March 21, 1961 V. STANZEL 2,975,467

APPLICATOR FOR LIQUIDS

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Fig. 1

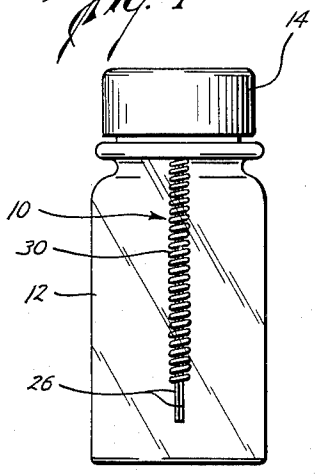


Fig. 2

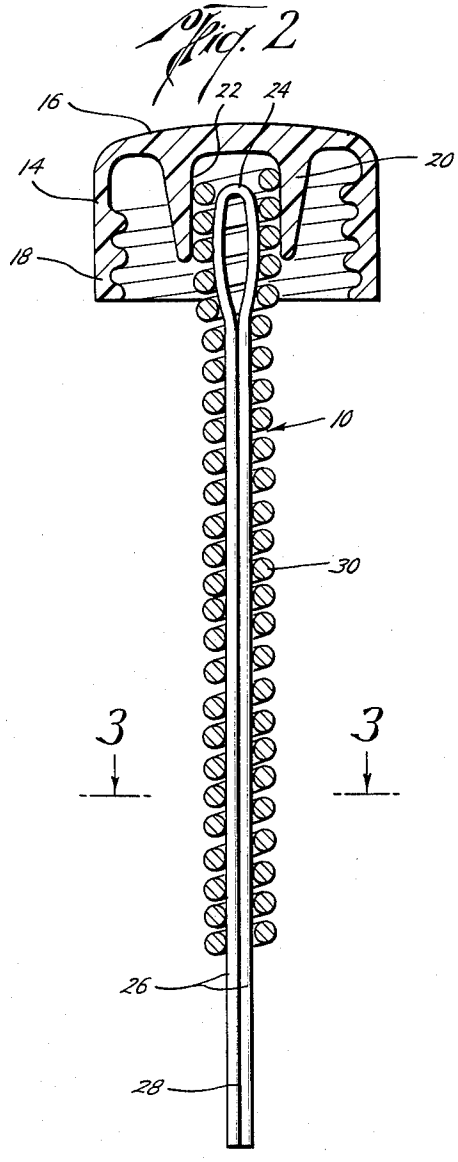


Fig. 3

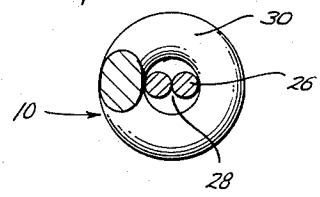
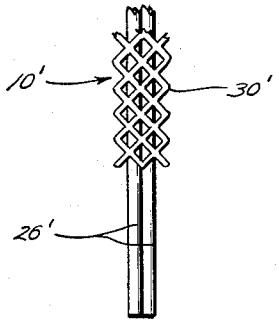


Fig. 4



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APPLICATOR FOR LIQUIDS

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2 Claims. (Cl. 15—611)

This invention relates to an applicator for liquids and more particularly to a device for dispensing or applying liquids in small regulated amounts under the control of the user.

While not limited to such purposes the invention finds particular use in connection with the application of relatively thin liquids, such as light oils, solvents and the like which run freely and which are difficult to control when it is desired to apply them in small amounts or in limited areas.

In the assembling of various articles, such as models made of plastics in a number of separate pieces, adapted to be cemented together it is customary to apply solvents of cements to the pieces on very limited areas of the parts which are to be secured together. At times it is desirable to apply such solvents to the surfaces which are to be adhered together in dots or pin point areas, while at other times the parts may be held in contact and the solvent applied in small amounts along an edge of the contacting areas to permit the solvent to flow between such areas by capillary action. Often the parts are secured together by the action of the solvent without the use of any cement, the solvent alone being sufficient to soften or dissolve the material of the parts at the contacting surfaces to cause the same to be integrally united.

Heretofore, solvents and cements for this purpose have usually been applied by the use of a medicine dropper, brush, swab, rod, tube or other means which does not permit accurate control of the amount applied with the result that excess liquid often comes in contact with areas of the same other than those which are to be cemented together which mars or defaces the external surface of the article and renders it unsightly. The spreading of the solvent or cement over large areas of the surfaces which are to be attached together also results in sealing in the liquid between the surfaces so that drying is then greatly prolonged or fails to take place.

The present invention has for an important object the provision of an applicator which can be used to accurately regulate the application of liquids to very limited areas.

Another object of the invention is to provide an applicator for liquids which is capable of holding a quantity of the liquid to be applied and which may be easily manipulated to accurately control the amount of the liquid which is applied.

A further object of the invention is to provide an applicator for liquids which may be used to apply a liquid in small dots or pin point areas on a surface, or by which relatively large quantities of the liquid may be applied at one location.

A further object of the invention is the provision of an applicator for liquids embodying an applicator member made up of slender, elongated elements positioned to form between them a liquid conducting channel along which the flow of the liquid to be dispensed may be controlled by tilting the member downwardly more or less from a horizontal position.

Another object of the invention is to provide an applicator for liquids embodying slender, elongated elements positioned in substantially parallel relation to form a liquid conducting channel and having means positioned in surrounding relation to the elements for retaining a supply of liquid in a position to be fed into the channel as the liquid flows downwardly in the channel.

A further object of the invention is the provision of an applicator for liquids embodying an applicator member formed of wire bent upon itself to form an enlarged eye or loop at one end and parallel disposed elongated elements forming between them a liquid conducting channel and a coil of wire surrounding said member throughout a portion of the length of the member and engageable with said eye or loop to hold the member in the coil.

A still further object of the invention is to provide an applicator for liquids which is of simple design and inexpensive construction and which is adapted to be attached to a bottle cap.

The above and other important objects and advantages of the invention may best be understood from the following detailed description constituting a specification of the same when considered in conjunction with the annexed drawings, wherein—

Figure 1 is a side elevational view of a bottle showing a preferred embodiment of the invention attached to the cap of the bottle with the bottle closed;

Figure 2 is a longitudinal cross-sectional view of the invention, on an enlarged scale, showing the same detached from the bottle;

Figure 3 is a cross-sectional view taken along the line 3—3 of Figure 2 and on a greatly enlarged scale; and

Figure 4 is a fragmentary side elevational view of a somewhat modified form of the invention.

Referring now to the drawings in greater detail the invention is illustrated herein in connection with use as an applicator for a bottled liquid, such as a solvent for plastics or a cement for the same, the applicator being attached to the cap of the bottle. As seen in Figure 1, the applicator, generally indicated at 10, is attached to the cap 14 of a bottle 12 adapted to contain the liquid which is to be dispensed, the applicator being positioned in the bottle when the bottle is closed and the cap being used as a handle for the applicator when applying the liquid.

The bottle 12 may be of any desired type, preferably having an externally threaded neck, and the cap 14 is of usual construction having a cover portion 16 provided with an annular, depending, internally threaded skirt 18 adapted to be threaded upon the neck of the bottle to close the bottle. The cap is also formed with a centrally located, depending extension 20 having a downwardly opening, central recess 22 therein into which the upper end of the applicator 10 is fitted.

As best seen in Figures 2 and 3 of the drawings the applicator 10 preferably comprises an applicator element formed of wire, bent upon itself to form an enlarged loop or eye 24 at the upper end of the member and slender, elongated side portions or elements 26 which extend downwardly from the loop 24 and are positioned in parallel relation to form between them a liquid conducting channel 28. The elements 26 may be in contact or may be slightly spaced apart so that the liquid flows between them along the channel 28 by capillary action.

The elements 26 are of the same length and preferably terminate at their lower ends in a common plane at right angles to the length of the member.

An outer part or sleeve in the form of a coil of wire 30 surrounds the loop 24 and extends downwardly about the elements 26 for a portion of their lengths, terminating in spaced relation above the lower ends of the elements. The turns of this coil 30 preferably sufficiently close together to cause a supply of the liquid to be disposed to be

held by capillary action in the spaces between the turns and between the coil and the elements 26.

The applicator is secured at its upper end to the cap 14 by inserting the upper end of the coil 30 into the recess 22 of the cap, the loop or eye 24 being positioned in the upper end portion of the coil to expand the turns thereof into tight frictional contact with the wall of the recess to securely retain the applicator in the recess.

In making use of the applicator of the invention, the applicator is dipped into the liquid to be dispensed which is contained in the bottle 12. A supply of the liquid is retained by capillary action between the turns of the coil 30 and between the coil and the elements 26 as well as along the channel 28 formed by the elements.

By tilting the bottle the applicator may be removed from the liquid therein in a tilted or slanting position and by holding the applicator in a substantially horizontal position the liquid on the applicator is prevented from running off.

Should it be desired to apply the liquid to a surface in very small dots or pinpoint areas the lower end of the applicator is momentarily touched to the surface at the desired locations while holding the applicator nearly horizontal, whereby only very small amounts of the liquid will be transferred from the applicator to the surface contacted. To apply larger amounts of the liquid it is only necessary to tilt the applicator more toward the vertical so that more of the liquid will run down along the channel 28 onto the surface to which it is to be applied when the lower end of the applicator is in contact with such surface. In the event that it is desired to apply the liquid throughout larger areas of the surface, this may be accomplished by moving the applicator to a vertically downwardly extending position, whereupon the liquid may be caused to form a drop on the lower end of the applicator which is transferred to the surface by contacting the drop with the surface at the desired location. By drawing the lower end of the applicator along a surface in contact therewith lines or stripes of the liquid of various widths may be applied to the surface by varying the position to which the applicator is tilted.

The applicator is not only useful for the application of very thin freely flowing liquids such as solvents, adhesives, medicinal tinctures, and the like, but may also be used for the dispensing of heavier liquids, such as oils, and may be utilized as an oiler for small parts or fine machinery.

The parts of the applicator may also be formed of other materials than wire, such as natural bristles or fibers or strands formed of plastics.

A somewhat modified form of the invention is illustrated in Figure 4 wherein the outer part 30' takes the form of a woven mesh sleeve of wire or the like surrounding the elements 26' in place of and serving the same purpose as the coil 30. The upper end of the sleeve 30', not shown, is attached to the cap 14 in the same manner as the coil 30, previously described, the loop 24 being positioned within the upper end portion of the sleeve 30' to expand the same into tight frictional contact with the wall of the recess 22. In other respects this form of the invention is constructed and used in the same manner as described in connection with the form illustrated in Figure 2.

It will thus be seen that the invention provides an applicator of simple design which is constructed to hold a supply of liquid to be dispensed and which is operable under the control of the user to apply the liquid to a surface in varying amounts.

The invention is disclosed herein in connection with certain specific embodiments of the same, but it will be understood that these are intended by way of illustration only, and that various changes can be made in the construction and arrangement of the parts within the spirit of the invention and the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. In an applicator the combination with a closure having a centrally located, downwardly opening recess of an elongated element formed of flexible material bent upon itself to form an enlarged end loop and separate parallel, longitudinally coextensive portions forming a channel along which fluid may flow by capillary action, said portions terminating in a common plane to form an open end for the channel, a sleeve member in the form of a helical coil of flexible material surrounding the element and whose turns are spaced to hold between them a supply of liquid by capillary action and positioned to cause the liquid to flow into the channel as liquid flows from the open end of the channel, turns of said member at one end of the member surrounding the loop in position to be inserted therewith into said recess and shaped for coaction with said loop in the recess to be expanded into gripping engagement with the internal wall of the recess and with said loop to secure the member and element to the closure.

2. In an applicator the combination with a closure having a centrally located, downwardly opening recess of an elongated element formed of flexible material bent upon itself to form an enlarged end loop and parallel, longitudinally coextensive portions forming a channel open at the other end of the element, a sleeve member in the form of a helical coil of flexible material surrounding the element and whose turns are spaced to hold between them a supply of liquid by capillary action and positioned to cause the liquid to flow into the channel as liquid flows from the open end of the channel, turns of said member at one end of the member surrounding said loop in position to be inserted therewith into said recess and shaped for coaction with said loop in the recess to be expanded into gripping engagement with the internal wall of the recess and with said loop to secure the member and element to the closure.

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