Dec. 22, 1936. F. R. PERKINS 2,065,243

CLOSURE

Filed April 25, 1935

Fig. 1

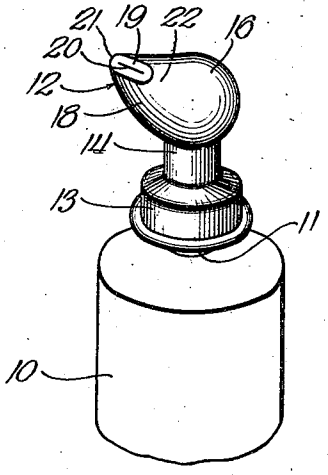


Fig. 2

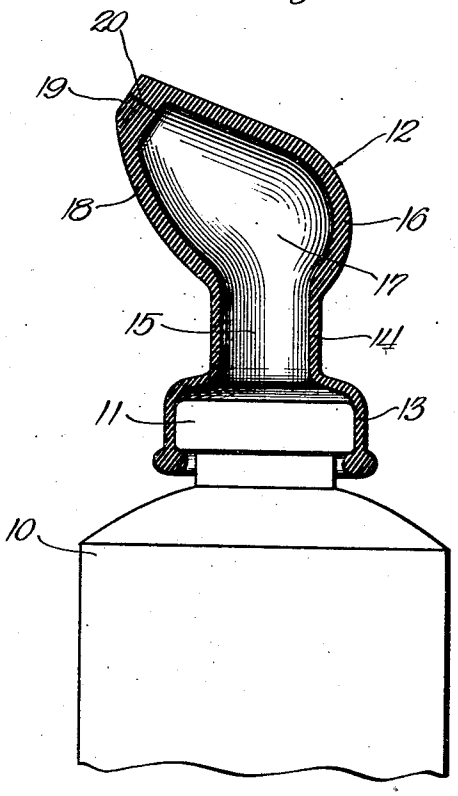
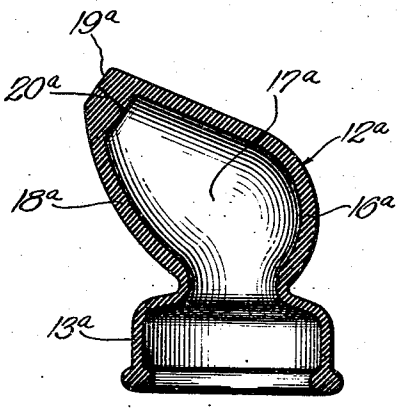


Fig. 3



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CLOSURE

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6 Claims. (Cl. 221—61)

This invention relates to a dispensing closure of flexible construction for small containers.

The invention has for its objects the provision of the following:

A new and improved flexible closure for small containers;

An unique self shutting closure;

A new type of closure for dispensing small quantities of material;

An improved cap for dispensing selected quantities of material; and

A self-sealing closure for preventing moisture from reaching the contents of a container.

These objects, and other objects which will hereinafter appear, are obtained by the novel arrangement, combination and construction of the elements comprising the invention hereinafter described and claimed. One embodiment of a closure disclosing the invention is illustrated in the accompanying single sheet of drawing, hereby made a part of this application, and in which:

Figure 1 is a perspective view of a closure embodying the invention in place upon the neck of a container;

Figure 2 is a longitudinal cross section of the closure shown in Figure 1; and

Figure 3 is a view similar to Figure 2 of a modified form of closure.

Like reference numbers are used to indicate similar parts in the drawing and in the following description.

Heretofore, salt cellars, pepper shakers and the like have had as closures perforated plates. Salt would pour through the perforations so long as it was reasonably dry, but the closure did not seal out moisture. The quantity of salt or the like could not be gauged.

In the case of the pepper or spices, the always open apertures permitted rapid drying out or oxidation of the condiment. Where this was to be avoided, a separate and usually ineffectual cover was applied.

In paste dispensers, paste has been expressed directly from a tube, the quantity expressed being largely a matter of guess work.

Liquid has been dispensed through shaker or sprinkler tops. The liquid sometimes has spurted out in large globules and again could hardly be freed from the container through the sprinkler top. When the former incident occurred, the quantity of material released was generally excessive and when the latter occurred, the user most frequently continued his efforts to shake out material until there was a too great release of liquid. In either event, the patience of the user was tried, and he became disgusted with the dispensing device, considering it a total failure.

For pepper sauces and other liquid condiments, and for hair tonics, mouth washes applied directly to tooth brushes, and the like, such sprinkler tops have been wholly inadequate because there was no means to measure the quantities of liquid to be dispensed thereby or to accurately direct the discharge thereof.

This invention does away with such difficulties and others. The invention consists essentially in a specially designed cap having an end through which there is a self-closing and normally closed slit, which is opened by pressure at the sides of the end of the cap. Back of the slot there is a chamber which may be connected with a container by a neck. The neck may be omitted for certain products. A container 10 is shown in Figures 1 and 2. Such container is designed to hold a quantity of material which may consist of powder, granules, a liquid, or the like. A paste holding container is not shown but the application of the present invention thereto is clear. The container 10 has a neck 11 which is constructed to receive a closure member. The neck 11 may be circumferentially beaded to more firmly hold the closure member in place thereon.

A closure 12 of rubber or of some similar material is fitted above neck 11. The closure 12 has a skirt 13 which is shaped to fit about and remain upon the neck 11 of the container. The skirt 13 tapers into a neck 14. The neck 14 is constricted, resulting in a passage 15 therethrough of relatively small diameter and somewhat tubular in character.

The neck 14 terminates in a head 16 which has a shape similar to the shape of a bird's head, and which is obliquely disposed to the axis of neck 14. Head 16 has a cavity 17 which communicates with the passageway 15 of the neck 14. The head 16 which governs the size of cavity 17 is of a selected size to determine the maximum amount of a single dispensing of material through the head 16. The head terminates in a nose 18 at a point removed from the upper terminus of passageway 15 of neck 14. In the form shown, the neck is vertical and the head is at an angle approximately thirty-five to forty-five degrees from the horizontal.

The end of the nose 18 is blunt and comprises a flat plane 19. Viewed from the front, the plane is an ellipse with the long dimension from

side to side and the short dimension, which is about one-third of the long dimension, from top to bottom.

The skirt 13 is relatively thin and so is the neck 14. The neck and skirt are highly flexible. The material of head 16 is thicker and while freely compressible, offers about twice as much resistance to compression as does the neck 14. The nose 18 adjacent the plane 19 is of a thickness several times the thickness of the material of head 16.

A slit 20 extends through the nose 18 diametrically of plane 19 along the long dimension thereof. Such slit extends into cavity 17 in the head 16. The slit may be cut with a sharp instrument, either with the material of the nose stretched which gives a narrower opening or with the head not under tension which provides a wider opening.

The resiliency of the material of the closure or cap 12 keeps the slit normally closed. By pressing on the narrow sides 21 and 22 of the nose 18, the slit 20 may be opened slightly or widely as desired. When pressure is released from sides 21 and 22, the material assumes its normal position and the slit is constricted or closed.

The closure is placed on a container 10 that holds material to be dispensed. When the material in the container 10 is powdered or granulated or liquid, the container 10 with the closure 12 thereon may be inverted. Such inversion causes material to flow into and fill the cavity 17 of the head 16.

The sides 21 and 22 of the nose 18 are then pressed to spread the slit 20. The material in the cavity 17 of the head 16 will flow out. If it is desired to limit the amount of material dispensed to that contained in the cavity of the head, thus measuring the material, the neck 14 is pressed between the thumb and fingers concurrently with the pressing of the head 16. This pressure closes the passageway 15, before or at the same time that the nose 18 is pressed to open the slit 20. Under such conditions, the material in the cavity 17 of the head 16 only will escape and all of this may be forced out by suitable pressure, so that the quantity dispensed is effectively measured. When the measuring effect is not desired, the passageway 15 in the neck 14 may be allowed to remain open even to the extent that the material in the container may pass unobstructedly into the head 16 and out through the slit 20, if such a result is desired.

When the closure 12 is used on a container of paste, or of material of pasty and coherent non-flowing consistency, the container may comprise a collapsible metal tube of any well known type, or a container equivalent thereto. The paste is pressed from the container into the head 16. When the cavity 17 in the head 16 is filled, this will be noted by resistance to further deformation of the collapsible tube. By pressure of the thumb and fingers, the passageway 15 in the neck 14 is closed or the back of head 16 sealed off, the slit 20 is opened, and the head 16 is compressed, all substantially at the same moment or in the order named. Such amount of paste as is desired is then dispensed from the container. As soon as pressure is released from the several parts mentioned, the slit 20 closes and the remaining material is sealed in the head 16 for future dispensings.

The head 16 is practically air tight when the slit 20 is closed preventing leakage of the paste. On emptying the head 16 of paste, more paste is expressed from the container into the head 16.

A second form of closure embodying the invention is disclosed in the device illustrated in Figure 3. The reference characters used in Figure 3 designate the parts that correspond with those used in Figures 1 and 2 adding the letter "*a*".

The closure 12*a* illustrated in Figure 3 includes a skirt 13*a* and a head 16*a*, but omits any neck, the head 16*a* resting directly upon the skirt 13*a*. The construction and operation of the device shown in Figure 3 is otherwise identical with the construction and operation of the first described device.

In either form of the invention there are but few variables to adapt the closure to any material or container therefor. The first variable is the size of the skirt. This size is determined by the neck of the container on which it is to be used. The second variable is the size of head 16. This is important only when accurate measured discharges are desired.

The thickness of nose 18 is a third variable determined by the material to be dispensed. The average thickness of nose 18 to the wall of head 16 is four to one, but this ratio may be reduced to three or even two and one-half to one for certain commodities and may be increased to six or seven to one for other materials. The slit 20 is narrow or broad, and long or short, as demanded by the physical character of the material to be dispensed therethrough.

In any structure, a leak proof always closed (except when in use) closure is provided, thus preserving the contents against waste and chemical and physical change so frequently resultant upon exposure to the air.

What is claimed as new and is desired to be secured by Letters Patent of the United States is:

1. A dispensing closure of elastic material comprising a skirt to fit about the neck of a container, and a compressible head integral with the skirt and terminating in a nose, the nose having a slit therein, and the head being at an oblique angle to said skirt.

2. A dispensing closure of elastic material comprising a skirt to be fitted about the neck of a container, and a compressible head integral with the skirt and at an oblique angle to said skirt and having a thick nose, the nose having a slit therein and being flat at the end thereof.

3. A dispensing closure comprising a skirt, a head on the skirt and at an angle thereto, and a nose on said head and comprising material substantially four times as thick as the material of said head, the nose having a flat end having a slit thereacross.

4. A dispensing closure of rubber comprising an attaching skirt, a compressible head integral with the skirt at an oblique angle to the axis of a container on which used and having a nose of thick material, the nose being flat at the end thereof and having a slit across such flat end to provide a self closing aperture openable by pressure at the sides of said nose.

5. A dispensing closure of elastic material for a container comprising a skirt for telescoping over such container, a tubular neck on said skirt and having a passageway therethrough, a hollow head on said neck at an oblique angle to said neck and communicating with said container through said neck, and a nose upon said head and having an end the material of which is several times the thickness of the material of said head,

the end of said nose being slit, said neck being compressible to close said passageway, said nose being compressible to open said slit, and said head being compressible to express material therein through said slit.

6. A dispensing closure of elastic material for a container neck comprising a skirt for telescoping over such container neck, a neck upon and integral with said skirt, and an elongated head on and integral with said neck at an oblique angle to said neck, the end of the head having a slit therethrough and said head being hollow and communicating with said container through said neck.

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