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J. W. THORSEN

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LIQUID DISPENSER AND METHOD FOR DISPENSING LIQUIDS

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Fig. 1.

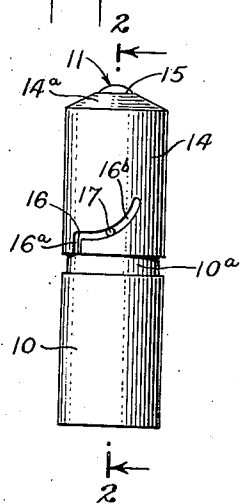


Fig. 2.

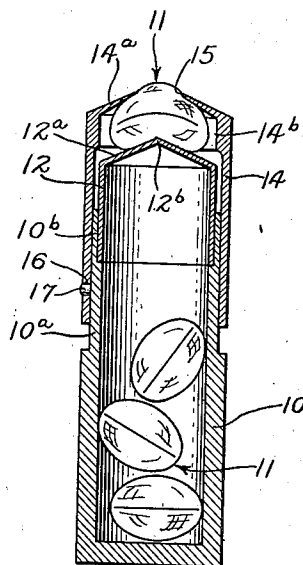


Fig. 3.

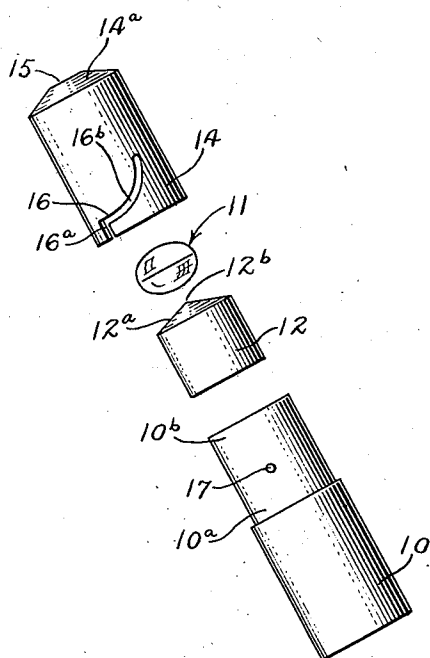
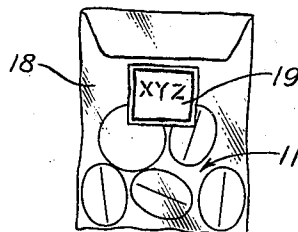


Fig. 4.



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## UNITED STATES PATENT OFFICE

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## LIQUID DISPENSER AND METHOD FOR DISPENSING LIQUIDS

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12 Claims. (Cl. 221-1)

This invention relates to a liquid dispenser or the like and a method for dispensing and/or shipping liquid.

One of the objects of this invention is to provide a liquid dispenser construction or the like which will be simple, practical and thoroughly durable. Another object is to provide a construction of the above character which may be manufactured with a minimum amount of labor and from inexpensive materials. Another object is to provide a construction of the above character which, while being practical in use, is also neat and attractive in appearance. Another object is to provide a construction of the above character which will form a convenient container for liquid or the like and will at the same time make available for use small quantities of liquid as desired. Another object is to provide a construction of the above character which will hold a small capsule of liquid and conveniently release a portion of the liquid from the capsule when desired by the user. Another object is to provide a construction of the above character which may be made up practically in small sizes and shapes convenient for use. Another object is to provide a method of dispensing liquid which will be convenient and make for considerable economy in shipment and display. Another object is to provide a method of the above character which will make possible the carrying of small quantities of liquid or the like and the application of small quantities thereof without inconvenience. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts and in the several steps and relation and order of each of the same to one or more of the others, all as will be illustratively described herein, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the possible embodiments of this invention,

Figure 1 is a front elevation of my device as assembled for use;

Figure 2 is an enlarged sectional view in elevation of the parts shown in Figure 1;

Figure 3 is an unassembled view of the parts shown in Figure 1, and

Figure 4 is a front elevation of a package of capsules or the like.

Similar reference characters refer to similar

parts throughout the several views of the drawing.

As conducive to a clearer understanding of certain features of this invention, it might here be pointed out that the shipment, storage and application of a liquid have been subject to many important difficulties. There are many liquids, e. g., various medicines, perfumes, and other chemicals, which it often becomes necessary to carry when one is away from home and it is desirable to apply many of these liquids to the person or perhaps the clothing in small quantities. For example, perfume and many drugs or the like are generally sold to the consumer in fragile bottles made from glass or the like which are subject to breakage and which are inconvenient to carry in pockets, purses, or the like. Furthermore, it is difficult and bothersome to apply these liquids or the like from these bottles or containers and, when so done, generally necessitates the use of both hands. The liquid dispensers now in use are of cumbersome size and proportions and complicated in structure, thus easily becoming damaged and apt to allow large quantities of the liquid contained therein to evaporate. No effective means now exists for the storage of small quantities of liquid and the application of small quantities thereof without accompanying bother and nuisance. One of the objects of this invention is to provide a construction and a method in which the above-mentioned difficulties as well as many others are successfully and practically overcome.

Referring now to the drawing in detail, there is shown in Figure 2 a container 10 preferably cylindrical in shape disposed within which are a plurality of capsules generally indicated at 11. Capsules 11 are filled with any suitable liquid or the like and may be made from any suitable material preferably pliable in character. For example, capsules 11 might be filled with a perfume or perhaps mercurochrome or some other drug. Thus capsules 11 may be depressed when pressure is exerted thereon without rupture and form a durable container for liquid not easily damaged in normal use.

Preferably the upper portion 10a of container 10 is reduced in outer diameter and a portion 10b thereof is also preferably increased in inner diameter. Fitting within portion 10b of container 10 is a stopper or cap 12. Thus stopper 12 forms a closure for container 10 to hold capsules 11 until they are desired. I have found that a tight fit between stopper 12 and portion 10b of container 10 is sufficient to hold the stopper in the position

shown in Figure 2, but, of course, any other means might be employed for this purpose, as, for example, threads. The top portion 12a of stopper 12 is preferably convex in shape thus forming a peak 12b substantially near the central portion thereof.

A cap member 14 is shaped to fit snugly over portion 10a of container 10 and is provided with an aperture 15 in its end portion immediately above peak 12b. The end portion 14a of cap member 14 preferably slopes upwardly and thus substantially corresponds in shape to end portion 12a of stopper 12. Also I prefer to provide an annular ridge portion 14b on the inner surface of cap member 14 shaped to engage stopper 12 and rest thereon when the cap member is forced down on container 10. Accordingly, ridge 14b acts as a stop to limit the relative movement between cap member 14 and the container.

Formed in cap member 14, as more clearly shown in Figures 1 and 3, is a slot 16 and a lug 17 extends from portion 10a of container 10 shaped to fit within this slot. Thus a portion 16a of slot 16 extends vertically with respect to the cap while another portion 16b thereof is curved upwardly about the diameter of the cap. Accordingly, when the cap member is fitted over portion 10a of container 10, portion 16a of slot 16 is first brought into registry with lug 17. Upon further downward movement, the cap is rotated slightly and will thus be held against displacement from the container thereby. Upon further rotation of the cap, lug 17 rides along portion 16b of slot 16 and thus forces cap member 14 further down upon portion 10a of container 10.

In use, cap 14 is removed from the container and a capsule 11 is dropped therein so that it rests on end portion 14a covering aperture 15. Next the container is slipped into position, lug 17 finally sliding through portion 16a of slot 16 and the container is rotated slightly to lock the cap in position. During this action, capsule 11 tends to locate itself substantially in the center of the upper portion of the cap, as shown in Figure 2, due to the concave shape of end portion 14a and also due to the convex shape of portion 12a of stopper 12. Furthermore, peak 12b serves to hold capsule 11 in this position, the walls of the capsule being depressed due to the pliable nature thereof. The portion of capsule 11 exposed by aperture 15 is now ruptured in any convenient manner, as, for example, with a pin or the like and my device is ready for use.

When the user desires to apply a small quantity of liquid, cap 14 is rotated so that lug 17 rides along portion 16b of slot 16. As pointed out above, this forces cap 14 further down upon container 10 and consequently exerts pressure on capsule 11. Thus a portion of the liquid in the capsule leaks out through the rupture and down upon the top of cap 14 where it is conveniently accessible for use. After the user has applied a sufficient amount of liquid, the release of cap 14 allows it to rest on capsule 11 without exerting undue pressure thereon and, due to the character of the material from which the capsule is formed, the rupture is in effect sealed so that no appreciable amount of liquid can leak or evaporate therefrom. Thus the device may be placed in a bag or the like without damaging leakage on other articles with which it may come in contact and also the liquid is protected against harmful evaporation.

After a capsule has been exhausted of its contents, it is an easy matter to remove the cap from

the container and remove stopper 12 to procure another capsule. The new capsule may be loaded in the cap in a manner substantially similar to that described above. Container 10 is preferably large enough to hold an adequate supply of capsules, but, of course, may be made in any size best suited to the user. Also, capsules 11 may be made of such inexpensive material that they may be discarded after exhausted without undue expense. Not only may this device be effectively operated with one hand but also its use results in a considerable saving in liquid for the amount used may be easily controlled by regulating the rotation of cap 14 and also due to the fact that leakage and evaporation are reduced to a minimum. Further still, the simplicity of this construction and the small number of parts make it extremely inexpensive to manufacture. It is of course to be understood that the various parts may be made in a number of different ways and from various materials, all according to the particular use for which it is adapted.

Capsules 11 form a very practical way for shipping and displaying various liquids, an example of which is perfume. As pointed out above, these capsules are formed from a pliable sturdy material, thus being free from accidental breakage during shipment and display, and, in fact, until they are placed for use in my dispenser. Also, after the capsules have been filled with perfume or some other liquid and sealed, they protect the liquid against any evaporation whatsoever before they are ruptured for use in my dispenser. Thus the capsules may be kept for a long period of time in stores and other places without any damage or loss from evaporation.

These capsules may be made up in attractive colors and sold in groups in suitable packages such as package 18 (Figure 4). I have found it desirable to make such packages from cellophane or some other transparent material suitably marked as at 19 to indicate the kind and brand of liquid the capsules contain and so that the group of capsules may be readily apparent to the casual observer and yet easily accessible to the consumer.

It will thus be seen that I have provided a thoroughly practical and efficient device and method for dispensing liquid or the like in which the several objects hereinabove mentioned as well as many others are successfully accomplished.

As many possible embodiments may be made of the mechanical features of the above invention and as the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a construction of the general nature of that herein described, in combination, a supporting member, and a cylindrical part fitting over said member and having an aperture formed in the end thereof, said supporting member and the end of said cylindrical part adapted to hold a capsule of liquid so that a portion thereof covers said aperture whereby when said capsule is ruptured pressure applied thereto by said cylindrical part forces some of the liquid in said capsule therefrom.

2. In a construction of the general nature of that herein described, in combination, a substantially cylindrical supporting member, a cylindrical

part fitting over said member and having an aperture formed in the end thereof, said supporting member and the end of said cylindrical part adapted to hold a capsule of liquid so that a portion thereof covers said aperture, and means adapted to force said cylindrical part down on said cylindrical member to exert pressure on said capsule upon the turning of said cylindrical part with respect to said cylindrical member.

3. In a construction of the general nature of that herein described, in combination, a substantially cylindrical supporting member, the top of said member being substantially convex in shape, a lug extending from said cylindrical member, and a cylindrical part fitting over said cylindrical member, said part having an aperture formed in its end substantially opposite said convex portion, said convex portion and said end adapted to hold a capsule to cover said aperture, said cylindrical part having a slot formed therein into which said lug may extend, said slot being shaped to coact with said lug and force said part further down upon said member upon the rotation of said part.

4. In a construction of the general nature of that herein described, in combination, a supporting member and a part fitting over said member and having an aperture formed in the end thereof, said part and said member being shaped to hold containing means for a liquid disposed between said member and the end of said part whereby pressure on said part forces some of the liquid from said containing means.

5. In a construction of the general nature of that herein described, in combination, a closed cylindrical member having one substantially convex end, a cap member fitting over said end and having an aperture immediately above said end, containing means for a liquid, said convex end being shaped to support said containing means within said cap member, and means adapted to force said cap member down on said containing means upon the rotation of said cap member with respect to said cylindrical member so that a portion of said containing means is forced to protrude through said aperture.

6. In a construction of the general nature of that herein described, in combination, a cylindrical member having a closed end, a lug extending from said cylindrical member, and a cap member fitting over said cylindrical member and having an aperture formed in its end immediately above said end of said cylindrical member, said cap member having a slot formed therein adapted to coact with said lug upon rotation of said cap member with respect to said cylindrical member to force said cap member toward said end of said cylindrical member whereby a capsule containing liquid disposed between said cylindrical member and said cap member may be compressed.

7. In a construction of the general nature of that herein described, in combination, a cylindrical member having a closed end, and a cap member fitting over the closed end of said cylindrical member and having an end portion con-

cave in shape to said closed end, the central portion of said end portion being open, said closed end of said cylindrical member and said end portion of said cap member adapted to hold a capsule of liquid whereby pressure applied to said cap member is transferred to said capsule to compress said capsule.

8. In a construction of the general nature of that herein described, in combination, a cylindrical member having a substantially convex end portion, and a cap member fitting over said cylindrical member and having a top portion in registry with said convex end portion substantially concave in shape with respect to said end, substantially the central portion of said top portion being open, and said end portion and said top portion adapted to hold a capsule formed from pliable material and containing a liquid whereby upon rupture of said capsule pressure by said cap member thereon forces a quantity of the liquid from said capsule to flow out on the top of said cap member.

9. In a construction of the general nature of that herein described, in combination, a closed cylindrical container, a cap member fitting over said cylindrical container and having an opening in its end, said container and said member being shaped to receive containing means for a liquid disposed between said cap member and said container, and means adapted to force said cap member down upon said last-mentioned means causing a portion of the containing means to extend through the opening of said cylindrical container.

10. In a construction of the general nature of that herein described, in combination, a closed cylindrical part, a member having an aperture formed in its end interfitting with said part, and means interposed between said part and said member and adapted to guide said member toward said part to hold a capsule of liquid in registry with said aperture and exert pressure thereon so that a small portion of said capsule protrudes through said aperture.

11. In a construction of the general nature of that herein described, in combination, a cylinder, means containing a liquid disposed on one end of said cylinder, a cap member having an opening therein and interfitting with said cylinder and said means, and means for forcing said cap member down on said cylinder and said first mentioned means to force a portion of said capsule through said opening.

12. In a construction of the general nature of that herein described, in combination, a supporting member, a liquid container resting on one end of said supporting member, and means fitting over a portion of said container and said supporting member and adapted to exert pressure against said container, said container being formed from material which may be ruptured and which has the characteristic of automatically sealing such a rupture when no pressure is exerted against said container.