June 4, 1940. P. M. THORN 2,203,313

DISPENSING CONTAINER

Filed Sept. 7, 1939

Fig. 1.

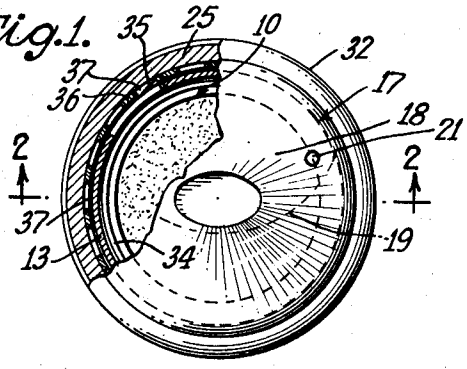


Fig. 4.

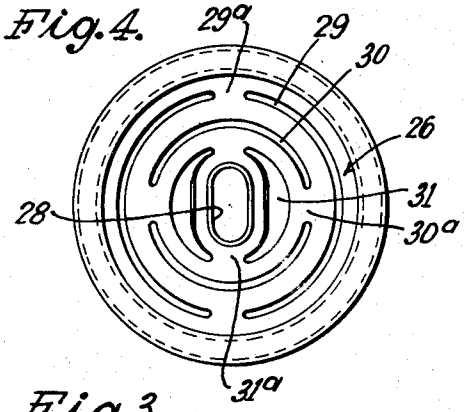


Fig. 2.

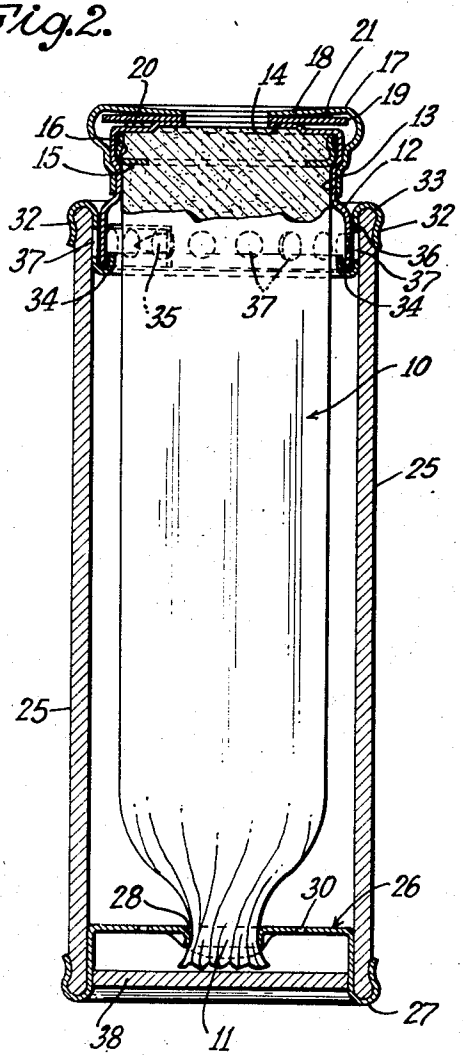
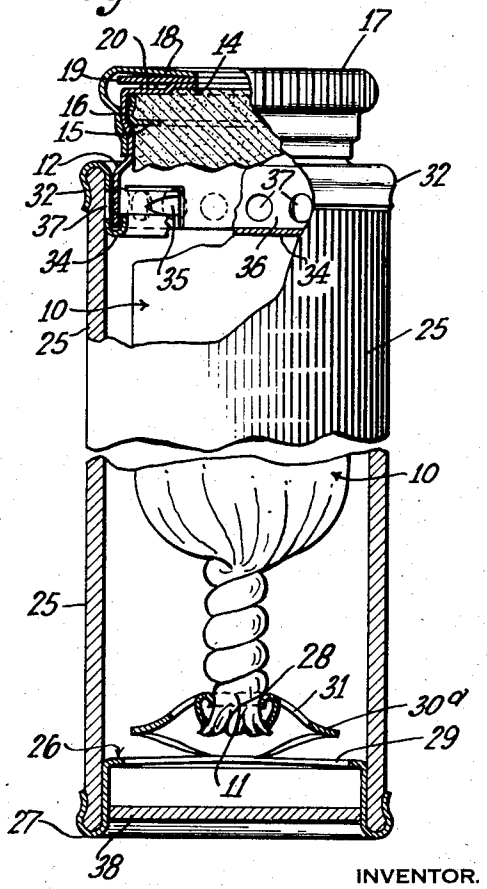


Fig. 3.



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2,203,313

DISPENSING CONTAINER

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Application September 7, 1938, Serial No. 228,729

7 Claims. (Cl. 221—60)

This invention relates to dispensing containers.

It is an object of this invention to provide a new and improved inexpensive container for tooth paste or other substances which can be opened and closed by a single movement of the fingers and in which the continued movement of the fingers in the opening direction will cause the controlled discharge of a portion of the contents.

It is a further object to provide a device of the character described which can be produced at a minimum of expense consistent with perfect operation.

It is a further object to provide a device in which the material to be dispensed is contained within a flexible tube and is discharged by twisting said tube and having means to allow for the shortening of the tube by the twisting process with a minimum of expense consistent with efficiency.

It is a further object to provide a device in which the tube itself may be made of the material known as Pliofilm, which has been found to have properties peculiar and important for this use.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view of a device embodying this invention, part being cut away.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a side elevation partly in section showing the device with the material partly dispensed.

Figure 4 is a plan view of the flexible bottom used in the container.

In the drawing the numeral 10 designates a cylindrical tube of any suitable material having the necessary flexibility and impermeability, but in my experience the substance known as Pliofilm possesses unique properties in that because of its elasticity and characteristics which will withstand an amount of manipulation far in excess of that which it will receive in practice without cracking or tearing and which will retain its properties even under prolonged exposure. For these reasons I prefer to make the device of Pliofilm which, moreover, possesses the unique property that at the base of the device where the tube is to be closed it may be welded together under heat.

This tube 10 is folded back at its bottom and preferably may be completely closed by heating it while pressing it together to form a tit 11. The upper end of the tube 10 is carried inside a cap 12 having cylindrical walls 13 and an end wall 14. The upper end of the tube 10 is held in firm engagement with the inside of the cylindrical wall 13 by means of a ring 15 and the cylindrical wall 13 is preferably provided with a slight recess 16 so as to hold the ring 15 in place.

Rotatably mounted upon the cap 12 is an outer member 17 having an end wall 18 parallel to the end wall 14 of the cap 12 and between these end walls is mounted a shutter 19 pivoted at one end to the end wall 14 as shown at 20 and pivoted at the other end to the end wall 18 as shown at 21. The end wall 14 is preferably pressed upwardly in the center to concentrate the pressure between the parts at that point and it will be understood that in one position of the shutter aligned openings are provided in the end walls 14 and 18 and in the shutter but that on rotation of the outer member the shutter is moved to the side to close the openings. This form of shutter is more fully disclosed in my prior Patent Number 2,095,042 and need not here be further described.

It is characteristic of such a shutter that it is opened and closed by a partial rotation of the parts. In this instance a rotation of the outer member 17 relative to the cap 12 but that the amount of this relative rotation is definitely fixed by the construction of the cap.

The number 25 represents an outer casing of paste board or the like having at its lower end a metallic plate 26 provided with flanges 27 which are crimped around the end of the casing 25 and provided at its center with an opening 28 to receive and retain the tit 11 of the tube 10.

The metallic plate 26 is preferably arranged to yield along the axis of the casing while retaining the tit 11 against rotation relative to the casing. To this end there may be provided in the metallic plate a plurality of circular slots 29, 30 and 31 which are concentric with each other. Each of these slots is interrupted at various points around the circle as shown at 29*a*, 30*a* and 31*a*. The interruptions in one slot being angularly displaced from the interruptions in the other so as to form a series of semi-cylindrical spring fingers capable of yielding transverse to the paper as shown in Figure 4 but resisting rotative movement between the inside and the outside of the plate.

With this construction as the tube is gradually twisted to discharge the contents and hence has a tendency to shorten, a portion of the yielding occurs within the tube itself because of the elasticity of the Pliofilm, but a portion of the yielding also occurs by reason of the construction of the end plate as shown in Figure 4.

At the upper end of the casing 25 is a circumferential flange 32 generally S shaped in cross section having one bend 33 embracing and clamping the upper end of the casing 25 and having a reversed bend 34 adapted to receive and support the lower edge of the cylindrical wall 13 of the cap 12.

The parts heretofore described are readily held in their assembled position by means of the flexible tube 10.

With this construction it will be clear that when the outer member 17 is rotated relative to the casing 25 that if the cap 12 is held against rotation, the shutter will be opened and if thereafter the rotation of the outer member 17 be continued, the shutter having reached the limit of its relative rotation will carry the cap with it and thus any further rotation of the outer member will turn the cap 12 relative to the casing and twist the flexible tube to expel its contents. A reverse movement of the outer member 17 will move it relative to the cap 12 and close the shutter. Any further movement in the reverse direction, if permitted, will then carry the cap 12 with it, partially untwisting the tube.

I prefer to provide the device with a ratchet construction which will prevent the cap 12 moving in the reverse direction relative to the casing 25. To accomplish this result there is struck out from the cylindrical wall 13 a spring pressed point 35 which is bent outwardly to engage the circumferential wall 36 of the flange 32 and this circumferential wall is provided with a series of openings 37 into which the spring pressed point may fall as the cap 12 is rotated.

With this construction it will be clear that on closing the device the outer member 17 will be limited in its movement and cannot untwist the tube.

In operation it will be clear that the user may grasp the casing 25 with the third and fourth fingers of the hand and then twist the outer member 17 with the thumb and first finger, which movement will first open the closure member and then exude the contents. When the proper amount is exuded the movement of the thumb and first finger in the opposite direction will close the device. As the flexible tube 10 is twisted it shortens and a part of this shortening is compensated by the stretch of the elastic material and a part of it is compensated by the yielding of the plate 26.

In the completed tube there may be provided a disc 38 to close the bottom of the casing.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A container comprising a flexible non-metallic tubing, a rigid rim to which the upper portion of said tube is attached, a closure member for closing the tube mounted on said rim, said closure member being operable and closable by a partial rotation of a member about the axis of the tube, a casing surrounding said tube, means on said casing for holding the bottom end of said tube and means on the upper portion of said casing for engaging and supporting said rim, the lower end of the tube being connected to the casing by a plate having a plurality of concentric circumferential grooves interrupted at spaced points, the grooves of one diameter being spaced opposite to the interruptions of radially adjacent grooves, to render it transversely elastic and means upon said plate for crimping the lower end of the tube.

2. A container comprising a cylindrical casing, a ring rotatably mounted upon and axially removable from one end of said casing, a tubular flexible container having a mouth attached to said ring, a closure upon said ring and means on the other end of said casing for holding the other end of said container with sufficient tension to hold said ring upon said casing.

3. A device in accordance with claim 2 having cooperating means between said ring and said casing serving as a ratchet to prevent rotation in one direction.

4. A container comprising a cylindrical casing having a rim fastened upon one end thereof carrying an upwardly facing channel, a ring having a downwardly extending flange fitting within said channel, a closure upon said ring, a flexible tubular bag of Pliofilm having its mouth attached to said ring and its body within said casing, a bottom for said casing having an upwardly facing groove into which the bottom of said casing extends, said bottom having a central opening and the lower end of said container being gathered together and held in said opening, said container being held sufficiently taut between said bottom and said ring to hold the said parts in place.

5. A device in accordance with claim 4 in which said ring and rim are provided with cooperating parts to serve as a ratchet to permit rotation in one direction.

6. A container comprising a cylindrical casing, a ring having a channel fitting over one end of said casing, a bottom having a channel fitting over the other end of said casing, said ring and bottom forming two parts one of which is removable from said casing and rotatable thereon, a tubular flexible container having a mouth attached to said ring and means connecting the other end of said tubular container with said bottom adapted to impose sufficient tension on said container to hold said parts in place.

7. A container comprising a support, a pair of relatively rotatable members carried by said support, a tubular flexible container having a mouth fixed to one of said members and means for connecting the other end of said container to the other of said members comprising a plate having a plurality of concentric circumferential grooves interrupted at spaced points, the grooves of one diameter being spaced opposite to the interruptions of radially adjacent grooves to render the plate transversely elastic and means upon said plate for crimping the lower end of said tube.

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