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(56) References cited:

EP-A- 0 022 592	CH-A- 0 406 544
US-A- 2 011 635	US-A- 3 172 356
US-A- 4 091 966	US-A- 4 133 614
US-A- 4 230 242	

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Description

This invention relates to the field of self-contained manually operable applicators for fluids and particularly to a non-pressurized apparatus that is adapted for one-handed use in any orientation and is designed for application of a fluid to a surface.

Background of the Invention

Many types of self-contained applicators for liquids have been described in the prior art. The extremes may be said to be the pressurized aerosol can and the manually operable applicator combinations. Manually operable applicator combinations have been basically of two types: those that must be inverted so that the liquid contents flow by gravity through some kind of valving mechanism, and pump and dip tube type dispensers that are intended to be operated from an upright or nearly upright position.

An example of the gravity-feed valved applicator is given by U.S. Pat. No. 3,147,512 to Gleason, "Shoe Polish Dispenser."

Manually-actuated pump-container combinations that pump a liquid up from the bottom of a container through a dip tube and out a nozzle which ejects the liquid in the form of a spray or mist are well known. Such combinations are most frequently used for the application of such things as hair sprays, colognes, cleaners, or weed killers.

U.S. Pat. No. 4,652,163 to Karliner et al., "Liquid Applicator with Scraper and Method of Use" discloses a gravity-flow type applicator. The applicator has a liquid container with an attached applicator, a detachable scrape overcap, and a separate protective cover. Transfer of liquid between the container and the applicator, which has a sponge on its outer surface, is regulated by a nozzle and spring valve assembly located within the container. The spring holds the nozzle against the inside of the neck of the container and seats the container. When force is applied to the applicator, the nozzle, which is located right under the applicator pad, is pushed back into the container, opening a channel between the nozzle and the neck opening of the container, allowing the liquid to flow out onto the applicator.

An applicator for liquids having a container, a foam applicator, and a ball valve dispensing means is disclosed by U.S. Pat. No. 3,192,553, to Schwartzman, "Dauber Having Spherical Valve Head." This applicator, whose main intended use is the application of shoe polish, has a hollowed tapered opening to the top of the container. A ball, which is seated on a carrier supported by a spring formed by helical coils, is located within and pressed into this opening. When pressure is applied against this

ball, it is pushed backwards against the spring and into the container opening, allowing liquid to escape from the container around the ball valve and onto a sponge applicator which covers the container opening ball valve structure. Obviously, no liquid will escape the container unless the applicator device is inverted so that the liquid runs out the opened valve by gravity flow.

U.S. Pat. No. 4,091,966 to Leawe, "Squeeze Bottle Containing A Powdered Product and Operative Whether Upright or Inverted" discloses a flexible bottle from which powder can be ejected by squeezing the bottle, the powder first entering a U-shaped tube within the bottle and connected to the dispensing orifice. The tube has an opening at the bottom of the U, through which powder enters the tube when the bottle is upright, and an apparatus at one top of the U, through which powder enters the tube when the bottle is inverted.

US-A- 4,091,966 shows an applicator comprising various orifices adapted to direct air flow into a powder product which is discharged from the known applicator. The inlets are adapted to allow the powder to be entrained within the air but they are not suited for introducing liquid to be sprayed into a device such as a cup for propelling it from the known applicator. However, for using such an apparatus in connection with a fluid, some fluid transfer means are to be provided to pull said fluid into said device. Furthermore the subject matter of US-4,091,966 cannot be used for the application of fluid because the amount of the discharged liquid is not controllable, especially when the applicator is used in an inverted position.

US-2,011,635 shows a fluid reservoir with two tubes entering the reservoir, said tubes having different lengths. However, this device cannot be used in an inverted position because one of these two tubes is intended to be beneath the liquid surface when the device is in operation so that various orientations of the fluid reservoir during operation of the device are not permissible. Furthermore, the handling of the device is cumbersome because the device consists substantially of a jar and an applicator being connected by two flexible tubes so that two hands are needed all the time whenever the device is operated in different positions.

Further, a liquid applicator for hair dressing use is disclosed in CH-A-406.544 which applicator comprises a pumping mechanism including a bellows, a cup receiving the outlet of the pumping mechanism and liquid application means mounted on said cup. By moving the cup of the liquid application means up and down, the bellows functions as a pump and presses liquid into the cup whereby the liquid application means absorbs liquid. In addition, the application movements are not extensive

enough for effecting such up and down movements to fill the cup with liquid so that when holding the applicator with one hand additional up and down movements of the cup with the other hand are necessary. Furthermore, this applicator cannot be used in an inverted position, because in such a position the free liquid surface in the container sinks below the end of a hollow tube member forming the inlet for the pumping mechanism. For this reason the applicator can only be used in a more or less upright position.

The problem with existing manually operable applicator combinations having non-pressurized reservoirs is that, as stated before, the operating positions for the two main types are not only opposite but mutually exclusive. A gravity-feed device will not work in the upright position, nor will the traditional dip tube and manual pump work in the inverted position (since the inversion usually leaves the end of the dip tube above the surface of the fluid). This limits the method and direction of application of the fluid onto a surface and requires creative angling on the part of the user. Thus, a manually operable fluid applicator capable of applying a fluid in either the upright or inverted position would facilitate fluid application over a variety of orientations of surfaces. In addition, such a device should have some means of metering the flow of the fluid, a feature built-in to all pump-operated devices but missing from most gravity-feed devices.

When the fluid to be applied is intended for insect control, the advantages of a device capable of applying a neat strip of insect-killing or repelling solution to surfaces of different orientations become even greater.

To briefly summarize the current methods of killing insects: methods of introducing roach and ant, or other insect killers into an area range from the use of fumigators, which disperse the insecticide throughout the area and usually require the removal of foodstuffs from the area, to the application of insecticidal foams to selected areas, a method which is especially effective for cracks and crevices, but one that, when the foam is applied to exposed areas can leave an undesirable residue, to the placing of insect devices such as bait stations in an area.

Pressurized cans for the application of insecticides are frequently used to control insect populations, but there are times when it is desirable to be able to control placement of the insecticide exactly, with no possibility of drift.

Despite this variety of approaches to the problem of killing insects with various types of insecticides, no method or apparatus exists which allows direct and localized application of a liquid insecticide without the necessity of direct user contact

with the insecticide to a selected area, whether that area be the bottom of a cabinet or the underside of a shelf. Such a method and apparatus would employ an applicator integrally connected to a container and would allow the user to apply the contents manually and with one hand. Such a method and apparatus would allow the user to stripe insect "barriers" across zones of expected insect travel for maximum effectiveness, stripes that would be invisible yet relatively long lasting, depending upon the formulation of the insecticide used.

Such a method and apparatus would avoid the need for the placing of a separate bait station in an area, but obviously, should not be used on an area that pets or children would be expected to eat from or lick.

Thus, it is an object of the present invention to provide an apparatus for applying a fluid that is self-contained, manually operable, and capable of applying in any orientation, metered amounts of the fluid, so long as enough fluid remains in the reservoir to enter the pumping mechanism.

It is a further object of the invention to provide such an apparatus adapted for use as an insecticide applicator and to describe a method of using such an apparatus for control of insect populations or for keeping insects from reaching an area.

Brief Description of the Drawings

FIGURE 1 is a partially exploded perspective drawing of one embodiment of the invention.

FIGURE 2 is a partially exploded perspective drawing of a second embodiment of the invention.

FIGURE 3 is a partial side sectional view of the embodiment of FIGURE 1 taken along section lines 3-3 showing the invention in an essentially upright position, with fluid transfer mechanism depicted schematically.

FIGURES 4 and 5 are illustrative drawings of the invention showing the method of use of the applicator in the essentially inverted position.

FIGURE 6 is a sectional detail view of the fluid transfer mechanism of the invention oriented in an upright position.

FIGURE 7 is a sectional detail view of the fluid transfer mechanism of the invention oriented in an essentially inverted position.

FIGURE 8 is a top view of the applicator cap surface of the embodiment of FIGURE 1.

FIGURE 9 is an exploded detail side sectional view of the applicator cap, pad, and part of the fluid transfer means, taken along section line 3-3 of Figure 1.

Description of the Preferred Embodiment

In the description of the preferred embodiments, like reference numbers are used on the different figures to refer to like parts.

FIGURES 1 and 2 show partially exploded views of two possible embodiments of fluid applicator apparatus 10, functionally similar but differing in the orientation of the top surface 20 of applicator cap 30 and of pad of porous material 40. FIGURES 1 and 2 also show fluid reservoir 50, protective overcap 54, closure cap 60, which sits over the neck 52 of fluid reservoir 50, and, emerging from closure cap 60, fluid outlet 70 (which is part of fluid transfer means 80 which is itself not visible in FIGURES 1 and 2).

As FIGURE 3 shows, fluid transfer means 80 includes a pumping mechanism 82, a ball check valve assembly 84, a dip tube 86 extending from the bottom of the combined pumping mechanism and ball check valve assembly toward the bottom of fluid reservoir 50, the dip tube having fluid inlet 87 at its bottom end, fluid outlet means 70 situated on the top of pumping mechanism 82 and extending through closure cap 60. In manufacture of the apparatus, fluid transfer means so can be crimped into the neck of the fluid reservoir, making refill impossible but minimizing access to the contents and thus adding a child protective feature to the device. Alternatively, the neck 52 of fluid reservoir 50 and closure cap 60 may be configured with matching screw threads, which would allow the apparatus to be opened to allow refill. Details of the preferred embodiment of ball check valve 84 are further shown in FIGURES 6 and 7.

FIGURE 3 shows the fluid applicator apparatus in the upright position, the position in which the apparatus would be oriented to apply a strip of insecticide to the underside of a cabinet or like surface, the applicator being filled with fluid 90 (illustrated only in Figs 6 and 7). When the apparatus is pushed against a surface, pressure is applied to the pad of porous material 40, and to applicator cap 30. This pressure forces applicator cap 30 and fluid reservoir 50 to telescope against each other as applicator cap 30 slides back toward the main portion of fluid reservoir 50 along slide area 92 of fluid reservoir 50.

This telescoping and pumping action (described below) is illustrated in FIGURES 4 and 5, which show the apparatus in the essentially inverted position, as it would be oriented to apply a strip of insecticide along a floor, the inside lower surface of a cabinet, or like surface. FIGURE 4 shows the apparatus with fluid reservoir 50 and applicator cap 30 telescoped into each other along slide area 92 (visible in FIGURE 5) on fluid reservoir 50. This position as described above, forces

the fluid from the pumping mechanism 82 and hence into pad of porous material 40. FIGURE 5 shows fluid reservoir 50 and applicator cap 30 in the extended position, in which a predetermined volume of fluid is pulled into pumping mechanism 82 through fluid inlet 100. Obviously, protective overcap 54, which protects the apparatus during transport and handling and prevents fluid transfer means 80 from being accidentally activated, has been removed before the applicator is used.

Figures 6 and 7 show details of the pumping and ball check valve mechanisms, with dip tube 86 truncated. While many variations of pump and dip tube assemblies exist and may be used in the present invention, the preferred pumping mechanism is disclosed in U.S. Pat. No. 4,230,242, which is hereby incorporated by reference. The combination of this basic pump mechanism with the ball check valve, which creates the unique "any orientation" feature of the mechanism, is disclosed by pending U.S. Pat. Ser. No. 305,288. When applicator cap 30 is telescoped against the main body of fluid reservoir 50 (as shown in Figures 4 and 5), fluid outlet 70 is pressed back into pumping mechanism 82 and compresses biasing spring 94. When the pressure on applicator cap 30 is removed, by a slight lifting of the apparatus away from the surface, spring 94 is released which creates a decrease in pressure within chamber 96 of pumping mechanism 82 and thus draws fluid 90 up through dip tube 86 into chamber 96. When pressure is again applied to applicator cap 30, the enchambered fluid is then forced out through fluid outlet 70 and thus out into pad of porous material 40.

When the apparatus is in the upright orientation, the fluid transfer mechanism, as shown in Figure 6, operates as follows: ball 98 sits over and thus blocks first fluid inlet 100, so that fluid 90 can only be drawn into pumping mechanism 82 through second fluid inlet 87 at the end of dip tube 86.

When the apparatus is held in an essentially inverted, angled orientation, as shown in FIGURE 7, the fluid transfer mechanism operates as follows: ball 98 has, as the apparatus is tilted, rolled along channel 102 and, by so doing, uncovered first fluid inlet 100. In this orientation, as the pumping mechanism 82 is actuated as described above, fluid is drawn into chamber 96 through first fluid inlet 100. Second fluid inlet 87, in this orientation, will most likely be above the level of fluid 90.

With two potential fluid inlets, one (87) located near the bottom of the fluid reservoir and the other (100) located near the top of the fluid reservoir, fluid may be pumped in any orientation. The only limitation would be that if the apparatus were held at a shallow angle and inadequate fluid remained to cover fluid inlet 87. In such a case, the user would

only need to steepen the angle to be able to pump out the remaining fluid.

FIGURES 8 and 9 show design and assembly details of applicator cap 30 and pad of porous material 40. As is shown in Figure 8, applicator cap 30 has formed within its top surface 20 recess, designed to accept pad of porous material 40, central apertures 112, and channels 114 extending outwardly from apertures 112. Fluid outlet 70 interference fits into receiving area 118, creating a seal. As is shown in FIGURE 9, when the apparatus is assembled, fluid outlet 70 sets just below and in contact with the portion of applicator cap surface 20 that contains apertures 112. Pad of porous material sits above apertures 112 and channels 114 in recess. When fluid transfer means 80 is activated, as described above, fluid is ejected from fluid outlet 70, and then passes through apertures 112. Channels 114 then serve to spread the fluid ejected from apertures 112 along the underside of pad of porous material 40.

It should be noted that other types of dispersing means may be used with the present invention. For example, a brush-type applicator might be preferable to the pad of porous material were the fluid applicator to be used to apply cleansing fluids to fabrics or irregular surfaces.

Other modifications of the fluid applicator of the present invention will become apparent to those skilled in the art from an examination of the above patent specification and drawings. Therefore, other variations of the present invention may be made which fall within the scope of the following claims even though such variations were not specifically discussed above.

Claims

1. A fluid applicator apparatus comprising:

a fluid reservoir (50) designed to hold the fluid to be applied, having a neck opening (52) at one end;

a fluid applicator means (30, 40, 106); and
fluid transfer means (80) for effecting a metered transfer of the fluid (90) from the fluid reservoir (50) to said fluid applicator means (30, 40, 106), the fluid transfer means (80) being located upon and within the neck opening (52) of the fluid reservoir;

the fluid transfer means (80) further comprising an extensible and retractable fluid discharge means having a first fluid inlet (87) and, spaced from said first fluid inlet (87), a fluid outlet (70) with said first fluid inlet (87) being located towards the distal end of a hollow tube member (86) attached to and in fluid communication with the fluid discharge means;

the fluid applicator means (30, 40, 106)

further comprising an apertured applicator cap (30), having on its outer surface a dispersing means (40), the aperture of the applicator cap (30) being designed to receive said fluid outlet, the applicator cap being movable relative to the fluid reservoir (50) in such a way that a predetermined force imposed on the applicator cap (30) causes the fluid discharge means to be retracted and then extended when the force is not applied anymore, which in turn causes fluid (90) to be transferred from the fluid reservoir (50) to the dispersing means (40), characterized in that

said extensible and retractable fluid discharge means is spring-biased and is in communication with a second inlet means (100) being located adjacent to said fluid discharge means towards the proximal end of the hollow tube member (86),

in that the fluid discharge means further comprises a pumping mechanism (82) including a spring-loaded piston within a pumping chamber (96), which, when the piston is retracted by a pre-determined force upon the applicator cap (30), forces the fluid out the fluid outlet (70) and hence into the dispersing means (40) and, when the force is removed and the piston extended, draws fluid from the fluid reservoir (50) through either one of the fluid inlets (87,100) into the pumping chamber (96),

in that the fluid transfer means (80) is adapted to pull fluid through one or the other of the first and second fluid inlets (100, 87) and

in that the fluid transfer means (80) connected to and in fluid communication with the pumping mechanism further includes a ball check valve (84) having a ball (98) movable in a channel (102) so that, when the apparatus is in an inverted position and fluid is drawn into the pumping mechanism (82) through the second inlet means (100), the first fluid inlet (87) is not working, and, when the apparatus is in an upright position, the fluid inlet (87) is working, and fluid is drawn into the pumping mechanism (82) through this first inlet (87).

2. A fluid applicator apparatus according to claim 1,

characterized in that said fluid outlet (70) is interference fit into a receiving area (118) in the interior of the applicator cap.

3. A fluid applicator apparatus according to claim 1,

characterized in that a top surface (20) of the applicator cap (30) is, relative to the longitudinal axis of said fluid reservoir, oriented at an

angle to the horizontal.

4. A fluid applicator apparatus according to claim 1,
characterized in that the dispersing means (40) 5
is an element formed of porous material.
5. A fluid applicator apparatus according to claim 3,
characterized in that said element formed of 10
porous material is a pad (40) of porous material which sits in said recess (106) in the top surface (20) of the apertured applicator cap (30), the recess (106) having therein channeled fluid distribution means (114), extending from 15
the aperture (112) of the applicator cap (30) and designed to distribute fluid discharged through the fluid outlet (70) over a substantial portion of part of the pad (40) of porous material. 20
6. A fluid applicator apparatus according to claim 1,
characterized in that said fluid transfer means (80) is crimped into the neck opening (52) of the fluid reservoir (50). 25
7. A fluid applicator apparatus according to claim 1,
characterized in that the apparatus further 30
comprises a protective overcap (54) which fits over the applicator cap (30) and is removably connected with a top section of the fluid reservoir (50). 35

Patentansprüche

1. Flüssigkeitsapplikator mit
einem Vorratsbehälter (50) zur Aufnahme der aufzutragenden Flüssigkeit, der an einem 40
Ende eine Halsöffnung (52) aufweist,
einer Flüssigkeit-Auftrageinrichtung (30, 40, 106) und
einer Flüssigkeit-Übertragungseinrichtung (80), die eine dosierte Übertragung der Flüssigkeit (90) aus dem Vorratsbehälter (50) an 45
die Flüssigkeits-Auftrageinrichtung (30, 40, 106) bewirkt und die auf und in der Halsöffnung (52) des Vorratsbehälters angeordnet ist, wobei
die Flüssigkeit-Übertragungseinrichtung 50
(80) weiterhin eine ausfahr- und einziehbare Flüssigkeit-Austrageinrichtung mit einem ersten Flüssigkeitseinlaß (87) und einem von diesem ersten Flüssigkeitseinlaß (87) beabstandeten Flüssigkeitsauslaß (70) aufweist und der 55
erste Flüssigkeitseinlaß (87) zum distalen Ende eines hohlen Rohrelements (86) hin angeord-

net ist, das in Strömungsverbindung mit dieser an ihr angebracht ist,

die Flüssigkeit-Auftrageinrichtung (30, 40, 106) weiterhin eine mit einer Öffnung versehene Auftragkappe (30) mit einer Verteileinrichtung (40) auf der Außenfläche hat, wobei die Öffnung der Auftragkappe (30) zur Aufnahme des Flüssigkeitsauslasses konstruiert und relativ zum Flüssigkeit-Vorratsbehälter (50) so bewegbar ist, daß bei Beaufschlagung der Auftragkappe (30) mit einer vorbestimmten Kraft die Flüssigkeit-Austrageinrichtung eingezogen wird und beim Wegfall der Kraft wieder ausfährt, wodurch Flüssigkeit (90) aus dem Vorratsbehälter (50) an die Verteileinrichtung (40) übertragen wird,

dadurch gekennzeichnet, daß

die ausfahr- und einziehbare Flüssigkeit-Austrageinrichtung federvorgespannt ist und in Strömungsverbindung mit einer zweiten Einlaßeinrichtung (100) steht, die neben der Flüssigkeit-Austrageinrichtung zum proximalen Ende des hohlen Rohrelements (86) hin angeordnet ist,

die Flüssigkeit-Austrageinrichtung weiterhin eine Pumpmechanik (82) mit einem federvorgespannten Kolben in einer Pumpkammer (96) aufweist, welche Mechanik, wenn der Kolben durch Beaufschlagung der Auftragkappe (30) mit einer vorbestimmten Kraft eingefahren wird, die Flüssigkeit aus dem Flüssigkeitsauslaß (70) hinaus in die Verteileinrichtung (40) drückt und beim Wegfall der Kraft und ausfahrendem Kolben Flüssigkeit durch einen der Flüssigkeitseinlässe (87, 100) aus dem Vorratsbehälter (50) in die Pumpkammer (96) zieht,

die Flüssigkeit-Übertragungseinrichtung (80) Flüssigkeit durch einen oder den anderen der beiden Flüssigkeitseinlässe (100, 87) ziehen kann, und daß

die mit der Pumpmechanik verbundene und in Strömungsverbindung stehende Flüssigkeit-Übertragungseinrichtung (80) weiterhin ein Kugel-Rückschlagventil (84) mit einer in einem Kanal 102 bewegbaren Kugel (98) aufweist, so daß, wenn der Applikator sich in der umgekehrten Lage befindet und Flüssigkeit durch die zweite Einlaßeinrichtung (100) in die Pumpmechanik (82) eingezogen wird, der erste Flüssigkeitseinlaß (87) nicht arbeitet, während bei sich in der aufrechten Lage befindlichem Applikator der Flüssigkeitseinlaß (87) arbeitet und Flüssigkeit durch diesen ersten Einlaß (87) in die Pumpmechanik (82) gezogen wird.

2. Flüssigkeitsapplikator nach Anspruch 1, **dadurch gekennzeichnet, daß** der Flüssigkeits-

auslaß (70) im Preßsitz in einen Aufnahmebereich (118) in Innern der Auftragkappe eingesetzt ist.

3. Flüssigkeitsapplikator nach Anspruch 1, **dadurch gekennzeichnet**, daß eine nach oben weisende Fläche (20) der Auftragkappe (30) relativ zur Längsachse des Vorratsbehälters winklig zur Horizontalen liegt. 5
4. Flüssigkeitsapplikator nach Anspruch 1, **dadurch gekennzeichnet**, daß die Verteileinrichtung (40) ein aus einem porösen Werkstoff ausgebildetes Element ist. 10
5. Flüssigkeitsapplikator nach Anspruch 3, **dadurch gekennzeichnet**, daß das aus porösem Werkstoff ausgebildete Element ein Kissen (40) aus porösem Werkstoff ist, das in der Vertiefung (106) in der nach oben weisenden Fläche der mit einer Öffnung versehenen Auftragkappe (30) sitzt, wobei die Vertiefung (106) eine kanalartige Flüssigkeit-Verteileinrichtung (114) enthält, die von der Öffnung (112) in der Auftragkappe (30) her verläuft und so konstruiert ist, daß durch den Flüssigkeitsauslaß (70) ausgetretene Flüssigkeit über einen wesentlichen Teil des Kissens (40) aus porösem Werkstoff verteilt wird. 15 20 25
6. Flüssigkeitsapplikator nach Anspruch 1, **dadurch gekennzeichnet**, daß die Flüssigkeit-Übertragungseinrichtung (80) in die Halsöffnung (52) des Vorratsbehälters (50) eingecrimpt ist. 30
7. Flüssigkeitsapplikator nach Anspruch 1, **dadurch gekennzeichnet**, daß der Applikator weiterhin eine schützende Überkappe (54) aufweist, die über und auf die Auftragkappe paßt und lösbar mit einem oberen Bereich des Vorratsbehälters (50) verbunden ist. 35 40

Revendications

1. Appareil applicateur de fluide comprenant : 45
 - un réservoir de fluide (50) conçu pour contenir le fluide à appliquer, ce réservoir possédant une ouverture de col (52) à une extrémité ;
 - des moyens applicateurs de fluide (30, 40, 106) : et 50
 - des moyens de transfert de fluide (80) servant à effectuer un transfert dosé du fluide (90) du réservoir de fluide (50) auxdits moyens applicateurs de fluide (30, 40, 106), les moyens de transfert de fluide (80) étant placés sur et dans l'ouverture de col (52) du réservoir 55

de fluide ;

les moyens de transfert de fluide (80) comprenant en outre des moyens d'éjection de fluide extensibles et rétractables ayant une première entrée de fluide (87) et, à distance de ladite première entrée de fluide (87), une sortie de fluide (70), ladite première entrée de fluide (87) étant située dans la région de l'extrémité distale d'un élément tubulaire creux (86) fixé aux moyens d'éjection de fluide et en communication fluidique avec ces moyens ;

les moyens applicateurs de fluide (30, 40, 106) comprenant en outre un chapeau d'appliqueur perforé (30) ayant sur sa surface extérieure des moyens de dispersion (40), l'ouverture du chapeau d'appliqueur (30) étant calculée pour recevoir ladite sortie de fluide, le chapeau d'appliqueur pouvant se déplacer par rapport au réservoir de fluide (50) de telle manière qu'une force prédéterminée au chapeau d'appliqueur (30) ait pour effet que les moyens d'éjection de fluide soient rétractés, puis mis en extension lorsque la force n'est plus appliquée, ce qui, à son tour, a pour effet que le fluide (90) est transféré du réservoir de fluide (50) aux moyens de dispersion (40), caractérisé

en ce que lesdits moyens d'éjection de fluide extensibles et rétractables sont rappelés par ressort et son en communication avec des deuxièmes moyens d'entrée (100) placés adjacents auxdits moyens d'éjection de fluide dans la région de l'extrémité proximale de l'élément tubulaire creux (86),

en ce que les moyens d'éjection de fluide comprennent en outre un mécanisme de pompage (82) comprenant un piston chargé par ressort logé dans une chambre de pompage (96) et qui, lorsque le piston est rétracté par une force prédéterminée exercée sur le chapeau d'appliqueur (30) refoule le fluide hors de la sortie de fluide (70) et, par conséquent, dans les moyens de dispersion (40) et qui, lorsque la force est supprimée et que le piston est mis en extension, aspire le fluide en provenance du réservoir de fluide (50), à travers l'une ou l'autre des entrées de fluide (87, 100) et vers la chambre de pompage (96),

en ce que les moyens de transfert de fluide (80) sont adaptés pour attirer le fluide à travers l'une ou l'autre des première et deuxième entrées de fluide (100, 87) et

en ce que les moyens de transfert de fluide (80) reliés au mécanisme de pompage et en communication fluidique avec ce mécanisme comprennent en outre un clapet anti-retour à bille (84) ayant une bille (98) qui peut se déplacer dans un canal (102) de telle manière

que, lorsque l'appareil est dans une position retournée et que du fluide est aspiré dans le mécanisme de pompage (82) à travers les deuxièmes moyens d'entrée (100), la première entrée de fluide (87) ne travaille pas et que, lorsque l'appareil est dans une position debout, l'entrée de fluide (87) travaille et le fluide est aspiré dans le mécanisme de pompage (82) à travers cette première entrée (87).

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2. Appareil applicateur de fluide selon la revendication 1, caractérisé en ce que ladite sortie de fluide (70) est emboîtée à serrage dans une zone réceptrice (118) prévue à l'intérieur du chapeau d'applicateur.

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3. Appareil applicateur de fluide selon la revendication 1, caractérisé en ce qu'une surface supérieure (20) du chapeau d'applicateur (30) est orientée, relativement à l'axe longitudinal dudit réservoir de fluide, pour former un angle par rapport à l'horizontale.

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4. Appareil applicateur de fluide selon la revendication 1, caractérisé en ce que les moyens de dispersion (40) sont constitués par un élément formé d'une matière poreuse.

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5. Appareil applicateur de fluide selon la revendication 3, caractérisé en ce que ledit élément formé d'une matière poreuse est un tampon (40) de matière poreuse qui se loge dans ledit évidement (106) ménagé dans la surface supérieure (20) du chapeau d'applicateur percé (30), l'évidement (106) présentant intérieurement des moyens de distribution de fluide (114) munis de canaux, qui partent de l'ouverture (112) du chapeau d'applicateur (30) et sont conçus pour répartir le fluide éjecté à travers la sortie de fluide (70) sur une portion importante d'une partie du tampon (40) en matière poreuse.

35

40

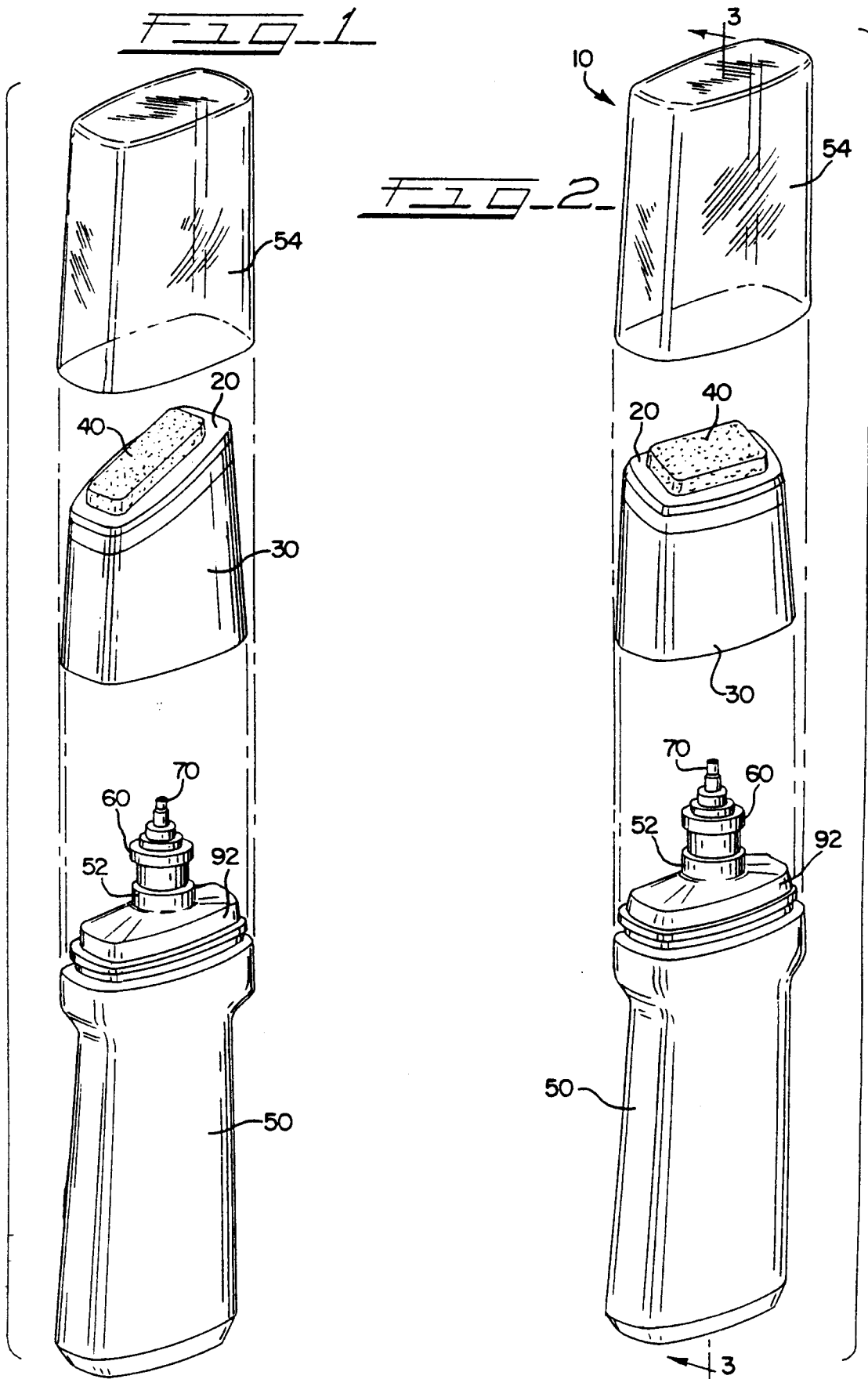
45

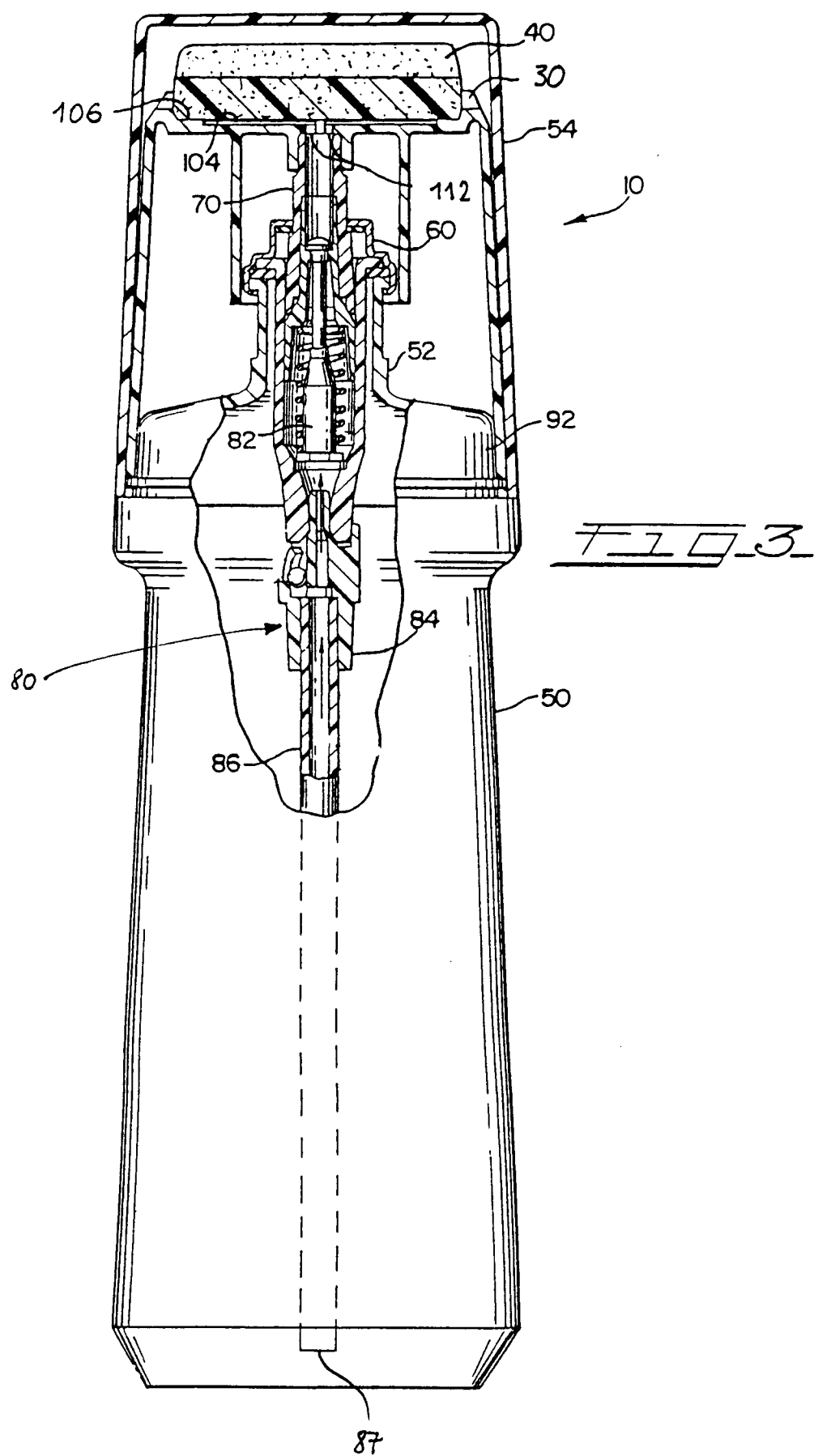
6. Appareil applicateur de fluide selon la revendication 1, caractérisé en ce que lesdits moyens de transfert de fluide (80) sont sertis dans l'ouverture de col (52) du réservoir de fluide (50).

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7. Appareil applicateur de fluide selon la revendication 1, caractérisé en ce que l'appareil comprend en outre un capuchon protecteur (54) qui s'ajuste sur le chapeau d'applicateur (30) et est relié de façon détachable à la section supérieure du réservoir de fluide (50).

55





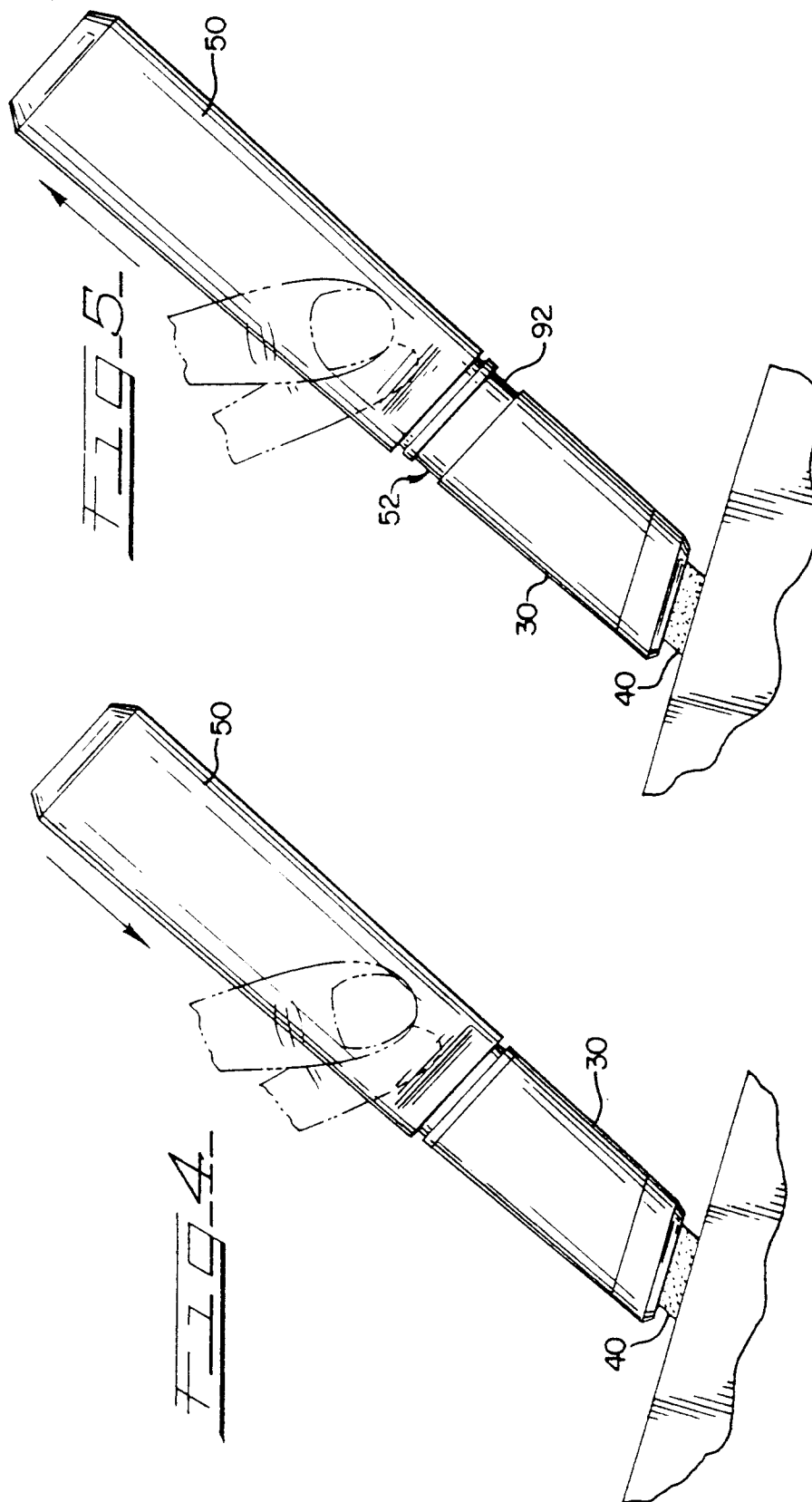


FIG. 6

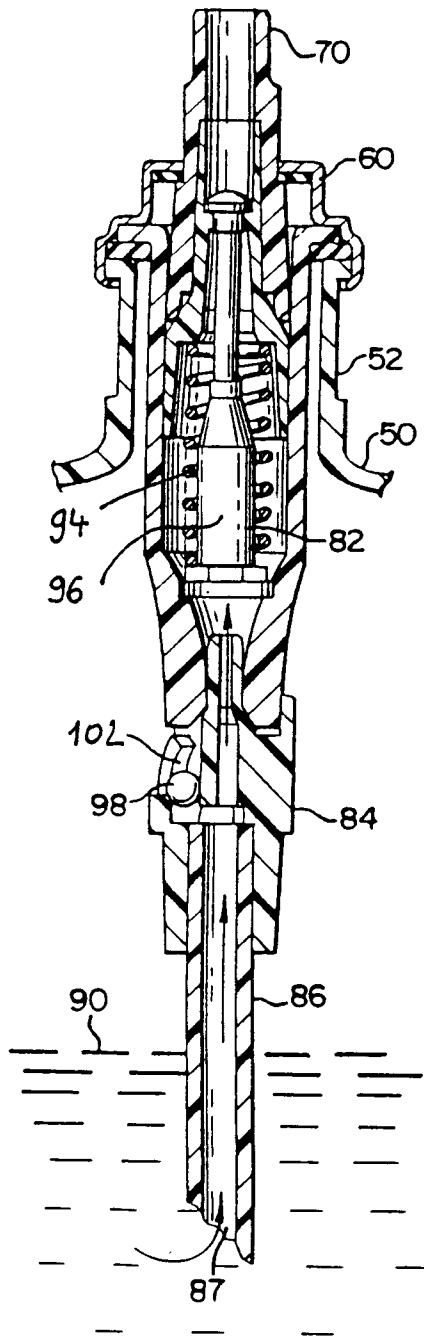
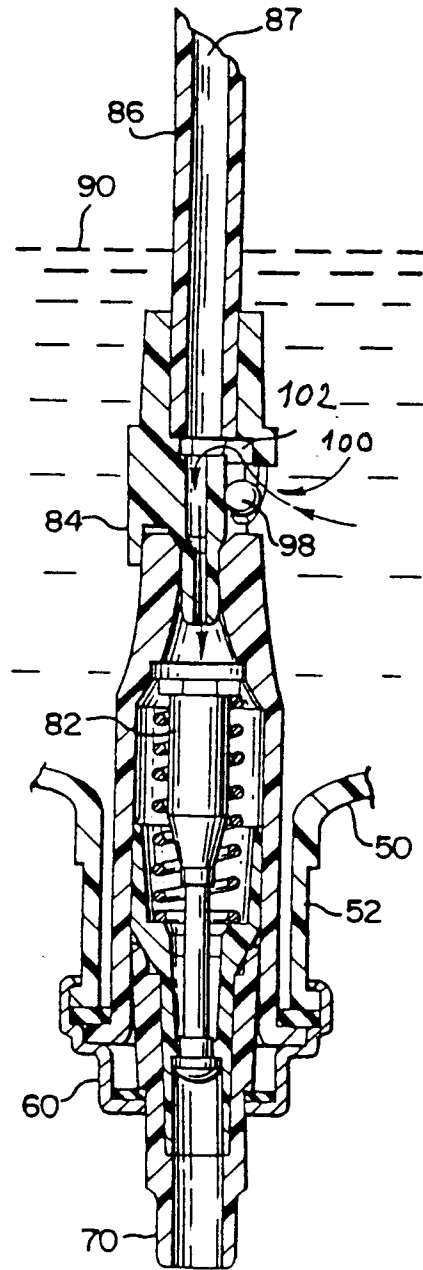


FIG. 7



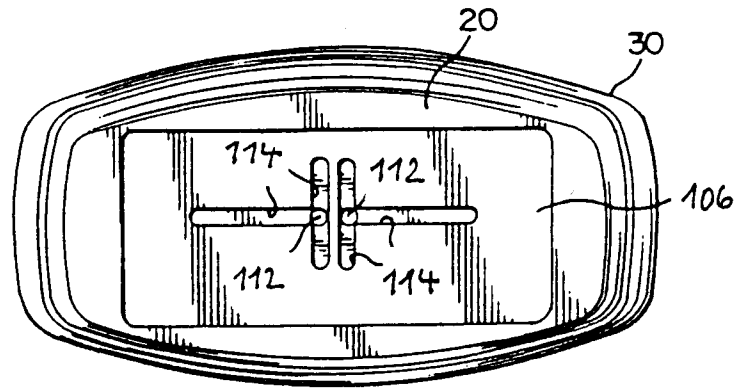


FIG. 8

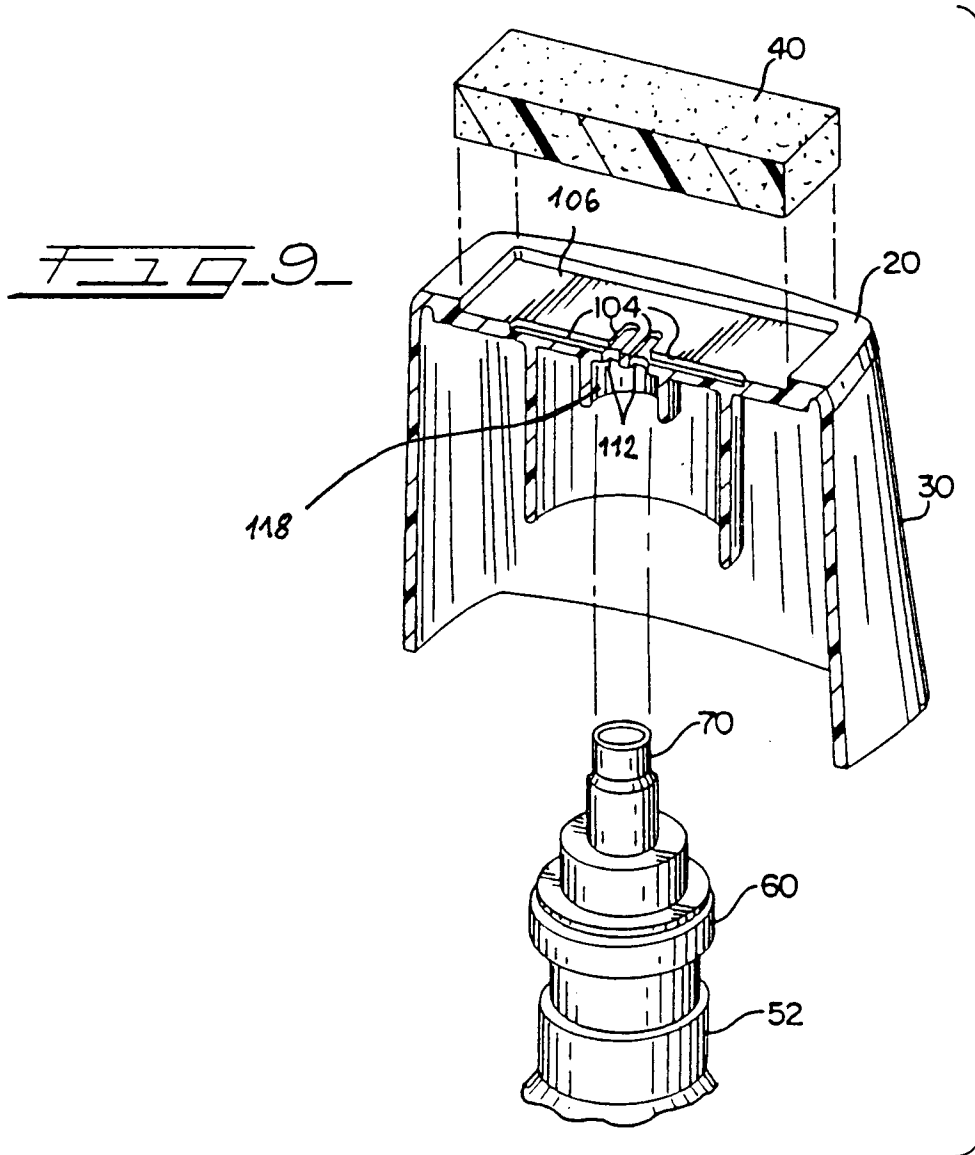


FIG. 9