

Jan. 5, 1943.

T. HUSTON

2,307,044

LIQUID DISPENSER

Filed Sept. 4, 1940

Fig. 1.

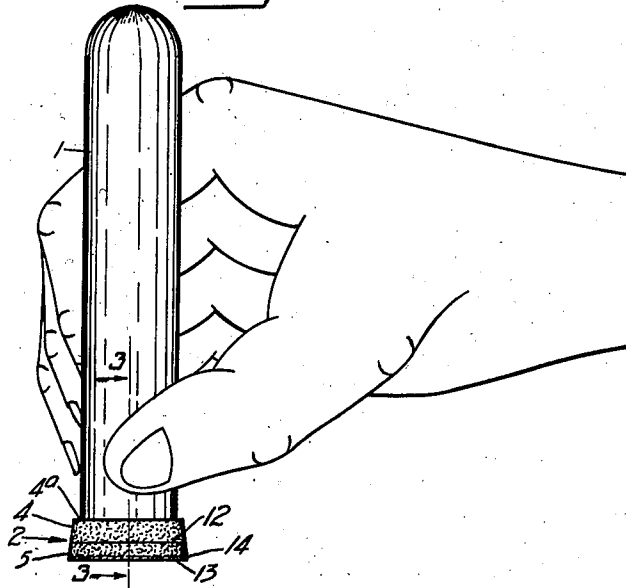


Fig. 2.

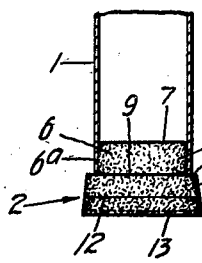


Fig. 3.

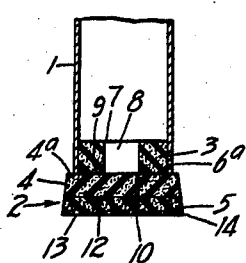


Fig. 4.

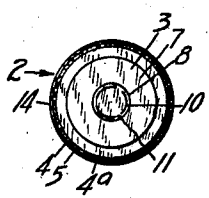


Fig. 5.

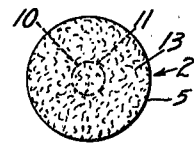


Fig. 6.

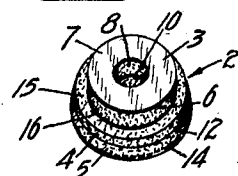


Fig. 7.

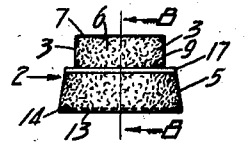


Fig. 8.

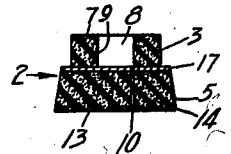


Fig. 9.

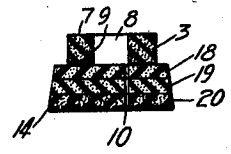


Fig. 10.



Fig. 11.

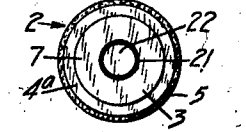
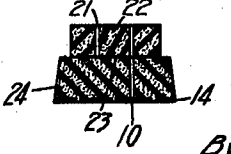
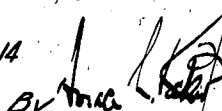


Fig. 12.



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UNITED STATES PATENT OFFICE

2,307,044

LIQUID DISPENSER

Tom Huston, Miami, Fla.

Application September 4, 1940, Serial No. 355,330

16 Claims. (Cl. 15-136)

My invention relates to liquid dispensers.

It has among its objects to provide an improved dispenser of the type adapted to dispense liquids such as shoe dressings or the like, and, more particularly, an improved dispenser of the type described and claimed in my copending application Serial No. 289,012, filed August 8, 1939, now Patent No. 2,279,320, patented April 14, 1942. A further object of my invention is to provide such an improved dispenser having improved slit means in the closure for the resilient container whereby, irrespective of the angular location of the points at which pressure is applied to the resilient container, the liquid therein is caused to be discharged in an improved manner and in such manner as to facilitate the effective use of the device through eliminating any need for the resilient dispenser to be pressed at specified oppositely located points disposed in a predetermined relation to the slit means. A further object of my invention is to provide an improved closure member for such a dispenser of an improved laminated construction adapted to enable normally closed slit means to continue to function over a long period while the closure retains its resiliency and is free from any deteriorating effects of the liquid, and also adapted to prevent objectionable seepage while obtaining an improved spreading action. These and other objects and advantages of my improvements will, however, hereinafter more fully appear.

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

In this drawing:

Figure 1 is a side elevation of my improved liquid dispenser in use;

Fig. 2 is a detail view showing the lower end of the resilient container in vertical section, and the closure member therein in elevation;

Fig. 3 is a vertical sectional view of both the container and closure member on line 3-3 of Figure 1;

Fig. 4 is a top plan view of the closure member removed from the container;

Fig. 5 is a bottom plan view of this member;

Fig. 6 is a perspective view of a modified form of closure member;

Fig. 7 is a side elevation of a further modified form of closure member;

Fig. 8 is a vertical section on line 8-8 of Figure 7;

Fig. 9 is a vertical section similar to Figure 8, but showing another modified construction;

Fig. 10 is a side elevation of a still further modified form of closure member;

Fig. 11 is a plan view of still another modified structure, and

Fig. 12 is a central vertical section of the closure shown in Figure 11.

Referring first to the illustrative forms shown in Figures 1 to 5, it will be noted that I have therein shown an elongated resilient nitro-cellulose tube or container 1 having an open end and having a closure member, generally indicated at 2, closing that end; this closure member 2 being of an improved construction hereinafter described.

In this construction, this member 2 is of an improved resilient laminated construction including three flexibly connected layers comprising an upper disc or neck portion 3, an intermediate disc portion 4, and an applying disc portion 5.

Of these, the neck portion 3 is preferably formed of non-absorbent sponge rubber having non-communicating cells such, for example, as Neoprene or other suitable synthetic rubber with the non-connecting cells thereof filled with air or nitrogen. In this construction, it will be observed that, as heretofore, cut cells 6 are provided on the sides of the neck piece and suitably flexibly cemented at 6a as, for example, by nitro-cellulose or neoprene cement, to the inner surface on the open end of the tube 1. Further, the exposed top surface of the neck 3 carries an impervious skin 7, while the bottom surface thereof may be free from skin and comprise cut cells. It will also be noted that an axial cylindrical aperture 8, preferably of substantial diameter, is provided which extends clear through the disc 3.

Cooperating with this neck piece 3 and suitably flexibly cemented as at 9 to the bottom thereof in such manner as to form a resilient continuation thereof, is the intermediate portion or lamination 4. Herein, it is of slightly larger diameter than the neck 3 and the tube 1, and coaxially disposed with respect thereto, and also preferably formed of the same material as the neck 3, and preferably with like skin 4a on its top surface. This intermediate portion 4, however, has no axial aperture corresponding to the aperture 8, but, instead, is provided with improved normally closed liquid discharge means including a plurality of slits spaced from and surrounding the axis of the member 2 and having their length defining the margin of a central portion of substantial area. As shown, these means comprise a plurality of arcuate slits 10, herein, for illustrative purposes, three in number, and disposed in

a circular arrangement around the axis of the portion 4, with short uncut portions 11 of the latter spacing the ends of adjacent slits 10. Further, it will be noted that these slits 10 extend clear through the lamination 4, and that the same are preferably disposed closely adjacent the wall of the axial aperture 8. As shown, this portion 4 is also provided with cut cells on its sides and bottom surface.

Cooperating with this intermediate portion 4 is also the bottom applying portion 5, preferably forming a beveled extension of the portion 4 and suitably cemented to the cut cell bottom surface thereof, as by a flexible cemented connection 12, and having the round liquid discharge means comprising the slits 10 and intermediate uncut portions 11 also extended from top to bottom through this portion 5 and communicating with the bottom or applying face 13 of the latter. Herein, this portion 5 is also formed of sponge rubber and all of its outer surfaces are also cut cell surfaces. In a preferred construction this member 5 is also formed of a slightly coarser sponge rubber than the portions 3 and 4 and has such slight communication between its cells that the applying portion thereof, preferably a thin zone below the dotted line 14 shown in Figures 1 and 2, is adapted to absorb a small amount of liquid as, for example, a few drops, through the cut applying surface thereof; all in such manner as thereby to improve the spreading action while preventing such a depth of penetration as to cause hardening or caking and enabling any retained material to be readily removed under running water whenever desired.

In the use of my improved construction, with the closure member 2 suitably cemented in the tube 1, the latter is grasped near the cap, like a pencil, between the thumb and fingers in any preferred manner. However, instead of requiring that the tube be grasped at diametrically opposite points at opposite ends of the single straight slits heretofore provided in order most effectively to open the latter, in my improved circular slit construction, one or two of the slits 10 is opened, whatever the angular position of the opposite points of pressure between the thumb and fingers. Thus, any need for care on the part of the user in pressing at any particular marked spots on the container is eliminated, and even the most careless user, when grasping the container, is enabled readily to obtain the desired limited flow of liquid from the interior of the container through the circular slits. Further, it will be observed that the neck lamination 3 is very freely compressible due to the axial aperture thereon and also permits free communication of the liquid in the container with the inlet of the circular slits at the bottom of the aperture 8. The resilient character of the intermediate sponge rubber portion 4 is also such as normally to maintain the several slits 10 in closed position whenever manual pressure is released. Similarly, the resilient character of the portion 5 also acts normally to maintain the slits 10 closed, while the resiliency of the several portions is such that the slits will open whenever the neck piece 3 is pressed, in such manner as to cause liquid to be discharged through the cut cell applicator surface 13, one or more of the normally invisible slits in this surface, indicated by dotted lines in Figure 5, then being opened. Obviously, as liquid is discharged through the slits, the liquid will be spread by the applicator surface 13 in a thin film and, as above described, the surface

portion 14 permits such a slight absorption of a few drops of liquid adjacent the cut surface 13 as to facilitate and expedite spreading.

As a result of my improved construction, it is found that although wherever pressure is applied, one of the circular slits 10 is adapted to be fully opened, or two are adapted to be opened part way, the other slit is so disposed as to tend to be closed by this pressure in such manner as to prevent any excessive supply of liquid. Further it is found that through my improved laminated portions and their connections to one another, it is made possible to produce a construction which is unaffected by the action of the liquid over long periods, and which further continues to act effectively over long periods to close the slits automatically as soon as manual pressure is released. My improved laminated construction also enables both the slits and the neck piece to be shorter than heretofore, and also enables an axial aperture of substantial diameter to be provided in the neck piece with resultant increase in the effects of pressure thereon and consequently facilitated opening of the slits. Attention is also directed to the fact that, through my improved laminated structure including the neck piece and intermediate portion, it is also made possible to utilize an absorbent applicator portion such as described and having the slits extending therethrough without objectionable results arising from the somewhat absorbent character of the applicator portion. In fact, with my improved connected neck and intermediate portions, an even greater depth of absorption in the applicator portion than that described is possible without objectionable results, and, although not preferred, with slits formed in suitable material and of suitable length, the applying portion, if desired, may be formed of other more absorbent materials than the sponge rubber described, as, for example, a pile fabric or the like.

In Figure 6, I have shown a modified closure member construction closely similar to that shown in Figures 1 to 5, but wherein the skin and cut cell surfaces are alternatively arranged, the top surface of the portion 4 being free from skin, as indicated at 15, and, instead, skin 16 being provided on the bottom of the neck portion 3. In this construction, it will also be observed that the bottom applicator portion 5 is thicker relative to the intermediate portion 4, than in the construction shown in Figures 1 to 5. In Figures 7 and 8, a further modified construction is shown, wherein, instead of a sponge rubber intermediate portion, a thin resilient disc 17 of ordinary rubber is suitably cemented or otherwise united to the bottom of the neck piece 3 and the top of a thicker applicator portion 5, herein of substantially the thickness of the combined portions 4 and 5 heretofore described; the circular slits 10 in this construction extending through both the laminations 17 and 5.

In Figure 9, instead of one lamination between the neck piece and the applicator portion, two thin laminations 18 and 19 are provided. These laminations are formed of non-absorbent, soft, fine-grained sponge rubber, such for example, as Rubatex, and comprising tiny cells filled with nitrogen. Also, the applicator portion 20, which is formed of the slightly absorbent material such as that in the portions 5, is thin and quite substantially thinner than the total depth of the non-absorbent portions 18 and 19. Thus, the two portions 18 and 19 being impervious and con-

nected by two cement connections, they will not soak up or absorb any of the shoe dressing material, and there can be no clogging or hardening of the main portion of the body of the applicator. This is a structure especially adapted to use with colored, as distinguished from white, dressings, wherein the drying and clogging problem has heretofore been especially troublesome.

In Figures 10, 11 and 12, further modified constructions are shown, wherein the circular slits extend through not only the applicator and intermediate portions, but also through the neck piece 3. In Figure 10, the neck piece 3 has no central aperture 8 therein and is cemented to the upper portion 4, while the laminations 4 and 5 are cemented together by a suitable flexible cemented connection 12 and the same circular slits 10 extend through these portions and also through the neck piece 3 to the inner surface thereof. It will also be understood that if desired an integral single member of the same material as either the portion 4 or 5 may be substituted for the two portions 4 and 5. In Figures 11 and 12, it will be noted that instead of discontinuous slits 10 in the neck piece 3, one continuous slit 21 is cut out around a central portion or plug 22. The latter herein also has its bottom 23 cemented to the top of the applicator portion 24 around slits 10 provided therein. Here, also the portion 24, while not limited thereto, is preferably of laminated type, such, for example, as that shown in Figure 9. If desired, the neck piece 3 may also be laminated in any of my forms.

While in certain figures I have shown the slits 10 and 21 as openings of substantial width, it will be understood that this is for purposes of illustration, the slits normally being closed and invisible.

While I have herein specifically described certain forms which my invention may assume in practice, it will be understood that the same have been chosen for purposes of illustration, and that the invention may be modified and embodied in 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 dispenser, a resilient container having an open end, a resilient closure member for said end, and normally closed liquid discharge means including a plurality of slits in said member disposed peripherally end to end about a central portion of said member and openable in response to pressures on the periphery of an adjacent portion of said container applied at any opposite points on said periphery.

2. In a liquid dispenser, a resilient container having an open end, a resilient closure member for said end, and normally closed liquid discharge means including a plurality of slits in said member spaced from the axis of said member and having their length defining the margin of a central portion of said member and at least one of which slits is openable in response to pressures applied at any diametrically opposite points on the periphery of an adjacent portion of said container.

3. In a liquid dispenser, a resilient container having an open end, a resilient closure member for said end, and normally closed liquid discharge means including a plurality of slits in said member disposed end to end around and spaced from the axis of said member and defining the periphery of a central portion thereof, said member

having an axially apertured neck portion of reduced cross section disposed in said end and said slits opening into the adjacent end of said aperture and being responsive to pressures applied to said neck at any opposite points on the periphery of an adjacent portion of said container to open said slits.

4. In a liquid dispenser, a resilient container having an open end, a resilient closure member for said end, and normally closed liquid discharge means including a plurality of slits in said member spaced from and disposed around the axis of said member and having their length defining the margin of a central portion thereof of substantial area, said closure member having a neck portion of reduced cross section extending into said end and said slits extending through said neck portion and being responsive to pressures applied to said neck at any opposite points on the periphery of an adjacent portion of said container to open certain of said slits.

5. In a combined closure and applicator member, a resilient closure member including an apertured neck portion and a coaxially disposed resilient body portion of larger cross section carrying said neck, and normally closed liquid discharge means in said body portion including at least three slits spaced from one another and the axis of said member and having their length directed marginally around a central portion of said member of substantially area.

6. In a combined closure and applicator member, a resilient closure member including a neck portion and a coaxially disposed resilient body portion of larger cross section carrying said neck, and liquid discharge means including at least three normally closed slits in said member spaced from one another and the axis of said member and disposed marginally end to end around a central portion of said member, said neck portion having an axial aperture therein and said slits opening into the adjacent end of said aperture.

7. In a combined closure and applicator member, a resilient closure member including a neck portion and a coaxially disposed resilient body portion of larger cross section carrying said neck, and liquid discharge means including at least three normally closed slits in said member spaced from the axis of said member and disposed end to end peripherally around a central portion of said member, said neck portion having said slits extending therethrough.

8. In a combined closure and applicator member, a plurality of superimposed resilient portions having adjacent flexibly connected faces and including an axially apertured neck portion and a coaxially disposed body portion of increased diameter, and liquid discharge means including a plurality of normally closed slits in said body portion disposed end to end and defining the periphery of a central portion of said member and opening into the bottom of said axial aperture.

9. In a combined closure and applicator member, a plurality of superimposed resilient portions having adjacent flexibly connected faces and including a neck portion and a coaxially disposed body portion of increased diameter, and liquid discharge means including a plurality of spaced normally closed slits in said member disposed end to end around a central portion of said member and receiving liquid through said neck portion and delivering through said body portion, said body portion comprising a plurality of flexibly connected laminations including an intermediate fluid impervious resilient portion having

said normally closed slits therein and an applicator portion receiving liquid from said slits.

10. In a combined closure and applicator member, a plurality of flexibly connected superimposed sponge rubber discs having non-communicating cells, certain of said discs having an axial aperture therein and others being unapertured and of larger diameter and having liquid discharge means including a plurality of normally closed slits therein disposed peripherally end to end about a central portion of said member and opening into the inner end of said aperture, and an applicator disc carried on the under surface of the disc remote from said aperture and having an outlet for said slits.

11. In a combined closure and applicator member, a plurality of flexibly connected superimposed sponge rubber discs having non-communicating cells, and having an upstanding neck and a body portion of larger diameter and liquid discharge means including a plurality of normally closed slits peripherally disposed end to end about a central portion of said member and opening through said neck and body portion, and an applicator disc carried on the under surface of said body portion and having an outlet for said slits, said applicator disc having an absorbent applying portion and said first mentioned discs being non-absorbent and preventing the supply of liquid to said applying portion save through said slits.

12. A combined closure and applicator member having a plurality of flexibly connected superimposed sponge rubber discs having non-communicating cells, certain of said discs forming a neck portion and others being of larger diameter and said member having liquid discharge means including a plurality of normally closed slits disposed peripherally end to end about a central portion of said member and opening through said neck portion, and an applicator disc flexibly connected to and forming the under surface of said member, said applicator disc being of sponge rubber having a limited communication between cells on the applying portion thereof and also having a continuation of said slits extending therethrough.

13. In a combined closure and applicator member, a plurality of flexibly connected superimposed discs, one of sponge rubber and having non-communicating cells and an axial aperture, and the other of larger diameter and of ordinary

rubber and having liquid discharge means including a plurality of normally closed slits disposed peripherally end to end about a central portion of said member and opening into the bottom of said aperture, and an applicator disc of sponge rubber on the under surface of said last mentioned disc and having said slits extending therethrough.

14. A combined closure and applicator member having a sponge rubber neck portion, and a flexibly connected laminated body portion of larger diameter including a rubber intermediate portion, and a sponge rubber applicator disc, and liquid discharge means including a plurality of normally closed slits disposed peripherally end to end about a central portion of said member for supplying liquid through said member receiving liquid through said neck portion and extending through said intermediate portion and said applicator disc and opened and closed upon pressing and releasing said neck portion.

15. In a combined closure and applicator member, a neck portion, an intermediate portion of larger diameter, an applicator disc on said intermediate portion, and liquid discharge means including a plurality of normally closed slits for supplying liquid through said member disposed peripherally end to end at spaced intervals around a central unslit portion of said member and receiving liquid through said neck portion and extending through said intermediate portion and applicator disc and opened and closed upon pressing and releasing said neck portion at any opposite points on the periphery thereof, said neck and intermediate portions being resilient and flexibly connected and of non-porous character and said applicator disc being flexibly connected to said intermediate portion and having a porous applicator portion.

16. A combined closure and applicator member comprising superimposed discs and having a neck portion, an intermediate laminated portion of larger diameter, and an applicator portion on said intermediate portion, said discs being flexibly connected to produce a flexible unit and said neck and intermediate portions being liquid impervious and resilient and said applicator portion having a porous applying portion, and normally closed slit means disposed axially in said member and spaced from and disposed around the axis of said member.

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