A. C. BOOTH.

CLOSURE FOR COLLAPSIBLE TUBES.

APPLICATION FILED APR. 14, 1916.

1,206,661. Patented Nov. 28, 1916.

Fig. 1.

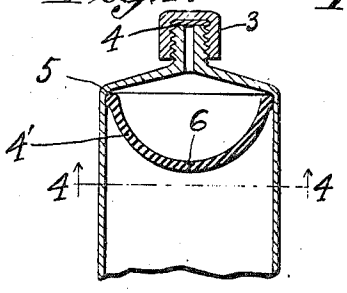


Fig. 2.

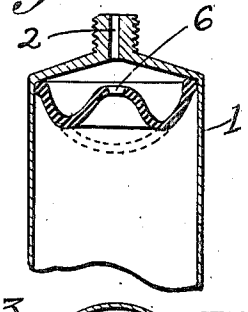


Fig. 3.

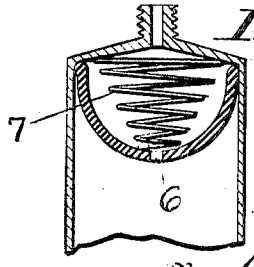
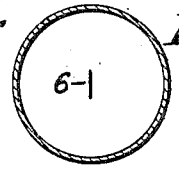


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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CLOSURE FOR COLLAPSIBLE TUBES.

1,206,661. Specification of Letters Patent. Patented Nov. 28, 1916.

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To all whom it may concern:

Be it known that I, ALBA C. BOOTH, a citizen of the United States, residing at Burlington, in the county of Chittenden and State of Vermont, have invented new and useful Improvements in Closures for Collapsible Tubes, of which the following is a specification.

This invention relates to improvements in receeptacles of that kind commonly known as collapsible tubes, and employed for holding various kinds of dentifrices, toilet substances, of a liquid, semi-liquid or pasty consistency, and which are expelled by collapsing or compressing the body of the tube.

The use of receptacles of this character is open to several objections, among them the tendency to feed an excess amount of the material through the discharge outlet, which excess amount of material collects about the outlet and upon the top of the receptacle, making the receptacle unsightly as well as unsanitary, owing to the colleection by the material of dirt and germs. Another objection to dispensing tubes of this character is that the top of the tube is exposed to the settlement of dust and dirt, thus contributing to the unsanitary collection of foreign substances and admixture of the same with the ejected recess material, and at the same time rendering it difficult to keep the receptacle clean.

One object of my invention is to provide a collapsible dispensing tube having a novel construction of means automatically operative at the end of the expressing action, in discharging a portion of the material, back into the tube, thus preventing its collection on the outside of the tube and waste and other objections above specified.

The invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawing in which:—

Figure 1 is a sectional elevation of a collapsible dispensing tube embodying my invention, showing the suction device in normal position. Fig. 2 is a similar view showing the suction device therein as it appears during the discharge action. Fig. 3 is a view similar to Fig. 1 showing a somewhat similar form of suction device employed in conjunction with a retracting spring. Fig. 4 is a cross section on the line 4—4 of Fig. 1.

Referring to the drawing, 1 designates a collapsible tube of the character described, which is provided at one end with the usual tubular outlet 2, externally threaded to receive a closure cap 3, with which may be employed a sealing disk 4. In practice, the tube is filled through its opposite end, which is normally open, and is folded or rolled upon itself, to form a closure at that end in the usual manner, and the material is discharged by folding or rolling the said folded or rolled end upon the body of the tube, by compressing the tube between the thumb and fingers of the hand, or by using an expressing device of suitable construction.

Within the tube is disposed a suction or vacuum producing device shown in the form of a dome-shaped or cup-shaped body 4′ of rubber or other elastic material. This cup-shaped body has its open side facing the top of the tube and provided with a thickened rim edge 5 to bear against the top of the tube and form therewith a suction or vacuum chamber. At its center the diaphragm cup is provided with an outlet in the form of a slit 6 which is normally closed by the elasticity of the material when the parts of the diaphragm are in normal position as shown in Fig. 1. In expelling the material the pressure of such material on the bottom of the diaphragm, causes such portion of the diaphragm to be elevated or forced into the cup toward the outlet, thus expanding the slit 6 to form a circular opening for the outward passage of the material. When the pressure upon the diaphragm is removed, the deflected portion thereof will return to normal position by its own elasticity, thus producing a suction or partial vacuum in the vacuum chamber whereby the excess material discharged will be drawn back into the tube in an obvious manner. The form of elastic cup shown in Figs. 1 and 2 may be used where the material stored and dispensed is comparatively light in weight and of a more or less readily flowing character, but for heavier and denser fluids, and thus having some material degree of viscosity, I may employ in conjunction with the cup a spring 7, as shown in Fig. 3, which will return the deflected portion of the cup positively to normal position after actuation.

I claim:—

1. A collapsible tube having an outlet, and an inverted dome-shaped resilient body ar-

ranged within the tube and having a central opening in its bottom portion for the passage of the material, the said bottom portion of the body provided with the opening being flexible in both directions from a normal position.

2. A collapsible tube having an outlet, a diaphragm arranged within said tube and comprising an inverted dome-shaped body of resilient material having its bottom portion provided with a central opening, said bottom portion of the body being flexible in both directions from a normal position, and a spring acting upon the central portion of the body for limiting its opening movement toward the outlet of the tube.

In testimony whereof I affix my signature in presence of two witnesses.

ALBA C. BOOTH.

Witnesses:

LOUISE M. CONVERSE,

EDMUND C. MOWER.