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(56) Documents Cited

**EP 0347957 A2**

**US 5366115 A**

(58) Field of Search

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INT CL<sup>6</sup> **B65D 47/06 47/20 47/26 47/34 83/16**

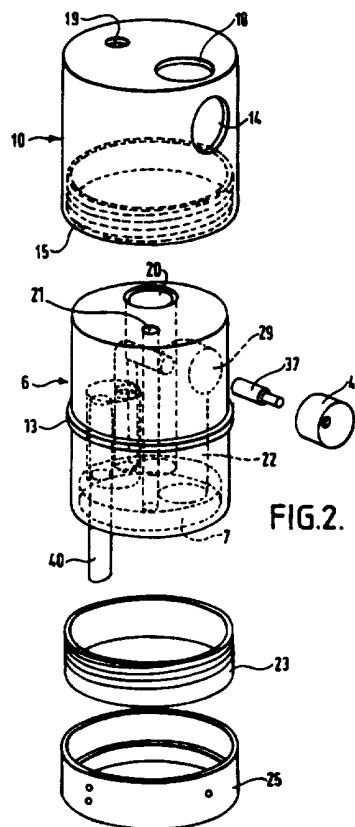
**ONLINE:WPI**

(54) **Liquid dispensing apparatus**

(57) An edible oil dispensing closure assembly (4) having a dip tube 40 is secured to a squeezable bottle (2) of edible oil.

The assembly (4) includes a body member (6) which engages the neck (8) of the bottle (2).

A rotary cap (10) has two operative angular positions, one in which oil can be poured from a first output orifice (18) and another in which oil can be sprayed from a second output orifice (14) with the aid of a nozzle (44). The cap is also capable of closing both the above orifices.



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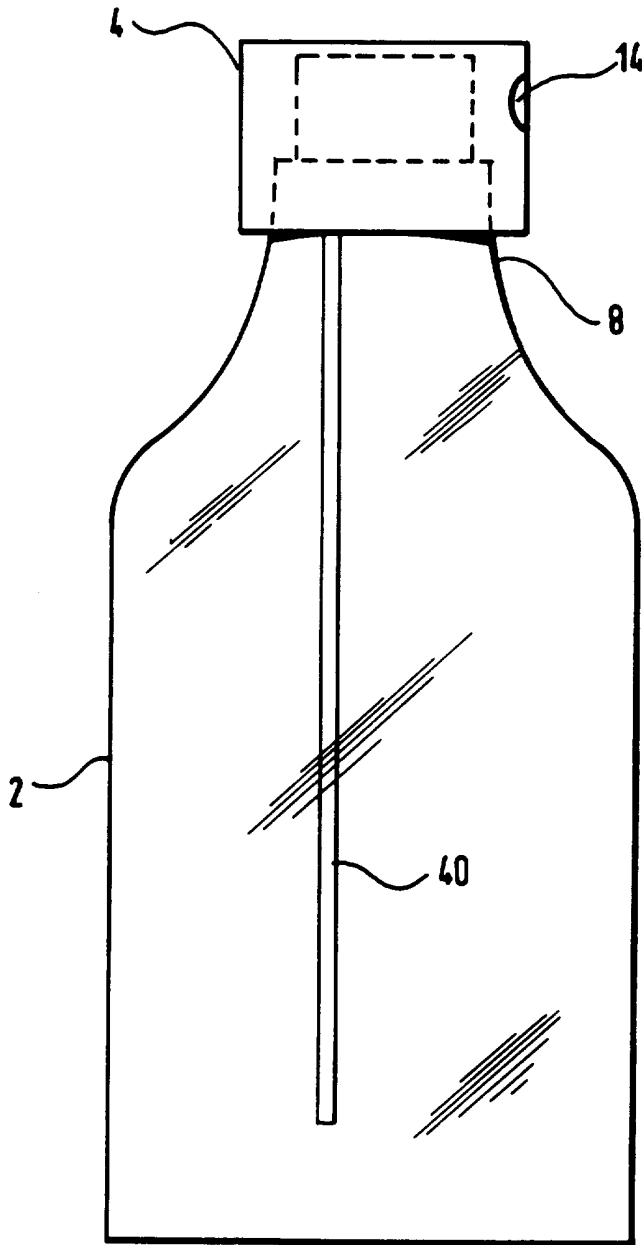
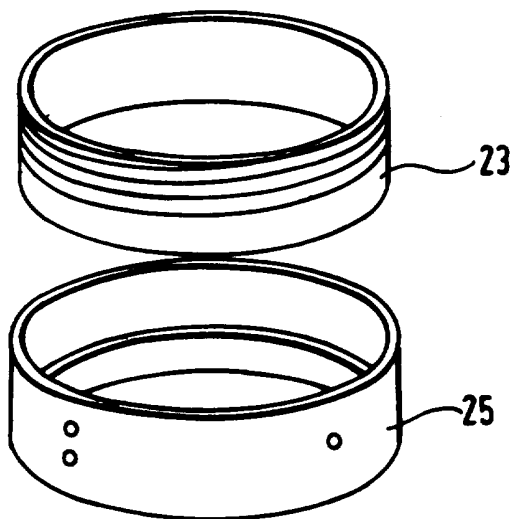
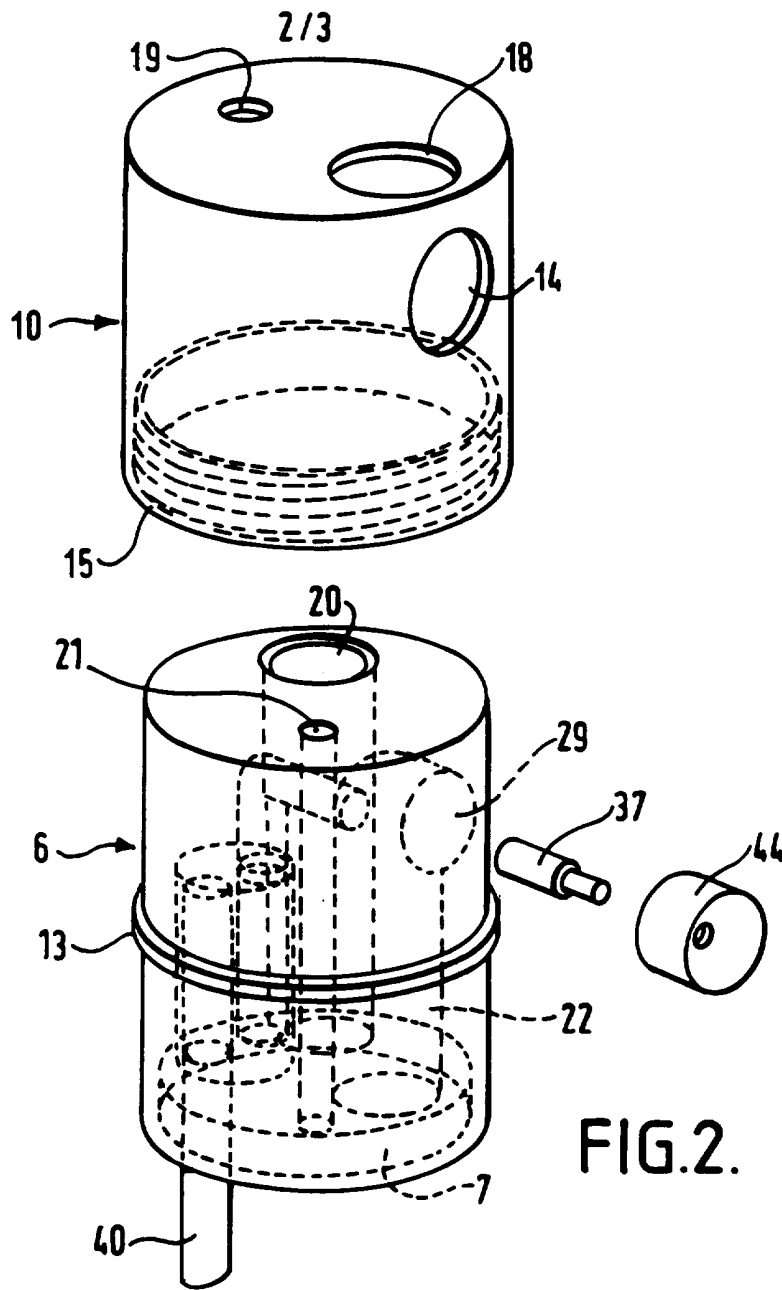
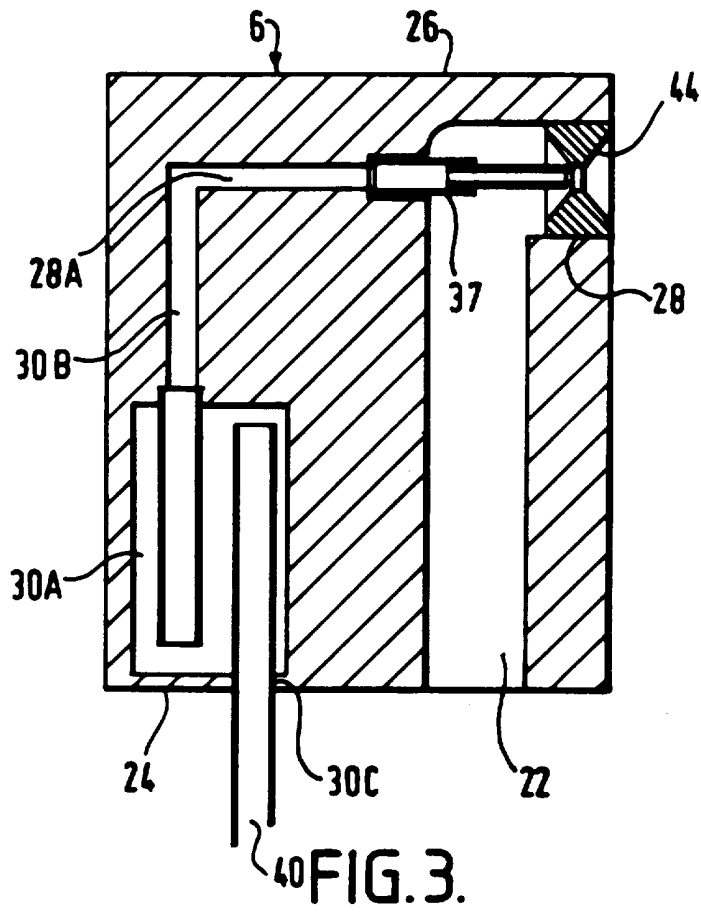


FIG.1.





40 FIG. 3.

LIQUID DISPENSING APPARATUS

The present invention relates to liquid dispensing apparatus.

5 Some containers for liquids are provided with a cap or closure incorporating a spray nozzle. Other containers for liquids are provided with a closure or cap incorporating a closeable discharge orifice.

It is an object of the present invention to provide an improved liquid dispensing apparatus.

10 According to the present invention there is provided liquid dispensing apparatus comprising a closure assembly for securing to the neck of a liquid container, the closure assembly having a body portion defining a first path for dispensing liquid from the container in a  
15 pouring mode and a second path incorporating a spray nozzle for dispensing the liquid in a spray mode, and means for selective opening and closing the paths.

Liquid dispensing apparatus embodying the invention will now be described, by way of example, with  
20 reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a front elevation of a container capped by a closure assembly;

25 Figure 2 is an exploded perspective view of the closure assembly; and

Figure 3 is a cross-section through a body member of the closure assembly.

The liquid dispensing apparatus to be described is a container for edible oil with a closure assembly  
30 which selectively allows the oil to be dispensed either by pouring or as a spray. It will be appreciated that for cooking, sometimes the surface of a cooking vessel needs to be coated with a fine film of oil in which case the spray option is used and sometimes a volume of oil needs  
35 to be dispensed into a container for mixing with other

ingredients in which case the pouring option is used.

As shown in Figure 1, the apparatus comprises a flexible translucent container 2 of plastics material capped by a closure assembly 4. The container has a narrow cylindrical neck 8 at its upper end. The closure assembly 4, as shown in more detail in Figure 2, comprises a cylindrical body member 6 having a circular cavity or recess 7 in its lower axial end face. The inner circumferential wall of the recess 7 has a screw thread (not shown) which can screw threadedly engage an external screw thread on the neck 8 of the container 2 to form a seal therewith. The body member has a generally centrally located annular rib 13.

A rotary cylindrical cap 10 fits snugly on the upper half of the body member 6. The lower end of the cap 10 has an annular skirt 15 of greater internal diameter than the external diameter of the rib 13 so that it can pass over the rib. The skirt is internally screw threaded and screw threadedly engaged by an external screw threaded sleeve 23 which snugly fits the body 6 and is threaded onto the body 6 from the opposite axial end to that to which the cap is applied. Thus, when the sleeve 23 and the cap 10 are in screw threaded engagement they are prevented from moving axially with respect to the body 6 by the rib 13. The cap 10 and the sleeve 23, however, can still rotate freely with respect to the body 6.

An external collar 25 forms a friction fit over the lower axial end of body 6 to hold the sleeve 23 captive on the body. The collar has a partially enlarged inner portion to accommodate the lower end portion of the sleeve 25. The sleeve 25 carries indexing markings on its outer surface.

The cap has an outer circumferential wall 12 with a single circular outlet orifice 14. The cap 10 also has an axial end wall 16 with a circular outlet orifice 18

located at a position adjacent the orifice 14 and radially offset from the axis of the cap 10. Diametrically opposite the outlet orifice 18 lies a vent orifice 19.

5 The cylindrical body 6, which can be seen in both Figures 2 and 3, has a number of fluid flow channels. A first channel 20, of circular cross-section, extends axially of the body parallel but lies spaced from the central axis of the body. A vent channel 21 of smaller cross-section than the first channel 20 extends parallel  
10 to the first channel 20 but lies diametrically opposite the first channel. The cross-sectional size and spacings of channels 20 and 21, from the perimeter of the body, are substantially similar to the size and spacing of the orifices 18 and 19 from the perimeter of the cap. Thus,  
15 the cap 10 can be rotated to bring the orifice 18 into alignment with the channel 20 and the vent orifice 19 into alignment with the channel 21 and so allow the contents of the container to be dispensed along the path of the channel 20 and the orifice 18 when the container is  
20 inverted (with venting taking place via the channel 21).

A second channel 22, of circular cross-section lying parallel to but spaced from the axis of the body, extends from the lower axial end 24 of the body 6 to a position just short of the upper axial end 26 of the body.  
25 The channels 20 and 22 are angularly spaced about the axis of the body by about 90°. A radially extending passage 28 of circular cross-section intersects the upper end of the channel 22 from an orifice 29 in the outer circumferential surface of the body 6 at a circumferential location  
30 closest to the channel 22. The passage 28, after intersecting the channel 22, has a portion 28A of reduced cross-section which terminates short of the diametrically opposite extremity of the body 6.

A third channel 30 of circular cross-section  
35 lying generally parallel to, but spaced from, the axis of

the body extends from the lower axial end 24 of the body 6 to a point at which it intersects the passage 28A.

The channels 22 and 30 are located diametrically opposite one another within the body 6.

5           The channel 30 has an enlarged intermediate portion 30A defining a reservoir chamber and upper and lower end portions 30B and 30C which are radially offset from one another and are of similar cross-section to the cross-section of the narrowed portion 28A of the channel  
10 28.

          The lower end portion 30C is engaged in a push fit manner, by the upper end of an elongate dip tube 40 which extends down into the container to reach a position near the base of the container. The upper end portion 30B  
15 is engaged, in a push fit manner, by the upper end of an auxiliary dip tube 42 which extends down into the reservoir to reach a position near the base of the reservoir. A spray nozzle 44 is located in a push fit manner in the passage 28 at a position near the orifice  
20 29. A liquid feed tube, of narrower internal cross-section than the narrow portion 28A of passage 28, is push fitted into the narrow portion 28A so that it projects across the channel 22 to be coaxial with and face the nozzle 44.

25           The orifice 29, in the body 6, is of similar size to the orifice 14 and has a similar axial location to the orifice 14 so that when the cap 10 is rotated, the two orifices 29 and 14 can be brought into coincidence. In this position, if the container 2 is squeezed air will be  
30 forced up the channel 22 to pass between the tube 37 and the nozzle 44. At the same time, liquid will be forced up the dip tube 40 through the reservoir 30 to be discharged by the liquid feed tube 37 through the nozzle 44 to emerge as a spray from the orifices 29 and 14.

35           Upon release of the container from squeezing,



the natural resilience of the container will allow it to expand and draw air back into the container through the path consisting of the passage 28 and the channel 22.

5 In a modification, a flap valve (not shown) may be located on the underside of the body 6 to close or partially close the channel 22 when the container is squeezed so as to increase the force with which liquid is forced up the dip tube 40.

10 It will thus be appreciated that the cap assembly allows liquid to be dispensed from the container 2 either in a pouring mode or a spray mode depending upon whether the orifice 18 is aligned with the channel 20 or whether the orifice 14 is aligned with the orifice 29. Of course, when the cap 10 is turned to a position in which  
15 none of the orifices are aligned with each other, escape of liquid from the container is inhibited.

The cap 10 may be provided with a detent mechanism to define the above three positions for the user.

20 While the apparatus has been described as dispensing edible oil for cooking, it will be appreciated that it can be used to dispense a variety of different liquids for different purposes for example for dispensing mineral oil in connection with the automotive industry.

CLAIMS

1. Liquid dispensing apparatus comprising a closure assembly for securing about the discharge orifice of a liquid container, the closure assembly having a body portion defining a first path for dispensing liquid from the container in a pouring mode and a second path incorporating a spray nozzle for dispensing the liquid in a spray mode, and means for selective opening and closing the paths.
2. Apparatus according to Claim 1, wherein the assembly includes an elongate body member to be fitted in the neck of the container having a first axially extending conduit defining said first path to enable liquid to be discharged from the axial end thereof, and a second conduit extending from the inner axial end of the body member to an outer circumferentially located orifice defining said second path to enable liquid to be discharged radially of the body member.
3. Apparatus according to Claim 2, including an elongate dip tube to extend said path from the inner axial end of the body member to the lower extremity of the container.
4. Apparatus according to Claim 2 or to Claim 3, wherein said assembly includes a rotary cap for at least partially enclosing the body member and arranged to be held captive on the body member, the cap having a first discharge orifice in an axial end wall thereof and a second discharge orifice in a circumferential wall thereof, the first orifice being aligned with the first path in a first angular position of the cap, the second orifice being aligned with the second path in a second angular position of the cap and neither the first nor the second orifices being aligned with their respective paths in a third angular position of the cap.
5. Apparatus according to any preceding claim,

wherein said second path includes a reservoir chamber for retaining some of said liquid when drawn from said container.

5 6. Liquid dispensing apparatus substantially as hereinbefore described, with reference to the accompanying drawings.

7. A container incorporating apparatus according to any preceding claim.



Application No: GB 9519097.1  
Claims searched: 1-7

Examiner: William Thomson  
Date of search: 1 August 1996

**Patents Act 1977  
Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.O): B8D (DSR1, DSS); B8T (TBB, TRE, TWH, TWJ, TWQ, TWR)  
Int CI (Ed.6): B65D 47/06, 47/20, 47/26, 47/34, 83/16  
Other: ONLINE:WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	EP 0347957A2 (LEEDS)	
A	US 5366115 (KERSTEN ET AL)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.