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Fears

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[54] **APPLICATOR FOR FLUIDS**

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[52] **U.S. Cl.** **401/190,** 401/206

[51] **Int. Cl.** **A46b 5/02**

[58] **Field of Search** 401/190, 183–186, 401/206

[56] **References Cited**

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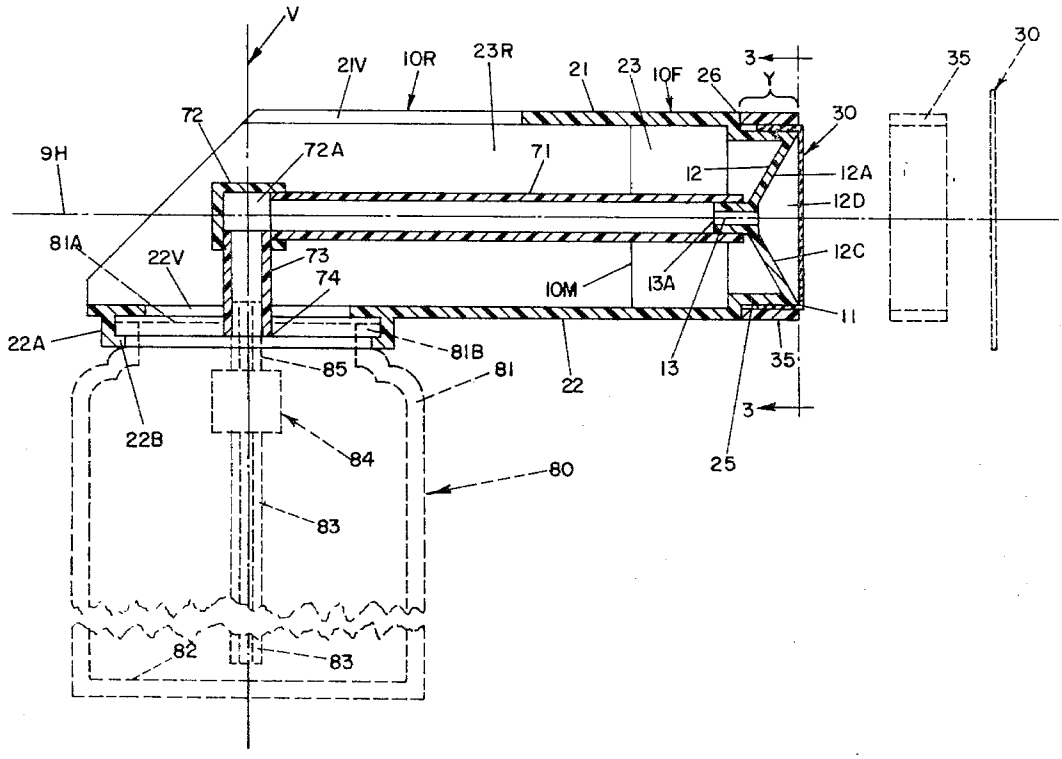
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Primary Examiner—Lawrence Charles
Attorney—George R. Nimmer

[57] **ABSTRACT**

There is provided an applicator adapted to be employed in removable and communicating relationship with an uprightable hand-manipulatable container of pressurized fluid, such as liquid masking tape, paints, etc., whereby the fluid bands or stripes can be controllably applied from the applicator fore-terminus to upright window panels and other broad working surfaces. The applicator includes a housing extending longitudinally forwardly along a main-axis that intersects the container lengthwise axis, the housing forwardly terminating as an annular lead-end defining a lead-plane which transversely intersects the main-axis; a porous pad firmly abutting the housing lead-end and preferably removably attached to the housing provides the applicator fore-terminus. There is a regulatable tubular conduit means extending from its inlet-end (which is transversely offset toward a fluids container) to an outlet-end located slightly rearwardly of the lead-plane and in fluid delivery relationship to the porous pad.

9 Claims, 5 Drawing Figures



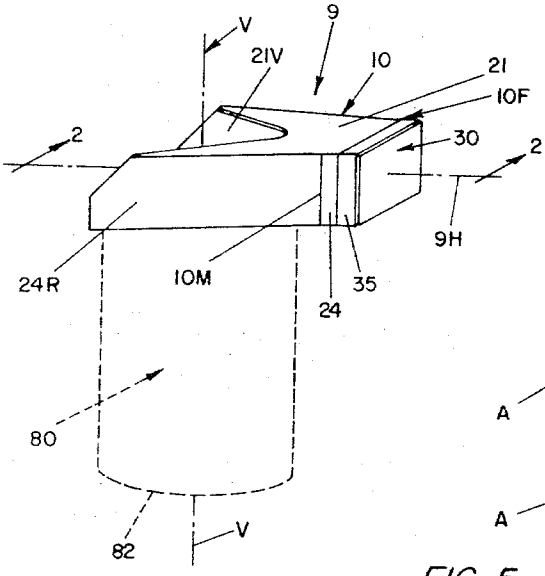


FIG. 1

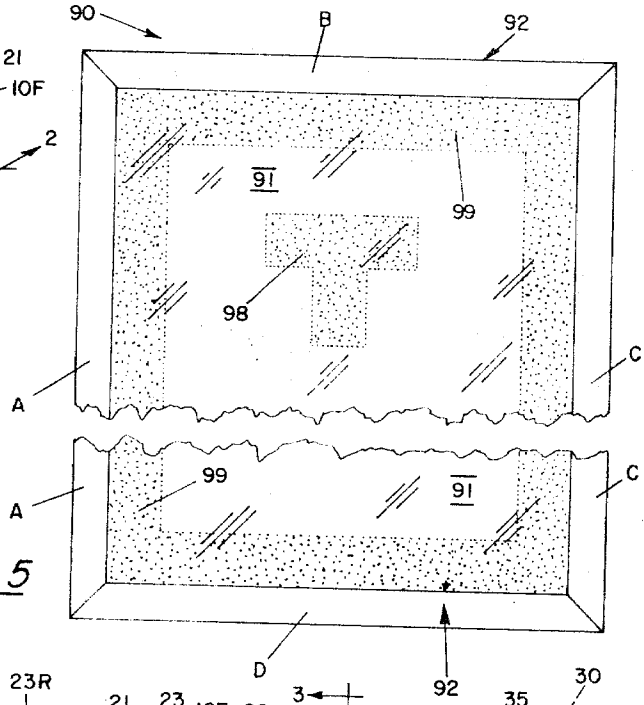


FIG. 5

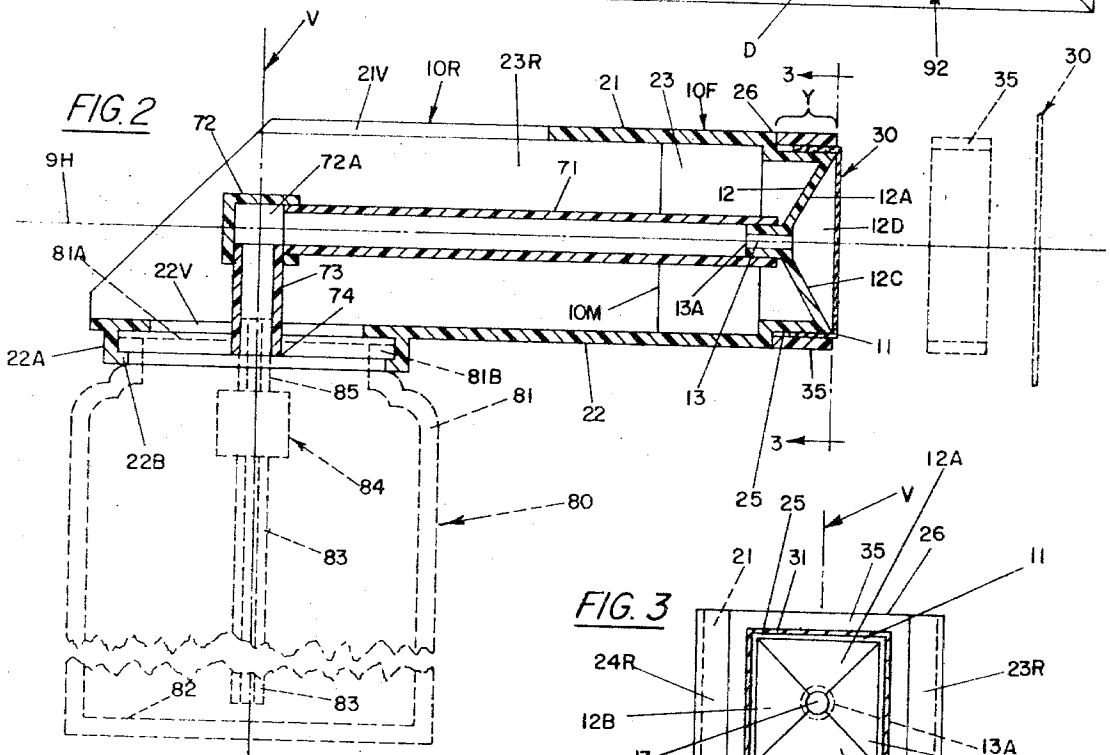


FIG. 2

FIG. 3

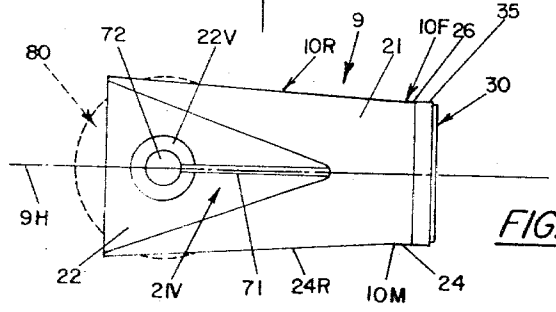


FIG. 4

APPLICATOR FOR FLUIDS

Fluids comprising an admixture of solids and volatile liquid are oftentimes applied in band or stripe form onto broad surfaces, such as when performing lettering or other graphics, applying adhesives, etc. For such purposes, bristles, pads, and felts, mounted as a head onto a manipulatable handle, have long been used. However, such prior art devices need to be dipped frequently into a reservoir of the paint or other fluid to be applied, and need to be maintained substantially perpendicular to the working surface; thus, they are tiring for the operator to use, especially when upright working surfaces are encountered. For example, it is an exceedingly tiring task to letter prices and other advertising matter onto vertical panels such as store windows. Similarly tedious is the application of the so-called "liquid masking tapes", i.e. a mixture of a volatile solvent and a removably adherent resin, onto the extreme peripheral edges of a window pane prepatory to painting of the window frame.

It is accordingly the general object of the present invention to provide a hand-manipulatable applicator device that is adapted to apply regular width bands or stripes of fluid laminae. Ancillary objects are to provide an improved applicator for graphics, for artistry, and for utilitarian purposes such as with adhesives.

It is another object to provide a hand manipulatable fluids applicator device that is exceedingly easy to use and to control with preciseness.

It is a further object to provide an applicator device that is adapted for use with a variety of broad surfaces, and for relative ease including even precise operations upon upright planar surfaces. It is an ancillary object to provide a manual applicator means for applying so-called "liquid masking tapes" with unusual ease and preciseness, to the extreme border areas of transparent or other inviolate framed panels.

It is yet another object to provide a manual fluids applicator that is reliable, long lasting, and that can be used for a succession of chemically different fluids.

It is a further object to provide a fluids applicator device that can be used in removable and communicating combination with hand-manipulatable uprightable fluid reservoirs, and even for gas-charged and other pressurizeable fluid reservoirs whereby fluid application need not be unduly interrupted for purposes of replenishing fluid onto the applicator head.

With the above and other objects and advantages in view, which will become more apparent as this description proceeds, the fluids applicator is adapted to be employed in removable and communicating relationship with an uprightable container of pressurizeable fluid and generally comprises a housing extending longitudinally forwardly along a substantially horizontal main-axis toward a head portion and forwardly terminating as an annular lead-end defining a lead-plane that transversely intersects said main-axis, the lead-plane being located laterally offset from the uprightable container, a porous pad ably attached to the housing head portion in abutting relationship to the annular lead-end and forwardly offset from the outlet-end of a conduit means, the conduit means extending parallel to the main-axis commencing slightly rearwardly from the porous pad and including a conduit inlet-end transversely offset from the main-axis as toward fluid communicating relationship with a suitable reservoir or container.

In the drawing, wherein like characters refer to like parts in the several views, and in which:

FIG. 1 is a perspective view of a representative embodiment of the fluids applicator of the present invention, herein shown in removable and communicating relationship with an uprightable container of pressurizeable fluid.

FIG. 2 is a sectional elevational view taken along line 2—2 of FIG. 1.

FIG. 3 is a sectional elevational view taken along line 3—3 of FIG. 2.

FIG. 4 is a top plan view of the FIG. 1 embodiment.

FIG. 5 is a side elevational view of a typical broad working surface with which the fluids applicator device might be employed.

Although it is not desired to limit the utility of the fluid applicator device **9** of the present invention to the application of lacquer masks to the border areas of generally rectangular transparent window panes, nor even to transparent panels, the applicator device **9** is especially desireable for the application of uniphase mixtures of a removably adherent masking resin and a volatile fluid carrier therefor to the extreme border areas of rectangular windows. For example, the rectangular window structure **90** of FIG. 5 comprises an apparently rectangular transparent pane **91** having a pair of substantially planar and parallel opposed broad surfaces. Upright pane **91** is surrounded by a relatively thick integrally attached frame **92** comprising four peripheral boundaries A–D to provide an abruptly shouldered rectangular linear juncture between frame **92** and pane **91** including four right-angle internal corners. Shown along the extreme border areas of pane **91** at its juncture with frame **92** is a removably adherent mask or shield layer **99** that has been applied in stripe or band form from the porous pad fore-terminus **30** of the applicator device **9**. The applicator device has numerous other uses, such as for graphically applying pigmented paint onto broad surfaces, herein indicated as the letter **T 98**.

The fluid material applied by the fluid applicator device originates from a pressurized source, as from an elongated container, whereby the pressurized fluid is expelled along the container lengthwise axis, e.g., V. During normal use of the applicator device of the present invention, the container is manipulated so that its lengthwise axis V is generally parallel to the broad surface, e.g., **91**, against which the fore-terminus pad **30** is pressed. Moreover, for customary upright broad surfaces, the uprightable container extends lengthwise along a vertical-axis V, and the fore-terminus pad **30** is non-horizontal and is laterally offset from container **80** so as to give fingers clearance between said panel **91** and container. The container's fluid pressurizing source might be manual, such as a resiliently hand-squeezeable bottle, or gaseous, such as a gas-charged aerosol can.

Applicator device embodiment **9** generally comprises a housing **10** extending in elongate direction along a substantially horizontal main-axis **9H**, the housing forwardly disposed head portion **10F** forwardly terminating as an annular lead-end **11** which defines a lead-plane **3—3** transversely intersecting main-axis **9H**. Housing **10** also includes a frontal-wall **12** provided with a bore **13** along main-axis **9H**, the major portion of the frontal-wall front-side (**12A–12D**) and bore **13** being located rearwardly of lead-plane **3—3**. A porous

fabric pad **30** firmly annularly abutting lead-end **11** and removably attached to housing head portion **10F**, as through removable annular collar **35**, provides the fore-terminus for applicator **9**. A conduit means (**71–73**) and including an inlet-end **74** transversely offset from main-axis **9H** allows pressurized fluid to flow from a suitable reservoir, e.g., container **80** along V, thence along main-axis **9H**, and then to the conduit outlet-end (**13**) located rearwardly of the porous pad fore-terminus. Preferably the frontal-wall front-side symmetrically surrounds main-axis **9H** and converges continuously uninterruptedly from the annular lead-end **11** toward the frontal-wall bore **13** thereby promoting a smooth and even fluid flow from the conduit outlet-end to the entire porous pad **30.** In this vein, the housing lead-end is preferably of symmetrical polygonal shape whereby the frontal-wall front-side includes a plurality of rearwardly convergent planar faces each of substantially isosceles triangular shape.

As seen in FIGS. **1–4,** housing embodiment **10** includes two portions extending along main-axis **9H** including a relatively short-length forwardly disposed head portion **10F** merging at **10M** with a relatively longer rearwardly disposed portion **10R**. Head portion **10F** is defined by four inter-connected panels comprising a pair of horizontal panels including roof-panel **21** and floor-panel **22** and a pair of vertical panels including right-panel **23** and a left-panel **24.** Head portion **10F** is provided with a circumferentially narrowed shank **25** extending rearwardly a finite-length Y from annular lead-end **11** to a forward portion shoulder **26.** Shank **25** surrounds main-axis **9H** and has therealong (from lead-end **11** to shoulder **26**) a regular outside cross-sectional shape of a constant finite area (as seen by solid-lines square **25** in FIG. **3**). As seen in phantom line in FIG. **3,** the herein rectangular porous fabric pad **30** has an area exceeding said shank cross-sectional finite-area; thus, peripheral portions **31** of flexible pad **30** are adapted to extend rearwardly of lead-end **11** to lie along said shank **25** toward shoulder **26.** A forwardly removable annular collar **35,** herein of square inside cross-sectional shape, exerts sufficient pressure to the pad annular peripheral portion **31** and against shank **25** and shoulder **26** that the pad **30** is removably though securely held in firm abutment against lead-end **11.** Preferably, transversely extending lead-plane **3—3,** and pad **30** are substantially perpendicular to main-axis **9H** and parallel to container lengthwise vertical-axis V.

The annular lead-end **11** preferably includes a pair of straight sides intersecting at 90° or other acute angle, thus enabling the operator to precisely control the position of the fluid band or stripe onto the working surface. In this vein, it is desireable to have the lead-end of regular polygonal shape, and preferably square, thereby enabling the operator to precisely apply "fluid masking tapes" to the extreme border areas of a window **91,** as indicated at **99** in FIG. **5.** With a square lead-end **11,** the front-side of frontal-wall **12** comprises four rearwardly convergent planar faces (**12A–12D**) each of isosceles triangular shape, to provide uniform fluid flow from bore **13** to the entire pad **30** which abuts annular lead-end **11.** For the application of "fluid masking tapes," rectangular collar **35** is of like outside dimension with shank **26** thereby acting as a slidable guide along window frame members **92A–92D.**

As had been previously mentioned, the applicator device of the present invention is most advantageously employed in removable and fluid-communicating combination relationship with a relatively small uprightable container or reservoir of the fluid to be applied. Moreover, the container is of the pressurizeable type, and accordingly, the operator might employ the container as a readily manipulatable handle for the applicator device which also ensures that a continuous supply of fluid is available to the porous pad fore-terminus. For squeeze-bottles, gas-charged "aerosols," and other pressurizeable hand-manipulatable containers, the fluid is forceably initiated along the container lengthwise axis and ultimately expelled through the container's upper tubular discharge spout. Because the porous pad fore-terminous of the applicator is positioned laterally remote from the upright container, and is non-perpendicular to the container lengthwise axis V, the applicator is exceedingly well adapted for use with upright working surfaces, e.g., **91.** In this vein, the conduit means necessarily includes a non-linear portion because its inlet-end is generously downwardly transversely offset from housing longitudinal axis **9H.** In the drawing herein and shown in phantom line, the fluids container is in the form of the conventional cylindrical can **80** surroundably extending along vertical-axis V and having a narrowed upper tubular discharge spout **81** and a bottom-plate **82.** The applicator is removably attachable to the container upper portion; for example, the applicator device includes a depending annular-flange **22A** surrounding vertical-axis V for snugly removably engaging the container neck **81.**

In the preferred situation, and as aptly indicated in FIG. **2,** the pressurized fluids receptacle is of the gas-charged or aerosol variety. Such containers normally include therewithin a conventional spring-loaded valve means (indicated generally at **84**) and located immediately below the horizontal upper extremity **81A** of neck **81.** A tubular stem **83** proceeds upwardly from bottom-plate **82** along axis V to valve **84,** while a tubular nozzle **85** extends upwardly from valve **84** along axis V toward container upper extremity **81A.** As is well known in the prior art, tilting, pressing, or other manipulation of nozzle **85** actuates valve **84** thereby permitting gas-pressured fluid to flow upwardly from container bottom-plate **82** along vertical-axis V and ultimately upwardly through tubular discharge spout **85.** The narrowed tubular upper portion of such "aerosol" type containers normally include a circular annular-bead **81B** at upper extremity **81A.** In this vein, the radially resiliently deformable depending annular-flange **22A** includes an inwardly extending annular-lip **22B** to securely removably engage the underside of container annular-bead **81B.** The applicator embodiment **9** herein preferably includes a rearward opening **22V** in resinous floor-panel **22,** the depending annular-flange **22A** and annular-lip **22B** being of like resinous material and in structurally continuous relationship with floor-panel **22.**

The applicator includes tubular conduit means having a leading portion parallel to main-axis **9H** and an inlet-end generously transversely offset from **9H.** The conduit means is attachable to the container and in fluid communicating relationship to the discharge spout whereby the pressurized fluid from the container spout can proceed along main-axis **9H** to porous pad fore-terminus **30.** There is also a regulator, such as **72,** whereby the operator might control the fluid flow rate along the tubular conduit means. Herein, the conduit

means includes an elongate tubular leading portion 71 surrounding main-axis 9H, the forward end of tube 71 securely (though removably) frictionally surrounds a rearwardly extending nipple 13A of frontal-wall 12 whereby cantilever tube 71 is resiliently downwardly depressible. Located at the intersection of axes 9H and V is a push-button 72 with an L-shaped bore 72A therethrough. The rearward end of leading tube 71 and the upper end of traiing tube 73 removably extend into the push-button bore 72A. The trailing tube 73 extends along vertical-axis V and at its inlet-end 74 securely (though removably) surrounds nozzle 85.

Assuming that the operator is grasping the upper portion of container 80, he is free to press his index finger through the forwardly convergent elongated notch 21V of roof-panel 21 and downwardly against push-button 72 thereby manipulating spring-loaded valve 84 through nozzle 85. When push-button 72 is briefly depressed, fluid flows from the conduit means inlet-end 74 upwardly along vertical-axis V, through L-shaped bore 72A, thence along main-axis 9H to the conduit means outlet-end 13. Thus, fluid is permitted to proceed to the space between the rearwardly convergent front-side 12A–12D and annular lead-end 11 thereby to the entire porous pad 30. In this fashion, the operator can continue to apply stripes or bands of fluid onto the working system (91) so long as some fluid remains on pad 30. When the fluid on pad 30 is spent and needs replenishment, the operator needs only to again temporarily depress push-button 72. The generally rectangular and rearwardly flared cross-sectional shape (at upright sidewalls 23R and 24R) of housing rearward portion 10R also tends to facilitate the joinder and manipulation of the applicator and container combination.

From the foregoing, the construction and operation of the applicator device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

I claim:

1. An applicator for fluid adapted to be employed in removable and communicating relationship with an uprightable container for pressurizeable fluids whereby the fluid can be forced upwardly along the container lengthwise vertical-axis and expelled through the container upper discharge spout toward the fluid applicator, said fluid applicator being adapted to controllably apply fluid bands upon working surfaces located laterally offset from the container vertical-axis, said fluid applicator comprising:

A. A housing extending longitudinally along a substantially horizontal main-axis and including a leading head portion forwardly terminating as an annular polygonal lead-end defining a lead-plane that transversely intersects said main-axis, said housing head portion including a generally transversely extending frontal-wall provided with a bore along said main-axis, the frontal-wall having a front-side being defined by a plurality of rearwardly convergent triangular planar faces each having an apex at the frontal-wall bore;

B. A tubular conduit means attached to the housing and including an outlet-end communicating with the bore of the housing frontal-wall and rearwardly of said lead-plane, said tubular conduit means also including an inlet-end downwardly transversely offset from the main-axis and adapted to be attached in communicating relationship with the discharge spout of an underlying upright container reservoir of fluid, the said tubular conduit means including an elongate leading portion extending parallel to said main-axis; and

C. A porous pad attached to the housing head portion and providing a fore-terminus for the applicator, said porous pad being located at the housing lead-end so as to lie along said lead-plane thereby being forwardly offset from the conduit means outlet-end.

2. The fluids applicator of claim 1 wherein at least two sides of the housing polygonal lead-end intersect at an acute angle; and wherein the applicator fore-terminus is defined by a fluid-absorbent fabric pad removably attached to the housing lead-end, said pad being substantially planar and perpendicular to the housing main-axis.

3. The fluids applicator of claim 2 wherein the housing annular lead-end is of symmetrical polygonal shape; wherein the frontal-wall front-side comprises a plurality of rearwardly convergent planar faces of substantially isosceles triangular shape; wherein said frontal-wall includes a tubular nipple extending rearwardly therefrom along said main-axis; and wherein the conduit means elongate tubular leading portion is removably frictionally engaged with said nipple and extends rearwardly therefrom along the housing main-axis.

4. The fluids applicator of claim 1 wherein the housing head portion is provided with a shank commencing at said lead-end and extending rearwardly therefrom for a finite-length, said shank surrounding the main-axis and having therealong a regular cross-sectional shape of a finite-area; and wherein the porous fabric pad has an area exceeding said shank finite-area whereby the periphery of said pad is adapted to extend rearwardly of the lead-end and to lie along said shank, the porous pad at said peripheral portion being removably securely interposed between the said shank and a frictionally engaged removable collar that surrounds said shank.

5. The fluids applicator of claim 4 wherein the housing shank including the annular lead-end and the collar internal side are of like symmetrical polygonal shape, the housing head portion at the shank rearward end including an abrupt annular shoulder of said symmetrical polygonal shape, the removable annular collar abutting the abrupt shoulder and being of like dimension therewith whereby the housing immediately rearwardly of said shoulder merges at constant elevation with the removable collar.

6. The fluids applicator of claim 5 wherein the housing includes a substantially horizontal floor-panel located below the main-axis and extending longitudinally rearwardly from the abrupt annular shoulder, said floor-panel remotely rearwardly of the housing lead-end being provided with a vertical opening, said conduit means trailing portion extending upwardly from its inlet-end through the floor-panel rearwardly disposed vertical opening.

7. The fluids applicator of claim 1 wherein the housing annular lead-end is of regular tetragonal shape; wherein the frontal-wall front-side comprises four rear-

wardly convergent planar faces each of substantially isosceles triangular shape; wherein the conduit means elongate tubular leading portion is removably engaged with the frontal-wall at the bore and extends rearwardly therefrom along the main-axis; wherein the housing includes a floor-panel provided with a vertical opening located remotely rearwardly of the housing lead-end; and wherein the conduit means trailing portion extends upwardly from its inlet-end through the floor-panel rearwardly disposed vertical opening.

8. The fluids applicator of claim **7** in removable and communicating physical combination with a hand manipulatable uprightable fluids container of the gas-charged pressurizeable type, said uprighted container surrounding a lengthwise vertical-axis and including a nozzle upper discharge spout, the applicator housing floor-panel at the rearward vertical opening being provided with a depending annular-flange surrounding the container vertical-axis and the nozzle and being removably attached to the container remote of said nozzle; wherein the conduit means includes a push-button regulator interposed between the conduit leading and trailing portions and located above the container nozzle; wherein the conduit trailing portion at the conduit inlet-end is removably attached in fluid communicating relationship with the container nozzle; and wherein the applicator porous pad is substantially parallel to the container vertical-axis and remotely laterally offset from the container.

9. The fluids applicator combination of claim **8** wherein the housing rearward portion includes a pair of upright opposed sidewalls located on opposite sides of the main-axis and rearwardly diverging from the housing forward head portion whereby said housing sidewalls are located on opposite sides of the housing floor-panel rearward vertical opening; and wherein the housing rearward portion is sufficiently open in top plan view to expose the push-button portion of the conduit means.

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