

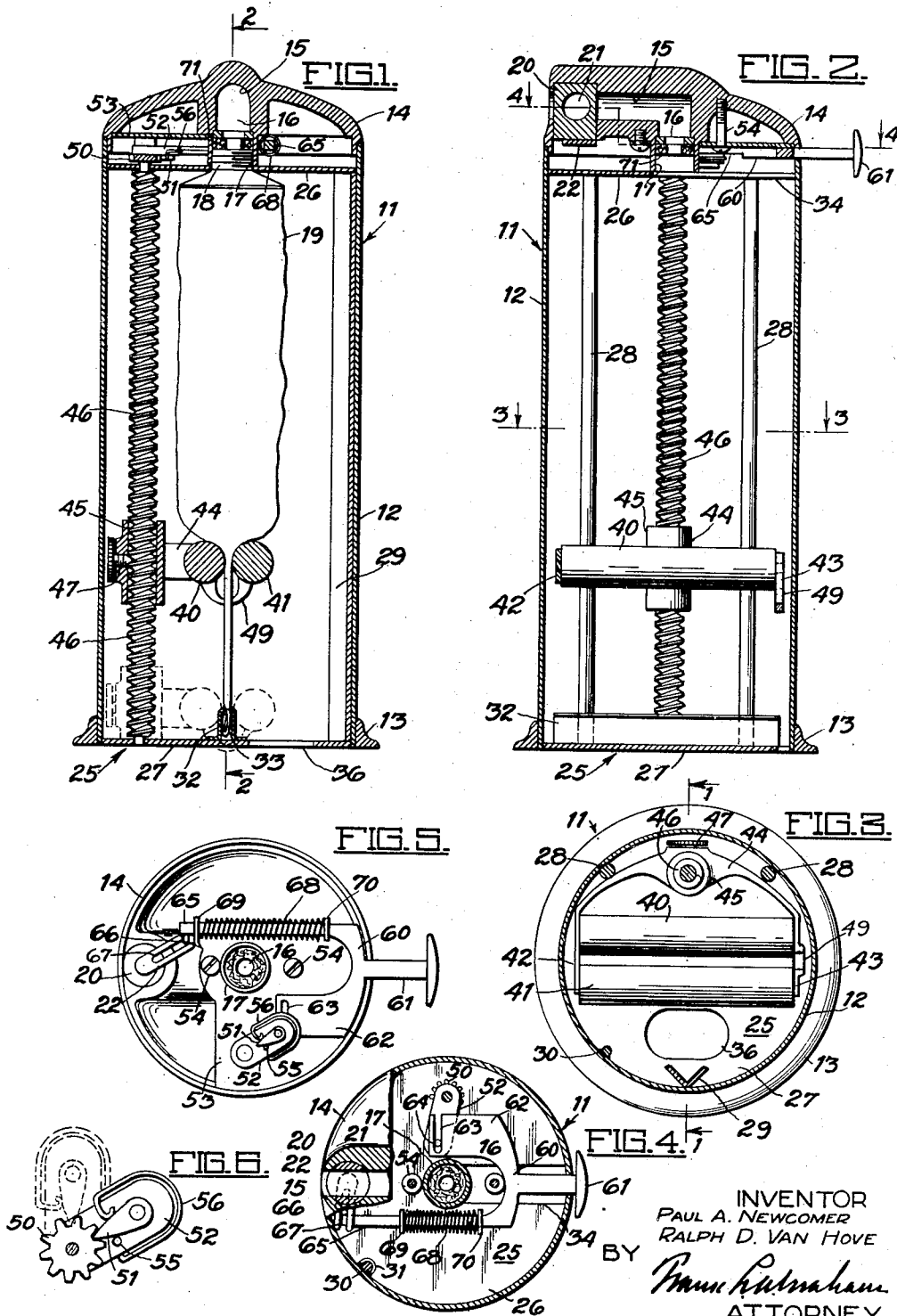
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TUBE CREAM DISPENSER

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TUBE CREAM DISPENSER

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6 Claims. (Cl. 221-60)

This invention has to do with devices for dispensing material such as shaving cream, tooth paste, etc., from collapsible tubes, and has as its primary object, the production of a container for a collapsible tube of the class described, which is attractive in appearance and which may be used to completely expel all of the material from the tube in independent discharges of predetermined quantities without waste.

The device contemplated by this invention consists in a general way of a container which has a cover provided with a valve discharge passage, such passage having a mouth or inlet which co-operates with the outlet nipple on a collapsible tube for receiving material therefrom.

The container is provided with a tube support adapted to hold the collapsible tube in position, and is also provided with a manually operable member whereby pressure may be applied to the collapsible tube, and the valve in the discharge passage may be opened.

It is an object of this invention to construct the operating mechanism just referred to, so that the valve in the discharge passage is opened simultaneously with the application of pressure to the collapsible tube.

It is a further object of this invention to construct the tube support so that it may be easily removed from the container or casing; the spent tube removed from the support; and the tube collapsing mechanism reset for reception of a fresh tube.

The details in the construction of a preferred form of my invention, together with other objects attending its production, will be best understood from the following description of the accompanying drawing which is chosen for illustrative purposes only, and in which—

Fig. 1 is a sectional elevation showing a preferred form of my invention with a collapsible tube mounted therein;

Fig. 2 is a sectional elevation taken in a plane represented by the line 2-2 in Fig. 1, illustrating the mechanism with the tube removed;

Fig. 3 is a plan section taken in a plane represented by the line 3-3 in Fig. 2;

Fig. 4 is a broken plane section partly broken away which may be considered as having been taken in planes represented by the line 4-4 in Fig. 2;

Fig. 5 is an inverted plan view of the cap or cover for the container; and

Fig. 6 is an enlarged view illustrating the construction and operation of a part of the mechanism which is used to collapse the tube.

More particularly describing the invention as herein illustrated, reference numeral 11 indicates a container embodying a shell 12 having a basal flange 13 and a cover member 14 which is removably mounted in the upper end portion of the shell 12.

The cover member 14 is provided with an outlet passage 15, the inner end of which terminates in a downwardly extending mouth 16 which has a collar 17 adapted to receive the outlet nipple 18 on a collapsible tube 19.

The outlet passage 15 is provided with a valve which is shown as comprising a cylindrical plug 20 having a passage 21 therethrough. The lower end of the plug is provided with an arm 22 which is associated with yieldable means for holding it closed and with means for rotating the plug so as to align the passage 21 with the outlet passage 15. Such means will be hereinafter more completely described.

The tube 19 is mounted in, what may be termed, a tube support 25 which is shown as comprising a top plate 26 and a bottom plate 27, such plates being rigidly held in spaced relation with each other by a pair of upright bars 28 and an upright angle bar 29. The plates and the bars are so constructed as to have a tight sliding fit within the shell 12 so that the tube support is held therein by friction. This construction is perhaps best illustrated in Fig. 3, and for the purpose of preventing relative rotation between the tube support and the shell, we provide the inner surface of the shell with a guide rib 30 which is adapted to be received in a notch 31 formed in the top plate 26.

The bottom plate 27 is provided with an upright channel member 32 which receives the retaining fold or rib 33 on the lower end portion of the collapsible tube 19, and the upper plate 26 is provided with an elongated slot or notch 34 through which the outlet nipple 18 on the collapsible tube may pass into a position where it is in alignment with the collar 16 so that the insertion of the tube support places the outlet nipple of the tube within the collar as shown in Fig. 1. The bottom plate 27 is provided with an opening 36 which is adapted for use in withdrawing the tube support from the shell.

It was pointed out in the earlier part of the specification that one of the objects of the invention was to provide a device with means for completely expelling all of the material from the tube. This is accomplished by means of a

pair of oppositely disposed tube compressing members preferably in the form of rollers 40 and 41 which are rotatably mounted between the ends 42 and 43 of a bracket member 44. One side (43) of the bracket member is provided with a U-shaped opening 49 which permits the insertion of the lower end of tube 19 into the channel 32 when the tube support is being "loaded." The bracket member 44 is carried by a sleeve 45 which is mounted upon a screw 46, the screw 46 being rotatably mounted between the plates 26 and 27.

In order that the sleeve 45 may be advanced by the rotation of the screw and to facilitate the settling of the sleeve at the lower end of the screw, we provide a tapered pin 47 which, in the form shown, is in threaded engagement with the sleeve and has its inner end adapted to extend into and engage the threads on the screw 46.

The screw is rotated for advancing the pressure roller along the tube by means of a pinion or gear 50 which is provided on the upper end of the screw and which is adapted to be engaged by a pawl 51 mounted on the underside of the lever member 52 which is pivotally mounted on a plate 53 and screwed in the cover 15 through the medium of screws 54.

The pawl 51 is associated with a stop pin 55 mounted on the lever member 52, and a spring 56 is also mounted on the lever member 52 so that the swinging movement of the lever member is adapted to impart uni-directional motion to the gear or pinion 50.

It will be seen therefore from the construction so far described that the swinging movement of the lever member 52 from the full line position to the dotted line position shown in Fig. 6 imparts a slight uni-directional rotation to screw 46 which in turn advances the sleeve 45 along the screw and by virtue of such advance, a part of the collapsible tube is compressed to squeeze a small portion of the material within the tube into the outlet passage 15.

As a means for avoiding waste in the operation of this device, we propose to open the valve 20 simultaneously with the application of pressure to the tube. This is accomplished through the medium of what we may term a plunger plate or plunger member 60 which is slidably mounted in the cover member 14 and is provided with a projection 61 adapted to be engaged by the thumb for pressing it inwardly.

The plate or plunger member 60 has a portion 62 which extends over the lever member 52, such portion being provided with a slot 63 adapted to receive a pin 64 on the top surface of the lever member 52. The plate 60 is also provided with an extended arm 65, the end of which has a finger 66 adapted for reception in a slot 67 on the lever 22 which is carried by the undersurface of the valve member 20.

Reference numeral 68 indicates a spring which is shown as being mounted on the arm 65 and is interposed between a fixed stop 69 on the undersurface of the plate 53 and a collar member 70 which is fixed to the arm 65 for the purpose of yieldably forcing the plate and its projecting button member 61 into its outside or normal position. From this construction it will be apparent that when the plate member 60 is moved from the position shown in Fig. 5 to the position shown in Fig. 4 by the application of pressure to the projected button 61, the valve is opened by the movement of the finger 66 in the slot 67 and the screw 46

is at the same time rotated a slight distance by the pawl 51 which engages and advances the gear or pinion 50 by virtue of the movement of the slot 63 which receives the pin 64. Thus a small portion of the collapsible tube 19 is compressed or collapsed by applying pressure, and the pressure thus applied to the material therein, forces such material through the passage 15 of the opening 21 in the valve plug 20. The valve may, of course, be held open until all of this pressure is expended if such a quantity of material is desired, or it may be closed by relieving the button 61 when the desired quantity of material has been obtained.

When the tube 19 has been exhausted, the tube support is withdrawn from the shell 12 by means of the opening 36, and the screw or pin 47 is retracted, which permits the sleeve 45 to drop to the lowermost position shown in dotted lines in Fig. 1. The spent tube 19 is then removed from the support by sliding the nipple 18 outwardly along the slot 34 at the same time withdrawing the lower end from the channel 32. A new tube is then inserted and the pin 47 is screwed into place after which the tube container is inserted in the shell 12, the nipple 18 being moved into contact with a packing washer 71 in the collar 17 and the device is again ready for operation.

It is to be understood that while I have herein described and illustrated one preferred form of my invention, the invention is not limited to the precise construction described above, but includes within its scope whatever changes fairly come within the spirit of the appended claims.

We claim as our invention:

1. A dispensing device of the class described embodying: a container having an outlet passage therein; means within said container for supporting a collapsible tube with the outlet nipple thereof in said container outlet passage; a screw rotatably mounted in said tube supporting means in substantially parallel relation with said tube; a sleeve mounted on said screws; means on said sleeve for releasably engaging said screw to move said sleeve by the rotation of said screw; a pair of oppositely disposed pressure members supported by said sleeve adapted to engage and squeeze said tube during the movement of said sleeve along said screw; and means for rotating said screw.

2. A dispensing device of the class described embodying: a container having an outlet passage; a collar in the top of said container surrounding the mouth of said outlet passage and adapted to receive the outlet nipple on a collapsible tube; a tube support removably mounted in said container, said tube support comprising a top plate and a bottom plate, means for holding said plates in spaced relation and a channel on said bottom plate adapted to receive the bottom of a collapsible tube, said top plate being provided with an opening cooperating with said collar to receive the outlet nipple on said collapsible tube; and means for collapsing said tube comprising a screw rotatably mounted between said plates, a sleeve on said screw adapted to be advanced by the rotation of said screw, means supported by said sleeve and engaging opposite sides of said tube for compressing same, and means in said container for rotating said screw.

3. A dispensing device of the class described embodying: a container having an outlet passage; a collar in the top of said container surrounding the mouth of said outlet passage and adapted to receive the outlet nipple on a col-

lapsible tube; a tube support removably mounted in said container, said tube support comprising a top plate and a bottom plate, means for holding said plates in spaced relation, and a channel on said bottom plate adapted to receive the bottom of a collapsible tube, said top plate being provided with an opening cooperating with said collar to receive the outlet nipple on said collapsible tube; and means for collapsing said tube comprising a screw rotatably mounted between said plates, a sleeve on said screw adapted to be advanced by the rotation of said screw, means supported by said sleeve and engaging opposite sides of said tube for compressing same, a pinion on the top of said screw, and pawl and plunger means in the top of said container for rotating said screw.

4. A dispensing device of the class described embodying: a container having an outlet passage; a collar in the top of said container surrounding the mouth of said outlet passage and adapted to receive the outlet nipple on a collapsible tube; a tube support removably mounted in said container, said tube support comprising a top plate and a bottom plate, means for holding said plates in spaced relation, and a channel on said bottom plate adapted to receive the bottom of a collapsible tube, said top plate being provided with an opening cooperating with said collar to receive the outlet nipple on said collapsible tube; means for holding said tube support against rotation in said container; and means for collapsing said tube comprising a screw rotatably mounted between said plates, a sleeve on said screw adapted to be advanced by the rotation of said screw, means supported by said sleeve and engaging opposite sides of said tube for compressing same, and means in said container for rotating said screw.

5. A dispensing device of the class described embodying: a container having an outlet passage; a collar in the top of said container surrounding the mouth of said outlet passage and

adapted to receive the outlet nipple on a collapsible tube; a tube support removably mounted in said container, said tube support comprising a top plate and a bottom plate, means for holding said plates in spaced relation, and a channel on said bottom plate adapted to receive the bottom of a collapsible tube, said top plate being provided with an opening cooperating with said collar to receive the outlet nipple on said collapsible tube; and means for collapsing said tube comprising a screw rotatably mounted between said plates, a sleeve on said screw adapted to be advanced by the rotation of said screw, a bracket mounted on said sleeve, a pair of rollers in said bracket adapted for pressure engagement with opposite sides of said tube, and means in said container for rotating said screw.

6. A dispensing device of the class described embodying: a container having an outlet passage; a collar in the top of said container surrounding the mouth of said outlet passage and adapted to receive the outlet nipple on a collapsible tube; a tube support removably mounted in said container, said tube support comprising a top plate and a bottom plate, means for holding said plates in spaced relation, and a channel on said bottom plate adapted to receive the bottom of a collapsible tube, said top plate being provided with an opening cooperating with said collar to receive the outlet nipple on said collapsible tube; and means for collapsing said tube comprising a screw rotatably mounted between said plates, a sleeve on said screw adapted to be advanced by the rotation of said screw, a bracket mounted on said sleeve, a pair of rollers in said bracket adapted for pressure engagement with opposite sides of said tube, and means in said container for rotating said screw, said bracket being provided with a notch at one side between said rollers to permit the insertion of the lower edge of a collapsible tube into said channel.

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