The invention pertains to a dispenser by means of which a given quantity of a substance can be discharged into a conduit wherein flows a fluid, said dispenser including a container having a discharge outlet, a connection between said outlet and said conduit, releasable closure means for said outlet and a neck within said conduit close to said connection.

4 Claims, 5 Drawing Figures
DISPENSER FOR DISCHARGING A QUANTITY OF A SUBSTANCE INTO A CONDUIT

The present invention relates to a dispenser device for discharging a quantity of a substance into a conduit wherein flows a fluid. The term “substance” as herein used encompasses liquids, creams, powders, emulsions and solutions.

An object of this invention is to provide such a dispenser by means of which a chosen or random quantity of a substance can be discharged when desired into a conduit wherein flows a fluid, without interrupting said flow.

Another object is to provide such a dispenser which is of economic yet rugged construction.

These objects are attained, according to the invention, by a dispenser comprising a container having a bottom and a discharge outlet in, respectively at the level of, said bottom; a connection between said outlet and said fluid conduit; a replaceable closure means for said discharge outlet; connected to said closure means, an operating means extending at least partially outside of said container; and a neck within said fluid conduit, upstream of said connection with respect to the direction of flow of the fluid within said conduit.

One particular field of application of such a dispenser is in conjunction with sanitary appliances, in homes, hospitals and so forth, i.e., to add pharmaceutical or cosmetic products to tub, seat bath, bidet or pool water feeds.

To illustrate the features and advantages of the dispenser according to the invention, two embodiments thereof are described hereafter in detail, reference being made to the appended drawings, wherein:

FIG. 1 is a side elevation of a dispenser according to this invention, one half of which being shown in radial section;

FIG. 2 is a radial section through another dispenser according to the invention;

FIG. 3 is a partial top view according to arrow F3 of FIG. 2; and

FIGS. 4 and 5 are cross-sections, respectively according to lines IV—IV and V—V of FIG. 2.

The dispenser 1, according to FIG. 1, allows to discharge a measured quantity of fluid contained therein to a conduit 2 wherein flows another fluid, in the direction as shown by arrows. The dispenser comprises a container 3, for instance cylindrical in shape, having a bottom 4 and a removable cover 5. A discharge outlet 6 is provided in bottom 4 and communicates with the inside of conduit 2 through a tapered connection 7 ending into a passage 8.

A guide-sleeve 9 projects from the bottom 4 within said container 3, around the entrance to said discharge outlet 6. A series of parts 10 is provided in sleeve 9, close to bottom 4.

An axially displaceable closure member 11 is slidably fitted into sleeve 9, said member having a cylindrical body 12 extended by a tapered part 13 terminated by a pin 14.

The closure member 11 is fitted at one end of an operating rod 15, the other end 16 of which projecting outside of the container, through said cover 5. A spring 17, acting on a projection 18 of the rod 15 normally maintains the closure member 11 in its closure position, wherein said tapered connection 7 forms a seat for said tapered part 13 and said pin 14 extends through passage 8.

A neck or venturi 18 is provided in conduit 2, close to passage 8 and upstream thereof with respect of the direction of flow of the fluid therein.

Assuming that one fluid is placed into container 3 and that another fluid flows through conduit 2, it will be sufficient to pull on end 16 of rod 15 so as to lift the body 12 of closure member 11 at least above the lowermost part of passages 10 to obtain a discharge of fluid from the container 3 into conduit 2, due to the suction effect created therein by fluid leaving neck 19. An air passage 20 is of course provided such as in cover 5. The quantity of fluid thus discharged into conduit 2 may readily be measured if at least part of the wall of container 3 is made of a transparent or translucent material provided with scale markings 21.

In the embodiment illustrated in FIG. 2, wherein like parts are indicated by the same reference numerals as in FIG. 1, the sleeve 5 extends up to near the cover 5, whilst rod 15 is hollow and slidably fits into sleeve 9.

A helical slit 22 (shown in dotted lines) is provided in the wall of said sleeve 9, extending from near the bottom 4 to near the top of the sleeve and around not more than 120° of its periphery. A slit 23 is similarly provided in the wall of hollow rod 15, said slit 23 having however an opposite slope to that of slit 22. Where these two slits cross each other, they define a passage 24 through which fluid can flow from container 3 into hollow rod 15 and hence, through passages 25 provided to that effect in closure member 11, into outlet 6 if rod 15 is raised as explained hereinafter.

It is clear that the distance between passage 24 and bottom 4 depends on the angular position of rod 15 with respect to sleeve 9 so that the amount of fluid discharged into conduit 2 may be adjusted by rotating rod 15. To this effect, the outer end 16 is provided with a knob 25 having a pointer 26, scale markings 27 being provided on cover 5. To raise rod 15 whilst rotating knob 25, the underside of the latter is provided with a ramp 28 resting on a similar ramp 29 constituted by the profiled edge of a collar 30 projecting from cover 5. The ramps 28 and 29 are so disposed that passage 24 is in its uppermost position when rod 15 is in its lowermost position.

Although the two slits 22 and 23 have both been described as being helical in shape, it will easily be understood that either one of them could be straight and the other helical, with the same effect.

The function of pin 14 is to prevent any risk of passage 8 becoming clogged, when for instance viscous or sticky fluids are to be dispensed but it is evident that such a pin could be omitted. It is also clear that closure member 11 may be given any suitable shape such as hemispherical or conical.

It is also obvious that, if the container 3 is to be mounted underneath conduit 2, the bottom 4 with its associated parts as described with respect to the embodiments shown in FIGS. 1 and 2, would be made as a removable cover and be provided with an air passage 20 whilst a suitable water tight packing should be provided between rod 15 and the bottom of the container.

In some instances, it might be advisable to provide the end 16 of rod 15 with an operating means such as i.e., an electro-magnet, and to provide time measuring means to control the duration of the discharge of fluid, emulsion, powder or solution, respectively the discharged quantity thereof.
Various other modifications can be brought to the embodiments described hereaboe, within the scope of the claims hereafter.

What I claim is:

1. A dispenser for discharging a quantity of fluid into a fluid conduit having a neck, said dispenser comprising a container having a bottom and a discharge outlet in said bottom, a connection between said outlet and said fluid conduit, displaceable closure means for said discharge outlet, a sleeve surrounding the inner end of said outlet and projecting from said bottom, said sleeve forming a guide for said closure means, a cover for said container, said closure means having a closure member axially displaceable within said sleeve, a rod integral with said closure member, said rod extending through said container and projecting outside of said cover, and a spring urging said rod towards said bottom, said sleeve extending to the vicinity of said cover, a wall of said sleeve having a helical slit, said rod being hollow and having a helical slit through its wall the slope of which is opposite to that of the slit in said sleeve.

2. A dispenser according to claim 1, wherein at least one passage is provided through said closing member, between the inner volume of said hollow rod and the external surface of said closure member.

3. A dispenser according to claim 1, wherein the upper end of said hollow rod projecting outside of said cover is provided with an operating means having one profiled surface in contact with a cam means on said cover, whereby rotating said operating means causes an axial displacement of said rod.

4. A dispenser according to claim 3, wherein the outer face of said cover is provided with a scale indicating the volume of fluid discharged from the dispenser for given angular positions of said operating means the latter being provided with a reference means.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,797,708 Dated March 19, 1974

Inventor(s) BOHUMIL SYPAL

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [76], "Bobhumil Sypal" should read  
-- Bohumil Sypal --.

Signed and sealed this 13th day of August 1974.

(SEAL)
Attest:

McCOY M. GIBSON, JR. C. MARSHALL DANN
Attesting Officer Commissioner of Patents