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APPLICATOR FOR DISPENSING LIQUIDS

Filed Aug. 15, 1962

2 Sheets-Sheet 1

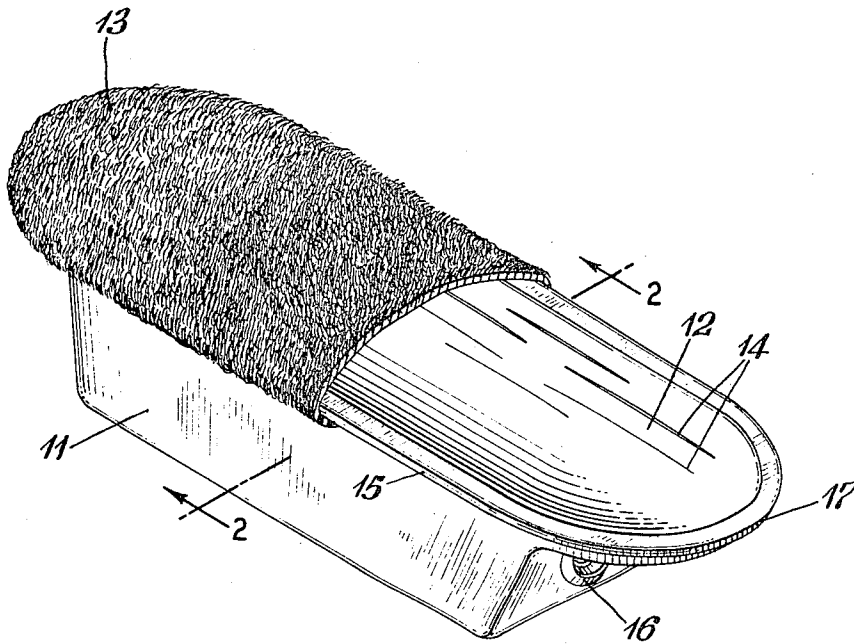


Fig. 1.

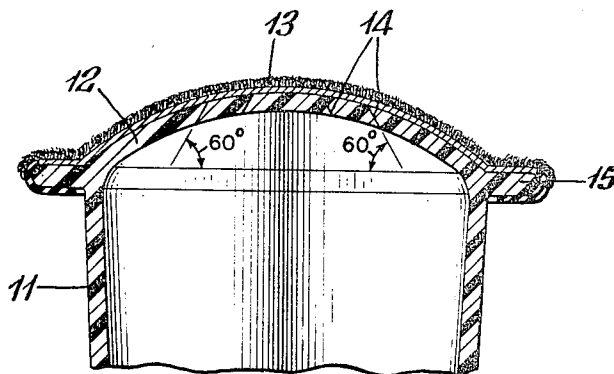


Fig. 2.

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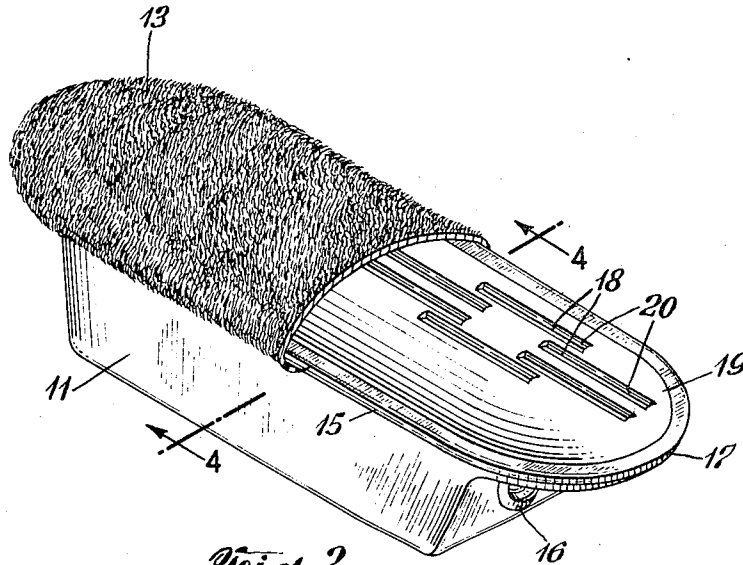


Fig. 3.

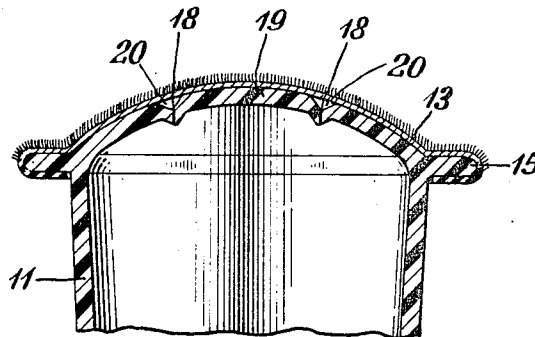


Fig. 4.

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APPLICATOR FOR DISPENSING LIQUIDS
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9 Claims. (Cl. 15—543)

This invention relates to applicators for dispensing liquids. More particularly, this invention relates to disposable applicators for dispensing liquids such as floor polish and the like.

Liquids and polishes of various types are commonly marketed in metal, plastic, or glass containers. Applicators for such liquids and polishes are normally available as independent units to be purchased separately along with a dip-pan used for soaking the applicator with the liquid. In addition to being cumbersome, such an array of devices also results in waste during application of the desired liquid. For example, in the application of floor polish, the applicator pad, usually comprising lamb's wool or the like, is dipped into the polish to saturate the pad. The resulting polish application is non-uniform. Immediately after removal from the dip-pan the applicator deposits a relatively thick film, the thickness of which has a tendency to continuously decrease as more surface area is covered. In another common method the polish is puddled on the floor and subsequently spread out. Again waste and uneven distribution results.

It is the primary object of this invention to provide an applicator which deposits a substantially uniform film of liquid on a given surface.

It is another object to provide a polish applicator which will produce no application marks arising from an excessive use of polish.

It is a further object to provide an applicator which minimizes waste of the liquid to be applied.

It is a still further object to provide a low-cost disposable applicator.

These and other objects are accomplished by the present invention which comprises a container having a convex-shaped, flexible wall provided with pressure-responsive slits for metering the flow of liquid from the container, and a pad coextensive with the convex-shaped wall for receiving and distributing the liquid fed through the slits.

The applicator of the instant invention is particularly convenient to use for the application of floor polish and avoids the wastage of the floor polish normally associated with the usual application techniques which involve pouring the polish directly on the floor and subsequently spreading the same with a pad of absorbent material. The applicator is relatively inexpensive to manufacture and thus may be disposed of after the polish contained therein is exhausted. Nevertheless, it can be readily stored between successive applications in the event that the entire supply of the polish provided is not used up in one application. The present applicator has been found to provide an effective polish application on a wide variety of floor surfaces including smooth, non-absorbent and also porous floor surfaces.

The invention will now be described in greater detail with particular reference to the accompanying drawings, in which:

FIG. 1 is an isometric view of an applicator with the pad partly broken away to show the pressure-responsive slits;

FIG. 2 is a fragmentary sectional view taken along the line 2—2 in FIG. 1.

FIG. 3 is an isometric view of another applicator of the instant invention with the pad partly broken away to show the pressure responsive slits; and

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FIG. 4 is a fragmentary sectional view taken along the line 4—4 in FIG. 3.

Referring now to the drawings and particularly to FIG. 1, the applicator comprises a container 11 provided with an oblong, convex-shaped, flexible wall 12 and a distributing pad 13 coextensive with the wall 12. The wall 12 is further provided with pressure-responsive slits as shown at 14 longitudinally disposed in wall 12. On the same side of the longitudinal midline of the flexible wall 12 the slits are usually aligned with each other at about the same angle, substantially as shown in FIG. 2.

A flange 15 is provided around the flexible wall 12 in instances where it is desired to have the pad 13 removably attached to the wall 12. This can be conveniently achieved by providing an elastic member around the periphery of the pad 13. The pad 13, usually made from an open-mesh absorbent fabric such as terry cloth or the like, and containing the elastic member is then stretched over the flexible wall 12 and the flange 15 and firmly held in place by the elastic member pressing against the flange 15. This is a generally desirable provision since during shipping and marketing of the applicator the pressure-responsive slits 14 are taped to prevent an accidental discharge of the contents of the container 11. When the applicator is subsequently readied for use, the pad 13 is taken off, the tape removed from the slits 14, and the pad replaced.

The applicator is initially filled with the liquid to be dispensed by means of an opening such as shown at 16.

The shape of the applicator is controlled by the desired applications for the device. The flexible wall may be cut to any desired, generally longitudinal, configuration. A longitudinal configuration for the wall 12 with the slits 14 being longitudinally disposed therein is necessary to assure proper functioning of these pressure-responsive slits. For the same reason, and also in order to assure positive contact of the applicator with the surface to be treated, the wall 12 must have a convex shape. For general household applications it is also desirable to design the applicator so as to have a protruding "tongue" at one end of the "working surface" which comprises the wall 12 and the pad 13. This is exemplified by the end 17 in FIG. 1. Such design facilitates the application of liquids such as furniture polish, floor polish, and the like near the corners or beneath the edges of household appliances such as refrigerators, dishwashers, clothes washers and driers, and the like. Provision may also be made to attach a handle to the applicator. Also, a handle may be attached to the applicator by means of a clamp which snaps over part of the container.

The arrangement and alignment of the slits 14 is extremely important to the proper functioning of the applicator. The slits 14 must be cut so as to be at an angle other than a right angle with respect to a plane tangent to the convex-shaped wall at its apex. A slit at a right angle to the plane does not perform satisfactorily since the two sides of the cut tend to rub against one another and the slit may stick in the open-position when one side rides on top of the other, thereby causing an excessive flow of the liquid. Slits cut at an angle of about 60 degrees with the plane have been found to perform best and for this reason are preferred. In addition, while a single slit will dispense liquid it is preferred to have a plurality of slits arranged in rows as shown in FIG. 1 for better control of the flow rate and the amount of liquid dispensed.

This oblique alignment also effects a complete seal of the container when no pressure is applied to the flexible wall. Moreover, in this manner dripping of the liquid is eliminated when the applicator is momentarily raised from the floor during use.

However, in sliding the applicator across the surface to

be treated, such obliquely-aligned slits are actuated by motion in one direction only, i.e., either toward or away from the person moving the applicator. To obviate this condition it is preferred to align the oblique-cut slits in opposite directions on opposite sides of the longitudinal midline of the flexible wall.

Another embodiment of the present invention is shown in FIG. 3. Basically the applicator is the same as that shown in FIG. 1 except for the pressure-responsive slit design. In the embodiment shown in FIG. 3 the pressure-responsive slits 18, longitudinally disposed in a flexible convex wall 19, are surrounded by indentations or grooves 20. The slits 18 are aligned normal to the flexible convex surface. An arrangement of this type materially enhances the polish distribution characteristics of the applicator and minimizes the number of slits required in the flexible wall 19 for a satisfactory operation. In addition, no binding or sticking of the slits in an open-position takes place.

The cross-sectional configuration of the indentations is not critical. The cross-sectional configuration may be semi-circular as shown in FIG. 4, semi-elliptical, triangular, and the like. In any instance, however, the indentation should be sufficiently deep so that the slits 18 do not contact the surface to be treated when the flexible wall is pressed against said surface.

The applicator body may be manufactured from a great number of materials. A particularly suitable material for this purpose is polyethylene which may be vacuum-molded, blow-molded, or similarly shaped, and the relatively low cost of which permits disposal of the applicator once the liquid supply contained therein is exhausted.

A number of applicators embodying the invention and of the construction illustrated have been made and tested. These tests have demonstrated the economy made possible by the applicators constructed and the superiority of the polish applications attained thereby. In all the tests the amount of polish required for a satisfactory application to a given area was about one-third or less of the amount necessary for a similar application with a conventional applicator pad of the lamb's wool type. The appearance and wear of the applied coatings with the instant device were superior or equal to those applied with the conventional applicator. A typical performance test is given as follows:

A water-wax-emulsion type floor polish was applied to an asphalt tile floor using a polyethylene applicator of this invention having a terry cloth pad, a 3/8-inch-crowned flexible wall and a series of 3 slits obliquely-aligned at 60 degrees, each 2 inches long, and longitudinally disposed in the flexible wall. The snap-on type handle was employed in this test. Approximately 100 ft.² of floor surface was covered using 90 grams of polish. The polish application was uniform and no application marks were apparent.

A number of other tests of the applicator have been made using the same floor polish formulation mentioned above. Types of floors covered include linoleum, vinyl tile and asphalt tile. In one case, the polish was applied on an asphalt tile having a total area of some 600 ft.². The applicator worked effectively in all cases and provided an even coat of polish.

It is to be understood that many changes in the shape and construction of the applicator may be made without departure from the spirit and scope of the invention.

We claim:

1. An applicator comprising a container having an oblong, convex-shaped, flexible wall provided with a plurality of obliquely-aligned, longitudinal, pressure-responsive slits for metering the flow of liquid from said container, and a pad coextensive with said convex-shaped wall for receiving and distributing the liquid fed through said slits and adapted to slide over a surface; said slits being aligned at an angle of about 60 degrees with respect to a plane tangent to said wall at its apex.

2. An applicator as defined by claim 1 having at least two rows of pressure-responsive slits.

3. An applicator comprising a container having an oblong, convex-shaped, flexible wall provided with a plurality of obliquely-aligned, longitudinal, pressure-responsive slits for metering flow of liquid from said container, and a pad coextensive with said convex-shaped wall for receiving and distributing the liquid fed through said slits and adapted to slide over a surface; said slits being aligned in opposite directions on opposite sides of the longitudinal midline of said wall and at an angle of about 60 degrees with respect to a plane tangent to said wall at its apex.

4. A disposable applicator which comprises a container containing liquid therein and having an oblong, convex-shaped, flexible wall provided with a plurality of obliquely-aligned, longitudinal, pressure-responsive slits for metering flow of liquid from said container, and a fabric pad removably attached to and coextensive with said convex-shaped wall for receiving and distributing said liquid and adapted to slide over a surface; said slits being aligned in opposite directions on opposite sides of the longitudinal midline of said wall and at an angle of about 60 degrees with respect to a plane tangent to said wall at its apex.

5. An applicator comprising a container having an oblong, convex-shaped, flexible wall provided with a plurality of longitudinal indentations, a pressure-responsive slit within each of said indentations for metering the flow of liquid from said container, and a pad coextensive with said convex-shaped wall for receiving and distributing the liquid fed through said slits and adapted to slide over a surface.

6. An applicator as defined by claim 5 having at least two rows of pressure-responsive slits.

7. An applicator comprising a container having an oblong, convex-shaped, flexible wall provided with a plurality of longitudinal indentations, a pressure-responsive slit within each of said indentations aligned normal to said convex-shaped wall for metering the flow of liquid from said container and a pad coextensive with said convex-shaped wall for receiving and distributing the liquid fed through said slits and adapted to slide over a surface.

8. An applicator adapted for sliding over a surface and comprising a container having an oblong, convex-shaped, flexible wall provided with a plurality of longitudinal indentations and with a flange projecting outward around the periphery thereof, a pressure-responsive slit within each of the indentations and aligned normal to the convex-shaped wall for metering the flow of liquid from the container, and a fabric pad coextensive with the convex-shaped wall for receiving and distributing the liquid fed through the slits and the peripheral portions of which are stretched over and around the flange.

9. In a combined liquid container and applicator device, the improvement comprising a reservoir tank having a resilient bottom wall, said wall being normally outwardly bowed, an inwardly concave groove defined by a portion of said bottom wall, and a slit opening formed in said groove, said slit opening extending in the direction of said groove so that it may be opened by flexing said wall inwardly of said tank toward a flat position.

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