

April 14, 1942.

T. HUSTON

2,279,320

COMBINED LIQUID DISPENSING AND APPLYING DEVICE

Filed Aug. 8, 1939

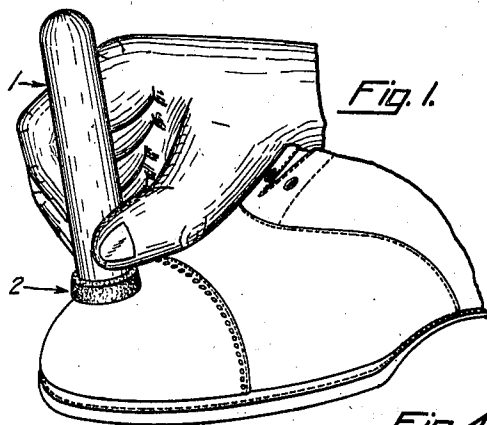


Fig. 1.

Fig. 2.

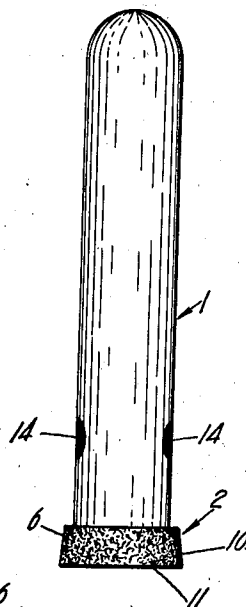


Fig. 4.

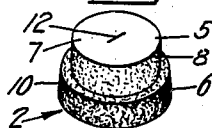


Fig. 3.

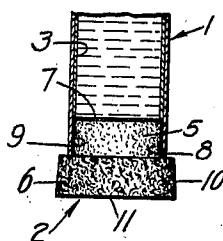


Fig. 5.

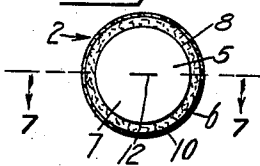


Fig. 6.



Fig. 9.

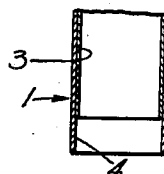


Fig. 7.

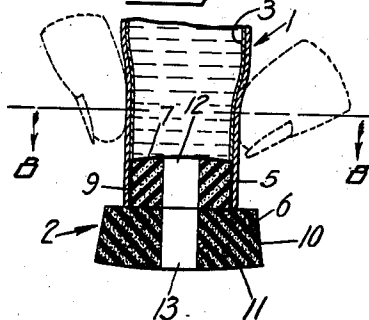
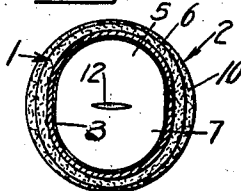


Fig. 8.



INVENTOR
Tom Huston
By *[Signature]*
ATTORNEY

UNITED STATES PATENT OFFICE

2,279,320

COMBINED LIQUID DISPENSING AND
APPLYING DEVICE

Tom Huston, Miami, Fla.

Application August 8, 1939, Serial No. 289,012

12 Claims. (Cl. 15—133)

My invention relates to combined liquid dispensing and applying devices.

It has among its objects to improve such a device, and, more particularly, to provide such an improved device especially adapted for use in dispensing and applying shoe dressing or the like. A further object of my invention is to provide such an improved construction of the general type described and claimed in my copending application Serial No. 110,725, filed November 13, 1936, and one wherein my prior construction is markedly improved and simplified in various respects enabling improved results to be obtained. A still further object of my invention is to provide an improved combined closure and applying member of an improved construction adapted to be mounted in an improved manner in the open end of an improved resilient fluid containing tube and to provide improved valve means controlling the flow through this member whereby the flow is controlled in an improved manner by compressing and releasing an adjacent portion of the tube. Still other objects of my invention are to provide such an improved construction wherein the improved closure and applying member is maintained ready for use even after being laid away for long periods between use thereof, and one wherein any tendency of the container to lose resiliency, or of the liquid to deteriorate or evaporate in the container during long periods of storage, or between periods of use of the dispenser, is effectually overcome. These and other objects and advantages of my improved construction will, however, hereinafter more fully appear.

In the accompanying drawing, I have shown for purposes of illustration one embodiment which my invention may assume in practice.

In the drawing:

Figure 1 is a perspective view of my improved dispenser in use as a shoe dressing dispensing structure and applying means;

Fig. 2 is a side elevation of the dispenser;

Fig. 3 is a vertical sectional view of the lower portion of the casing, the closure means being shown in side elevation therein;

Fig. 4 is a perspective view of the closure means;

Fig. 5 is a top plan view of the latter;

Fig. 6 is a bottom plan view of the latter;

Fig. 7 is a sectional view on line 7—7 of Figure 5 showing the closure means in the end of the container and the latter pressed between the fingers during use;

Fig. 8 is a section on line 8—8 of Figure 7

showing the position of the parts when thus manually compressed, and

Fig. 9 is an enlarged detail sectional view of a portion of the tube showing the coated and uncoated interior surfaces thereof.

In this illustrative construction, I have shown a shoe dressing dispensing and applying device especially adapted to dispense and apply so-called liquid "shoe white" or the like and including an improved dispensing container or tube, generally indicated at 1, and having an open end and an improved combined closure and applying member, generally indicated at 2, normally closing said end, all as hereinafter more fully described.

Referring more particularly to the tube 1, it will be noted that the same is generally cylindrical and of small diameter and elongated in such manner as to enable it to be held in the fingers substantially after the manner of a pencil. For example, as shown in Figure 1, the same may be held between the thumb and middle finger with the tube projecting above the grasping points and the latter so disposed closely adjacent the bottom of the tube as to make the tube readily manipulatable in the fingers after the manner of a pencil, while also being subject to finger pressure thereon, to control the liquid flow as hereinafter described. In a preferred construction, the tube is formed of a usual semirigid yet resilient cellulose nitrate material, such, for example, as Celluloid or other equivalent material, and is closed at its upper end and has its lower end open, and therefore more resilient, and adapted to be closed by the resilient closure and applying member 2 while retaining the resiliency of both and requiring only slight finger pressure. Herein also it will be noted that the interior of this tube 1 is suitably coated, as at 3, over its entire liquid containing area in such manner as to prevent what I find to be an objectionable diffusion of moisture through the side walls of such tubes which results in objectionable evaporation of the liquid during storage and, further, in such waterlogging of the material of the tube as to destroy its resiliency. While other wax coatings may be used, I prefer to form this coating of beeswax, pouring this when hot into the tube and relatively quickly emptying the same, as I find that the remaining coating is flexible and satisfactorily imparts wholly new impervious and resilient characteristics to the cellulose tube. Further, it will be observed that the inner surface 4 adjacent the open end of the tube is free from the wax coating 3, any such coating of the same

being undesirable to permit the use of my improved cement on this surface 4 to connect there-to a portion of the member 2.

The closure member 2 which cooperates with my improved container 1 is also of an improved construction. As illustrated, it includes an inner, herein cylindrical, resilient closure portion 5 and an outer, likewise cylindrical, resilient applying portion 6 of larger diameter cemented to the bottom of the portion 5. In a preferred construction, each of these portions 5 and 6 is of rubber and although both may be formed of the same material as the portion 5, the portion 5 is formed of finer and more expensive sponge rubber known as cellular rubber, while the portion 6 is formed of ordinary high grade sponge rubber. Referring more particularly to the portion 5, it will be understood that the same comprises very small non-communicating cells or pores, and that the same are filled with nitrogen instead of air. Further, it will be observed that herein the upper surface 7 of the portion 5 has a skin thereon in such manner as thereby to minimize penetration by the liquid, while the side wall 8 thereof is cemented to form a liquid tight yet flexible cemented connection to the surface 4. Herein, the side wall 8 is free from skin, i. e. comprises cut cells, and is cemented to the uncoated portion 4 of the tube 1 by suitable cellulose nitrate cement, as indicated at 9. The portion 6 is formed of high grade sponge rubber having somewhat larger non-communicating cells, but these are filled with air. Further, all of the outer surfaces of this portion 6 are free from skin, i. e. comprise cut cells, while it will also be observed that a slight taper is provided, as at 10, on the periphery of the portion 6 in such manner as thereby to increase somewhat the area of the bottom applying surface 11.

Herein, improved cooperating liquid outlet means are also provided in both the portions 5 and 6 whereby improved results are obtained. These outlet means include a slit 12 centrally or axially located in the cellular rubber portion 5 and extending through the latter and a cooperating communicating slit 13 in the sponge rubber portion 6 leading downward through the latter to the bottom surface 11. Both slits are of such character as normally to be closed by the resiliency of the material forming the walls thereof. Further, each is adapted to be opened when pressure is applied at opposite points on the tube 1, indicated by spots 14, and herein disposed slightly above the upper end of the portion 5 and opposite the opposite extremities of the upper end of the slit 12. However, while cooperating, each end of the slit 12 acts quite differently from the other when the member 2 is in operative position in the tube 1 and the latter is compressed by pressure applied to the spots 14.

Considering the operation of the device and referring more particularly to the action of the slit 12, it will be observed that the same is disposed longitudinally below the desired pressure points 14 on the tube 1. Thus, when the tube is compressed by a slight squeezing action of the fingers on these two spots 14, the upper end of slit 12 is mechanically opened, as shown in Figure 8, by the endwise pressure applied to it, at the same time that the walls of the container are deformed by this pressure or flexing. On the other hand, when pressure is thus applied to the spots 14, the slit 13 in the portion 6 is not mechanically opened by the pressure of the fingers, but, instead, is forced open by the liquid which is forced through the

then open slit 12 by the pressure of the liquid in the container arising from the deformation of the latter as above described. Consequently, a small quantity of liquid is caused to be automatically expelled upon the applying surface 11, this liquid being discharged first through the slit 12 and then through the slit 13, as a result of the same flexing motion which has caused the slit 12 to open. Here, obviously, both slits will close due to the resiliency of the material forming their walls, following relief of finger pressure, only a minimum of the liquid being then retained therein, and repeated discharges may be effected as and when desired while the expelled liquid is being applied and spread by the surface 11.

Thus, the two slits may be considered to function as cooperating valves. Both are normally closed and thus cooperate to prevent seepage. On the other hand, the slit or valve 12 is mechanically opened at its upper end and by the opposite endwise manual pressure applied to the extremities of that end, in such manner as to open quite wide and thus provide a free passage for the liquid. However, the slit 13, being more remote, is not thus manually compressed endwise and opened wide, but instead remains closed, or substantially closed, until, as a result of the flattening or deformation of the container 1, the liquid in the latter is forced through the then open slit or valve 12, and forces its way between the walls of the slit 13 and out therethrough, spreading over the surface 11. When, however, the finger pressure on the spots 14 is released and as the container springs back to its normally cylindrical shape, both slits or valves 12 and 13 then are closed by the resiliency of the material comprising their walls, i. e. are returned to their normally closed position.

As a result of my improved construction, it is found that due to the provision of the wax coating 3, the liquid dressing in the tube 1 can be stored for long periods without the evaporation or deterioration heretofore experienced with such cellulose tubes and heretofore believed to be inherent where such cellulose tubes have been used, with consequent resulting improvement in the resiliency thereof and in the resultant functioning of the dispensing and applying member 2, the slit means in which are normally closed by this resiliency. Further, due to my improved construction and the cementing of the cellular rubber portion 5 to the resilient end of the tube 1, it is made possible to obtain a wholly new resiliency in this portion of the dispenser, not only enabling the finger pressure to be applied closer to the closure member, but also making it possible to obtain my improved valve action including the opening and closing of the slit 12 in the cellular rubber portion 5, while also requiring only a slight squeezing action. Here it will also be evident that a greater pressure, or pressure applied below the spots 14, will act to open the slit throughout its length in such manner as to increase the flow when desired, while like results may also be obtained by varying the thickness of the sections 5 and 6 or the width of the slit. Attention here is also directed to the fact that the use of cellulose nitrate cement between the uncoated surface 4 of the tube and the cut cells on the side 8 of the portion 5 makes it possible to obtain permanent bonding of the cellulose tube and cellular rubber portion without reducing the resiliency of the parts and while at the same time producing a joint which is water tight, leak proof and

non-absorbent to moisture. Moreover, through the use of such a portion of cellular rubber and the skin thereon, it is made possible to eliminate seepage through the closure for long periods of time, as, for example, when the dispenser is stored, or between periods of use thereof, while it is found that such cellular rubber does not absorb, swell or deteriorate while in contact with the liquid dressing. Further, by reason of the use of this cellular member of fluid impervious character, it is also made possible for the cells of the under or applicator section to have a limited amount of communication, if desired, for example, sufficient to adapt the latter section to retain a few drops of dispensed liquid for subsequent spreading. These and other advantages of my improvements will, however, be evident to those skilled in the art.

While I have in this application specifically described one embodiment which my invention may assume in practice, it will be understood that the same is shown for purposes of illustration, and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a liquid dispensing device, a resilient cellulose container having an open end and having fluid pervious walls comprising the walls of the container and of sufficient resiliency to return to their normal position following compression, a resilient dispenser having a normally closed passage therein normally closing that end thereof and adapted to discharge liquid through said passage when said container walls are compressed, and a flexible wax coating on the inner surface of said container for maintaining sufficient resiliency of said cellulose container to maintain said passage normally closed while preventing diffusion of liquid through the outer walls thereof.

2. In a liquid dispensing device, a resilient cellulose container having an open end and having fluid pervious walls comprising the walls of the container and of sufficient resiliency to return to their normal position following compression, a resilient dispenser having a normally closed passage therein normally closing that end thereof and adapted to discharge liquid through said passage when said container walls are compressed, and a flexible wax coating on the inner surface of said container and flexible with the resilient walls of said container for maintaining the resiliency of said walls and preventing diffusion of liquid through the walls thereof, said container having a portion thereof receiving a portion of said dispenser and free from coating and cemented to said dispenser portion and having the remainder of its interior coated.

3. In a liquid dispensing device, a resilient container having an open end, a dispenser having a resilient neck portion manually compressible while in said end, and normally closed liquid delivering slit means in said dispenser communicating with the interior of the container and mechanically opened at the inner end of said slit means when said neck portion is compressed by compression of said container adjacent said open end and having said slit means opened throughout the remainder of its length by the pressure of liquid forced through the outer end of said slit means by said compression

of said container, said inner and outer ends of said slit means both springing back to closed position upon release of said pressures.

4. In a liquid dispensing device, a container having a resilient open end, a resilient closure member for said end having an inner neck portion in said end, and slit means disposed longitudinally generally centrally in said closure member and having the inner end thereof opened upon deformation of said neck portion by manual pressure applied to said container adjacent said open end, and said slit means also having the outer end thereof forced open by and discharging liquid as said container is deformed by said manual pressure, said closure member comprising sponge rubber portions of different cellular character at its inner and outer ends and having the rubber of finer cellular character at its inner end.

5. In a liquid dispensing device, a resilient semi-rigid container having an open end, a laminated liquid impervious dispenser closing said end and having a cellular rubber neck portion extending into said end and also having a sponge rubber applying disc and a cement layer between the top of said disc and the bottom of said portion, and normally closed longitudinally disposed slit means beginning at the applying surface of said disc and communicating with the interior of said container.

6. In a liquid dispensing device, a resilient elongated tube adapted to be held after the manner of a pencil and having a lower open end compressible at its extremity by the fingers when so held, a resilient dispensing and applying member normally closing said end and having a resilient neck portion mounted on said compressible extremity and compressible thereby when the latter is compressed by the fingers, and normally closed liquid discharge slit means in said resilient member controlled by said finger pressure.

7. In a liquid dispensing device, a resilient elongated tube adapted to be held after the manner of a pencil and having a lower open end compressible at its extremity by the fingers, a resilient dispensing and applying member having a resilient neck portion in said compressible extremity and normally closing said end and compressible thereby when the latter is compressed by the fingers and an applicator portion outside said tube, and slit means in said neck and applicator portions, said slit being normally closed at its opposite ends and mechanically opened at the end thereof in said neck by deformation of said container while having the other end thereof opened by the pressure of the discharged liquid.

8. A combined closure and applicator for a dispensing device including a resilient member comprising upper and lower connected laminated neck and applying portions having longitudinally generally centrally disposed slit means therein normally closed and mechanically opened in said neck portion upon pressing toward one another the opposite sides of the neck, said resilient member comprising portions of normally different cellular structure and cross section and having communicating slits therein.

9. A combined closure and applicator member for a liquid dispensing device including a liquid impervious resilient member comprising laminated neck and applying portions of sponge rubber and intermediate connecting means and having a normally closed slit means in said member

above the applying surface of said applying portion operative upon compressing the neck portion of said member and receiving liquid through said neck portion and delivering the same through said applying portion.

10. A combined closure and applicator for a liquid dispensing device including a liquid impervious resilient member having axially disposed normally closed slit means therein controlling the flow through said member, said resilient member comprising laminations of material of different cellular structure, including a cellular rubber neck portion having no liquid communication between the cells thereof and a sponge rubber applying portion below said cellular portion and having only limited liquid communication between the cells thereof.

11. A combined closure and applicator for a liquid dispensing device including a liquid im-

pervious resilient member having a liquid impervious surface adapted to be exposed to the liquid to be dispensed and comprising laminated rubber sections of different character, one having said impervious surface thereon and another having an applicator surface, and normally closed means extending through said sections.

12. In a liquid dispensing device, a resilient container having an open end, a liquid impervious dispenser member comprising resilient superimposed applicator and sealing portions cemented together, said sealing portion being fixed to and closing the open end of said container and having a fluid impervious surface exposed to the liquid therein, and normally closed slit means controlled by finger compression and release of said container and extending through both of said portions.

TOM HUSTON.