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G. W. BUNGAY
METHOD OF CONNECTING A COLLAPSIBLE CELLOPHANE
TUBE TO A METALLIC DISPENSING TERMINAL
Filed June 3, 1931

1,921,021

Fig. 1.

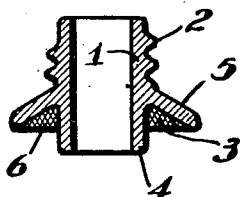


Fig. 2.

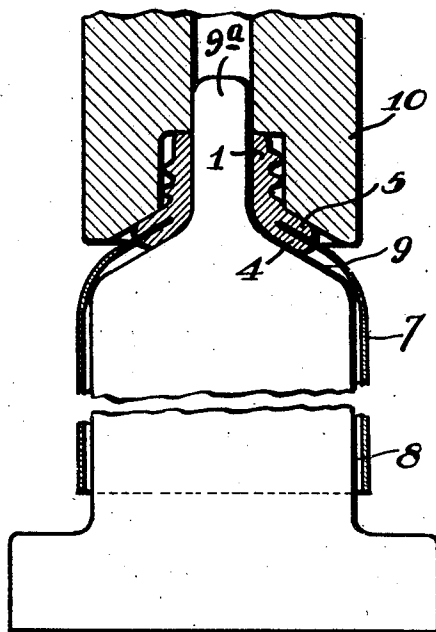


Fig. 3.

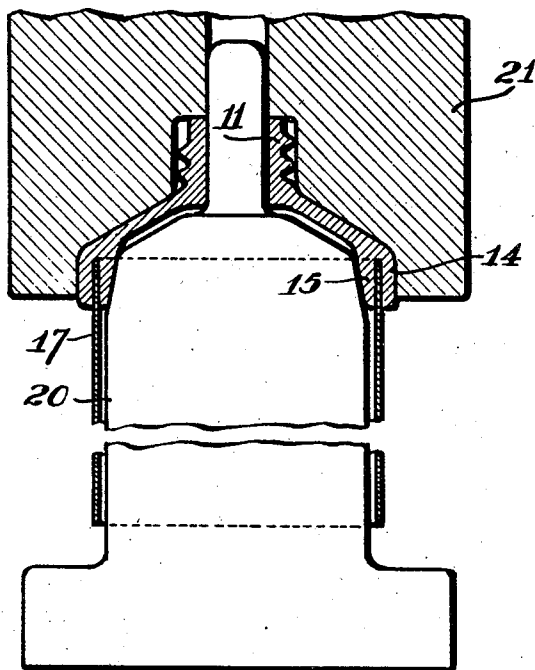
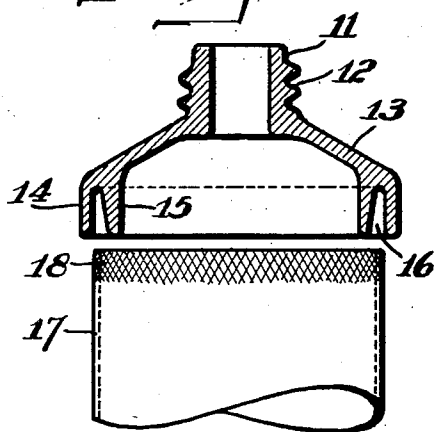


Fig. 4.

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UNITED STATES PATENT OFFICE

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METHOD OF CONNECTING A COLLAPSIBLE
CELLOPHANE TUBE TO A METALLIC DIS-
PENSING TERMINALGeorge W. Bungay, Plainfield, N. J., assignor to
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1 Claim. (Cl. 29—148.2)

The invention relates to the manufacture of collapsible tubes, such as those used for dispensing tooth paste, face and other creams, and the like.

5 Several attempts have been made to form the collapsible bodies of such tubes of cellophane so that their contents may be observed, and to form the dispensing terminals of metal so that removable caps may be readily attached to them, but, as far as I am aware, all such attempts have been unsuccessful because of failures of the connections between the tubes and the terminals. These connections have not been sufficiently tight to prevent leakage of the contents of the tubes, or to prevent separation of or relative movements between the two parts, as when the closure caps are tightened upon the terminals.

The object of this invention is to provide a method of so connecting a collapsible cellophane tube to a metal dispensing terminal that a secure, durable and leak-tight joint may be easily and economically formed.

In the practice of this invention, a collapsible cellophane tube is attached to a metallic dispensing terminal by forming a groove at the edge of the terminal, inserting the end of the tube in the groove, and pressing the walls of the groove upon the tube. The dispensing terminal is preferably die cast from tin, lead, aluminum, or other suitable metal, and the cellophane tube is molded or otherwise formed in any suitable or desired manner. To afford a tight joint between the end of the tube and the terminal, one or the other of the inter-engaged portions of these members is roughened, and the pressure applied to the walls of the groove is not only such as to bring them into firm contact with the tube, but also to cause the roughened wall of one to deform the wall of the other member, thereby effecting an interlocking of the two members. In case the terminal member is formed of tin or lead, either of which is softer than the cellophane used to form collapsible tubes, a wall of the engaged end of the tube is roughened so that its projections are pressed into the relatively soft metal of a wall of the terminal groove. In case the terminal member is formed of aluminum, which is harder than the cellophane used for the tubes, the roughening is applied to a wall of the groove formed in the dispensing terminal. It will be understood that both the inner and outer walls of the tube, or both walls of the groove, may be roughened for the purpose explained.

The invention will be further explained with reference to the accompanying drawing, of which Fig. 1 is a central sectional view of one form of metallic dispensing terminal; Fig. 2 a central sectional view through the terminal of Fig. 1 and a collapsible cellophane tube attached to it, the view including, in diagrammatic form, apparatus elements for making the connection between the terminal and tube; Fig. 3 a central sectional view of another form of metallic dispensing terminal, combined with a side view of an end of a collapsible cellophane tube in position to be applied to the terminal; and Fig. 4 a central sectional view through the terminal and tube of Fig. 3 attached to each other, the view including, in diagrammatic form, elements of apparatus for making the connection between the terminal and tube.

Having reference first to Figs. 1 and 2, the metallic dispensing terminal 1 there shown comprises an exteriorly threaded neck 2 for the reception of a closure cap, and, adjoining the neck, a groove 3 formed between walls 4 and 5, the wall 4 being in effect a prolongation of neck 2. The walls 4 and 5 being spaced from each other, make it possible to readily roughen one or the other thereof, the wall 5 being shown at 6 as being radially knurled or otherwise suitably roughened. As previously explained, a groove-forming wall of a terminal is roughened when the terminal is die-cast or otherwise formed from metal which is harder than the cellophane tube.

In Fig. 2, a cellophane tube 7 is shown with its upper end pressed between the walls 4 and 5 of the terminal, the upper end of the tube being molded or otherwise shaped in conical form the same, or substantially the same, as that of the inner face of wall 5 of the terminal. For pressing the walls of the terminal into firm engagement with the upper end of tube 7, and for simultaneously causing the roughened face 6 of wall 5 to deform the adjacent wall of the tube, a mandrel 8, provided at its upper end with a conical face 9 and a centering projection 9a, may be inserted into the tube to turn wall 4 of the terminal outwardly and press it against the tube and against outer terminal wall 5, which wall may be held by the lower end of a sleeve-like die 10 having a conical face.

In Fig. 3 there is shown another form of dispensing terminal 11, comprising a threaded neck 12, a conical top 13 and a pair of walls 14 and 15 depending from the edge of top 13 and forming between them a groove 16 for the reception

of the upper end of a collapsible cellophane tube 17. In this case the upper end of tube 17 has its outer wall knurled or otherwise roughened, as shown at 18, the wall of the tube being 5 roughened when the terminal is formed of a metal softer than the cellophane.

After the upper end of tube 17 has been inserted in groove 16 of terminal 11, the groove-forming walls 14 and 15 are pressed into firm engagement with the end of the tube, and the 10 roughened surface 18 of the tube is simultaneously caused to deform the adjacent face of the wall 14 of the terminal. This may be done in a manner indicated by Fig. 4, which shows 15 a mandrel or swedging punch 20 inserted through tube 17. With mandrel 20 in this position, wall 15 of the terminal may be pressed outwardly by the punch, wall 14 being then engaged by a suitable die 21.

When connections are thus formed between 20 collapsible cellophane tubes and metallic dispensing terminals, there are afforded leak-tight joints which are strong and durable, and which 25 on account of the interlocking of the roughened walls of the harder with the adjacent walls of the softer members, prevent relative movements between the tubes and terminals. The simplicity of the connections, and the economical way in which they may be made, are obvious 30 from the foregoing explanation of the invention.

According to the provisions of the patent statutes, I have explained the principle and mode of operation of my invention, and have illustrated and described the specific ways in which it may be practiced. However, I desire to 80 have it understood that, within the scope of the appended claim, the invention may be practiced otherwise than as specifically illustrated and described.

I claim as my invention: 85

The method of connecting a collapsible cellophane tube member to a metallic dispensing terminal member having vertical depending side walls and being of different hardness than the tube member, comprising forming a groove at 90 the edge of the terminal member extending upwardly into said vertical side walls of the terminal member, a wall of which is a substantially cylindrical surface, roughening a wall of 95 the softer member, inserting an end of the tube in said groove, and pressing the walls of said groove upon the tube and into such firm contact therewith that the roughened wall of the harder deforms the wall of the softer member, 100 thereby forming an interlocking connection without deforming the upper end of the cellophane tube member.

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