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COLLAPSIBLE TUBE CASING AND DISPENSER HAVING A ROTATABLE AND SLIDABLE CLOSURE PLUG

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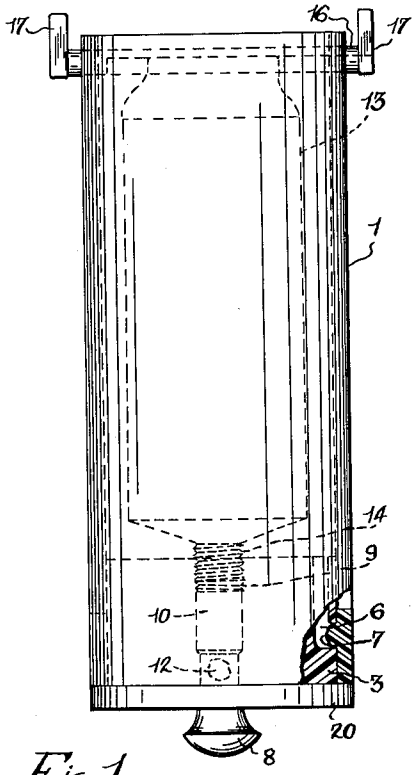


Fig. 1

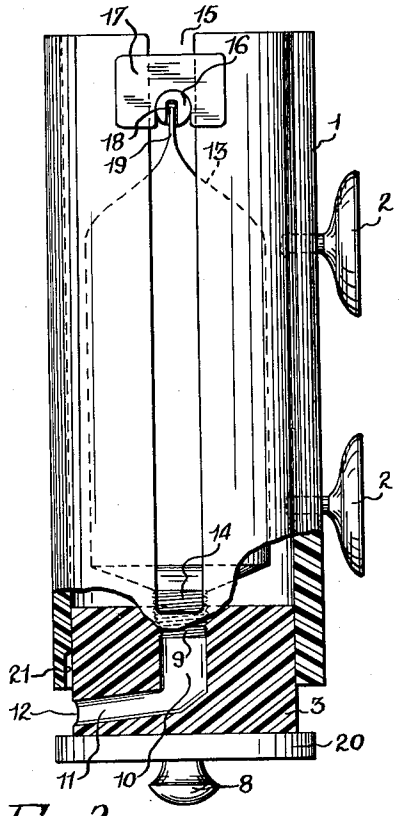


Fig. 2

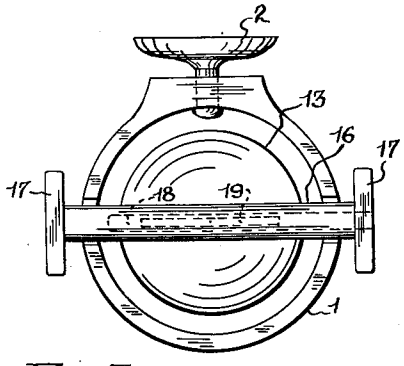


Fig. 3

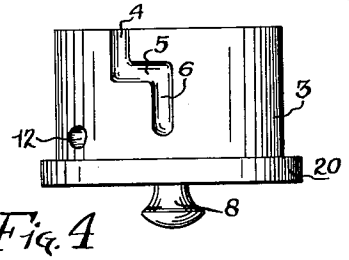


Fig. 4

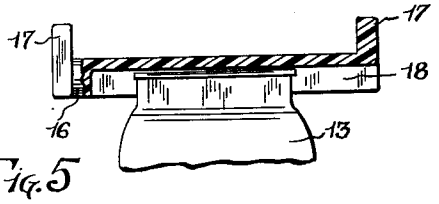


Fig. 5

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COLLAPSIBLE TUBE CASING AND DISPENSER HAVING A ROTATABLE AND SLIDABLE CLOSURE PLUG

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4 Claims. (Cl. 222—100)

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This invention relates in general to dispensing devices and more particularly to apparatus for supporting and dispensing the contents of collapsible tubes.

One of the primary objects of the invention is to provide a simple, inexpensive and convenient combined support and dispenser that will enable and insure manually regulated even, and eventually complete, ejection of the collapsible tube contents in accordance with the desires of the operator.

Another object is to provide in such an apparatus a means whereby the screw cap of the tube may be discarded when the tube is installed in the apparatus and which apparatus is provided with an improved manually installable and operable closure means for normally sealing the outlet and easily operable to open the same for manipulation of the tube squeezing key while the closure is open.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended claims, certain embodiments thereof being illustrated in the accompanying drawings, in which:

Figure 1 is a view in elevation of the support, with the closure device in closed position, the support being partly broken away to show a portion of the closure device, and the collapsible tube and operating key being shown in dotted lines and secured together prior to ejection of the tube contents.

Figure 2 is a view taken at right angles to Figure 1, showing suction cup fastening means and showing the closure means open and in greater detail, the tube being partially collapsed and part of its contents discharged.

Figure 3 is a top plan view of the dispenser.

Figure 4 is a view in elevation of the slidable base of the closure device; and

Figure 5 is a detail view of tube dispensing key and a fragmentary portion of the tube.

Referring more particularly to the drawings, the device includes a casing 1 with suction cups 2 as a mere example of an expedient for releasably securing the device to a wall.

In the lower portion of the casing is removably and slidably mounted a closure plug 3. This closure plug is provided with a compound groove in its side wall that includes a vertical groove 4, a continuing horizontal groove 5 and a continuing downwardly extending groove 6. The lower inner surface of the casing is provided with a lug, or tit 7. In assembling the plug 3, the tit 7 is

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brought into registry with groove 4 and the plug 3 forced upwardly until the tit 7 reaches the bottom of groove 4, after which the plug is rotated counterclockwise, as viewed in Figures 1, 2 and 4, with tit 7 riding in horizontal groove 5 in the plug. This leaves the plug free to be manually pushed up and down in the casing with the tit 7 riding in vertical groove 6 without removal of the plug from the casing. Knob 8 is representative of any desired means for manual manipulation of the plug.

The plug is further provided in its upper wall with a screw threaded opening 9 with a vertical passage 10, a generally transverse communicating passage 11 to a discharge opening 12 in the side wall of the plug. After the conventional screw cap has been removed from the collapsible tube 13, the screw neck 14 of the tube is screwed into the screw threaded opening 9 in the plug.

As shown in Figure 3, the two opposite sides of the cylindrical casing 1 are formed with vertical slots 15 that extend the majority of the length of the casing. These opposed slots support and form guides for a cylindrical key barrel 16 that carries manual knobs 17 and its two ends. The key barrel 16 has a convenient side slot 18 to engage the closed and crimped end 19 of the collapsible tube. Figure 1 shows the crimped end engaged by the key prior to the winding of the key to collapse the tube. As the key is appropriately wound to rotate the key shaft, the tube is accordingly wound about the key shaft from its crimped end downwardly. The engagement of the key shaft with the two opposed casing slots 15 insures the straight horizontal collapsing of the tube throughout its length in response to the manual winding of the key.

As stated before, Figure 2 shows the discharge opening 12 of the closure plug 3 closed by the casing 1 as the plug has been forced upwardly into the casing until plug flange 20 abuts the bottom of the casing. When it is desired to eject some of the contents of the collapsible tube, the operator engages the knob 8 and pulls the plug downwardly to its position of Figure 2. This opens the discharge outlet 12. The two knobs 17 are then rotated manually. This winds up the tube from its flat end and ejects some of the contents of the tube as the key barrel is vertically guided by casing slots 15. The desired quantity of the tube contents is thus squeezed out of the tube through the side wall discharge outlet 12 in the plug. Closure of this outlet is accomplished merely by manually pushing the plug upwardly to its position of Figure 1. As a further refine-

ment in the closure operation, the discharge opening 12 is indented and a coacting recess 21 formed in casing 1 to confine the tube contents against flow while the plug opening is closed.

In actual assembly, if desired, the plug 3 may be removed from the casing. After the usual tube screw cap has been removed, the open screw head 14 of the tube may be screwed into the screw threads 9 of the plug. Thereafter, the plug is manually positioned to bring its vertical side groove 4 into registry with the internal casing tit 7 and the plug forced upwardly in the casing. The tit rides in groove 4 to its bottom, after which the plug is rotated counterclockwise, as viewed in Figure 4, as the tit rides in groove 5 to its right extremity where it blends in with groove 6. This releasably locks the plug and casing together but permits vertical adjustment of the plug between the upper and lower limits of groove 6, as previously described.

This positions the flat crimped end of the tube near the top of the casing with the key barrel 16 placed in the opposed casing slots 15, the flattened crimped end 19 of the tube is easily fitted in the side groove 18 of key barrel 16. Afterwards, the key barrel is manually rotated by the hand knobs 17 to wind the tube and collapse the same in accordance with the desired discharge of the tube contents when the discharge outlet 12 is open. The tube, key and plug may be just as readily disassembled from each other and the casing and reassembled in the installation of a new tube.

Thus, it will be seen that there has been provided a simple and efficient collapsible tube support and dispenser that adequately supports the tube and guides the movements of it and the winding key in the discharging operation and which is provided with a simple and foolproof closure means. No complicated spring, lever or pawl and ratchet operating means are employed. With the plug fitting snugly slidable in the casing, the plug, besides supporting the tube, carries the discharge outlet and the casing normally closes the discharge outlet. Instead of employing additional closure means, manual pushing up on the plug closes the discharge outlet and manual pulling down on the plug opens the discharge outlet. The tube, plug and winding key are easily assembled together and in the casing, and just as easily disassembled for the installation of a new tube. The plug is easily inserted and locked in the casing for relative longitudinal adjustment and just as easily manually removed for any desired purpose.

I claim:

1. In a collapsible tube support and tube dispenser, a casing and a closure plug releasably and slidably mounted for longitudinal movement therein, said tube having a permanently closed end and an openable end, the latter of which is adapted to be releasably secured to said plug, a discharge outlet in the side of said plug for the contents of said tube, said plug being longitudinally adjustable into a retracted position in said casing where said casing covers and closes said discharge outlet and also longitudinally adjustable into an extended position in said casing for uncovering and opening said discharge outlet, manually operable means for engaging the closed end of said tube for squeezing the contents of said tube into said discharge outlet and cooperating guide members in said casing and carried by said tube for guiding the longitudinal movements of said manual means as it is operated to squeeze out and discharge the contents of said tube through its openable end.

2. In a collapsible tube support and tube dispenser, a casing and a closure plug releasably and slidably mounted for longitudinal movement therein, said tube having a permanently closed and flattened end and an openable end, the latter of which is adapted to be releasably secured to said plug, a discharge outlet in the side of said plug for the contents of said tube, said plug being longitudinally adjustable into a retracted position in said casing where said casing covers and closes said discharge outlet and also longitudinally adjustable into an extended position in said casing for uncovering and opening said discharge outlet, manually operable means including a slotted barrel for engaging the closed flattened end of said tube and a manually operable key carried by said barrel to rotate the latter, for squeezing the contents of said tube into said discharge outlet, said casing having longitudinal slots therein for receiving said barrel guiding the longitudinal movements of said barrel as it is rotated to squeeze out and discharge the contents of said tube through its openable end.

3. In a collapsible tube support and tube dispenser, a casing and a closure plug releasably and slideably mounted for longitudinal movement therein, means including a lug and a compound groove in said casing and plug and so cooperatively arranged that relative longitudinal movement of said lug and groove, locks the casing and plug together, leaving the plug longitudinally adjustable in said casing by further longitudinal movement of said lug in said groove, said tube having a permanently closed end and an openable end, the latter of which is adapted to be releasably secured to said plug, a discharge outlet in the side of said plug for the contents of said tube, said plug being longitudinally adjustable into a retracted position in said casing where said casing covers and closes said discharge outlet and also longitudinally adjustable into an extended position in said casing for uncovering and opening said discharge outlet, manually operable means for engaging the closed end of said tube for squeezing the contents of said tube into said discharge outlet and cooperating guide members in said casing and carried by said tube for guiding the longitudinal movements of said manual means as it is operated to squeeze out and discharge the contents of said tube through its openable end.

4. In a collapsible tube support, a casing and a closure plug releasably and slidably mounted for longitudinal movement therein, means including a lug and a compound groove in said casing and plug and so cooperatively arranged that relative longitudinal movement of said lug and groove locks the casing and plug together, leaving the plug longitudinally adjustable in said casing by further longitudinal movement of said lug in said groove, said tube having a permanently closed and flattened end and an openable end, the latter of which is adapted to be releasably secured to said plug, a discharge outlet in the side of said plug for the contents of said tube, said plug being longitudinally adjustable into a retracted position in said casing where said casing covers and closes said discharge outlet and also longitudinally adjustable into an extended position in said casing for uncovering and opening said discharge outlet, manually operable means, including a slotted barrel for engaging the closed flattened end of said tube and a manu-

ally operable key carried by said barrel to rotate the latter for squeezing the contents of said tube into said discharge outlet, said casing having longitudinal slots therein for receiving said barrel and for guiding the longitudinal movements of said barrel as it is operated to squeeze out and discharge the contents of said tube.

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The following references are of record in the file of this patent:

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