May 27, 1930. C. J. PENNEY 1,760,773

CONTAINER OR TUBE FOR DENTIFRICE

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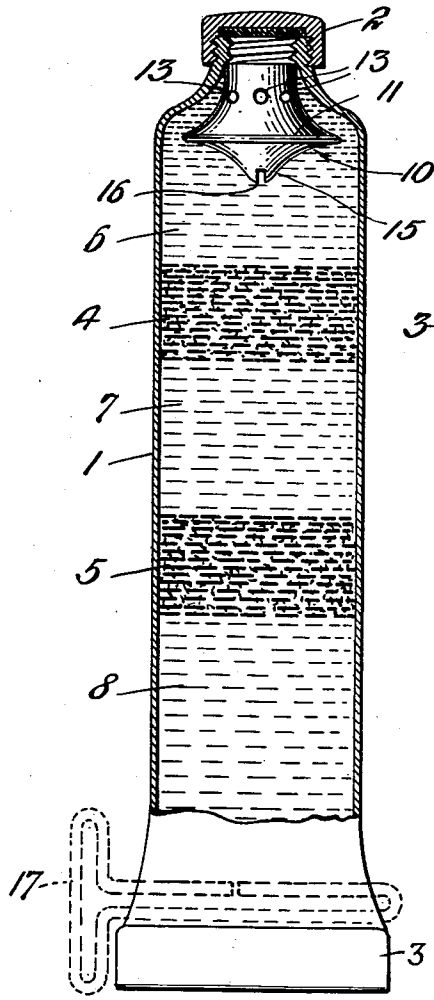


Fig. 1.

Fig. 2.

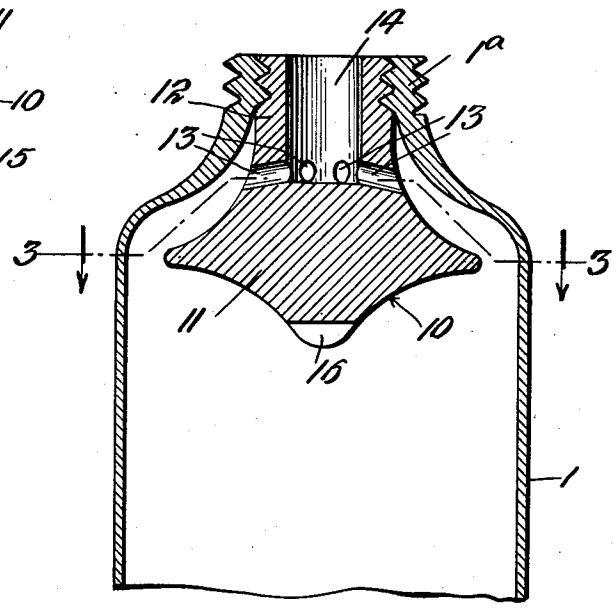
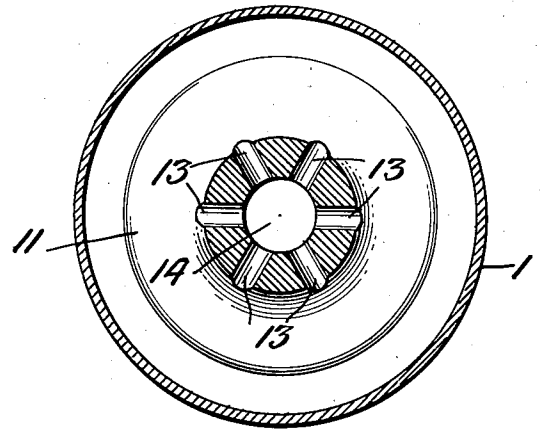


Fig. 3.



INVENTOR
CLARENCE J. PENNEY
BY
Leo Fawcett
ATTORNEY

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CLARENCE J. PENNEY, OF NEW YORK, N. Y.

CONTAINER OR TUBE FOR DENTIFRICE

Application filed September 29, 1928. Serial No. 309,155.

The present invention relates more particularly but not necessarily to the art of making and packaging tooth pastes. The tooth pastes on the market today are compositions intended principally for polishing the teeth; the cleaning of the teeth, that is, the removal of the dangerous films and tartar, being left to the dentist. The dentist usually employs powdered pumice stone, or similar abradant material, in connection with a new brush of strong bristles.

The principal object of the invention is to provide means whereby the user of tooth paste may obtain results which, while possibly not equal to the results obtained by the proper and regular use of good tooth pastes or powders and cleaning of the teeth by a dentist at suitable intervals, are much better than those usually obtained and assure better care of the teeth by the users of tooth paste. Accordingly, the present invention aims to provide for extruding or forcing out one layer at a time from a collapsible container tube of the customary type, closed at one end and having at the other end a discharge opening or outlet which may be restricted and serve to control the flow, a filling of paste comprising layers of different composition, for example, layers of two kinds of of paste arranged in alternation and differing also in their relative thicknesses, in such proportion that one paste layer serves for an extended period of time as compared with the next paste layer, and so on through the filling of the tube. Preferably the paste layers of less thickness include an abradant substance intimately admixed therewith. The proportions of the relative thicknesses of the layers may be such that if the user of collapsible tubes so filled, used twice each day a reasonable amount of the ordinary or usual tooth pastes contained in the tube, each layer of tooth paste containing the abrasive would come around at the end of nine days of use of the ordinary paste which would be good for the tooth and gums, stimulating the circulation in the gums and removing the film which forms on the teeth and which is a fertile field for bacteria reproduction. By using the tube in this manner, the user will follow a regular course of dental treatment. Therefore a most important object of the present invention is to provide for the regular prophylactic treatment of the teeth and gums, consecutively and at the proper intervals, the succession of treatments being controlled and not actually at the pleasure of the subject because a single container is used both for the ordinary tooth paste and for the abrasive paste.

Another object of the invention is to provide a controlling device or controller for use in the collapsible tube to render the flow of material from points in each cross section of the tube toward the restricted outlet substantially uniform. According to one form of carrying out the invention, there is provided a controlling device or controller located in the tube at the outlet end thereof. This controller may have a stem located at and secured in the outlet by any suitable means, such as a screw thread at the outside of the stem and an internal screw thread in the outlet end of the tube, and a depending controlling head of a mushroom shape spaced from the tube at its periphery and at its forward side, that is the side toward said outlet, and having an inner or rearward face with a projecting center or point from which the head gradually increases in cross section until its greatest periphery is reached.

When the tube is collapsed uniformly from its rear end, as by winding the rear end around a suitable key, the material is forced outwardly around the periphery of the mushroom head and inwardly to the stem of the controller. At that point the material enters radial openings or bores communicating at their inner ends with a central or axial bore extending to the outer end of said stem, and through which the material is supplied at the outer end of the outlet of the collapsible tube.

With the above and other objects in view, the present invention consists of certain novel features of the container, the method of filling and using the same, and the means for controlling the flow of the paste to the outlet, which can best be described in connection with the accompanying drawings, showing a

tube and controller constituting a preferred embodiment of the invention and in which:

Fig. 1 is a sectional elevation of the tube;

Fig. 2 is a sectional elevation of the upper end of the tube and of the controller, taken along a plane perpendicular to that along which the section in Fig. 1 is taken; and

Fig. 3 is a section on the line 3—3 of Fig. 2.

Referring to the drawings, 1 denotes a collapsible tube or container having at one end a constricted or restricted outlet or neck 1ª threaded externally to receive thereon an internally threaded closure or cap 2, and at the other or rear end a seal which may be effected by means of a sealing strip 3. This tube may conveniently be five inches long and three inches in circumference and preferably is filled with paste of different kinds arranged in layers, 4, 5, 6, 7, and 8, the layers 6, 7, and 8 being of the usual tooth paste and preferably about one inch in depth and the layers 4 and 5 being of a mixture of the usual or customary tooth paste with a suitable pulverized or powdered abrasive of a sufficient gritty nature pulverized pumice stone, for example, and preferably about one-half of an inch in depth.

Said layers of material may be formed by pressing suitable amounts of said usual tooth paste and of said mixture alternately, into the rear end of the tube 1 before closing it with the sealing strip 3. The collapsible tube 1 is made of any suitable material, such as tin foil or pyroxylin, one advantage of the pyroxylin tube being that the various layers show through the material and indicate the nature of the filling as well as the extent of the material remaining at any time in the layer positioned at the outlet ready for use.

With the tube of the dimensions specified and the layers of the thicknesses specified, the ordinary paste in one of the layers 6, 7, and 8 would ordinarily last about nine days, and the mixture in each of the layers 4 and 5 would last about one-half as long. To be more definite with respect to proportions, one inch of ordinary paste would ordinarily be sufficient for eighteen applications to the teeth, twice a day for nine days, and the mixture in each of the one-half inch layers would, if used at the same rate, last one-half as long.

As to the proportions of the ordinary paste and abrasive or abradant material in each of the layers 4 and 5, there may be two-thirds ordinary paste and one-third powdered or pulverized pumice stone. Of course other proportions may be found desirable, as, for example, three-quarters paste or paste vehicle and one-quarter pumice stone.

Preferably the successive layers of paste and mixture are colored to facilitate differentiation by the user and give him information as to when the next layer is reached after a preceding layer has been squeezed out of the discharge opening or outlet of the tube. Such indications may be observed at the outlet of the tube and, in the event that the tube be of transparent material, through the side of the tube. Preferably the usual or ordinary paste for mere polishing of the teeth would be of a creamy yellow color and the mixture of paste and abrasive or abradant would be of a pinkish or coral color.

When the rearward end of the tube is collapsed by pressure applied uniformly across the same, very satisfactory results are obtained in expelling substantially all of one layer before the material of the next layer appears at the outlet. This action is facilitated not only by the easy flowing quality of the paste but also by the low degree of adhesion of the same to the inner surface of the tube, especially when the tube is made of very smooth material such as pyroxylin.

When, and if, the flow within the body of the paste filling of the tube is so much faster than at points adjacent to the wall of the tube that the separate feeding of layers from the outlet is not sufficiently satisfactory, it may be desirable to make suitable provisions to obviate such unsatisfactory conditions. Such desired results may be obtained by suitable shaping of the layers of material but preferably by use of controlling means located in the tube.

In carrying out this feature of the invention, there has been provided a depending controlling device or controller 10 in the general form of an inverted mushroom and located at the outlet of the tube. This controller includes a head 11 and a stem 12 which may be secured to the tube by means of an external screw thread on the stem 12 and an internal screw thread in the neck of the tube 1. The head 11 is so shaped as to retard the flow at the middle of the tube and cause the material to flow around the outside of the head and down to the stem where it passes through ducts 13 extending in generally radial arrangement from and communicating with an axial passage 14 extending to the outlet end of said stem.

At its outlet side the head 11 flares outwardly and inwardly from the stem 12 to provide a passage between the head and the outlet end of the tube and at its greatest periphery is spaced from the cylindrical wall of the tube to provide an annular inlet to the outlet passages. At its opposite side the head converges rearwardly to a point or tip 15 which for convenience in attaching the controller is provided with a slot 16 which may be reached by a screw driver inserted through the open rear end of the tube. The side having the tip 15 may also be considered as diverging from the tip and is so shaped that the material is spread gradually at the tip 15 and then as the flare of this side increases the flow of material becomes more nearly perpendicular to the common axis of the tube and the

controller. It should be noted that all surfaces are shaped to provide satisfactory flow lines.

In order to influence the user to start at the bottom of the tube and to assist in obtaining uniformity of feed of the material, the sealing strip is preferably of greater thickness and weight than the usual sealing strip and is perhaps twice as wide. It has been found to be particularly desirable to use a key 17, such as shown in dotted lines on Fig. 1, for winding the rear or bottom end of the tube thereon, thus assuring the application of pressure to the column of material at the extreme rear end thereof.

It should be understood that in place of a collapsible tube, use may be made of other containers, such for example as a cylindrical one provided with a plunger or piston workable therein to press the material through the outlet.

It will be obvious to those skilled in the art that various changes may be made within the spirit and scope of the present invention and still be within the appended claims, and accordingly the invention is not limited in the respects specifically described herein and illustrated in the drawing.

This application is a continuation of my co-pending application Serial No. 227,484, filed October 20, 1927, as to all common subject matter of invention disclosed in the two applications.

What I claim as new, is:

1. The combination with a collapsible container tube of the customary type which is closed at one end and has a restricted discharge opening at the other end, of means for rendering the flow of material from points in each cross section of the tube to said restricted opening substantially uniform as the tube is uniformly collapsed from its closed end, including a spreading device mounted in said discharge opening and projecting inwardly therefrom.

2. The combination with a collapsible container tube of the customary type which is closed at one end and has a restricted discharge opening at the other end, of means for rendering the flow of material from points in each cross section of the tube to said restricted opening substantially uniform as the tube is uniformly collapsed from its closed end, including a device having a tubular portion fitting at its outer end into said restricted opening and provided inside said tube with generally radially arranged passages extending from the passage in said tubular portion through the side of the tubular portion to receive paste from the interior of the tube and a closure at the inner end of said passage.

3. The combination with a collapsible container tube of the customary type which is closed at one end and has a restricted discharge opening at the other end, of means for rendering the flow of material from points throughout each cross section of the tube to said restricted opening substantially uniform as the tube is uniformly collapsed from its closed end, including a device having a part fitting in said restricted opening and a portion located within the tube proper and spaced from the tube wall to provide a passage there between, said device having an axial passage extending through the restricted opening of the tube and communicating at its rear end by generally radial passages with said passage formed between the device and the wall of the tube.

4. The combination with a collapsible tube of the customary type which is closed at one end and has a restricted discharge opening at the other end, of means for rendering the flow of material from all points in each cross section of the tube to said restricted opening substantially uniform as the tube is uniformly collapsed from its closed end, including a device having a portion fitting into said restricted opening and a head extending rearwardly in the tube and flaring outwardly from the portion in said restricted opening to provide the inner wall of a passage between the head and the tube and then tapered inwardly and toward the rear end of the tube to force outwardly toward the circumferential wall of the tube material forced toward said restricted end, said device having an axial passage through the portion fitting into said restricted opening and having radially arranged passages connecting said axial passage with the passage between the inner surface of the tube and the forward flared side of said head.

5. A dentifrice package including a tube or container provided with an outlet at one end and containing a stratified filling of dentifrice comprising a plurality of different dentifrice substances for treatment of teeth and gums, the different substances being arranged in alternating layers, transversely of the tube or container, to adapt the substances upon application of pressure to be extruded in orderly succession through the outlet.

6. A dentifrice package including a collapsible tube or container provided with an outlet at one end and enclosing a stratified filling of dentifrice comprising a plurality of different dentifrice substances for treatment of teeth and gums, the different substances being arranged in alternating layers, transversely of the tube or container, so that when the tube is collapsed from its rear, these substances will be extruded in orderly succession through the outlet.

7. The combination with a collapsible tube closed at one end and having a restricted outlet at the other end, and adapted to contain a dentifrice; of a device positioned in said tube adjacent to its discharge end and formed with

a curved lower face adapted to deflect the dentifrice upwardly and towards the inner wall of the tube upon collapsing the tube from its closed end in an upward direction.

8. The combination with a collapsible container closed at one end and having a discharge opening at its opposite end and adapted to contain a dentifrice; of means positioned within the container adjacent its discharge end and spaced from the walls of the container, said means being shaped to cause a uniform flow of the dentifrice from all points in the cross section of the container upon collapsing the container upwardly from its closed end.

CLARENCE J. PENNEY.