect to the nozzle support and means constraining the relative motion between the plug and the nozzle to be one of helical translation, a female thread in the nozzle, a thread-engaging helically coiled member formed from a cylindrical wire integral with the plug, an extension from the helically coiled member, parallel to, but offset from the axis of the helix, and means on the nozzle support adapted to engage the said extension.

6. A dispensing device for containers, comprising a nozzle support, a nozzle, rotatable and axially non-slidable with repect thereto. intercommunicating passages through the nozzle support and through the nozzle, a female thread in the nozzle, a thread-engaging plug having an axial projection extending withdrawably outward into an inwardly enlarging portion of the discharge passage, and engaging means on the plug and nozzle support respectively, permitting an axially slidable, non-rotatable motion therebetween.

7. A dispensing device for containers, comprising a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, substantially as, and for the purpose set forth.

8. A dispensing device for containers, comprizing a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, the said means com-

prising a female thread in the nozzle, a thread-engaging plug extending axially and withdrawably outward into an inwardly enlarging portion of the discharge passage, and engaging means on the plug and on the cup respectively, permitting an axially slidable, non-rotatable motion therebetween.

9. A dispensing device for containers, comprising a nozzle, a flanged nozzle supporting cup adapted to engage the container structure, a projecting lip on the nozzle, closed inward into rotatable engagement with the cup flange, intercommunicating passages through the bottom of the cup and through the nozzle, and means for plugging the discharge passage, the said means comprising a female thread in the nozzle, a plug, formed from a single piece of cylindrical wire into a helically coiled thread-engaging portion, having at one end an axial projection extending withdrawably outward into an inwardly enlarging portion of the discharge passage, and having at the other end, a parallel, non-axial extension, and means in the bottom of the cup adapted to engage the said non-axial extension.

10. In a dispensing device for containers, a nozzle support, a nozzle rotatable and axially non-slidable with respect thereto, a nozzle plugging member within the nozzle, engaging elements integral with the nozzle plugging member and with the nozzle support respectively, permitting an axially slidable, non-rotatable motion therebetween, and means constraining the relative motion between the nozzle plugging member and the nozzle to be one of helical translation.

11. In a dispensing device for containers, a nozzle support, a nozzle rotatable and axially non-slidable with respect thereto, elastic packing means interposed between the nozzle and its support, a nozzle plugging member within the nozzle, engaging elements integral with the nozzle plugging member and with the nozzle support respectively, permitting an axially slidable, non-rotatable motion therebetween, and means constraining the relative motion between the nozzle plugging member and the nozzle to be one of helical translation.

12. A dispensing device for containers, comprising a nozzle support, a nozzle rotatable and axially non-slidable with respect thereto, elastic packing means interposed between the nozzle and its support, intercommunicating passages through the nozzle support and through the nozzle, a female thread in the nozzle, a thread engaging plug having an axial projection extending withdrawably outward into an inwardly enlarging portion of the discharge passage, and engaging means on the plug and nozzle support respectively, permitting an axially slidable, non-rotatable motion therebetween.

13. In a dispensing device for containers, a nozzle support, a nozzle rotatable and axially non-slidable with respect thereto, a nozzle pluging member within the nozzle, an extension on the nozzle plugging member presenting an engaging surface in spaced parallel relation with respect to the axis of the said member, an element integral with the nozzle support and adapted to engage the said surface, and means constraining the motion between the nozzle plugging member and the nozzle to be one of helical translation.

14. In a dispensing device for containers, a nozzle support, a nozzle rotatable and axially non-slidable with respect thereto, elastic packing means interposed between the nozzle and its support, a nozzle plugging member within the nozzle, an extension on the nozzle plugging member presenting an engaging surface in spaced parallel relation with respect to the axis of the said member, an element integral with the nozzle support and adapted to engage the said surface, and means constraining the motion between the nozzle plugging member and the nozzle to be one of helical translation.

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