

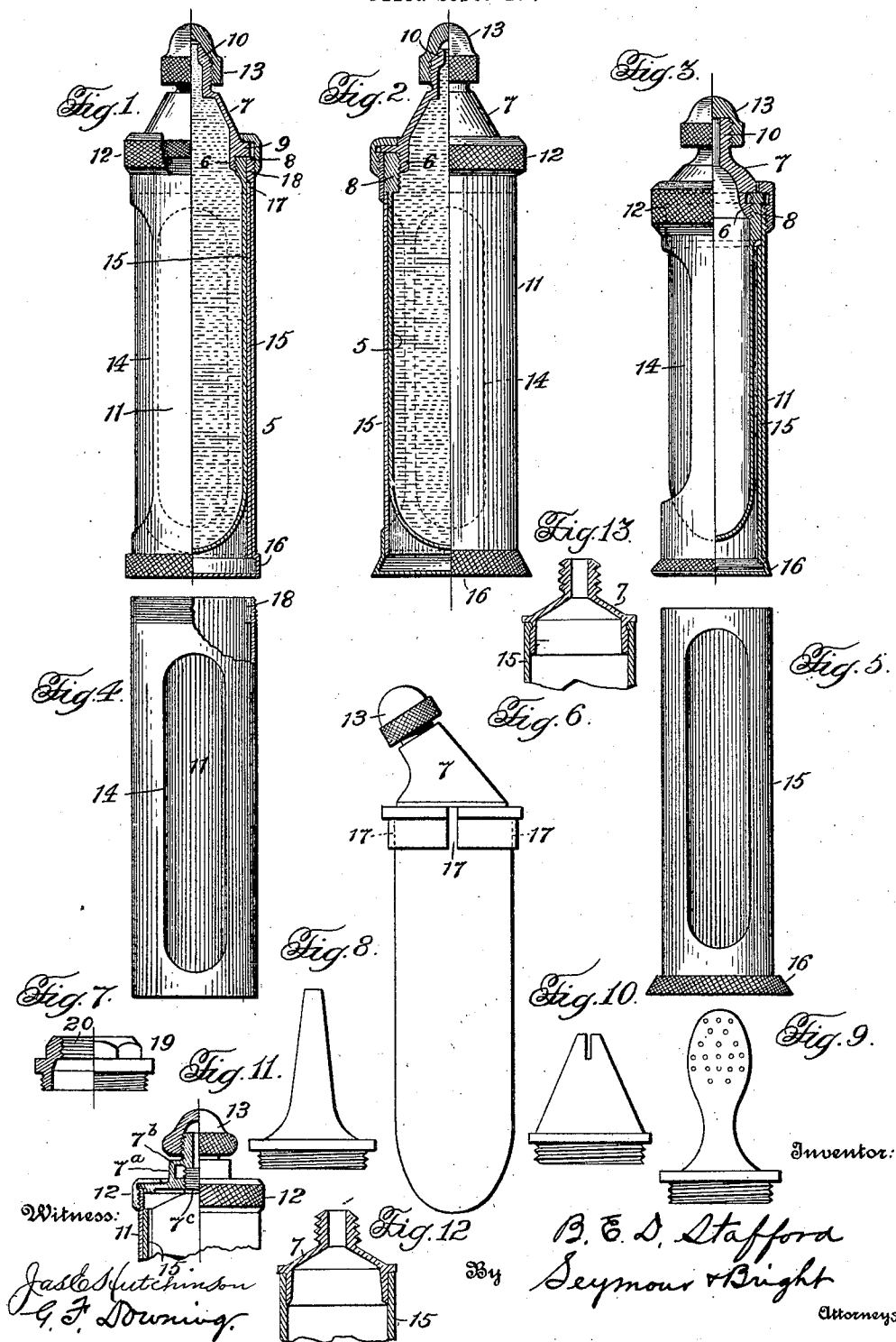
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B. E. D. STAFFORD

COLLAPSIBLE DISPENSING TUBE

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UNITED STATES PATENT OFFICE.

BENJAMIN E. D. STAFFORD, OF PITTSBURGH, PENNSYLVANIA.

COLLAPSIBLE DISPENSING TUBE.

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To all whom it may concern:

Be it known that I, BENJAMIN E. D. STAFFORD, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Collapsible Dispensing Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in collapsible dispensing tubes and a container or finger tube for the same.

The object of the invention is to provide simple and readily operable means for detachably connecting the head, tube and container, so as to permit of the ready removal of a used tube and the insertion of a new one, and it consists in the parts and combination of parts and in the details of construction as will be more fully explained and pointed out in the claims.

In the accompanying drawings; Figure 1 is a view partly in section and partly in elevation of my improved device; Figures 2 and 3 are views partly in section and partly in elevation showing slightly modified forms of tube; Figure 4 is a view of the finger tube and Figure 5 a view of the hood; Figure 6 is a view in elevation of the tube shown in Figure 2 showing a head with a modified form of nozzle; Figure 7 is a view partly in section and partly in elevation of a special head; Figures 8, 9 and 10 are views of standard nozzles adapted for use with the head shown in Figure 6, and Figure 11 is a view partly in section and partly in elevation and Figures 12 and 13 views in section of other modifications.

5 represents a flexible or collapsible tube open at one end and threaded at said open end for the attachment of the head 7 and closed at its other end, the closed end being elliptical as shown. This tube 5, which is designed for holding tooth paste, shaving cream, library paste etc., is made thin so that it may be readily compressed by a finger for forcing the contents out through the nozzle 10 in the usual and well known manner and is open at one end and internally threaded to receive the threaded end 6

of the head 7. The open threaded end of the collapsible tube is thickened as shown to provide for the threads without unduly weakening the said end, and the thickened portion 8 may project inwardly as in Figure 1 or centrally located with relation to the body of the tube as shown in Figure 2, or it may be flanged so as to overlap the open end of the finger tube or container as shown in Figure 3. These collapsible tubes are designed to be filled at the factory and closed by a head as shown in Figure 2, without of course the ring clamp, which head for temporary use may be of tin or similar metal moulded and machined, and thrown away with the emptied tube if the latter be used as the ordinary tube without the container. If however the collapsible tube be used with the container or finger tube as shown, I can when preferred use a head 7 of harder metal which is substituted for the cheaper head.

The outer end of the collapsible tube is made flat or flanged to snugly fit against the underside of the peripheral flange 9 of the head 7, and this flange on the head preferably projects slightly beyond the outer face of the tube or the flange thereon as shown in Figures 1 and 3 to form a stop or bearing for the outer end of the container or finger tube 11, in other words this peripheral flange 9 of the head 7 may form a support or abutment for not only the outer open end of the collapsible tube 5 but also the container or finger tube 11 so as to form a tight joint at the juncture of the said parts.

By making the open end of the collapsible tube thicker than the body by flanging it or otherwise, the said open end will be comparatively stiff and rigid and when screwed to the internally threaded end of the head, the latter forms an inside support for the open end of the collapsible tube and prevents the said end from collapsing or bending under any pressure exerted on the collapsible tube 5.

The flange 9 of the head 7 rests tightly against the end of the collapsible tube, and the finger tube or container 11 is passed over the tube 5 and abuts at its free end against the flange on the tube or against the flange 9 of the head and is secured in place by the ring clamp 12 which is provided with inter-

nal threads for engagement with external threads on the finger tube or container, and is also provided at its upper or other end with a flange which overlaps the flange 9 on the head 7 and locks the said finger tube or container on and over the collapsible dispensing tube, the outer edge of the ring clamp being preferably milled or roughened to permit it to be readily turned. The ring clamp is applied over the head 7, and the latter is provided with an internal nozzle 10 closed by a cap 13. With this construction it will be seen that the container or finger tube can be applied to a tube and head as shown in Figure 1 and locked thereto by the ring clamp.

The body of the collapsible tube fits loosely within the container or finger tube so as to permit the latter to be readily applied to the former and cover and protect it and also form an ornamental housing or casing for the said tube.

The head 7 is hollow as shown for the free passage therethrough of the paste or other material in the tube, and the cavity in the head at its lower end is but slightly less than the diameter of the tube 5 at its upper thickened end so as to permit of the free passage of the contents of the tube without any tendency to choke at this point.

The finger tube or container is provided with a finger slot 14 which extends throughout the major part of the length of the collapsible tube so as to permit the latter to be compressed up to a point near the head so as to expel the contents of the collapsible tube.

15 is a hood, which is preferably integral with the end 16 as shown in Figure 5 so as to be turned thereby, or may be separate from the said end, in which latter instance the end would be integral with the container 11. In the construction shown in Figure 1, the outer end of the finger tube or container or the end adjacent the head 7, is thickened, the thickened part projecting inwardly thus forming a space between the finger tube and collapsible tube for the hood; in the construction shown in Figure 2 the thickened end of the collapsible tube is central with relation to the tube thus leaving a space between it and the finger tube for the hood, and in Figure 3 the end of the hood is covered by the flange on the tube. This hood is cylindrical in shape and snugly fits within the finger tube, and is provided with a slot, which by turning the hood may be brought into alignment with the finger slot 14 in the finger tube or container so as to expose the collapsible tube, which may then be pressed with a finger or fingers to expel part of its contents, and by again turning the hood the latter will effect a closure of the finger slot 14 in the finger tube and thus cover and protect the collapsible tube.

With this construction the finger tube or

container may be assembled and sold with the collapsible tube and head, or more expensive and ornamental containers may be sold independently for use with a filled collapsible tube, which with its head may be sold as a complete article.

I prefer to provide the upper thickened end of the collapsible tube with one or more external grooves 17 and the upper end of the finger tube or container with internal corresponding ribs 18 to enter said grooves so as to prevent any turning movement of the finger tube or container on the collapsible tube, and particularly so when securing the ring clamp in place, and these groove or grooves and ribs serve to locate the finger slots in the container or finger tube with relation to the nozzle when a bent or inclined nozzle as shown in Figure 6 is used. Instead of employing a head with an integral nozzle as above explained, the head may be in the form of a reducer 19 as shown in Figure 7, that is to say, it is threaded and flanged to engage the upper end of the collapsible tube, and is provided with a reduced internally threaded opening 20 for the attachment of all nozzles of standard size, three forms of which are shown in Figures 8, 9 and 10.

In the construction shown in Figure 11, the head 7^a rests on the outer open end of the finger tube or container and is provided with an internally threaded socket 7^b to receive the threaded nozzle 7^c of the ordinary collapsible tube of commerce. This nozzle is in line with the nozzle opening in head 7^a and said latter opening is closed by a cap, as in the other forms. With this construction the head 7^a is secured to the finger tube by the ring clamp 12.

Instead of securing the open end of the collapsible tube 5 to the head 7 by screw threads as shown in Figures 1, 2 and 3, I may make a force fit between the inner depending end of the head and the upper end of the collapsible tube as shown in Figure 12. This may be done by a slight taper between the parts, or by a sweat fit as shown in Figure 12, or providing the head with a groove 6^a and spinning the end of the tube into said groove as shown in Figure 13.

It is evident that many slight changes might be resorted to in the relative arrangement of the parts shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described but,

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. A collapsible metal tube having an open end, a removable head detachably secured to said open end and having a periph-

eral flange overlapping and resting on said end, and a rigid container or finger tube secured to the head and housing the collapsible tube and provided with a finger slot.

5 2. The combination of a collapsible tube having a thickened and internally threaded open end, a head screwed to said thickened end, a container or finger tube embracing the collapsible tube and provided with a
10 finger slot, a hood mounted between said tubes and adapted to be turned to close the slot in the finger tube, and a ring clamp screwed to one end of the finger tube and having a flange embracing the head.

15 3. The combination of a collapsible tube closed at one end and open at the other end and internally threaded at its open end, a head having a threaded portion to engage the threads of the collapsible tube and also
20 provided with a peripheral flange to rest against the open end of said tube, a finger tube or container open at one end and externally threaded at said open end and provided with a finger slot, a ring clamp screwed

to the finger tube or container and having 25 a top flange in a plane above the open end of the collapsible tube, and a hood interposed between the two tubes and having a slot adapted when said hood is turned to align with the slot in the finger tube or con- 30 tainer so as to expose the collapsible tube.

4. The combination of a collapsible tube having an open internally threaded end the wall of said open end being thickened and grooved externally, a finger tube for housing 35 said collapsible tube and provided with an internal rib to engage the groove in the collapsible tube, a head having a threaded portion to engage the threaded end of the collapsible tube, and a peripheral flange to 40 overlap the open end of the collapsible tube.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

BENJAMIN E. D. STAFFORD.

Witnesses:

G. B. WORSTALL,
S. W. HOGAN.