Aug. 5, 1952 N. W. TELANDER 2,605,934

POWDER DISPENSER

Filed May 23, 1949

FIG. 1

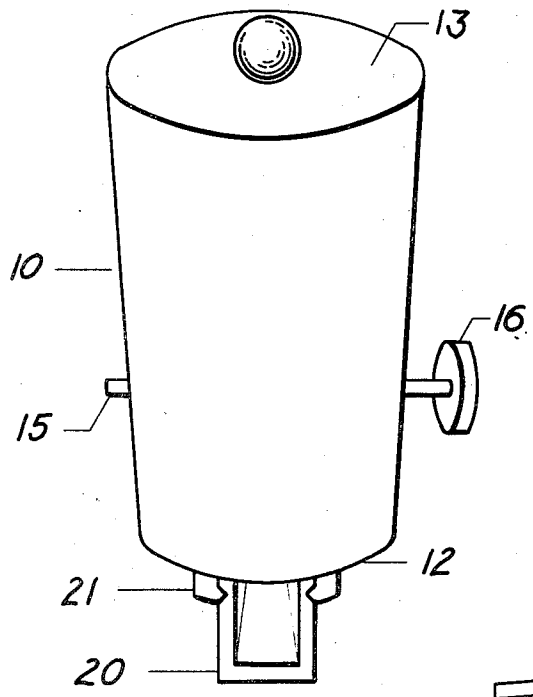


FIG. 2

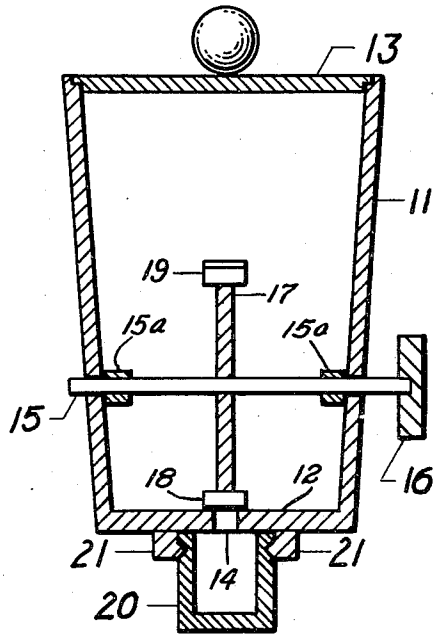


FIG. 3

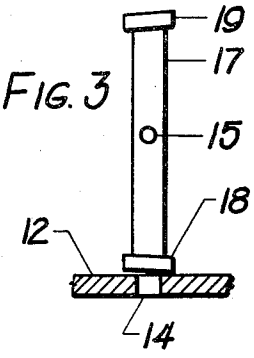


FIG. 4

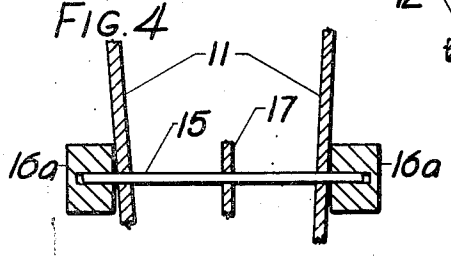
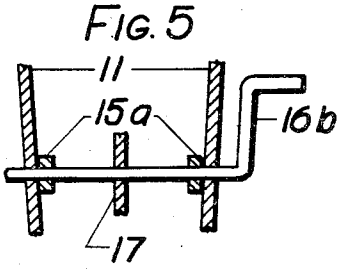


FIG. 5



INVENTOR

NORMAN W. TELANDER

by Gilbert B. Gehrenbeck

AGENT

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POWDER DISPENSER

Norman W. Telander, Minneapolis, Minn.

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5 Claims. (Cl. 222—126)

1

This invention relates to dispensers, and in particular to dispensers for powders, such as powdered dentrifices, which are subject to caking.

An object of my invention is to provide a powder-dispenser which is easily and economically assembled. Another object is to provide a powder-dispenser which simultaneously loosens, releases and dispenses the powder in a single simple operation. Other objects and advantages of my novel dispenser will be apparent from the following description, particularly in conjunction with the accompanying drawing, in which:

Figure 1 is a perspective view of the assembled dispenser.

Figure 2 is a front sectional view showing the dispenser valve in closed position.

Figure 3 is a side sectional view of the valve and agitator element in conjunction with the base, and

Figures 4 and 5 are detail views of modifications of the valve-operating means.

The dispenser 10 consists of a container 11, which as shown may be in the form of a doubly truncated cone, having a permanent base 12 at one end and a removable cover 13 at the other. An opening 14 through which powder may be dispensed from container 11 is centrally located in the base 12. A shaft 15 passes through the container above the opening 14 and parallel to the base 12; and is held in place by collars 15a. The shaft 15 may be turned by means of the external knob 16 of Figures 1 and 2, or by either of the knobs 16a of Figure 4, or by the crank 16b of Figure 5. In the modification shown in Figure 4, the knobs 16a hold the shaft 15 in place, hence the collars 15a of Figures 2 and 5 are omitted.

Fastened to the shaft is a cross-member 17, having two legs of slightly different length. To the end of the longer leg is fastened a valve-plate 18; the shorter leg carries at its end an end-plate 19. The cross-member 17 is in line with the orifice 14, and is so located on the shaft 15, and its legs are of such length, that, with the valve in the closed position as shown in Figures 2 and 3, the valve-plate 18 just covers, i. e. completely overlaps, the aperture 14 with the trailing edge of the plate in full contact with the base 12. When the cross-member 17 is reversed, by turning the knob through one-half revolution, the end-plate 19 comes close to the base 12, with its trailing edge parallel to the base 12 but slightly above it.

Where tooth-powder is to be dispensed, the dispenser is desirably fitted with a slidably removable receptacle 20, held in place by means of guides 21 attached to the under side of the base 12. The receptacle 20 is of a size and shape to take the head of a toothbrush, and is centrally located with respect to the aperture 14 in the base 12. For other powders and other purposes, other types of receptacles may be substituted for

2

the one illustrated, or the receptacle may be omitted. However, the removable receptacle shown in the drawing offers a number of advantages where tooth powder is to be dispensed, as will later become apparent, and I prefer to include this member in my novel dispenser assembly.

The dispenser is also fitted with suitable known supporting means, not shown, for attaching to a wall or otherwise supporting the dispenser in an upright suspended position.

In the closed position, the valve-plate 18 completely covers the orifice 14 in the base 12, and prevents the powder in the container 11 from falling through. Where the dispenser is to be used to dispense a powdered dentrifice, a toothbrush is first placed with the brush-head in the receptacle 20 and with the bristles upward. The receptacle serves to hold the brush-head in suitably aligned position. A partial turn of the knob 16 then moves the valve-plate 18 away from the dispensing orifice 14 and allows a quantity of powder to fall through onto the brush, whereupon the knob is turned back to its original position, thus returning the valve-plate to place. In the event the powder is somewhat caked and does not flow readily, as frequently happens with powdered dentrifices, the motion of the cross-member 17, together with the end-plates 18 and 19, tends to break up the caked mass and to cause the powder to flow. Where the powder has become rather firmly packed, or where lumps have collected at the opening and prevent further flow, a full half turn of the knob effectively pulverizes the lumps and forces the powder through the orifice 14. This action is due to the arrangement of the end-plate 19, which is at an angle with the cross-member 17 as shown and swings close to, but not out of contact with, the base 12 of the container. With the end-plate 19 at its position nearest to the base 12, the end-plate will be seen to form an acute angle with the base. This angle is preferably slightly larger than the oppositely facing small acute angle formed by the valve-plate when in the closed position. The angle formed between valve-plate and base is preferably only just sufficient to permit the valve to open freely.

Ordinarily, all of the powder released by the operation of the valve will be retained by the brush. However, if the valve is held open too long and a portion of the powder does spill from the brush, it is caught by the receptacle 20, which may thereupon or subsequently be removed for disposal of the excess powder and for cleaning.

As described and illustrated, my novel dispenser is easily and economically assembled and conveniently operated. It may be constructed of readily available materials to have an attractive appearance. For example, a "Beetle-ware" urea-formaldehyde plastic tumbler provides a

suitable container where the dispenser is designed for use with a powdered dentifrice; and the shaft, cross-piece, end-plates, and other working parts are also conveniently constructed of plastic rods and sheets, thermoplastic and solvent-soluble materials such as "Lucite" methyl methacrylate polymer or the like being particularly suitable. In such cases, the pre-formed parts may be fastened together where desired merely by the application of a small amount of a suitable solvent or of a solution of the polymer in a solvent. However, other materials of construction may equally well be employed, and I do not intend to limit my invention to any specific structural materials.

Likewise, I do not intend to limit my invention to the specific structures hereinabove described, since many equivalent structures will be apparent in the light of the disclosure herein contained. For example, the container **11** may be of any convenient shape, such as cylindrical or rectangular. The bottom of the container may be constricted at the sides, and rounded towards front and back, so as to facilitate the flow of powder toward the orifice. The shaft **15** may be supported entirely within the container at the end opposite that which carries the knob **16**, and may be fitted with a coil spring or other means of automatically returning the valve-plate to the closed position. In another modification, the shaft may be at an angle to the base, and the orifice at the side of the base; the valve-plate and end-plate must then be fastened to the cross-member at an angle which will bring the trailing edge of each parallel to the base when at its closest approach thereto. Still another modification involves substitution for the double-ended cross-member **17** of a cross-member having more than two ends or legs, e. g., a three-ended cross-member carrying one valve-plate and two end-plates.

Having now described my invention in terms of a number of specific illustrative embodiments, but without intent to be limited thereto, what I claim as my invention is as follows:

1. A powder-dispenser suitable for the dispensing of easily caking tooth powders and the like, comprising a container and a valve assembly, said container having a flat base with an orifice, said valve assembly comprising: a shaft passing above said orifice, a cross-piece mounted on said shaft and in line with said orifice, a valve-plate angularly positioned on the end of one leg of said cross-piece, and an end-plate reversely angularly positioned on the end of another and slightly shorter leg of said cross-piece, and external means for rotating said shaft through at least about one-half turn; the lagging edge of said valve-plate being in contact with said base and the plate forming a small acute angle with said base at said contact and completely overlapping said orifice when the valve is in the closed position.

2. A powder-dispenser suitable for the dispensing of easily caking tooth-powders, comprising a container, a valve assembly, and a brush-supporting receptacle, said container having a flat base with a central orifice, said receptacle being removably and centrally attached to said base below said orifice, and said valve assembly comprising: a shaft extending through opposite sides of said container and above said orifice; a cross-piece mounted on said shaft and above said orifice; a valve-plate angularly positioned at one end of said cross-piece, with the lagging edge in contact with said base and the plate forming a small acute angle at said contact with said base and completely overlapping said orifice when the valve is in the closed position; an end-plate reversely angularly positioned at the other end of said cross-piece, said end-plate being slightly above said base when the end-plate is at its position nearest the base; and means for manually rotating said shaft through at least about one-half turn and for holding said shaft in desired longitudinal position, said means being positioned on at the extended ends of said shaft and adjacent the opposite sides of said container.

3. A powder-dispenser suitable for the dispensing of easily caking tooth-powders and the like, comprising a container and a valve assembly, said container having a flat base with an orifice, and said valve assembly comprising: a shaft, a valve-plate, means for connecting said valve-plate to said shaft in fixed relationship, and external means for rotating said shaft through at least about one-half turn; said valve-plate when placed in closed position lying above and completely overlapping said orifice being at a small acute angle at the trailing edge of said valve plate with said base, and said trailing edge being in full contact with said base.

4. A powder-dispenser suitable for the dispensing of easily caking tooth-powders and the like, comprising a container and a valve assembly, said container having a flat base with an orifice, said valve assembly comprising: a shaft, a cross-piece mounted on said shaft and having a longer leg and a shorter leg, a valve-plate angularly positioned on the end of said longer leg, an end-plate reversely angularly positioned on the end of said shorter leg, and external means for rotating said shaft through at least about one-half turn; said valve-plate when placed in closed position lying above and completely overlapping said orifice being at a small acute angle at the trailing edge of said plate with said base, and said trailing edge being in full contact with said base.

5. A powder dispenser suitable for the dispensing of easily caking tooth-powders and the like, comprising a container and a valve assembly, said container having a flat base with a circular orifice, and said valve assembly comprising: a shaft passing above said orifice, a cross-piece mounted on said shaft in line with said orifice and having a longer leg and a shorter leg, a valve-plate angularly positioned on the end of said longer leg, an end-plate reversely angularly positioned on the end of said shorter leg, and external means for rotating said shaft through at least about one-half turn; said valve-plate when placed in closed position lying above and completely overlapping said orifice being at a small acute angle at the trailing edge of said plate with said base, and said trailing edge being in full contact with said base; and said end-plate coming close to but not touching said base when said shaft is rotated at least about one-half turn.

NORMAN W. TELANDER.

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