Jan. 22, 1929. 1,699,532

N. M. HOPKINS

MULTIPLE COLLAPSIBLE TUBE

Filed July 11, 1924

Fig. 2.

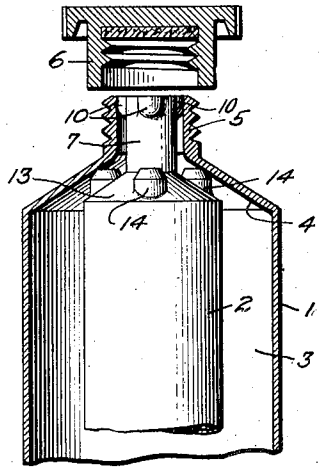


Fig. 1.

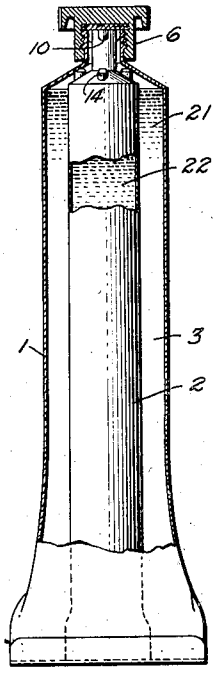


Fig. 5.

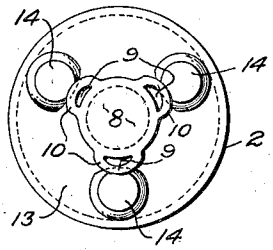


Fig. 6.

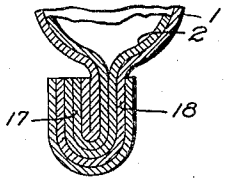


Fig. 3.

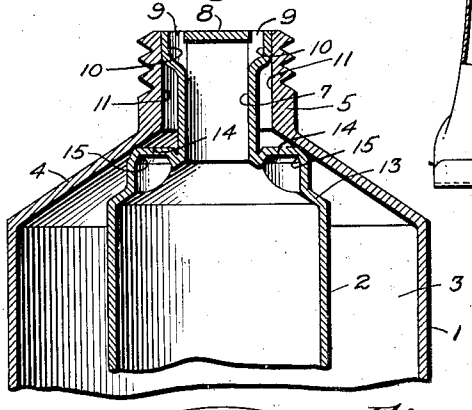


Fig. 7.

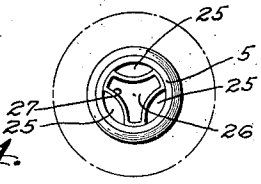


Fig. 9.

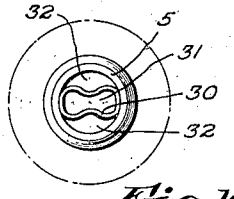


Fig. 4.

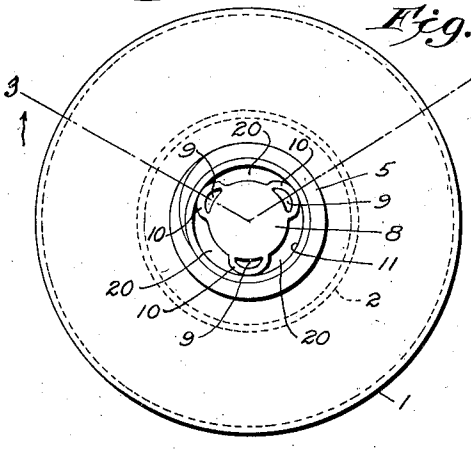


Fig. 8.

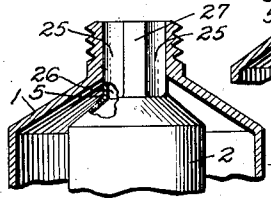
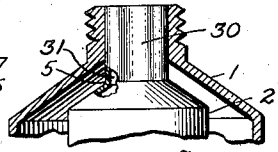


Fig. 10.



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UNITED STATES PATENT OFFICE.

NEVIL MONROE HOPKINS, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO GILMONT PRODUCTS CORPORATION.

MULTIPLE COLLAPSIBLE TUBE.

Application filed July 11, 1924. Serial No. 725,457.

This invention relates to double collapsible tubes, and has for its object to improve the constructions which have been heretofore proposed.

With this and other objects in view the invention consists in the novel parts and combinations of parts comprising the improve double tube, all as will be more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings, forming a part of this specification, in which like numerals designate like parts in all the views,

Figure 1 is a sectional view partially broken away of one form of double collapsible tube made in accordance with this invention;

Figure 2 is an enlarged sectional detail view of a portion of the parts shown in Fig. 1;

Figure 3 is a sectional view taken on the line 3—3 of Fig. 4, looking in the direction of the arrows;

Figure 4 is an enlarged plan view of the parts shown in Fig. 3;

Figure 5 is an enlarged plan view of the inner tube removed from the outer tube;

Figure 6 is an enlarged sectional detail view of the bottom of the two tubes;

Figure 7 is a plan view of a somewhat modified form of construction;

Figure 8 is a sectional view of the construction shown in Fig. 7;

Figure 9 is a plan view of a still further modified form of the invention; and

Figure 10 is a sectional view of the parts shown in Fig. 9.

1 indicates an outer collapsible tube, 2 an inner collapsible tube centered inside the tube 1 as illustrated, and providing an annular space 3 between the tubes 1 and 2. The tube 1, near its top portion, is provided with the inclined portion 4 and the screw-threaded neck portion 5, over which fits the usual screw cap 6, as shown. The inner tube 2 is provided with the neck portion 7 which is closed by the integral member 8 except for the outlets 9, as will be clear from Figs. 2, 3 and 4. These outlets 9 are conveniently made by inserting an instrument through the integral portion 8 and thus displacing the thin metal into the bulges or projecting portions 10 which are of such a size as to fit the interior 11 of the neck portion 5, all as is plainly shown in the above mentioned Figures 2, 3 and 4. The projecting portions 10 thus form hollow extensions of the neck 7 and provide passageways in communication with the interior of the inner tube to provide exits for the contents of said inner tube. The neck portion 7 of the inner tube is joined to the body portion 2 thereof by the inclined portion 13 which is provided with a plurality of projections or knots 14 adapted to fit under the inclined portion 4 of the outer tube, as at the points 15, see Fig. 3. The construction is such, as will be clear from the drawings, that when the inner tube 2 is inserted in the outer tube 1, the shoulders or projections 14 will take against the inner surface of the inclined portion 4 of the outer tube and contact therewith at the points 15 as plainly shown in Fig. 3, while the bulges or projections 10 will fit against the inside 11 of the neck portion 5 of the outer tube, as also plainly shown in the drawings. In the meantime, the bottom portion 17 of the inner tube being rolled up or secured to the bottom portion 18 of the outer tube, as indicated in Fig. 6, the parts are held securely in their operative position as illustrated in Fig. 1.

From the construction disclosed, there is provided three ejecting orifices 9 from the inner tube, and also three ejecting orifices 20 from the outer tube as plainly shown in the drawings. The orifices 20 are fed from the spaces between the projections 14 and the projections 10 on the inner tube 2, as will be clear from Figs. 2 and 3 of the drawings. It will be observed that the extensions 10 of the inner neck 7 and the exit orifices 9 are spaced peripherally or circumferentially of the tube neck, and that the exit orifices 20 are also peripherally spaced and arranged intermediate the respective extensions 10 and orifices 9. Furthermore, the plate 8 forming a partial closure for the passageway leading to the inner tube confines the orifices 9 to positions circumferentially of the tube neck, and a series of peripheral or circumferential exits is thus provided leading respectively to the compartments of the inner and outer tubes.

In double collapsible tubes, as is well known, the paste or other material 21 in the space 3 is usually chemically different from the paste or other material 22 in the inner tube 2, and it is usually very desirable to mix

the materials 21 and 22 upon using the same, in order to get the full benefits accruing from the use of these tubes. In this invention this mixing is facilitated by providing a plurality of streams or ribbons of each of the materials 21 and 22, when they are to be used. That is to say, in the case of a tooth paste, for example, composed of chemically reacting pastes 21 and 22, it is very desirable to thoroughly mix the two materials on the brush as they are being applied to the teeth, in order to get an improved cleansing action, and therefore by providing the three ejecting orifices 20 and the three ejecting orifices 9, one has six small ribbons or streams of paste simultaneously delivered to the brush, which are immediately and thoroughly mixed when the brush is applied to the teeth.

In the somewhat modified form of construction shown in Figs. 7 and 8, there are provided the three outer orifices 25 from the outer tube, and a single orifice 26 of the shape shown from the neck 27 of the inner tube. Here, the mixing is not so thorough as in the case of Fig. 4, but the peculiar shape of the orifice 26 aids the mixing of the material ejected therefrom with the material ejected from the three orifices 25. It will be clearly seen in Fig. 7 that the inner neck 27 is provided with peripherally spaced wall portions offset inwardly so as to provide the peripherally spaced exit orifices 25 disposed between said offset portions, and the wall of the outer neck, while the portions of said inner neck wall intermediate said offset portions, are also peripherally spaced and provide spacing supports contacting with the inner wall of the outer neck for supporting the inner and outer tubes relatively to each other at the neck portions thereof. In this respect, therefore, this construction is similar to that of Figs. 2 and 3 described above.

In the case of the modified form of the invention shown in Fig. 9, the neck 30 of the inner tube is shaped as shown so as to provide a single orifice 31 of the shape illustrated, and two orifices 32 from the outer tube of the shape illustrated are also provided from the outer tube 1. Here, again, the shape of the neck 30 and of the orifice 31 from the inner tube facilitates the mixture of the paste from the orifices 32 of the outer tube. In this case also as in the modifications heretofore disclosed, the neck 30 is provided with peripherally spaced offset portions providing passageways leading to the interior compartment of the outer tube, while the portions of the inner neck intermediate said offset portions contact with the inner surface of the outer neck thus providing supports between the inner and outer tubes at the neck portions thereof.

It will thus be seen that in all the forms of the invention there is provided more than two orifices from the two tubes 1 and 2, so that more than two streams or ribbons of paste are extruded from the two tubes, and that the ribbons of paste from the orifices of the inner tubes are so disposed and shaped as to coact with the ribbons from the orifices of the outer tubes to facilitate the mixing of the pastes in use.

It will further be clear that a single closure 6 closes all the orifices, or exits from both tubes.

What is claimed is:

1. In a multiple collapsible tube, the combination of an outer collapsible tube having a neck portion; an inner collapsible tube provided with a neck portion having hollow extensions providing exits for the inner tube and disposed inside said first named neck portion and in contact therewith so as to divide said outer neck to provide a plurality of exits from said outer tube, and common means to close all of said exits.

2. In a multiple collapsible tube, the combination of an outer collapsible tube having a neck portion; an inner collapsible tube provided with a neck portion having hollow extensions disposed inside said first named neck portion and in contact therewith so as to provide a plurality of exits from said outer tube, a plate covering a portion of the neck of the inner tube but leaving exits therein, and common means to close all of said exits.

3. In a multiple collapsible tube, the combination of an outer collapsible tube having a neck portion; an inner collapsible tube provided with a neck portion having hollow extensions disposed inside said first named neck portion and in contact therewith so as to provide a plurality of exits from said outer tube, a plate covering a portion of the neck of the inner tube but leaving exits therein at said extensions, and common means to close all of said exits.

4. In a multiple collapsible tube, the combination of an outer collapsible tube having a neck, an inner collapsible tube having a neck disposed inside said first mentioned spaced portions of its wall offset and having peripherally spaced portions intermediate said first mentioned spaced portions, certain of said wall portions contacting with the wall of the outer neck portion to provide spacing supports, and the other wall portions of the inner neck cooperating with the outer neck to provide exit passageways.

5. In a multiple collapsible tube, in combination, an outer collapsible tube having a neck, an inner collapsible tube having a neck disposed inside said first mentioned neck and having an exit passageway leading to the inner compartment of the inner tube, said inner neck having peripherally spaced portions of its wall offset and having periph-

erally spaced portions intermediate said first mentioned spaced portions, certain of said wall portions contacting with the wall of the outer neck portion to provide spacing supports, and the other wall portions of the inner neck cooperating with the outer neck to provide exit passageways, and a closure for a portion of the exit passageway of the inner neck, so as to form a series of peripherally arranged exit passageways leading to the inner and outer compartments of the tube.

In testimony whereof I affix my signature.

NEVIL MONROE HOPKINS.