

(19)



(11)

EP 1 853 152 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
25.09.2013 Bulletin 2013/39

(21) Application number: **06709792.3**

(22) Date of filing: **17.02.2006**

(51) Int Cl.:
A47L 13/30 *(2006.01)*

(86) International application number:
PCT/GB2006/000555

(87) International publication number:
WO 2006/090121 (31.08.2006 Gazette 2006/35)

(54) **A FLUID APPLICATOR**

FLUIDAPPLIKATOR

APPLICATEUR DE FLUIDE

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

(30) Priority: **22.02.2005 GB 0503606**
25.10.2005 GB 0521645

(43) Date of publication of application:
14.11.2007 Bulletin 2007/46

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Description

[0001] This invention relates to a fluid applicator. The fluid applicator may be for applying a polish to a surface.

[0002] One known fluid applicator is described in US3384438 in which a applicator is provided in the form of a device with a handle wherein the device has a collapsible reservoir tank with slits in a flexible wall such that external pressure applied to the tank may cause the slits to open.

[0003] An existing method for applying polish to a floor is by using a mop. Devices are also known by which a user carries a back pack filled with polish, which back pack has a feed line to a mop to allow continuous supply of polish to the mop. This arrangement is disadvantageous in that the back pack is difficult to carry and store in a domestic setting. Also, refilling of the back pack is disadvantageously messy.

[0004] It is an object of the present invention to address the above mentioned disadvantages.

[0005] According to a first aspect of the present invention there is provided a fluid applicator having the combined features of claim 1.

[0006] Preferably, the fluid store extends substantially across a width and/or length of the head section. Preferably, the fluid extends over substantially the full horizontal extent of the head section.

[0007] The head section may be triangular in plan view, preferably with rounded vertices.

[0008] The handle section is preferably joined to the head section at an upper face of the head section, preferably substantially centrally on the upper face. The handle section may be joined to the head section by a ball-and-socket joint, which is preferably centrally located on the head section, preferably on an upper side thereof, a socket of which preferably extends into the fluid store. The handle section may be joined to the head section by a hinge, which may be formed by a flexible web.

[0009] The fluid dispensing section is preferably located in a lower face of the fluid store, preferably substantially centrally in said lower face.

[0010] The fluid dispensing section preferably incorporates a fluid release valve biased to a closed position, which is operable to be opened by a downward pressure on the head section.

[0011] The fluid dispensing section is preferably operable to release fluid into an opening in the fluid dispersal section. The opening preferably, in use, leads to a surface on which the fluid applicator is to be used. Preferably, the opening is a substantially central opening. The fluid dispersal section includes a pliable dispersing member, which is preferably made of a foam material, or may be a sponge-type material. The dispersing member may be made of an open-celled foam material, or a closed-cell foam material, or a foam material comprising partly open cells and partly closed cells.

[0012] The dispersing member preferably surrounds the opening in the fluid dispersing section.

[0013] Preferably, the fluid store includes a filling neck, which may have a closure secured thereto.

[0014] Preferably, the closure can either be not removable if applicator is intended to be disposable, or removable and replaceable if applicator is intended to be refillable. Preferably, the fluid applicator is a floor treatment fluid applicator, more preferably a floor polish applicator. The fluid applicator may be a cleaning fluid applicator, a disinfecting fluid applicator, and/or a sanitising fluid applicator.

[0015] A horizontal distance from a leading edge or vertex of the head section to a joint with the handle section may be given by X. A vertical distance from a base of the fluid dispersing section to an upper face of the fluid store may be given by Y. Preferably, the ratio X:Y is greater than approximately 1.25, more preferably greater than approximately 1.35, more preferably greater than approximately 1.45.

[0016] The distance X may have a value depending on whether a stroke is a forward stroke or a backward stroke. Thus a distance X to a front leading edge may be different to a distance X to a rear leading edge, as in the example of a triangular head section.

[0017] The head section may include a cover section, operable to be placed over the dispersing section. The cover section preferably includes locating tabs to assist location relative to the dispersing member. The cover section may include a wall section adapted to abut the opening in the dispersing section. The wall may be ring shaped. The wall may define a cavity in the cover section, which cavity is preferably beneath the dispensing section and may be operable to receive any drips or leaks of fluid from the fluid dispensing section.

[0018] The head section may be triangular in shape, and may have curved, rather than angular, vertices. The curved vertices may suitably reduce wear and tear in comparison to angular vertices.

[0019] All of the features described herein may be combined with the above aspect.

[0020] For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a schematic perspective view of a head section of a first embodiment of floor polish applicator;

Figure 2 is a schematic cross-sectional view of the head section of the floor polish applicator shown in Figure 1;

Figure 3 is a schematic view from below of the floor polish applicator with a cover section removed;

Figure 4 is a schematic side view of the floor polish applicator; and

A floor polish applicator 10 comprises a body or head section 12 and a cover section 14.

The body section 12 has a triangular shape in plan view with a filling point 16 for a reservoir 18 of the body section 12.

Figure 5 is schematic cross-sectional view of a second embodiment of floor polish applicator.

Figure 6 is a view from below of the floor polish applicator with core section removed and with shaped channels.

Figure 7 is a schematic front view of the hinge and connector component in close-up.

Figure 8 is a schematic side view of the hinge and connector component in close up.

Figure 9 is a schematic cross-section viewed from above the hinge and connector component in close-up.

Figure 10 is a schematic profile view viewed from above the hinge and connector component in close-up.

[0021] A ball and socket pivot joint 20 is located centrally on an upper surface of the body section 12. The pivot joint 20 incorporates an internally threaded sleeve 22, in which is received a correspondingly threaded pole handle 34 (see Figure 4) of the usual type supplied with mops etc.

[0022] The reservoir 18 communicates with a dispensing section 24 of the body section 12.

[0023] The dispensing section 24 incorporates a valve 26 through which polish or the like held in the reservoir 18 is dispensed as described below. The valve 26 may be of a known type which is biased by a spring to a closed position and in which application of pressure to the valve 26 causes opening thereof.

[0024] An applicator sponge section 28 is located beneath the reservoir 18. The sponge section 28 surrounds the valve 26, with the valve 26 being in a central opening in the applicator sponge section 28.

[0025] The applicator sponge section 28 incorporates channel sections 30a, b, c, (see Figure 3) which allow propagation of polish material from the valve 26 to edges of the applicator sponge section 28. The channels extend from a central opening in the applicator sponge section towards the vertices of the triangular body section 12.

[0026] Channel sections 30 a, b, c may have any profile suitable for propagation of polish material. Figure 3 shows 3 channels of rectangular profile. In a further embodiment it has been found that propagation of polish material is further enhanced if the channels have a wider profile at the point nearest the central opening in the applicator sponge. Such a profile has the added advantage of lessening the narrowing of the channels caused by swelling of the foam distribution material on saturation with the polish material. A particular example of this is shown in Figure 6, where the channels 30 a, b, c have a wider curved profile at the centre of the applicator device, tapering (narrowing) to a rectangular profile at the apices of the device.

[0027] The cover section 14 is arranged to fit over the applicator sponge section 28 and to engage by a snap fit action with the body section 12. The cover section 14 engages with the side walls of the reservoir 18. The cover section 14 also includes tab sections or dividing walls 32 a/b which allow location of the cover section 14 relative to the applicator sponge section 28 and also provide a seal from the atmosphere for the applicator sponge section 28 to prevent drying and hardening of floor polish material held in the applicator sponge section 28. A wall section 32a surrounds the central opening in the applicator sponge section 28 which provides space for a valve 26. Peripheral wall sections 32b are provided as tabs to provide means for locating the cover section 14 as mentioned above.

[0028] In a particular embodiment cover section 14 engages by snap-fit action with the body section 12 by means of an inter-engaging mechanism located on the dividing walls 32 a/b of the cover section and inter-engages by a snap-fit with matching protrusions on the applicator situated concentrically with the valve 26. An advantage of this mechanism is that it retains the cover section 14 more efficiently whilst at the same time protecting the valve opening 27 from being activated during transport or storage of the applicator device.

[0029] The body section 12 measures approximately 220mm across each side of the triangular shape. The reservoir 18 has a height of approximately 30mm and has a volume providing space for approximately 500ml of polish material. The cover section has a height of approximately 25mm. Thus, the height of the floor polish applicator 10, with the cover removed is approximately 55mm.

[0030] Given that the floor polish applicator 10 has a generally triangular shape and given that the pivot joint 20 is centrally located within the body section 12 of the distance from the pivot joint 20 to the middle of one side of the body section is approximately 80mm i.e. for a forward stroke. The distance from the middle to one of the vertices, i.e. for a backward stroke, is approximately 100mm.

[0031] The area presented by the applicator sponge section 28 to a surface to be cleaned is approximately 250cm².

[0032] The floor polish applicator is provided to end users with the reservoir 18 filled with a polish material. The filling point 16 is not removable but is permanently fixed to the reservoir 18 after filling of the reservoir 18 during manufacture.

[0033] In use, the user would remove the cover section 14 from the floor polish applicator 10 to expose the applicator sponge section 28. A user would then place the applicator sponge 28 on a surface to be polished by holding on to the handle section 34 as described above. The user applies pressure to the handle and thus to the floor polish applicator 10 which pressure causes the valve 26 to contact the surface and push a valve seat 27 to an open position against a force of a spring element 29. The opening of the valve 26 allows polish material held within the reservoir 18 to exit down on to the surface on which the floor polish applicator 10 is located. The central opening within the applicator sponge section 28 forms an enclosure in which the polish material is received. The sponge section 28 typically compresses about 10mm when pressure is applied.

[0034] A user then moves the applicator 10 around the surface to be cleaned or polished. This causes the floor polish material to be spread across the surface by the applicator sponge section 28. The channels 30a, b, c allow the floor polish to propagate more quickly and effectively through the sponge section 28 to achieve a good spread of polish material. The spread of material across the sponge section 28 allows the greater surface area of the sponge section 28 to be used to apply the polish material to the surface.

[0035] When moving the applicator 10 across the surface it has been found that friction can occur between the surface and the applicator 10, causing greater difficulty in pushing the floor polish applicator 10 across the surface. It is a realisation of the invention embodied in the floor polish applicators described herein that the friction between the surface and the movement of the floor polish applicator creates a moment about the leading edge or leading vertex of the applicator. When pushing the polish applicator 10 forwards there will be a tendency of the applicator body section 12 to rotate about the leading edge or vertex. Figure 4 is a schematic diagram indicating this tendency. In Figure 4 the leading edge of the applicator 10 is marked A. The pivot joint 20 is marked at B. It is assumed that a handle 34 is pushed from right to left as seen in Figure 4 there will be a tendency for the pivot joint at the point marked B to rotate along the line marked C about point A. As mentioned above the moment is about the point A, but results from force exerted along the handle 34.

[0036] It has been advantageously realised that by increasing the horizontal separation between the points marked A and B in Figure 4 and/or decreasing the vertical separation between the points marked A and B then the rolling or tipping effect discussed above can be reduced. The effect of the horizontal separation and the vertical separation of points A and B can be combined into the ratio of horizontal separation (X) to vertical separation (Y) of the points A and B. A reduced rolling effect is observed as the ratio X/Y increases. Thus, a ratio of 1 is thought to still provide a pronounced rolling/tipping effect. However, a ratio of X over Y of 2 has advantageously reduced rolling. The ratio in the embodiment shown in Figures 1 to 3 is approximately 2.75. Thus, a ratio of X over Y greater than approximately 1.75 is thought to have a beneficial reduced rolling effect.

[0037] When a vertex is forwardmost as the head section is moved along the surface the measurement of X should be taken from the vertex to the joint. The rolling/tipping effect is also observed on a backward stroke, in which case the measurement X would be taken as the horizontal distance between points B and D on figure 4. In other respects the ratio and tipping effect apply as described above.

[0038] The ball and joint socket joint 20 may advantageously be recessed into the body section 12 to reduce the value of Y, where Y is measured from the point at which the handle 34 exerts pressure on the body section section 12 to the lower face of the sponge section 28.

[0039] When a user has spread sufficient polish material over the surface then the cover section 14 is replaced in order to maintain the quality of the sponge section 28, which may otherwise dry out and harden. The hardening is typically caused by evaporation of elements of the polish material, which evaporation is prevented or significantly reduced by the cover section 14 having a snap fit closure with the body section 12.

[0040] Figure 5 shows a second embodiment of floor polish applicator. This embodiment has many features in common with the first embodiment and like reference numerals have been used for like parts.

[0041] The second embodiment differs mainly in the construction of the joint to the handle 34 and the construction of the valve 26.

[0042] The joint comprises a flattened ring-shaped base section 60 from which a cone 62 extends upwards. The cone 62 has a linear upper ridge 64 that provides a linear hinge 66 in the form of a web connected to an inverted cone 68 having a corresponding linear ridge. The inverted cone 68 opens out to the internally threaded sleeve 22.

[0043] The hinge 66 allows flexure of the sleeve 22 and handle 34 relative to the body section 12. The relative flexure is allowed in a forwards and backwards direction, whereas sideways flexure is deterred. This hinge 66 has the benefit of low manufacture and production costs compared to the ball and socket joint 20 of the first embodiment. Also, the joint has been found to be sufficiently durable to allow exhaustion of the reservoir 18 before failing. The reservoir 18 is not intended to be refilled. Typically, three normal-sized rooms could be treated with polish before the reservoir 18 is exhausted.

[0044] The base section 60, the sponge section 28 and the valve 26 are secured in position with adhesive.

[0045] In the second embodiment the valve 26 has a cylindrical collar 70 that extends up into the reservoir 18 and has at least one side opening 72. The valve seat 27 and the spring element 29 are different to the first embodiment in that the valve seat 27 extends further downwards towards a floor to be cleaned, so that less pressure is required on the sponge section 28 to cause actuation of the valve. The valve seat 27 is approximately 8mm long, but it will be appreciated that the length should be matched to the thickness of the sponge section 28, so that compression thereof causes activation of the valve seat 27.

[0046] The shape, size and material composition of the linear hinge 66 have been found to influence the performance of the device in use, in particular with respect to its tendency to tip and the level and ease of manoeuvrability. In a lateral direction hinge 66 is formed at the junction of core 62 (which extends from the base section 60) and cone 68 which connects to handle 34. This is shown in detail in Figures 7 to 10. Whilst in this embodiment hinge 66 as shown is substantially linear, it may also have a slight curvature.

[0047] The width 'a' of the hinge is preferably between 10 and 50mm, more preferably between 15 and 35 mm. In a preferred embodiment, the width is between 25 and 30 mm. In a further embodiment, the width is between 15 and 20 mm.

[0048] The thickness 'b' of the hinge is preferably between 0.5 and 2.0 mm, more preferably between 0.9 and 1.5 mm, especially between 1.0 and 1.4 mm. Typically this thickness results from the thickness of the mould used to form the whole joint component 70. It has been found that a further benefit is conferred if the component 70 is subjected to one or more flexes immediately following forming and prior to the component fully setting.

[0049] Component 70, and particularly hinge 66, are preferably formed from a resilient plastics material, preferably a polyolefin, especially polypropylene. Differing grades and types of polypropylene may be used for component 70. Three primary types of polypropylene commonly used are

- Homopolymer (isotactic) which is made in a single reactor with propylene and catalyst.
- Random copolymer (homophasic copolymer) which is made in a single reactor with a small amount of ethylene (<5%) added which disrupts the crystallinity of the polymer
- Impact copolymer (heterophasic copolymer) which is made in a two reactor system where the homopolymer matrix is made in the first reactor and then transferred to the second where ethylene and propylene are polymerized to create ethylene propylene rubber (EPR) in the form of microscopic nodules dispersed in the homopolymer matrix phase.

TABLE 1

Hinge Torque Testing			
Version		Torque To Break	Comments
1	19mm wide hinge; Homopolymer/ 0.5mm thick	Not tested	Easily broken by hand.
2	19mm wide hinge; Homopolymer/ 9.7mm thick	1.4-1.5Nm	Easily broken by hand.
3	19mm wide hinge; Radius to side of hinge; Homopolymer/0.7mm thick	1.9-2.1 Nm 1.4-1.6 Nm	Strong enough to function in-use but still easily broken by hand.
4	27mm hinge homopolymer /1.2mm nominal copolymer/1.2mm nominal	4.4-4.9 Nm 3.1-3.6 Nm	Cannot break by hand.
5	As 4 Post mould flexed (by hand) Homopolymer/1.2mm Nominal Copolymer /1.2mm Normal	4.6-5.0 Nm 3.6-4.0 Nm	Variation in hinge thickness post flexing. Improvement found with post mould flexing.
6	As 4 impact copolymer	3.9-4.4 Nm	

[0050] The reservoir 18 in both embodiments is preferably made by a blow moulding procedure. The reservoir 18 may be made of any suitable plastic material, such as polyethylene, in particular high density polyethylene. The valve 26 is suitably made of any plastics material, such as polyethylene. The handle and/or hinge may be made up of any suitable

plastics material, preferably polyethylene or polypropylene.

[0051] Floor polish formulations that may be used with the device include aqueous styrene acrylic emulsion floor polishes, cleaning compositions, polishing compositions, liquid coatings for gloss finishes all of which should be free-flowing liquids.

[0052] In view of the above tendency towards rolling the height of the reservoir 18 has been minimised and its lateral extent maximised in order to provide a broad thin reservoir that provides a beneficial X over Y ratio as defined above.

[0053] The invention has been described in relation to floor polish applicators. The invention could equally apply to a cleaning fluid applicator, or a fluid applicator generally. The fluid applicator could apply other protective coverings, such as a varnish or paint.

Claims

1. A fluid applicator 10 comprising a head section 12 and a handle section 34, wherein the head section incorporates an integral fluid store 18, a fluid dispensing section and a fluid dispersing section, wherein the fluid dispensing section is operable to release fluid into the fluid dispersing section upon application of pressure, in which the fluid dispersal section includes a pliable dispersing member, the latter incorporating at least one dispersal channel 30 **characterised in that** the or each dispersal channel 30 extends towards an edge or vertex of the dispersing member and terminates before reaching said edge or vertex of the dispersing member.
2. A fluid applicator as claimed in claim 1, in which the or each dispersal channel 30 has an open bottom.
3. A fluid applicator as claimed in any preceding claim, in which the fluid store extends over substantially the full horizontal extent of the head section 12.
4. A fluid applicator as claimed in claim 1 or claim 2, in which the head section 12 is triangular in plan view.
5. A fluid applicator as claimed in any preceding claim, in which the handle section 34 is joined to the head section 12 at an upper face of the head section 12.
6. A fluid applicator as claimed in any preceding claim, in which the fluid dispensing section is located in a lower face of the fluid store 18.
7. A fluid applicator as claimed in any preceding claim, in which the fluid dispensing section incorporates a fluid release valve 26 biased to a closed position, which is operable to be opened by a downward pressure on the head section 12.
8. A fluid applicator as claimed in any preceding claim, in which the fluid dispensing section is operable to release fluid into an opening in the fluid dispersal section.
9. A fluid applicator as claimed in claim 8, in which the opening, in use, leads to a surface on which the fluid applicator is to be used.
10. A fluid applicator as claimed in claim 8 or claim 9, in which the dispersing member surrounds the opening in the fluid dispersing section.
11. A fluid applicator as claimed in any one of claims 8 to 10, in which the or each dispersal channel 30 extends from the opening towards an edge of the dispersing member.
12. A fluid applicator as claimed in any preceding claim, in which the fluid applicator 10 is a floor treatment fluid applicator.
13. A fluid applicator as claimed in any preceding claim, in which a horizontal distance from a leading edge or vertex of the head section 12 to a joint with the handle section 34 is given by X, a vertical distance from a base of the fluid dispersing section to an upper face of the fluid store 18 is given by Y and the ratio X:Y is greater than approximately 1.25.
14. A fluid applicator as claimed in any preceding claim, in which the head section 12 includes a cover section 14, operable to be placed over the dispersing section.

15. A fluid applicator as claimed in claim 14, in which the cover section 14 includes a wall section 32 adapted to abut the opening in the dispersing section, wherein the wall 32 defines a cavity in the cover section 14 operable to receive drips or leaks of fluid from the fluid dispensing section.

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Patentansprüche

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1. Fluidapplikator 10, der einen Kopfabschnitt 12 und einen Griffteil 34 umfasst, wobei der Kopfteil einen integralen Fluidspeicher 18, einen Fluidabgabeabschnitt und einen Fluidverteilungsabschnitt umfasst, wobei der Fluidabgabeabschnitt so betrieben werden kann, dass er Fluid bei Anwendung von Druck in den Fluidverteilungsabschnitt freisetzt, wobei der Fluidverteilungsabschnitt ein biegsames Verteilungselement enthält, das mindestens einen Verteilungskanal 30 enthält, **dadurch gekennzeichnet, dass** sich der oder jeder Verteilungskanal 30 zu einer Kante oder einem Eckpunkt des Verteilungselementes hin erstreckt und vor dem Erreichen der Kante oder des Eckpunktes des Verteilungselementes endet.

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2. Fluidapplikator nach Anspruch 1, wobei der oder jeder Verteilungskanal 30 einen offenen Boden hat.

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3. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Fluidspeicher sich im Wesentlichen über die volle horizontale Ausdehnung des Kopfabschnitts 12 erstreckt.

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4. Fluidapplikator nach Anspruch 1 oder 2, wobei der Kopfabschnitt 12 in der Draufsicht dreieckig ist.

5. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Griffteil 34 an einer oberen Fläche des Kopfabschnitts 12 mit dem Kopfabschnitt 12 verbunden ist.

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6. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Fluidabgabeabschnitt sich in einer unteren Fläche des Fluidspeichers 18 befindet.

7. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Fluidabgabeabschnitt ein Fluidfreisetzungsventil 26 enthält, das für eine geschlossene Position vorbelastet ist, das so betrieben werden kann, dass es durch einen Druck nach unten auf den Kopfabschnitt 12 geöffnet wird.

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8. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Fluidabgabeabschnitt so betrieben werden kann, dass er Fluid in eine Öffnung im Fluidverteilungsabschnitt freisetzt.

9. Fluidapplikator nach Anspruch 8, wobei die Öffnung beim Gebrauch zu einer Oberfläche führt, auf der der Fluidapplikator angewendet werden soll.

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10. Fluidapplikator nach Anspruch 8 oder 9, wobei das Verteilungselement die Öffnung im Fluidverteilungsabschnitt umgibt.

11. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der oder jeder Verteilungskanal 30 sich von der Öffnung in Richtung auf eine Kante des Verteilungselementes erstreckt.

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12. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Fluidapplikator 10 ein Bodenbehandlungs-Fluidapplikator ist.

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13. Fluidapplikator nach einem der vorherigen Ansprüche, wobei ein horizontaler Abstand von einer Vorderkante oder einem Eckpunkt des Kopfabschnitts 12 bis zu einer Verbindungsstelle mit dem Griffteil 34 durch X gegeben ist, ein vertikaler Abstand von einer Basis des Fluidverteilungsabschnitts bis zu einer oberen Fläche des Fluidspeichers 18 durch Y gegeben ist und das Verhältnis X:Y größer als ca. 1,25 ist.

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14. Fluidapplikator nach einem der vorherigen Ansprüche, wobei der Kopfabschnitt 12 einen Abdeckabschnitt 14 enthält, der so betrieben werden kann, dass er auf den Verteilungsabschnitt gesetzt wird.

15. Fluidapplikator nach Anspruch 14, wobei der Abdeckabschnitt 14 einen Wandabschnitt 32 enthält, der so ausgelegt ist, dass er an die Öffnung im Verteilungsabschnitt grenzt, wobei die Wand 32 einen Hohlraum im Abdeckabschnitt 14 definiert, der so betrieben werden kann, dass er Fluidtropfen oder aus Undichtheit austretendes Fluid aus dem

Fluidabgabeabschnitt aufnimmt.

Revendications

1. Appareil de fluide 10 comprenant une section de tête 12 et une section de poignée 34, la section de tête incorporant un réservoir de fluide intégré 18, une section de distribution de fluide et une section de dispersion de fluide, la section de distribution de fluide pouvant être utilisée pour libérer du fluide dans la section de dispersion de fluide lors de l'application de pression, dans lequel la section de dispersion de fluide comporte un organe de dispersion flexible, celui-ci incorporant au moins un canal de dispersion 30, **caractérisé en ce que** le ou chaque canal de dispersion 30 s'étend vers un bord ou un sommet de l'organe de dispersion et se termine avant d'atteindre ledit bord ou sommet de l'organe de dispersion.
2. Appareil de fluide selon la revendication 1, dans lequel le ou chaque canal de dispersion 30 a un fond ouvert.
3. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel le réservoir de fluide s'étend substantiellement toute l'étendue horizontale de la section de tête 12.
4. Appareil de fluide selon la revendication 1 ou 2, dans lequel la section de tête 12 est triangulaire en vue en plan.
5. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel la section de poignée 34 est reliée à la section de tête 12 au niveau d'une face supérieure de la section de tête 12.
6. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel la section de distribution de fluide est située dans une face inférieure du réservoir de fluide 18.
7. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel la section de distribution de fluide incorpore une soupape de libération de fluide 26 sollicitée dans une position fermée, qui peut être utilisée de manière à être ouverte sous l'effet d'une pression vers le bas sur la section de tête 12.
8. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel la section de distribution de fluide peut être utilisée pour libérer du fluide dans une ouverture dans la section de dispersion de fluide.
9. Appareil de fluide selon la revendication 8, dans lequel l'ouverture, pendant l'utilisation, conduit à une surface sur laquelle l'appareil de fluide doit être utilisé.
10. Appareil de fluide selon la revendication 8 ou 9, dans lequel l'organe de dispersion entoure l'ouverture dans la section de dispersion de fluide.
11. Appareil de fluide selon l'une quelconque des revendications 8 à 10, dans lequel le ou chaque canal de dispersion 30 s'étend depuis l'ouverture vers un bord de l'organe de dispersion.
12. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel l'appareil de fluide 10 est un appareil de fluide pour le traitement des sols.
13. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel une distance horizontale depuis un bord avant ou un sommet de la section de tête 12 jusqu'à une jointure avec la section de poignée 34 est indiquée par X, une distance verticale depuis une base de la section de dispersion de fluide jusqu'à une face supérieure du réservoir de fluide 18 est indiquée par Y et le rapport X:Y est supérieur à approximativement 1.25.
14. Appareil de fluide selon l'une quelconque des revendications précédentes, dans lequel la section de tête 12 comporte une section de recouvrement 14, pouvant être utilisée de manière à être placée par-dessus la section de dispersion.
15. Appareil de fluide selon la revendication 14, dans lequel la section de recouvrement 14 comporte une section de paroi 32 prévue pour buter contre l'ouverture dans la section de dispersion, la paroi 32 définissant une cavité dans la section de recouvrement 14, pouvant être utilisée pour recevoir des gouttes ou des fuites de fluide provenant de la section de distribution de fluide.

Fig.1.

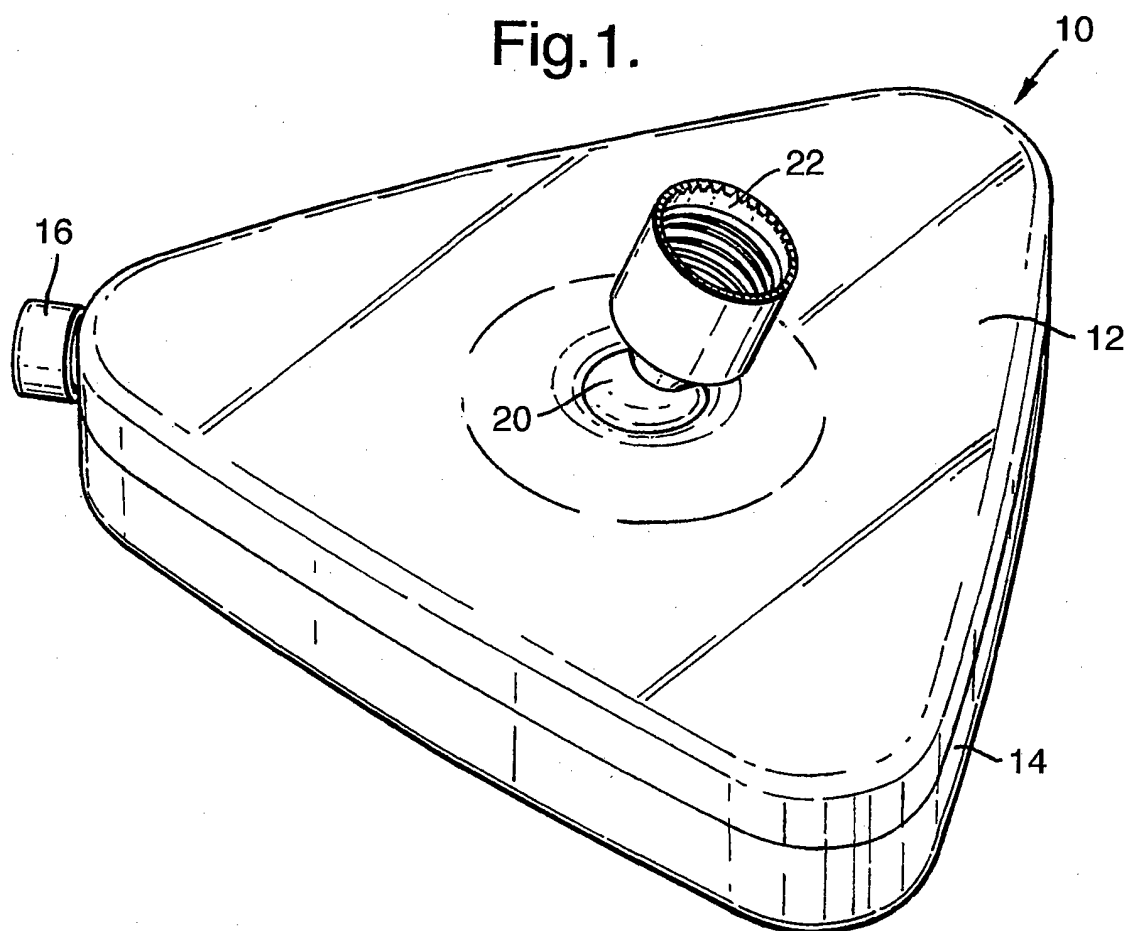


Fig.4.

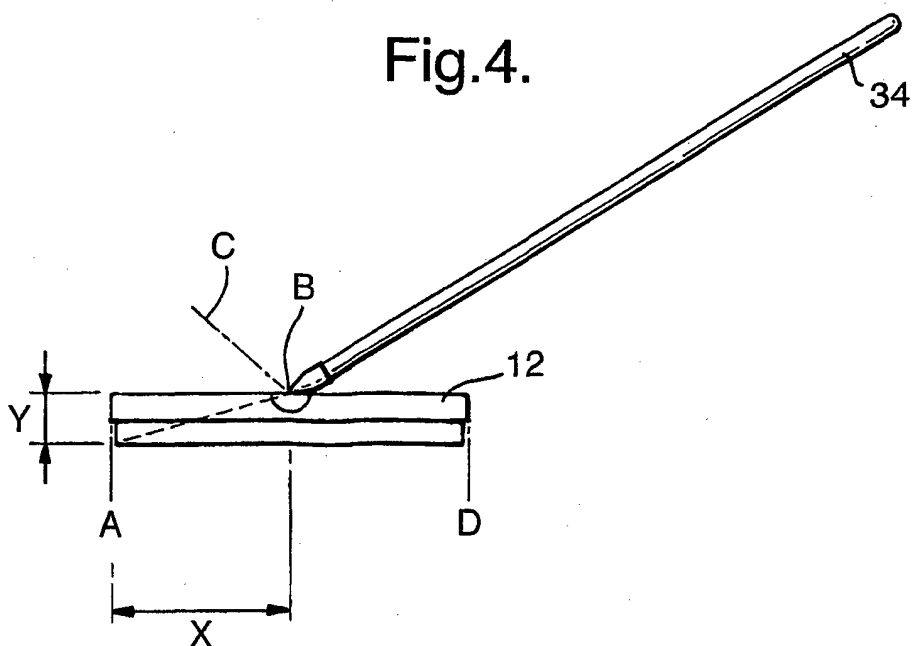


Fig.2.

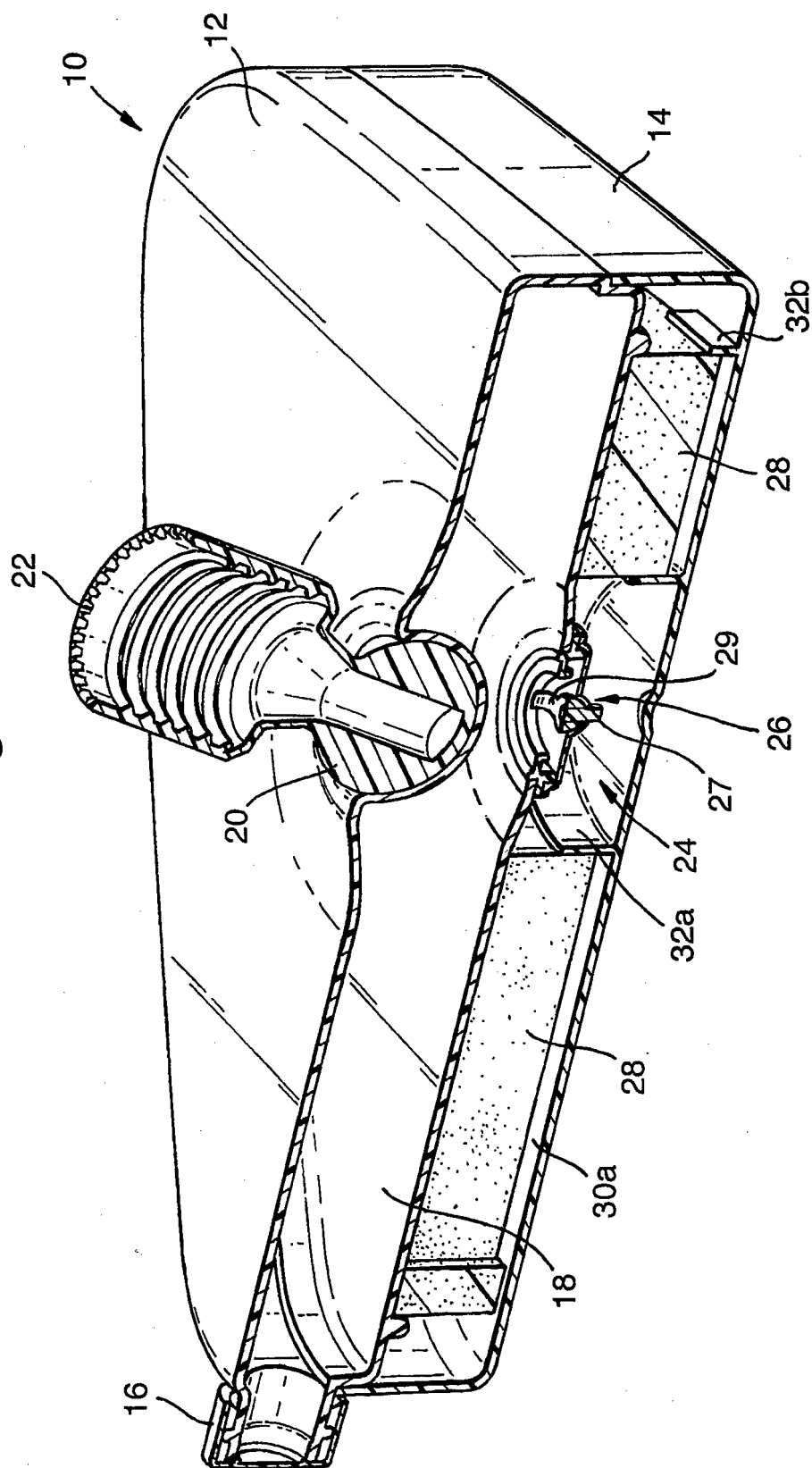
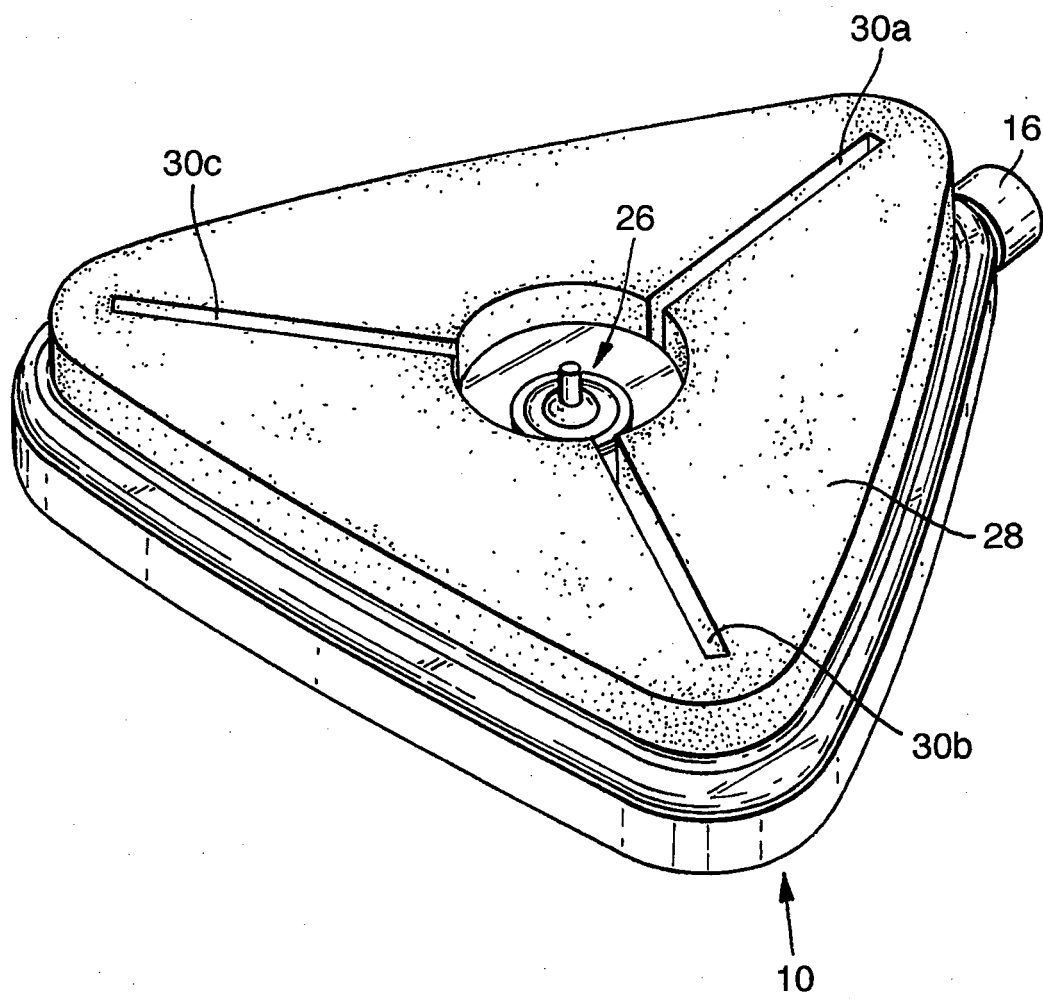


Fig.3.



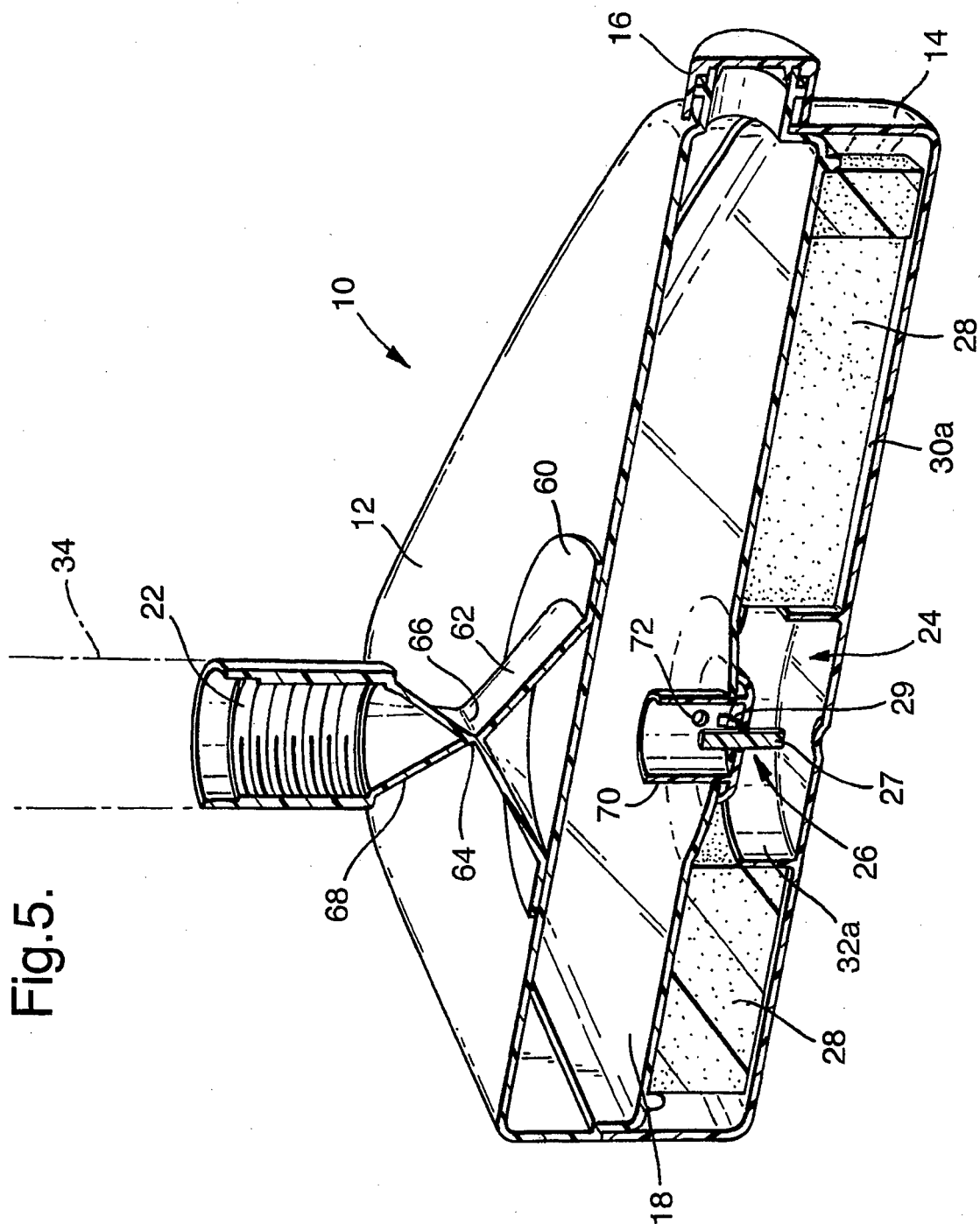


Fig. 5.

Fig.6.

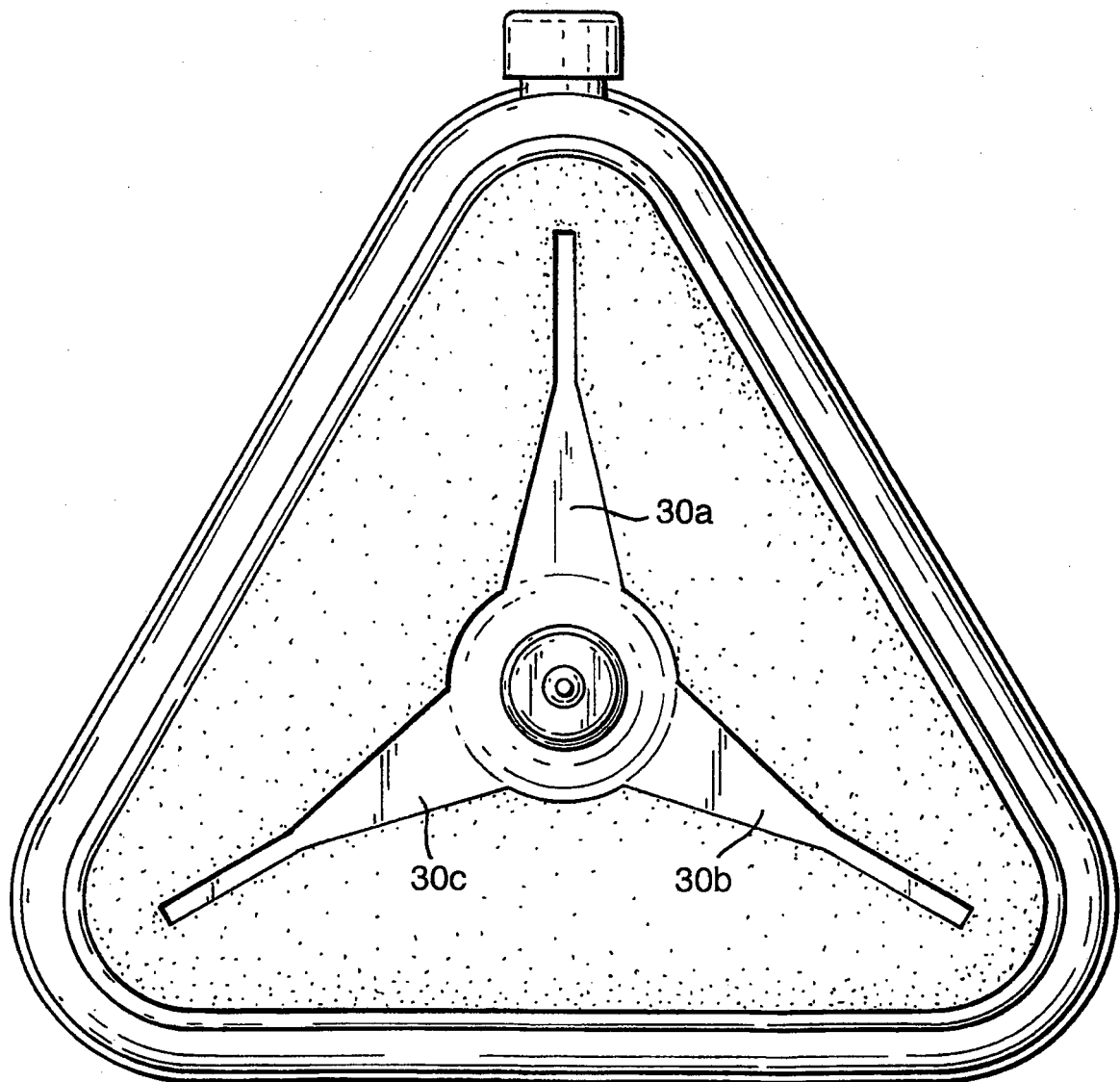


Fig.7.

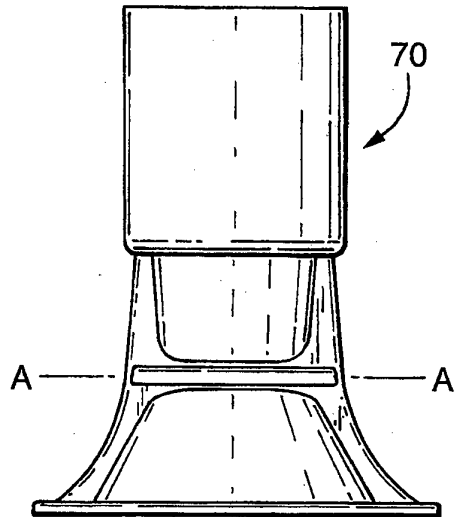


Fig.8.

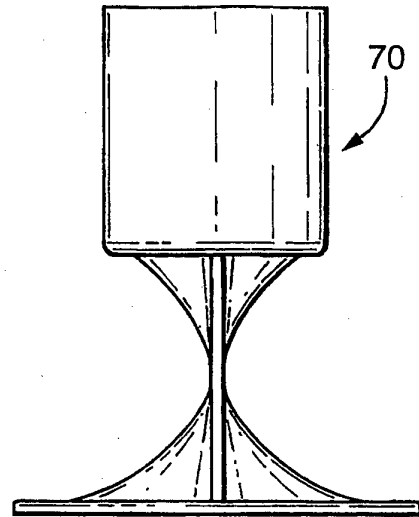


Fig.9.

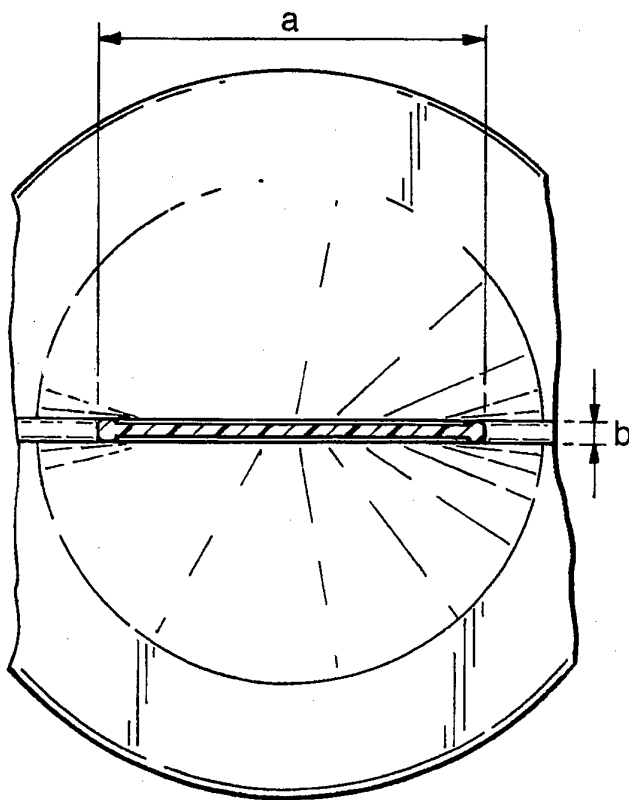
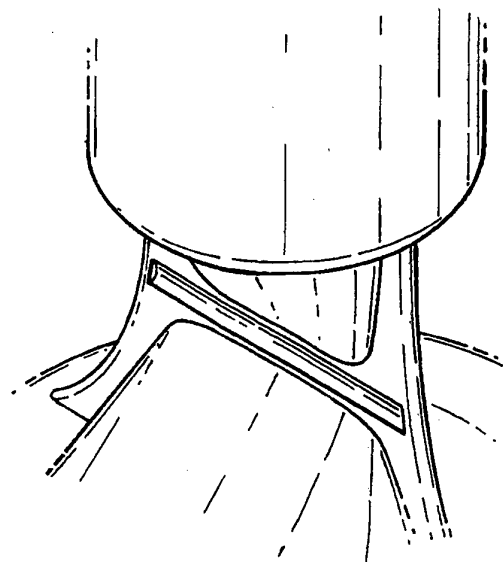


Fig.10.



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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