

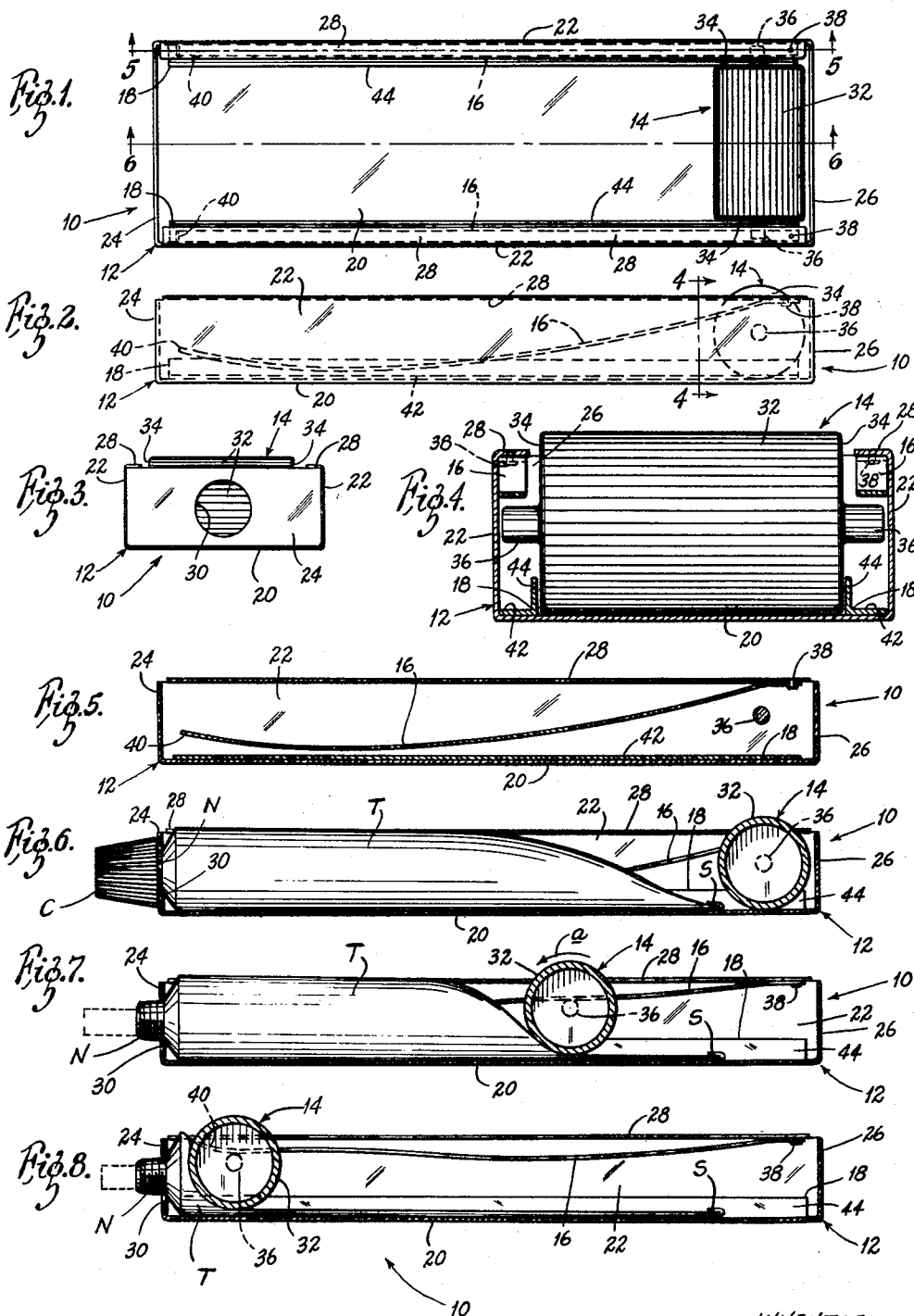
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DEVICE FOR DISPENSING THE CONTENTS OF COLLAPSIBLE TUBES

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DEVICE FOR DISPENSING THE CONTENTS OF COLLAPSIBLE TUBES

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This invention relates generally to a novel and improved device for use in dispensing the contents of collapsible tubes, particularly tubes of the well known lead, aluminum, and plastic types that are in extensive use at the present time.

More particularly stated, the present invention is directed to a novel and simple device adapted not only to facilitate dispensing operations, but also to obviate waste and numerous difficulties frequently encountered heretofore by users of products sold in collapsible tubes.

It is common knowledge that with the cap or closure member removed, the application of thumb and finger pressure to the tube body results in the discharge of some of its contents via a nozzle provided on one end thereof. It is further common knowledge that all too frequently, users apply more than sufficient pressure to effect the proper discharge, especially when the contents are of a semi-fluid nature, such as for example shaving cream and tooth paste. Furthermore, most people have a habit of applying pressure midway between the ends of the tubes, so that long before the entire contents thereof have been dispensed, said tubes had become deformed and frequently ruptured.

The nozzle-opposite end of a tube of the type under consideration usually terminates in a reversely bent and crimped extremity that constitutes a seal as is well understood. In order to evacuate the tube, it has heretofore been necessary to manually "roll" this extremity toward the nozzle, which operation is tedious and must be carefully done, particularly when the tube body had theretofore been deformed.

An important object of my invention is to provide a simple device adapted to facilitate dispensings of the contents of collapsible tubes ordinarily found in most households. In this category, tubes that contain shaving cream, tooth paste, ointment, or a liquid cement, are cited in an exemplary sense.

In the field of industry and manufacture, it is well known that many materials employed are also contained in collapsible tubes of the type under consideration. Calking materials of varying viscous propensities, cementitious materials, and heavy lubricants are typical items in this category. Generally, the tubes containing materials of this nature are considerably larger than those found in the home, and consequently the proper handling of them is more difficult as should be understood.

It is therefore also an important object of my invention to provide a simple device that may be fabricated in various sizes to facilitate dispensings of the contents of collapsible tubes ranging from the smallest to the largest customarily in present day use.

Briefly, the invention contemplates a generally rectangular casing of rigid material wherein a tube of the type under consideration may be positioned, and firmly held in place by means of its own cover or closure member when the device is not in use. A pressure applying member in the form of a cylindrical roller is confined

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within the casing, and with the device held in one hand, said roller may be propelled by thumb manipulation toward the delivery or discharge nozzle of the tube. The roller has a pair of axially projecting studs, and when the device is in operation, a pair of relatively heavy leaf springs bear downwardly against these projections, thus constantly biasing the roller into intimate contact with the tube body as will appear. With the closure member of the tube removed, each incremental advance of the roller will result in a flattening of a minute portion of the tube body and the concurrent discharge of a portion of the contents of the tube. The peripheral surface of the roller may be knurled or fluted to facilitate manipulation thereof. Transversely spaced guide rails extend longitudinally within the casing along both sides of the roller, thus insuring ease of roller movements. When the entire contents of a particular tube have been dispensed, it may be quickly removed from the casing and replaced with a similar fresh tube.

An exemplary embodiment of the invention is illustrated on a sheet of drawings that accompanies this specification, and a more comprehensive understanding of the features and advantages of the invention may be had from the detailed description thereof to follow with reference to said drawings, wherein:

Figure 1 is a top plan view of a device constructed in accordance with the present invention for dispensing the contents of a collapsible tube;

Figure 2 is a side elevational view of said device;

Figure 3 is a front end elevational view thereof;

Figure 4 is an enlarged sectional view taken transversely of the device on the line 4—4 of Figure 2;

Figure 5 is a sectional view taken longitudinally of the device on the line 5—5 of Figure 1;

Figure 6 is a sectional view taken longitudinally of the device on the line 6—6 of Figure 1, and demonstrating a filled collapsible tube mounted in position to have its contents dispensed following removal of its closure member;

Figure 7 is a view similar to Figure 6 demonstrating a dispensing operation; and

Figure 8 is a view similar to Figure 7 illustrating the condition of the tube following a final dispensing of its contents.

The device embodying the principles of the present invention is designated as a whole by numeral 10. It includes a generally rectangular casing 12, a pressure roller 14, a pair of leaf springs each designated 16, and a pair of angle bars each designated 18.

The casing 12 may be fabricated of aluminum, plastic, or any selected rigid material, and includes a bottom wall 20, side walls 22, a front end wall 24, and a rear end wall 26. At their upper ends, as clearly shown, the side walls 22 terminate in horizontal flanges 28 that extend inwardly so as to overlie the leaf springs 16. Formed centrally in the front wall 24 is a circular opening 30 for a purpose to appear.

The roller 14 is cylindrical, may also be made of aluminum, plastic, or any selected rigid material, and preferably but not necessarily, has its peripheral surface 32 transversely fluted as shown, or knurled. Preferably as illustrated in Figures 6 through 8, the roller 14 is hollow, but it may be solid if desired. Projecting axially from each end face 34 of said roller is a stud 36, as best seen in Figure 4.

The leaf springs 16 are fabricated from relatively heavy steel stock to the configuration most clearly illustrated in Figure 5. These springs are secured at their rear ends to the inturned flanges 28 by means of rivets 38 as shown, or otherwise, and the free body portions thereof extend longitudinally of the casing along the side walls 22. The

front end extremity 40 of each spring is preferably upturned slightly as shown, although this is not critical.

The angle bars 18 may likewise be fabricated of aluminum, plastic or other appropriate material to include a horizontal base segment 42 and a vertical leg segment 44. The bars 18 are rigidly secured to the bottom wall 20 of the casing, and extend longitudinally thereof along the side walls 22 as clearly shown.

From the foregoing description and an inspection of the drawings, it should be manifest that the device is of simple construction. It will be noted with attention directed primarily to Figure 4, that the vertical leg segments 44 of the transversely spaced bars 18 serve as guides for the roller 14, although a slight clearance space is provided between each of them and the adjacent end face 34 of said roller in order to obviate friction. It will also be observed that the leg segments 44 together with the side walls 22 serve to confine the free forward body portions of the leaf springs when the roller is in the position shown for example in Figure 2.

Use

Although it is believed that the operation of the invention should be evident from the foregoing description and the drawings, a brief explanation will be given.

Thus, it will be assumed that the illustrated device 10 has been dimensioned for use in dispensing tooth paste from a collapsible tube, and that the casing 12 is empty with the roller resting against or near the rear end wall 26 as shown in Figures 1 and 2. In order to place a tube of tooth paste such as that designated T in the position shown in Figure 6, the closure C would first be removed from the externally threaded nozzle N of the tube, care being taken not to squeeze said tube. Thereupon, the tube would be deposited in the casing 12, with the nozzle N thereof projecting through the circular opening 30 and extending beyond the front wall 24, whereupon the closure C would again be applied, thus releasably securing the tube against fortuitous displacement. It will be observed with attention directed particularly to Figures 7 and 8, that the diameter of the circular opening 30 exceeds that of the nozzle N, so that the aforesaid tube placement operation would be a simple one.

Assuming now that it were desired to dispense some of the contents of tube T, the user, holding the device 10 in his right hand, would first unscrew the closure member C with his left hand, and then by means of his right thumb effect the forward advance of the roller 14. When said roller, rotating counterclockwise as indicated by the arrow *a* in Figure 7, passes over the crimped seal S of the tube body, the studs 36 will encounter the downwardly biased leaf springs 16, so that from then on, the roller 14 would advance with downward pressure automatically applied thereto. A liberated quantity of contents in consequence of a minute advance of the roller is suggested in broken lines to the left of the nozzle N in Figure 7.

Assuming that dispensings for the time being had ended, the closure member C would again be applied to the nozzle N, thus sealing the tube contents. Inasmuch as the roller 14 would be restricted against fortuitous movements in consequence of the forces exerted against its studs 36 by the leaf springs 16, the next dispensing operation would simply require removal of the closure member C followed by manipulation of the roller 14 as before.

Figure 8 demonstrates that it is possible by means of the present invention to evacuate all but a negligible quantity of its contents from a tube. As the roller 14 is advanced toward the front end of the device 10, lateral spreading of the flattened tube body is limited by the transversely spaced vertical leg segments 44 of the angle bars 18. When the roller 14 has arrived at its most advanced position as illustrated in this figure, the tube body will have been compressed and flattened as shown, thus

obviously having delivered practically all of its contents. The roller 14 may be now quickly rotated in a clockwise direction to the position thereof demonstrated in Figures 1 and 2, whereupon a fresh tube T may be positioned as previously explained and demonstrated in Figure 6.

It is believed that the foregoing description of operation relatively to a tube of tooth paste should suffice for a clear understanding of the invention when in use for dispensing any and all materials that are customarily contained in collapsible tubes.

It is to be understood that changes in structural details may be made within the scope of the claims hereunto appended, without departing from the principles of my invention.

What I claim is:

1. In a device for dispensing the contents of a collapsible tube of the type described, the combination of: a rectangular casing for the reception and support of the tube, said casing including a bottom wall, a front end wall, a rear end wall, and a pair of side walls; a circular opening formed centrally in the front end wall, said opening being of a size adapted to have the nozzle portion of the tube extend therethrough; a horizontal flange extending inwardly from the top margin of each side wall; a reciprocable cylindrical roller adapted to be manually incrementally advanced along the upper surface of the tube from the rear to the front end wall of the casing; a pair of transversely spaced guide members for the roller rigidly secured to the bottom wall of the casing and longitudinally substantially coextensive therewith, said guide members also serving to confine the tube body therebetween; a stud projecting axially from each end of the roller; and a pair of relatively heavy downwardly biased leaf springs each including a rear end portion secured to the underside of the rear end portion of one of said horizontal flanges of the casing side walls aforesaid, and a free forwardly extending body portion bearing against one of said studs as the roller is advanced.

2. In a device for dispensing the contents of a collapsible tube of the type described, the combination comprising: a rectangular casing for the reception and support of the tube, said casing having a bottom wall, a front end wall, a rear end wall, and a pair of side walls; a circular opening provided centrally in the front end wall, said opening being sized to have the nozzle portion of said tube project therethrough for the application of the tube closure member when the device is not in use; a horizontal flange substantially coextensive therewith projecting inwardly from the top margin of each side wall; a manually reciprocable cylinder roller having a fluted peripheral surface and adapted to be incrementally advanced along the upper surface of the tube from the crimped end of the tube to the nozzle end thereof; a pair of transversely spaced angle members substantially coextensive therewith secured to the upper surface of the casing bottom wall, each angle including a horizontal leg segment and an upwardly projecting leg segment, said angle members forming guide means for the roller and serving to confine the body of the tube therebetween; a pair of studs projecting axially from the roller and disposed beneath the horizontal flanges of the side walls; and a pair of relatively heavy leaf springs each including a rear end portion secured to the underside of the rear end portion of one of said horizontal flanges, and a free forwardly extending downwardly biased arcuate portion adapted to bear against one of said studs as the roller advances.

References Cited in the file of this patent

UNITED STATES PATENTS

1,470,534	Keiper	Oct. 9, 1923
1,691,457	Behrens	Nov. 13, 1928
2,643,795	Teal	June 30, 1953