

Nov. 2, 1943.

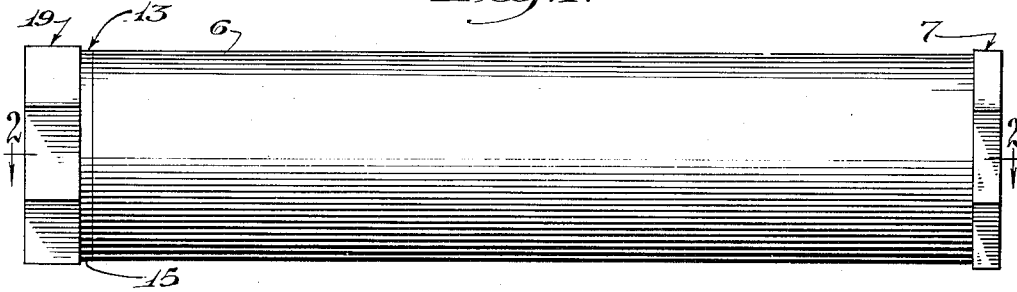
A. J. LAUTMANN

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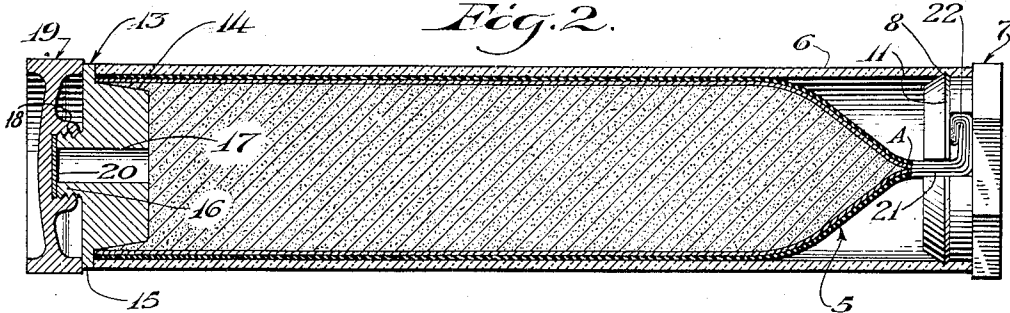
DISPENSING DEVICE

Filed July 16, 1941

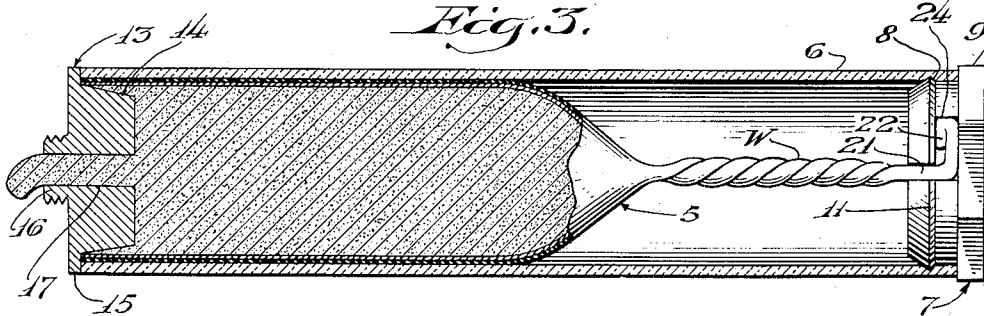
*Fig. 1.*



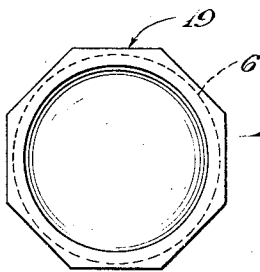
*Fig. 2.*



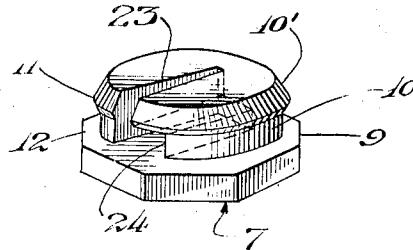
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE

2,333,320

## DISPENSING DEVICE

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5 Claims. (Cl. 221—60)

This invention relates to dispensing devices and particularly to the kind embodying a container which may be collapsed to thereby expel the contents thereof through an opening leading therefrom.

Dispensing devices of the aforesaid character are often used in the dispensing of facial and hand creams and like cosmetics as well as similar products such as deodorizing and kindred compounds, tooth paste, shaving creams and various other pastes. While in many of such usages such devices, when not in use, are stored in cabinets and the like where they are not exposed to view, there are instances where it is desirable and advantageous that such devices be kept under circumstances where they will be exposed to view, as when they are laid on dressing tables and the like. Particularly where the containers of such devices are not collapsed first at the end thereof opposite the discharge opening leading therefrom and especially where such containers are not rolled upon the collapsed portions thereof, such containers may often have an unsightly appearance which is objectionable in those instances where the containers are exposed to view.

Moreover, it has been observed that generally more satisfactory results can be realized if containers of the aforesaid character are collapsed first from the end thereof opposite the discharge opening therein, and among the objects of the present invention is to insure such collapsing of a collapsible container.

Still another object of the present invention is to conceal the collapsible portion of the container or dispensing device and particularly to effect this in such a way as to insure that the dispensing device will at all times have a pleasing appearance for so to do not only avoids the unsightly appearance of dispensing devices when they are left exposed to view but it also tends to increase the salability of devices of the aforesaid character and is advantageous for other reasons.

In many of the uses to which the present invention may be put it will be advantageous to utilize a translucent material to conceal the collapsible portion of the device but a metallic covering may also be utilized. However it is another object of this invention to conceal the collapsible portion of a dispensing device by utilizing a translucent covering whereby while the collapsible portion of the container may, thus be concealed, the outlines thereof may nevertheless be ascertained through the translucent member when the translucent member is disposed

between a source of light and the point of observation. This permits the determination of the degree of collapsing of the collapsible portion and from this it is possible to determine the quantity of material remaining in the collapsible portion of the device.

Yet other objects of this invention are to expedite proper collapsing of the collapsible portion of a dispensing device and thereby facilitate and insure proper discharge of the contents therefrom; to maintain the collapsed portion of a dispensing device in collapsed condition once it has been collapsed; to enable collapsing of the collapsible portion of a dispensing device to be effected upon relative rotation of parts of the dispensing device; and to enclose the collapsible portion of a dispensing device in a container including the portion which may be rotated relative to the container and to which the collapsible portion of the device is connected so as to thereby insure controlled yet proper collapsing of the collapsible portion of the dispensing device.

Still other objects of the invention are to provide a novel dispensing device of pleasing and attractive appearance and to prevent undesired movement of such a device on the surface upon which it may be disposed.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawing which, by way of illustration, shows a preferred embodiment and the principle thereof and what I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawing,

Fig. 1 is an elevational view of the dispensing device embodying my invention;

Fig. 2 is a longitudinal sectional view taken substantially on the line 2—2 on Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing certain of the elements in a different operating position;

Fig. 4 is an end elevational view looking in at the left-hand end of Fig. 1; and

Fig. 5 is a perspective detail view of an element of the device.

A preferred form of my invention is illustrated in the accompanying drawing and referring thereto it will be seen that the collapsible portion of

the device is afforded by a sack, generally indicated by 5 and described in detail hereinafter. This sack is permanently mounted in an enclosure in the form of a tube 6 that has the ends thereof closed by members of which one is effective to secure one end of the sack 5 in position in the tube 6 and the other of which is operative to effect controlled and proper collapsing of the sack 5.

In the form of my novel dispensing apparatus illustrated in the accompanying drawing the tube 6 is circular in cross section and is made of a rigid, translucent plastic material such as those of the phenol-formaldehyde type, vinyl resins, ethyl cellulose plastics, methyl methacrylate resins or the like. However, in those instances where the advantages of a translucent material are not needed or desired, the tube as 6 may be of metal such as aluminum, stainless steel or the like and, of course, other suitable materials may be used. A base, generally indicated by 7, is rotatably mounted at one end of the tube 6 and one convenient way in which this may be effected is the provision of a substantially V-shaped groove 8 on the inner surface of the tube 6 near the end thereof whereat the base 7 is to be mounted. The illustrated base includes a head 9 which, for a purpose to be explained presently, is preferably polygonal in outline. A neck 10 extends inwardly from the head 9 and terminates in a tapered end portion 10'. This tapered end is arranged to include a portion that extends beyond the periphery of the neck 10 and another portion leads from the free end of this taper and at right angles thereto to the periphery of the neck 10 whereby a substantially right angular shoulder 11 is afforded near the free end of the neck 10. The neck 10 is preferably circular in outline and of a size such that it will neatly fit in the adjacent end of the tube 6 and the apex of the shoulder 11 is also circular in outline but of a diameter greater than that of the inner periphery of the tube 6. The diameter of the neck 10 is less than that of the head 9 whereby a shoulder 12 is defined on the base 7. This shoulder is adapted to engage the adjacent end of the tube 6, and when the shoulder 12 is engaged with such end of the tube 6 the shoulder 11 seats in the groove 8. The material of which the base 7 and the tube 6 are made is such as to embody sufficient resiliency to enable the shoulder 11 to be forced along the inner periphery of the tube 6 until it snaps into the groove 8. When, however, the shoulder 11 is seated in the groove 8 it enables the base 7 to be rotated relative to the tube 6 but at the same time prevents displacement of the base from the tube. It will be understood that the base 7 might be connected to the tube 6 other than in the manner just explained, but it has been found that this is a convenient and inexpensive way to rotatably interconnect a tube as 6 and a base as 7.

The sack 5 is preferably circular in outline and sized to neatly fit in the tube 6 into which the empty sack is passed to have a free end thereof aligned with the end of the tube opposite that whereat the base 7 is to be mounted, the opposite end of the sack being extended beyond the opposite end of the tube. A plug, generally indicated by 13, which preferably included a tapered neck portion 14 and a head portion 15 is then disposed so that the neck portion 14 thereof may be passed into the sack 5 and preferably the tapered periphery of the neck portion 14 is so sized that the adjacent portion of the sack will be tightly clamped between the periphery of the neck portion 14 and the adjacent inner periphery of

the tube 6, the tight clamping action which is thus afforded securing the plug 13 and the sack 5 in position in the tube 6. By reason of the aforesaid diameter of the neck portion 14 it is spaced inwardly from the free marginal edge of the head 15 of the plug 13, the head 15 preferably being of an outline similar to that of the outline of the tube 6 and preferably being of an equal diameter so that these portions will smoothly join. It will be understood that the sack as 5 might be secured to the tube as 6 other than in the manner just described but I have found this to be a convenient and inexpensive way of firmly connecting such a sack in such a tube.

A plug 16 projects from the head 15 of the plug 13 in a direction opposite to the projection from this head of the tapered neck 14, and this neck 16 is preferably medially located on the plug 13. A bore 17 passes through the plug 13 so as to medially pass through the neck 16. The periphery of the neck 16 is screw-threaded to receive the screw-threaded inner periphery on the neck 18 of the cap generally indicated by 19, which preferably has an outline corresponding to that of the cap 7. A gasket 20 is provided at the inner end of the neck 18 of the cap 19 and is effective to tightly close the end of the bore 17 when the cap 19 is screw-threaded into its closed position on the plug 13.

With the sack and tube assembled in the above described manner an arrangement is afforded which may be filled by any of the conventional methods but when the material that is to be dispensed from my device is introduced into the sack, a portion of the sack at the free end thereof is not filled and this portion is permitted to extend beyond the adjacent end of the tube. This end of the sack is thereafter closed, as will be explained presently.

The sack 5 is desirably made of a highly flexible and waterproof material and I have found it advantageous to make this sack of what is chemically known as a stabilized halogen containing rubber derivative, or more specifically a stabilized rubber hydrohalide, an example of this material being disclosed in Patent No. 1,989,632, patented January 29, 1935 to William C. Calvert. This material is available in the form of what is referred to as a film and I prefer to use such form of this material. A material that I have found to be particularly advantageous is one which, upon testing for tensile strength, is found to have a yield point which first occurs at about 15% to 20% elongation, this being followed by a racking period up to about 200% to 250% elongation, which, in turn, is followed by a secondary elastic period of about 500% to 600% elongation. While a material having the aforesaid desirable properties is particularly advantageous for use in the present invention, desirable results may be realized, at least to a limited extent, by making the sack from a film of cellulose acetate or from a nitrocellulose, cellulose acetobutyrate, cellulose acetopionate or ethyl cellulose film. However, it is particularly advantageous to make the sack as 5 of a stabilized halogen containing rubber derivative having physical properties like those set forth since both elongation and elasticity are desirable properties in the sack and a material of this character embodies both of these characteristics.

As stated hereinabove, the sack 5 is filled after it is introduced into the tube 6 and it has been explained that the sack is not completely filled

adjacent the open free end thereof affording a portion which may be pinched together, preferably by tapering inwardly a marginal portion near the end of the sack and compressing opposite portions of the free end of the sack together to afford a tail 21. The free end of the tail 21 is preferably folded upon itself, as indicated at 22, to enable it to be connected to the base 7.

While the tail 21 may be connected to the base 7 in a wide variety of ways, I have found it advantageous to afford a diametrically extending slot 23 in the neck 10, this slot 23 extending from the shoulder 11 diametrically into the neck to a point beyond the axial center thereof. As best shown in Fig. 5, the portion of the slot 23 in the part 10' is tapered so as to decrease in width inwardly of the extent thereof. A portion of the neck 10 beneath the tapered part 10' thereof is cut away to afford a pocket 24 which is in communication with the tapered slot 23.

With the base 7 arranged in the just described manner, the portion of the tail 21 immediately adjacent the apex A (Fig. 2) is passed into the slot 23 which is sized at its outer end to enable unrestricted passage of the tail 21 therein. However, by reason of the taper of the slot 23, as the tail 21 is passed inwardly thereof, it is tightly clamped in the slot. The free end of the tail which is folded upon itself, as indicated at 22, is so folded upon itself that when this portion of the tail 21 is passed into the pocket 24 it will be neatly embraced therein. It is, however, primarily the clamping of the tail 21 in the slot 23 that serves to firmly interconnect the base 7 and the sack 5.

Thus in assembling a dispensing device of my invention a sack as 5 is filled in the manner above described and to the extent shown in Fig. 2 and thereafter the tail as 21 of this sack is connected to a base as 7. Then the neck of a base as 7 is passed into the tube as 6 until the shoulder as 11 thereon seats in the groove as 8 to thereby rotatively connect the base as 7 to the tube as 6 and thereupon assembly of my device is completed.

When it is desired to dispense material from the sack 5, which material will be of a viscous nature, as explained hereinabove, the cap 19 is removed so as to disclose the free end of the port as 17 and then the tube 6 and the base 7 are grasped so as to permit relative rotation to be effected therebetween, it being advantageous to hold the tube 6 against rotation and to turn the base 7. In any event the relative rotation between the base 7 and the tube 6 causes the portion of the sack 5 adjacent the apex A to be twisted and wound upon itself, as indicated at W in Fig. 3. Each time such relative rotation is effected and the sack 5 is caused to wind, as indicated at W, a small quantity of material will be forced through the port 17 to be discharged from the free end thereof.

It will be appreciated that in winding the sack 5 in the manner indicated at W it will be necessary to elongate the sack. It is for this reason that it is desirable to form this sack of a material having physical properties such as those displayed by the above referred to stabilized halogen containing rubber derivative, for the properties of elongation and elasticity displayed by this material enables such stretching of the sack to be effected as will be required to dispense the quantity of material that will usually be desired each time relative movement between the tube 6 and the base 7 is effected. A subse-

quent racking period will be displayed by material of this character under such circumstances and this enables the sack to remain in its elongated condition without sacrificing the desirable elasticity, such elasticity being desirable since it places the base 7 under tension and prevents retroactive or unwinding movement of the base 7 so as to thereby maintain the sack wound upon itself, as indicated at W. In any event, the sack will need be made of such material that it will elongate and desirably maintain its elasticity or resiliency so as to prevent breaking of the sack as it is wound in the manner indicated at W.

Particularly where the tube is circular in cross section it is advantageous to form the peripheries of the heads of the base 7 and cap 19 as to be polygonal in outline for when this is done and the dispensing device is laid on a flat surface, such polygonal outline of these parts prevents undesired rolling of the dispensing device on the flat surface. It will be appreciated, of course, that the tube 6 may be polygonal in outline, which will also realize the just described desirable result and in such an event the parts as 7 and 19 need not be made so as to extend beyond the periphery of the tube 6 and in such an instance either or both of the parts 7 and 19 may be formed so as to be circular in outline if this should be found to be desirable.

In a circumstance where it is desirable that the material with which the sack 5 is filled is to be kept free from contamination so as not to be affected by any odor or the like that the sack may innately possess, it will be advantageous to form the sack of a material which will be free of an odor. Moreover, in some instances it will be desirable that the sack be free of a characteristic taste as where a food product is to be dispensed from my novel apparatus. However, I have found that those materials which possess the other necessary requisites of the sack and which are also free from an odor, taste and the like are more expensive than materials which possess the other properties required of the sack. Thus in those instances where it is desirable that contamination of the material packed in the sack be prevented, the sack, as in the illustrated form of the invention, may be advantageously made of a two-layer material, the inner layer, that is to say, the one that is to come in contact with the material to be dispensed, being free from an odor, taste or the like and the outer layer being of an ordinary material. Resort to this arrangement, which will entail the use of two relatively thin films having a composite thickness and strength characteristic, such as required of the sack, enables the sack to perform its intended function of storing and enabling dispensing of the material and at the same time prevents contamination of the material.

It will be apparent from the foregoing description that I have provided a dispensing device which is of attractive and pleasing appearance and in this regard, primarily since the tube as 6 and the base as 7 and the cap as 19 may be made of a plastic material, such as a synthetic resin, these may respectively be made to possess contrasting or blending colors as, for example, the tube may be made of one color and the cap of another.

Furthermore, since the tube as 6 conceals the collapsible portion of the device, as the sack 5, from view by reason of the translucent or opaque

properties of the tube, I am able to overcome the somewhat displeasing appearance of prior collapsible containers, this being true since the collapsible portion of my dispensing device is concealed from view.

When the main body or tube as 6 of my device is made of a translucent material, it is possible to view the degree of emptying of the collapsible portion of the device as the sack 5 by disposing the device between a source of light and the point of observation. The translucent material will permit sufficient light to pass through my device to permit ascertaining whether or not any material remains in the collapsible portion but at the same time this portion will be concealed unless viewed as just described.

Still further, by reason of the fact that the collapsible portion of my device will always be collapsed from the end thereof remote from the discharge opening, proper collapsing of this portion of the device is insured and hence undesirable oxidation or the like of a portion of the material to be dispensed adjacent the discharge opening may be avoided since this material will be that which is constantly being expelled, and in this respect it will be noted that a tight closure is afforded for the dispensing opening of my dispensing device which also insures against oxidation and the like.

Many other advantages of the present invention will be apparent from the foregoing description and in this respect, while I have illustrated and described a selected embodiment of my invention it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A dispensing device comprising a tubular casing, a collapsible sack in said casing and fixed at its front end to the same and elastically extensible longitudinally thereof to permit and compensate for twisting the sack between fixed portions thereof for expelling the contents of the sack when the same is filled, a dispensing element having an outlet and secured to the front end of the casing and forming a closure for the front end of the sack when the outlet is closed, and a plug fitted in the rear end of the casing and having the rear end of the sack attached to it, said casing and plug having cooperating means for rotatably mounting the plug and for holding the same against movement axially of the casing, the sack when filled being of an initial length to extend from the dispensing element to said plug and the inherent properties of said sack permitting tensioning and stretching of the sack without rupture when the plug is rotated to twist the sack and expel the contents thereof.

2. A dispensing device comprising a tubular casing, a collapsible sack in said casing elastically extensible longitudinally thereof to permit and compensate for twisting of the sack between fixed portions thereof for expelling the contents of the sack when the same is filled, a front plug fitted in the front end of the sack and the casing and fixing the sack thereat to the casing, said plug being provided at its outer face with a centrally arranged, exteriorly threaded projecting neck and having a dispensing outlet extending through the plug and the neck, a cap

provided with an interiorly threaded neck engaging the threaded neck of the plug and closing the dispensing outlet, said cap being also provided with a peripheral portion spaced from the neck of the cap and having an abutting engagement with the outer face of the front plug, and a plug fitted in the rear end of the casing and having the rear end of the sack attached to it, said casing and plug having cooperating means for rotatably mounting the plug and for holding the same against movement axially of the casing, the sack when filled being of an initial length to extend from the front plug to the rear plug and the inherent properties of the sack permitting the tensioning and stretching of said sack without rupture when the rear plug is rotated to twist the sack and expel the contents thereof.

3. A dispensing device comprising a tubular casing, a collapsible sack in said casing, a dispensing element having an outlet and secured to the front end of the casing and forming a closure for the front end of the sack when the outlet is closed, and a rear plug fitted in the rear end of the casing, said casing and plug having cooperating means for rotatably mounting the plug and for holding the same against movement axially of the casing, said plug being provided with a central opening and having an inwardly tapered radial slot extending from the periphery of the plug to the central opening and having inwardly converging side walls, one of the side walls being recessed to provide a pocket and said sack being provided at its rear end with a tail portion extending through the central opening of the plug into said slot and frictionally engaged with the converging side walls thereof and the terminal portion of the tail being folded and arranged in said pocket, whereby the rear end of the sack is secured to the rear plug to enable rotation of the plug to twist the sack and expel the contents thereof through the outlet of the dispensing element.

4. A dispensing device comprising a tubular casing provided at its rear end with an interiorly arranged annular groove, a collapsible sack in said casing, a dispensing element having an outlet and secured to the front end of the casing and forming a closure for the front end of the sack when the outlet is closed, and a rear plug fitted in the rear end of the casing and having a transversely tapered peripheral portion engaging said groove for rotatably mounting the plug in the casing and for holding the plug against movement axially of said casing, said plug being provided with a central opening and having an inwardly tapered radial slot extending from the periphery of the plug to said opening, said sack having a tail portion extending through the opening in the plug and into said radial slot and frictionally engaged by the inwardly converging side walls thereof for securing the rear end of the sack to said plug to enable rotative movement of the plug to twist the sack and expel the contents thereof through the outlet of the dispensing element.

5. A dispensing device comprising a tubular casing, a collapsible sack in said casing elastically extensible longitudinally thereof to permit and compensate for twisting the sack between fixed portions thereof for expelling the contents of the sack when the same is filled, a front plug fitted in the front end of the sack and the casing and fixing the sack thereat to the casing and provided with a centrally arranged, exteriorly projecting neck and having an outlet opening

extending through the neck, said neck being adapted to receive a closure cap, and a rear plug fitted in the rear end of the casing, said plug and casing having cooperating means for rotatably mounting the plug and for holding the same against movement axially of the casing, said rear plug being provided with a central opening and having an inwardly tapered radial slot extending from the periphery of the rear plug to the central opening and one of the converging walls of the slot being recessed to provide a pocket,

said sack having a tail portion extending through the opening in the rear plug and into said slot and frictionally engaged by the converging walls thereof, the terminal portion of the tail of the sack being folded and arranged in said pocket, whereby the rear end of the sack is secured to the rear plug and rotative movement of the rear plug will twist the sack and expel the contents thereof through the outlet of the front plug.

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