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(54) **Apparatus for spraying liquids, and disposable containers and liners suitable for use therewith**

Vorrichtung zum Zerstäuben von Flüssigkeiten, Einwegbehälter und Behälterinliner dafür

Dispositif pour la pulvérisation de liquides, et réservoirs et garnitures internes aux réservoirs jetables

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EP 1 415 719 B1

Description

[0001] The present invention relates to containers, more especially, disposable containers and to containers which can function as liners. The invention also relates to apparatus for spraying liquids (for example, spray guns) and, more especially, to the liquid containers or reservoirs of such apparatus.

[0002] There are many uses, in many different fields, for disposable containers. For example, many goods are packaged in disposable containers (e.g. bags) either before or after purchase. When the disposable container is a plastic bag, it will often be re-used by the purchaser as a disposable liner for another receptacle, for example a refuse bin. In some cases, disposable liners are produced specifically for use in other, re-usable, receptacles: in those cases, the liner may be intended to aid disposal of the contents of the receptacle (as in the case of a liner in a refuse bin); to protect the receptacle or its contents; or to facilitate, or even eliminate, the cleaning of the receptacle.

[0003] The use of a liner in a receptacle in which a substance like glue, paint or plaster is mixed or contained for use can be particularly advantageous, in terms of facilitating the cleaning of the receptacle after use and of preventing substances in the receptacle from being contaminated by the remains of other substances. Receptacles in which paints are mixed or contained for use, for example, must be clean to ensure that the colour or quality of the paint is not altered by traces of other substances: that is particularly important, as explained above, when a vehicle is being re-painted and the paint is required to match an existing one. To avoid contamination problems when mixing paints, it is often the practice in vehicle body shops to use disposable waxed paper cups as mixing containers, particularly when only a small amount of paint is required. An alternative approach, proposed in US-A-4 383 635, involves the provision of a disposable container which, for use, is located in a re-usable frame-like receptacle.

[0004] In the field of spray guns, it has been proposed for various reasons that a disposable liner should be used in the reservoir of the gun (see US-A-3 211 324, 3 255 972, 4 151 929, 4 951 875 and 5 143 294, and EP-A-0 678 334). Guns for spraying liquids (e.g. paints, garden chemicals etc.) are generally well known and typically comprise a reservoir in which a liquid to be dispensed is contained, and a spray nozzle through which the liquid is dispensed, under pressure, under the control of a trigger mechanism. The liquid may be fed from the reservoir under gravity and/or it may be entrained in a stream of pressurized fluid, for example air or water, which is supplied to the gun from an external source.

[0005] When a user wishes to change the liquid in the reservoir of a spray gun, it is usually necessary to clean the gun very thoroughly to ensure that no traces of the old liquid remain in the gun to contaminate the new liquid. That applies particularly to paint spray guns because any

traces of an old batch of paint remaining in a gun may affect the colour of a new batch of paint to the extent that the new batch of paint becomes useless. This can cause problems especially in vehicle body shops where the paint applied to a vehicle is often required to match existing paint work exactly. Alternatively, if paint residues have been allowed to dry within the gun, they may flake and contaminate the new batch of paint. The cleaning of spray guns is, however, a comparatively complex and time consuming operation. Moreover, in the case of paint spray guns, the cleaning operation involves the use of comparatively large amounts of solvents which, for environmental reasons, should be handled and disposed of with care. That, in turn, can add substantially to the cost of a painting operation. It has already been suggested (see, for example, EP-A-0 678 334 mentioned above) that the use of a disposable liner in the paint reservoir (i.e. the paint pot) of a spray gun can simplify the cleaning of the gun and reduce the amount of solvent required. It has also been suggested in DE-U- 8807118 that the use of a removable liner of thick film material in a container for storing and/or transporting flowable materials can prevent the container contents contacting the inner wall of the container.

[0006] The present invention is concerned with the provision of a container which is sufficiently inexpensive to be disposable and which is comparatively easy to handle and to fill when in use. The invention is concerned, more especially, with the provision of such a container which is suitable for use as a liner in another receptacle. The present invention is also concerned with enabling the cleaning of spray guns and like apparatus to be simplified, and with thereby enabling the time and expense associated with that operation to be reduced.

[0007] Thus, according to the present invention, there is provided a hand-held spray gun fluid reservoir as defined in claim 1 and a method for use in a hand-held spray gun as defined in claim 12.

[0008] A container in accordance with the invention may be used as a liner for a receptacle, the liner having a shape which corresponds to the interior of the receptacle. As a modification, the invention also provides, in combination with a receptacle, a disposable liner which fits within and has a shape corresponding to the interior of the receptacle wherein the liner is thermo/vacuum formed from a plastics material.

[0009] Also in accordance with the Invention, there is provided a spray gun comprising a fluid reservoir having a removable lid located in an opening in the reservoir; a removable liner located within the reservoir and secured to the reservoir, by the lid, at the periphery of the opening; and a spray nozzle for dispensing fluid from within the liner, wherein the liner is removable from the reservoir together with the lid.

[0010] The present invention also provides a spray gun comprising a fluid reservoir, and a spray nozzle for dispensing fluid from within the reservoir, the reservoir having a removable lid and including a removable, generally

conical, mesh filter secured in the reservoir by the lid.

[0011] The present invention also provides a gravity-feed spray gun comprising a fluid reservoir, and a spray nozzle for dispersing fluid from within the reservoir, the reservoir having a removable lid and a removable liner secured in the reservoir by the lid.

[0012] The term "thermo/vacuum-forming" as used herein means a process by which a sheet of material is heated to a softened condition and formed into a required shape, defined by a mould, while in that softened condition. It includes the case in which the application of a differential air pressure is used to assist in forming the material into the required shape and, in particular, includes the case in which a vacuum is produced on one side of the material to assist in forming it into the required shape (also known simply as "vacuum-forming").

[0013] It will be appreciated that the process requires the mould to have a slightly tapered shape with the largest cross-section being at the lower end to allow the sheet to be removed when the forming operation is complete. When the process is used to produce of a liner which is required to fit inside a container, that, in turn, requires that the container should be similarly tapered internally. The liner/container may be formed from any suitable thermoplastic material capable of forming a thin film which is impervious to the materials it is intended to contain. In some cases, it may be desirable to use a material which is in the form of a laminate. For most applications, however, polyolefins such as polyethylene or polypropylene are preferred since these are relatively cheap, are readily thermo-formable, and are inert to most aqueous and organic fluids.

[0014] The term "paint" is used herein to include all forms of paint-like coating materials that can be applied to a surface using a spray gun, whether or not they are intended to colour the surface. The term includes, for example, primers, base coats, lacquers and similar materials.

[0015] By way of example only, embodiments of the invention will be described with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a prior art spray gun, shown partly-disassembled so that it can be filled with paint;

Fig. 2 shows a spray gun similar to that of Fig. 1 but with an alternative form of paint reservoir according to the present invention; and

Fig. 3 shows the gun of Fig. 2 with a modified form of paint reservoir;

[0016] Fig. 1 of the drawings illustrates a typical prior art hand-held paint spray gun 1 of the gravity-feed type. The gun 1 comprises a body 2, a handle 3 which extends downwards from the rear end of the body, and a spray nozzle 4 at the front end of the body. The gun is manually-operated by a trigger 5 which is pivotally-mounted on the sides of the gun. The paint reservoir, or paint pot, 6 which

contains paint (or similar material) to be discharged by the gun, is located on the top of the body 2 and communicates with an internal passageway (not visible) for compressed air, which extends through the gun from a connector 7 at the lower end of the handle 3 to the nozzle 4. In use, the connector 7 is connected to a source of compressed air (not shown) so that, when the user pulls on the trigger 5, compressed air is delivered through the gun to the nozzle 4 and entrains and atomizes paint which is being delivered under gravity from the pot 6. The paint is then discharged through the nozzle 4 with the compressed air, as a spray.

[0017] The paint which is contained in the pot 6 is often mixed by hand (for which a separate receptacle, for example a jug, is required), and poured into the pot. To ensure that there are no unwanted particles in the paint, which would spoil the finish of the painted surface, the paint is usually poured into the pot 6 through a filter. Fig. 1 shows the cap 8 of the pot 6 removed for this purpose, and a conical filter 9 about to be positioned on the open end of the pot. The filter 9 is shown as being a known type of disposable conical filter, having solid sides and a filter mesh portion 10 at the pointed end of the cone. When the pot 6 has been filled with paint, the filter 9 is removed and discarded, and the cap 8 of the pot is replaced. If the filter 9 is a reusable filter then, like the gun, it should be cleaned thoroughly before it is used with a different liquid (e.g. a paint of a different colour or a liquid having a different chemical composition).

[0018] Fig. 2 illustrates an alternative spray gun embodying the invention in which the standard paint pot 6 of the spray gun 1 (see Fig. 1) is retained and is provided with a liner 35 which fits inside the pot and, preferably, extends into the connection with the body 2 of the gun to form a liquid-tight seal with the latter, for example through the use of a flexible O-ring (not visible) between the gun and the liner. The liner 35 does not collapse when paint is removed from within the pot and may be formed from a more rigid material to assist in positioning it within the pot 6. Once in position, the liner 35 is held in place by the cap 8 which is screwed down onto an outwardly-extending rim 36 at the open end of the liner. The pot 6 of Fig. 2 is additionally provided with a filter 37 which is of generally conical shape and formed entirely of mesh material and which, in use, is positioned inside the liner 35. The filter 37, like the liner 35, has an outwardly-extending rim 38 which lies on top of the liner rim 36 and is likewise held in place by the cap 8 of the pot 6.

[0019] The pot 6 of Fig. 2, is intended to be filled with paint while attached to the spray gun 1. The liner 35 and filter 37 are placed in position, paint is poured into the pot, and the cap is fitted. During this operation, there is no risk of the filter being dislodged and, because the filter is formed entirely of mesh material, the user is always able to see the paint level while the paint is being poured into the pot. The gun 1 is then ready for use. All of the paint dispensed by the gun passes through the filter 37 and there is, accordingly, no need for the paint to be

filtered when it is being poured into the pot 6. After use, the cap 8 is unscrewed to allow the filter 37 and liner 35 to be removed. The liner 35 is discarded and the filter 37 is either also discarded or is cleaned, depending on whether or not it is disposable. The use of the liner 35 reduces the amount of solvent required to clean the gun 1, with a further reduction being possible through the use of a disposable filter 37.

[0020] The filter 37 can have any suitable shape and may, for example, have fluted sides to increase the effective surface area of the filter.

[0021] In a modified arrangement, illustrated in Fig. 3, the liner 35 and the filter 37 are combined to form a single unit 39. In this case, the filter is discarded with the liner.

[0022] In each of the arrangements shown in Figs. 2 and 3, the liner 35 and filter 37 can be removed from the pot 6 with the lid 8. In that case, it is possible to replace the conventional lid 8 of the pot 6 by a disposable lid so that the lid 8, liner 35 and filter 37 can be discarded together.

Claims

1. A hand-held spray gun fluid reservoir comprising an outer container (6) and a removable inner container (35) received in the outer container (6), the reservoir having a first end provided with an outlet connectable in use to a spray gun (1) for dispensing fluid withdrawn from the inner container (35), a second end spaced from the first end and provided with a removable lid (8) opposite the outlet, and a sidewall extending between the first and second ends **characterised in that** the lid (8) is arranged to close an opening in the inner container (35).
2. A hand-held spray gun fluid reservoir according to claim 1 **characterised in that** the outer container (6) is connectable at the first end to the spray gun (1) and the inner container (35) forms a fluid tight seal at the connection to the spray gun (1).
3. A hand-held spray gun fluid reservoir according to claim 1 or claim 2 **characterised in that** means (8) is provided to hold the inner container (35) in place in the outer container (6), for example securing means (8) arranged to screw down onto the inner container (35).
4. A hand-held spray gun fluid reservoir according to any one of the preceding claims **characterised in that** the inner container (35) has a shape corresponding to the outer container (6), for example generally cylindrical, and is preferably a close fit in the outer container (6).
5. A hand-held spray gun fluid reservoir according to claim 4 **characterised in that** the inner container

(35) has a slightly inwardly tapered shape in a direction towards the first end and preferably has an outwardly extending rim (36) at the second end.

6. A hand-held spray gun fluid reservoir according to any one of the preceding claims **characterised in that** the inner container (35) is made of plastics material, for example polyolefins such as polyethylene or polypropylene, and can optionally be removed from the outer container (6) with the lid (8).
7. A hand-held spray gun fluid reservoir according to any one of the preceding claims **characterised in that** a filter (37), preferably of mesh material, is provided within the inner container (35), preferably arranged to filter liquid withdrawn from the reservoir in use, and is optionally detachable.
8. A hand-held spray gun reservoir according to claim 7 **characterised in that** the inner container (35) and filter (37) are combined in a single unit.
9. A hand-held spray gun fluid reservoir according to any one of the preceding claims **characterised in that** the inner container (35) does not collapse when liquid is removed from the reservoir.
10. A hand-held spray gun fluid reservoir according to any one of the preceding claims **characterised in that** the inner container (35) has an outlet opening for liquid withdrawn from the reservoir in use which is opposite the opening closed by the lid (8).
11. In combination the hand-held spray gun fluid reservoir according to any one of the preceding claims and a hand-held spray gun (1), for example a hand-held gravity feed spray gun (1) having a body (2) with the reservoir located on top of the body (2) in communication with an internal passageway for compressed air that is delivered to a nozzle (4) and entrains and atomises liquid delivered under gravity from the reservoir, and the reservoir can optionally be filled with liquid while attached to the spray gun (1).
12. A method for use in a hand-held spray gun, the method comprising steps of
 - (A) providing a hand-held spray gun such as a hand-held gravity feed spray gun (1),
 - (B) providing an outer container (6) having a first end, a second end and a sidewall extending therebetween,
 - (C) attaching the outer container (6) at the first end to the spray gun(1),
 - (D) inserting an inner container (35) in the outer container (6) from the second end,
 - (E) adding liquid to the inner container (35),

(F) closing the inner container (35) with a lid (8) at the second end of the outer container (6) opposite the first end,
 (G) operating the spray gun (1) to spray liquid withdrawn from the inner container (35).

13. A method according to claim 12 **characterised in that** the steps (A) to (G) are carried out in the order recited.

14. A method according to claim 12 or claim 13 further comprising one or more of the following steps:

(H) providing a filter (37) in the inner container (35) prior to step (E), and preferably arranging the filter (37) to filter liquid withdrawn from the inner container (35)
 (I) securing the inner container (35) in the outer container (6) after step (E) ,
 (J) removing the inner container (35) with the lid (8) from the outer container (6) after step (G).

15. A method according to claim 14 further comprising the step of

(K) forming the liner (35) to have a shape corresponding to, and to be a close fit in the reservoir (6) prior to step (D).

Patentansprüche

1. Fluidvorratsbehälter für eine Handsprühpistole, der einen äußeren Behälter (6) und einen herausnehmbaren inneren Behälter (35), der in dem äußeren Behälter (6) aufgenommen ist, aufweist, wobei der Vorratsbehälter Folgendes aufweist: ein erstes Ende, das mit einem Auslass versehen ist, der während des Gebrauchs an eine Sprühpistole (1) angeschlossen werden kann, um Fluid abzugeben, das aus dem inneren Behälter (35) abgezogen wird; ein zweites Ende, das von dem ersten Ende beabstandet ist und mit einem abnehmbaren Deckel (8) gegenüber dem Auslass versehen ist; und eine Seitenwand, die sich zwischen dem ersten Ende und dem zweiten Ende erstreckt, **dadurch gekennzeichnet, dass** der Deckel (8) dafür konfiguriert ist, eine Öffnung in dem inneren Behälter (35) zu verschließen.

2. Fluidvorratsbehälter für eine Handsprühpistole nach Anspruch 1, **dadurch gekennzeichnet, dass** der äußere Behälter (6) an dem ersten Ende mit der Sprühpistole (1) verbunden werden kann und der innere Behälter (35) eine Fluidabdichtung an der Verbindung zu der Sprühpistole (1) bildet.

3. Fluidvorratsbehälter für eine Handsprühpistole nach Anspruch 1 oder Anspruch 2, **dadurch gekennzeichnet,**

zeichnet, dass ein Mittel (8) vorhanden ist, um den inneren Behälter (35) an seinem Platz in dem äußeren Behälter (6) zu halten, zum Beispiel ein Befestigungsmittel (8), das dafür konfiguriert ist, auf den inneren Behälter (35) geschraubt zu werden.

4. Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der innere Behälter (35) eine Form aufweist, die dem äußeren Behälter (6) entspricht, zum Beispiel allgemein zylindrisch, und vorzugsweise ohne Spiel in dem äußeren Behälter (6) sitzt.

5. Fluidvorratsbehälter für eine Handsprühpistole nach Anspruch 4, **dadurch gekennzeichnet, dass** der innere Behälter (35) eine leicht nach innen verjüngte Form in einer Richtung zu dem ersten Ende hin aufweist und vorzugsweise einen sich nach außen erstreckenden Rand (36) an dem zweiten Ende aufweist.

6. Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der innere Behälter (35) aus Kunststoffmaterial, zum Beispiel Polyolefinen wie beispielsweise Polyethylen oder Polypropylen, besteht und optional aus dem äußeren Behälter (6) mit dem Deckel (8) herausgenommen werden kann.

7. Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Filter (37), vorzugsweise aus Maschenmaterial, in dem inneren Behälter (35) angeordnet ist, der vorzugsweise dafür konfiguriert ist, Flüssigkeit zu filtern, die während des Gebrauchs aus dem Vorratsbehälter abgezogen wird, und ist optional abnehmbar.

8. Vorratsbehälter für eine Handsprühpistole nach Anspruch 7, **dadurch gekennzeichnet, dass** der innere Behälter (35) und der Filter (37) in einer einzigen Einheit kombiniert sind.

9. Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sich der innere Behälter (35) nicht zusammenlegt, wenn Flüssigkeit aus dem Vorratsbehälter abgezogen wird.

10. Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der innere Behälter (35) eine Auslassöffnung für Flüssigkeit, die während des Gebrauchs aus dem Vorratsbehälter abgezogen wird, aufweist, die sich gegenüber der Öffnung befindet, die durch den Deckel (8) verschlossen wird.

11. Kombination aus dem Fluidvorratsbehälter für eine Handsprühpistole nach einem der vorangehenden Ansprüche und einer Handsprühpistole (1), zum Beispiel einer durch Schwerkraft befüllten Handsprühpistole (1) mit einem Körper (2), wobei der Vorratsbehälter auf dem Körper (2) angeordnet ist und mit einem inneren Durchgang für Druckluft verbunden ist, die einer Düse (4) zugeführt wird und Flüssigkeit, die unter Schwerkraft aus dem Vorratsbehälter zugeführt wird, mitreißt und zerstäubt, und wobei der Vorratsbehälter optional mit Flüssigkeit befüllt werden kann, während er an der Sprühpistole (1) angebracht ist.

12. Verfahren zur Verwendung mit einer Handsprühpistole, wobei das Verfahren folgende Schritte aufweist:

- (A) Bereitstellen einer Handsprühpistole, wie zum Beispiel einer durch Schwerkraft befüllten Handsprühpistole (1),
- (B) Bereitstellen eines äußeren Behälters (6) mit einem ersten Ende, einem zweiten Ende und einer sich zwischen dem ersten und dem zweiten Ende erstreckenden Seitenwand,
- (C) Anbringen des äußeren Behälters (6) mit dem ersten Ende an der Sprühpistole (1),
- (D) Einsetzen eines inneren Behälters (35) von dem zweiten Ende her in den äußeren Behälter (6),
- (E) Einfüllen von Flüssigkeit in den inneren Behälter (35),
- (F) Schließen des inneren Behälters (35) mit einem Deckel (8) an dem zweiten Ende des äußeren Behälters (6) gegenüber dem ersten Ende,
- (G) Betätigen der Sprühpistole (1), um Flüssigkeit zu versprühen, die aus dem inneren Behälter (35) abgezogen wurde.

13. Verfahren nach Anspruch 12, **dadurch gekennzeichnet, dass** die Schritte (A) bis (G) in der angegebenen Reihenfolge ausgeführt werden.

14. Verfahren nach Anspruch 12 oder Anspruch 13, das des Weiteren einen oder mehrere der folgenden Schritte aufweist:

- (H) Bereitstellen eines Filters (37) in dem inneren Behälter (35) vor dem Schritt (E) und vorzugsweise Anordnen des Filters (37) in einer Weise, dass Flüssigkeit gefiltert wird, die aus dem inneren Behälter (35) abgezogen wird,
- (I) Befestigen des inneren Behälters (35) in dem äußeren Behälter (6) im Anschluss an Schritt (E),
- (J) Herausnehmen des inneren Behälters (35) mit dem Deckel (8) aus dem äußeren Behälter

(6) im Anschluss an Schritt (G).

15. Verfahren nach Anspruch 14, das des Weiteren den folgenden Schritt (K) aufweist: Formen des Inneneinsatzes (35) zu einer Form, die dem Vorratsbehälter (6) entspricht und ohne Spiel in dem Vorratsbehälter (6) sitzt, vor dem Schritt (D).

Revendications

1. Réservoir de fluide pour pistolet pulvérisateur portatif comportant un récipient extérieur (6) et un récipient intérieur (35) amovible logé dans le récipient extérieur (6), le réservoir présentant une première extrémité pourvue d'une sortie raccordable en utilisation à un pistolet pulvérisateur (1) pour distribuer un fluide tiré du récipient intérieur (35), une deuxième extrémité espacée par rapport à la première extrémité et pourvue d'un couvercle (8) amovible à l'opposé de la sortie, et une paroi latérale s'étendant entre les première et deuxième extrémités, **caractérisé en ce que** le couvercle (8) est agencé pour fermer une ouverture dans le récipient intérieur (35).
2. Réservoir de fluide pour pistolet pulvérisateur portatif selon la revendication 1, **caractérisé en ce que** le récipient extérieur (6) est raccordable au niveau de la première extrémité au pistolet pulvérisateur (1) et que le récipient intérieur (35) forme un joint étanche au fluide au niveau du raccordement au pistolet pulvérisateur (1).
3. Réservoir de fluide pour pistolet pulvérisateur portatif selon la revendication 1 ou la revendication 2, **caractérisé en ce qu'un** moyen (8) est mis en place pour maintenir le récipient intérieur (35) en place dans le récipient extérieur (6), par exemple un moyen (8) de fixation agencé pour se visser vers le bas sur le récipient intérieur (35).
4. Réservoir de fluide pour pistolet pulvérisateur portatif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le récipient intérieur (35) présente une forme correspondant au récipient extérieur (6), par exemple généralement cylindrique, et s'ajuste de préférence sans jeu dans le récipient extérieur (6).
5. Réservoir de fluide pour pistolet pulvérisateur portatif selon la revendication 4, **caractérisé en ce que** le récipient intérieur (35) présente une forme légèrement inclinée vers l'intérieur dans la direction de la première extrémité et est de préférence doté d'une couronne (36) s'étendant vers l'extérieur au niveau de la deuxième extrémité.
6. Réservoir de fluide pour pistolet pulvérisateur porta-

- tif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le récipient intérieur (35) est constitué de matériau plastique, par exemple de polyoléfines telles que du polyéthylène ou du polypropylène, et peut éventuellement être retiré du récipient extérieur (6) avec le couvercle (8). 5
7. Réservoir de fluide pour pistolet pulvérisateur portable selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'un** filtre (37), de préférence constitué d'un matériau en treillis, est mis en place à l'intérieur du récipient intérieur (35), de préférence agencé pour filtrer un liquide tiré du réservoir en utilisation, et est éventuellement démontable. 10 15
8. Réservoir de fluide pour pistolet pulvérisateur portable selon la revendication 7, **caractérisé en ce que** le récipient intérieur (35) et le filtre (37) sont combinés en une seule unité. 20
9. Réservoir de fluide pour pistolet pulvérisateur portable selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le récipient intérieur (35) ne s'affaisse pas lorsque du liquide est retiré du réservoir. 25
10. Réservoir de fluide pour pistolet pulvérisateur portable selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le récipient intérieur (35) est doté d'une ouverture de sortie pour du liquide tiré du réservoir en utilisation, qui est située à l'opposé de l'ouverture fermée par le couvercle (8). 30
11. En combinaison, le réservoir de fluide pour pistolet pulvérisateur portable selon l'une quelconque des revendications précédentes et un pistolet pulvérisateur (1) portable, par exemple un pistolet pulvérisateur (1) portable alimenté par gravité doté d'un corps (2) avec le réservoir situé au sommet du corps (2) en communication avec une voie de passage intérieure pour de l'air comprimé qui est amené à une buse (4), entraîne et atomise un liquide amené par gravité depuis le réservoir, le réservoir pouvant éventuellement être rempli de liquide pendant qu'il est fixé au pistolet pulvérisateur (1). 35 40 45
12. Procédé destiné à une utilisation dans un pistolet pulvérisateur portable, le procédé comportant les étapes consistant à : 50
- (A) mettre en place un pistolet pulvérisateur portable tel qu'un pistolet pulvérisateur (1) portable alimenté par gravité,
- (B) mettre en place un récipient extérieur (6) présentant une première extrémité, une deuxième extrémité et une paroi latérale s'étendant entre celles-ci, 55
- (C) fixer le récipient extérieur (6) au niveau de la première extrémité au pistolet pulvérisateur (1),
- (D) insérer un récipient intérieur (35) dans le récipient extérieur (6) par la deuxième extrémité,
- (E) ajouter du liquide dans le récipient intérieur (35),
- (F) fermer le récipient intérieur (35) par un couvercle (8) au niveau de la deuxième extrémité du récipient extérieur (6) à l'opposé de la première extrémité,
- (G) faire fonctionner le pistolet pulvérisateur (1) pour pulvériser du liquide tiré du récipient intérieur (35).
13. Procédé selon la revendication 12, **caractérisé en ce que** les étapes (A) à (G) sont réalisées dans l'ordre énoncé.
14. Procédé selon la revendication 12 ou la revendication 13, comportant en outre une ou plusieurs des étapes suivantes :
- (H) mettre en place un filtre (37) dans le récipient intérieur (35) préalablement à l'étape (E), et de préférence agencer le filtre (37) pour filtrer du liquide tiré du récipient intérieur (35),
- (I) fixer le récipient intérieur (35) dans le récipient extérieur (6) après l'étape (E),
- (J) retirer le récipient intérieur (35), avec le couvercle (8), du récipient extérieur (6) après l'étape (G).
15. Procédé selon la revendication 14, comportant en outre l'étape consistant à :
- (K) former la garniture (35) pour lui donner une forme correspondant à, et s'ajustant sans jeu dans, le réservoir (6) préalablement à l'étape (D).

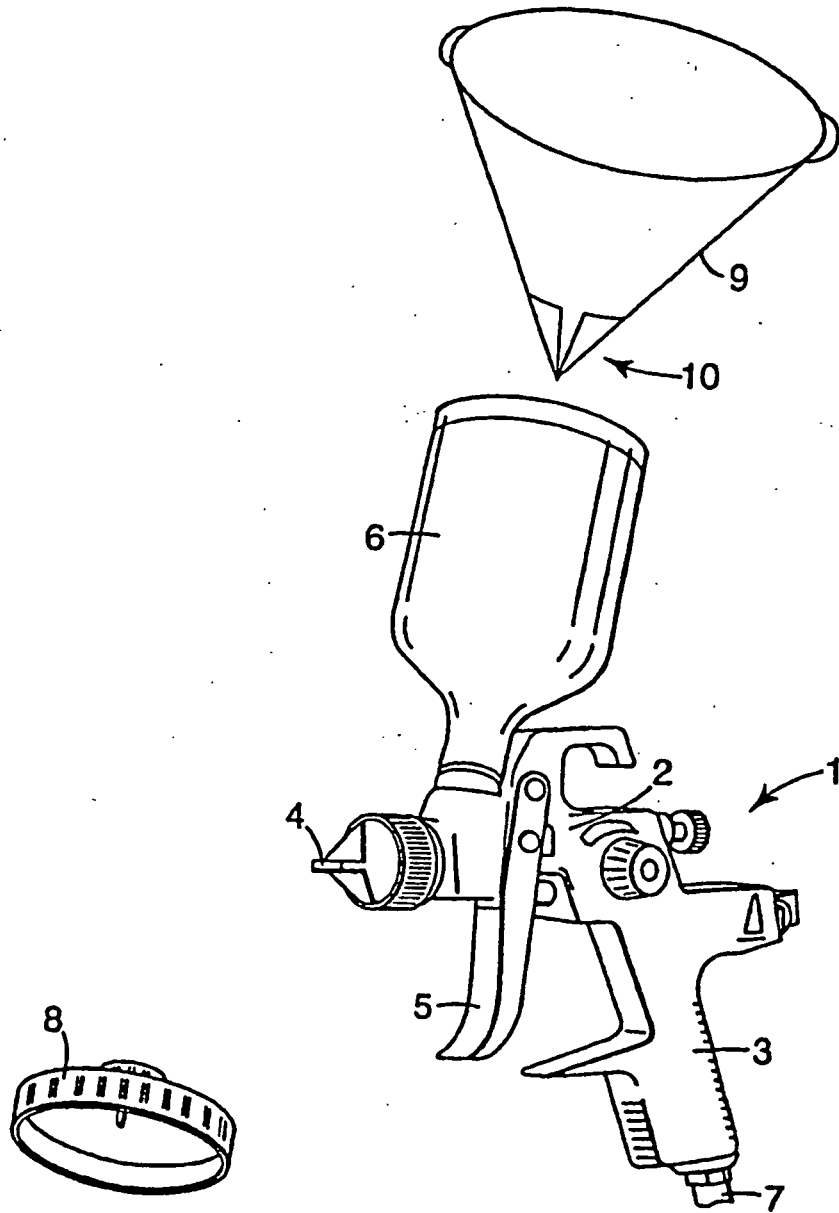


Fig. 1
PRIOR ART

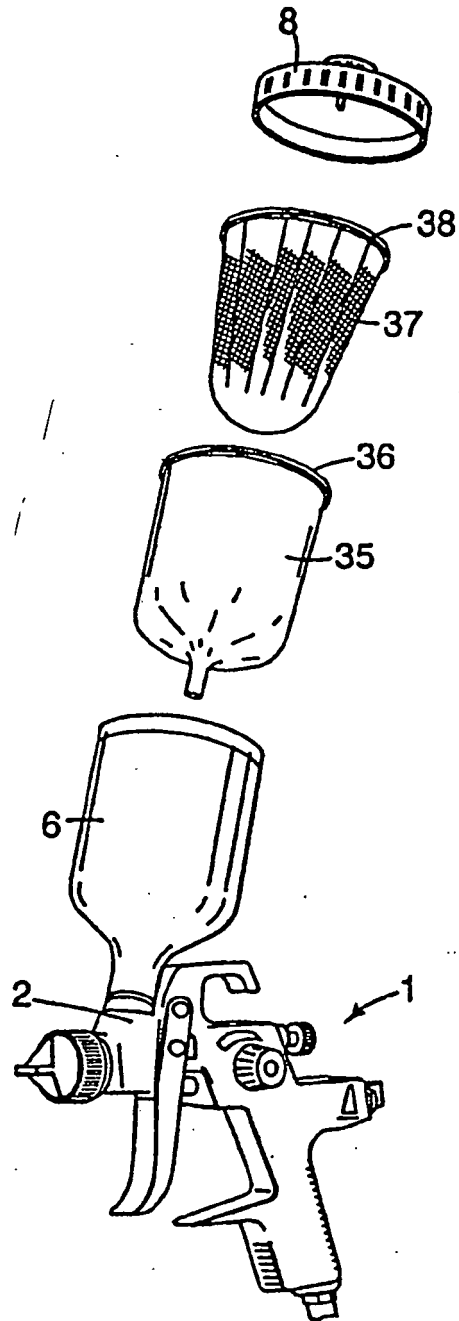


Fig. 2

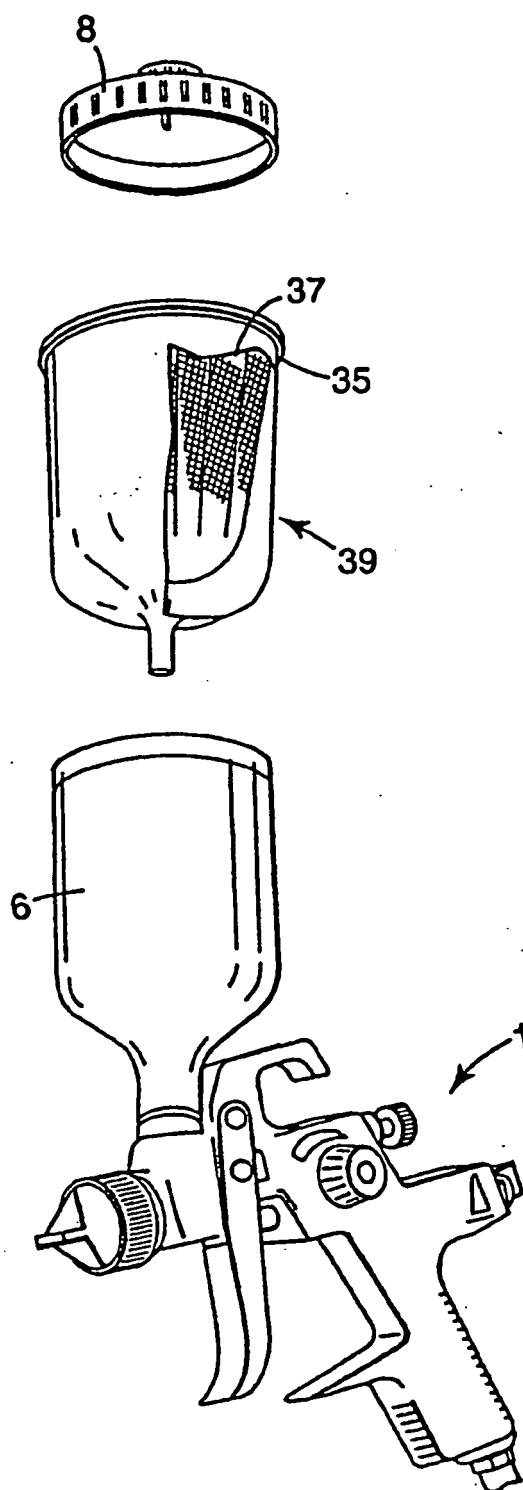


Fig. 3