March 23, 1943. E. L. HOLLENBECK 2,314,539

FLUID CONTROL APPLICATOR

Filed Aug. 5, 1941

Fig. 1.

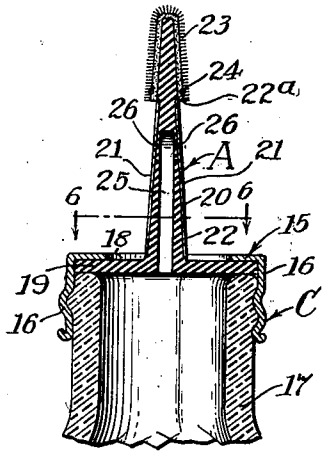



Fig. 2.

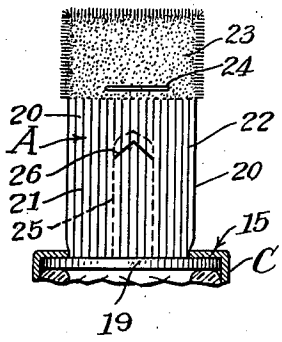



Fig. 3.

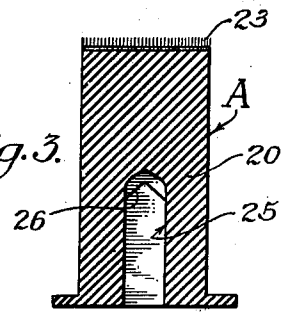



Fig. 4.

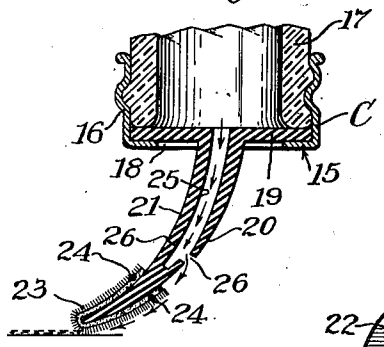



Fig. 5.

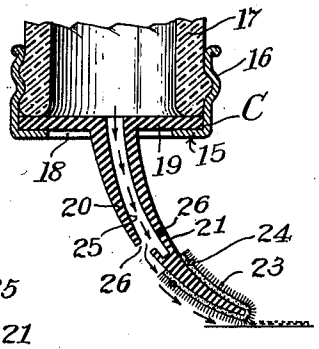
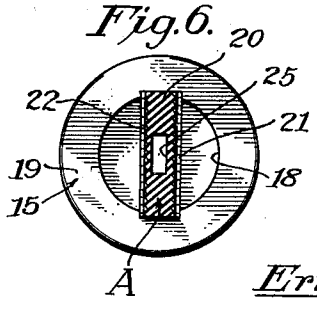



Fig. 6.




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# UNITED STATES PATENT OFFICE

2,314,539

## FLUID CONTROL APPLICATOR

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Application August 5, 1941, Serial No. 405,504

2 Claims. (Cl. 15—139)

My invention relates to fluid control applicators of the character embodied in my copending application Serial No. 321,621, filed March 1, 1940, now Patent No. 2,282,406, May 12, 1942.

It is a purpose of my present invention to provide a fluid control applicator which is structurally and/or functionally characterized in any one or all of the following manners: simplicity of construction with less use of materials resulting in lower cost of manufacture; the embodiment therein of a flexible and resilient spreader tongue with normally closed ports leading from a fluid feed duct to opposite sides of the tongue and adapted to be alternately opened by oscillation of the tongue in effecting and controlling the supply of fluid to opposite sides of an applicator strip; the particular form of the ports which when open tend to confine the flow of fluid directly to the applicator strip; the formation of the spreader tongue of tapered and relatively thin form to give added flexibility thereto and thus facilitate oscillatable manipulation thereof and consequent spreading of the fluid over the surface being coated; and means on the spreader tongue for confining the fluid to the tongue and thus to the applicator strip.

I will describe only one form of fluid control applicator embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing:

Fig. 1 is a fragmentary sectional view showing the neck for a bottle or other form of liquid or fluid reservoir, having applied thereto and illustrated in section, one form of fluid control applicator embodying my invention.

Fig. 2 is a view showing the applicator of Fig. 1 in side elevation and partly in section, and applied to the bottle neck.

Fig. 3 is a view showing the applicator devoid of the cap thereof, and in longitudinal section.

Fig. 4 is a view similar to Fig. 1, but inverted and showing the spreader tongue flexed in one direction and illustrating by arrows the manner in which fluid is fed to the applicator strip and ultimately to the surface being coated.

Fig. 5 is a view similar to Fig. 4 showing the tongue flexed in the other direction.

Fig. 6 is a transverse sectional view taken on the line 6—6 and looking in the direction of the arrows.

My fluid applicator in its present specific embodiment, comprises a cap C preferably formed of metal and having a top 15 from the outer edge of which extends a collar 16 screw-threaded for application to the exteriorly threaded neck 17 of a bottle or other liquid or fluid reservoir. The top 15 is provided with an opening 18 which, in the present instance, is of circular form.

The applicator includes a fluid control assembly A formed of rubber or any other material possessing the requisite degree of resiliency and flexibility. The assembly is susceptible of being molded as a single unit and to form a body or base 19 and a spreader tongue 20. The body 19 is in the shape of a disk of slightly less diameter than the internal diameter of the collar 16 so as to fit therein.

The spreader tongue 20 (Fig. 1) is relatively thin and tapered from end to end with its thick end perpendicular to and centrally of the body 19, so that the latter in effect forms a flange for the tongue.

The tongue presents opposite surfaces or sides 21 which are corrugated transversely or grooved longitudinal to provide a multiplicity of channels 22 extending from the base 19 to a point spaced from the free end of tongue, as indicated at 22a. Beyond these points the two tongue surfaces are smooth.

It is to these two smooth areas of the tongue that an applicator strip 23 is secured by a staple 24 to cover such surfaces, as well as the extreme end of the tongue. This strip 23 is formed of felt or any other suitable fabric which has sufficient pile to hold the liquid supplied thereto incident to its application to the surface to be coated.

As best shown in Figs. 1 and 3, the tongue 20 as well as the body 19, is formed with a duct 25 the inner end of which terminates short of the free end of the tongue, and is preferably rectangular in cross section, as shown in Fig. 6. Adjacent the inner end of the duct 25 the tongue is formed with ports 26, 26 which when open provide outlets for the duct through which fluid may pass to the tongue surfaces 21, 21.

The ports 26 are formed by slitting the rubber at corresponding points and in two planes, so that each port is of synclinal shape with the apex of the slit centrally of the port and midway of the side edges of the tongue. Also, the ports are spaced from the confronting edges of strip 23 in order that liquid as emitted from the ports may spread to the channels in its flow to the strip and thus be distributed across the strip.

To apply my applicator to the bottle neck 17, the assembly A and the cap C are first associated one with the other so that the base 19 is positioned within the collar 16 and flat against the inner side of the top 15. The base 19 now spans the opening 18 with the tongue component

projecting from the cap. Thus assembled, the applicator is applied to the bottle neck with the cap threaded on the latter and the base 19 firmly clamped between the top 15 and the upper edge of the neck.

As best shown in Fig. 2, the width of the tongue exceeds the diameter of the opening 18. This provides two advantages. First, the tongue is compressed by the wall of the opening 18 so that the latter serves to retain the assembly A in the cap C. Second, a relatively wide tongue and applicator strip may be used in comparison to the size of the cap. The wide tongue and strip increases the applying and spreading property of the device as a whole.

With the bottle, of which the neck 17 forms a part, containing shoe dressing, for example, such liquid may be applied to the surface of a shoe by manipulating the bottle and applicator as follows: By inverting the bottle and applicator and using the former as a handle, the spreader component may be worked back and forth over the shoe surface in the manner of a paint brush, the tongue 20 being flexed from a position in which it is perpendicular to the base 19, first in one direction and then the other. So long as the tongue 20 is in normal perpendicular position, both ports 26 are closed, so that even when the bottle is inverted, no liquid can escape.

However, when flexing the tongue 20 in either direction from this perpendicular position, that port 26 at the convex side of the tongue is opened, the port to the other side remaining closed. Thus, liquid from the bottle now flows from the duct 25 outwardly through the open port and along the surface of the tongue to the underside of the strip 23, from which latter it is applied to and spread over the shoe surface as the strip is wiped therealong.

As the tongue 20 is tapered to a relatively thin free end, it is extremely flexible to permit easy bending thereof in either direction thereby facilitating spreading of the liquid on the surface being coated. Also, the tongue is sufficiently resilient to restore itself to perpendicular position after each bending, thus insuring immediate closing of either port.

Figs. 4 and 5 illustrate the two flexed positions of the tongue, the arrows indicating the path of flow of the liquid in each instance. With opening of either port the major portion of the liquid emitted therefrom occurs at the apex of the port because of its synclinal contour. This tends to confine the liquid flow to the center of the tongue and strip. Further possibility of the liquid flowing off of the edges of the tongue rather than down to the strip, is precluded by the channels 22. These channels act as capillary tubes to confine the liquid to paths of flow which lead directly to the strip, and there being a multiplicity of such channels an even distribution of the liquid along the length of the strip, is the result.

I claim:

1. In combination, a bottle cap having a flat top formed with an opening, and a fluid control applicator having a flat body closing said opening, a flexible spreader tongue on said body of compressible material, said tongue extending through said opening of greater width than the latter so as to be compressed by said cap, a duct in said body and spreader, and normally closed ports in opposite sides of said tongue and leading from said duct to said sides, whereby when said tongue is flexed in one direction or the other one port or the other will open.

2. A fluid control applicator, comprising a body, a flexible spreader tongue fixed at one end to said body, a duct in said body and said tongue, and normally closed ports centrally in opposite sides of said tongue leading inwardly to said duct and adapted to be opened by flexing said tongue, said ports each of V-form with the apex thereof facing the free end of said tongue so that the major portion of the liquid emitted from the port occurs at the longitudinal center of the tongue and toward the free end thereof.

ERNEST L. HOLLENBECK.