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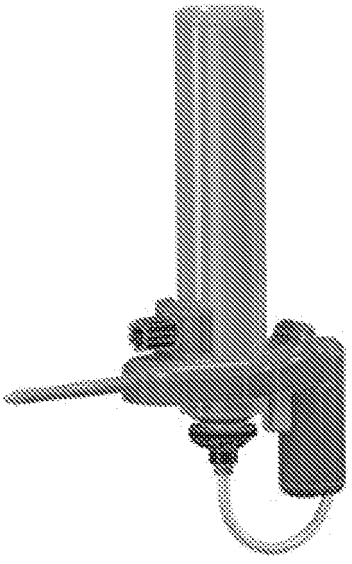
(54) Gun for dispensing pressurized fluids with a height adjustable reservoir

(57) The present invention is directed to a gun for dispensing foam comprising a body structure, a handle structure, a means for securing a container to said body structure and a flexible tube for connecting the container to said gun by means of an adapter ring, **characterized in that** the container can be substantially vertically moved in said body.

FIG. 5a



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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a device for dispensing pressurized fluids, such as sealants, adhesives and foams, in particular polyurethane foam.

BACKGROUND OF THE INVENTION

[0002] Guns for dispensing pressurized fluids are widely used in construction and repair work for the application of foam material, such as polyurethane foam, in applying the foam in mounting panels or other components. Utilization of such guns involves the problem of guns to apply pressurized fluids, such as foam, at specific locations because a foam supply container extending from a gun often encounters obstructions such as structural members, which impede or prevent access to locations at which foam is to be applied.

[0003] Use of a gun for dispensing foam has already been disclosed in EP 1,046,427. The invention describes a gun for dispensing plastic foam material. The gun comprises a manually operable indexing system for positioning a container in any of three orientations relative to the gun body. Although the foam dispensing gun is used to avoid impediment to locations at which foam is to be applied, it is still difficult to have access to some locations. Particularly, when an operator wants to apply foam at the ceiling, he is still hindered by the container being positioned above the gun body's axis. The indexing system enabling an operator to position the container carrier and container thereon to any of three positions or orientations, and to retain them in selected positions is thus not enough to provide access to locations where the height above the foam gun is limited.

[0004] Another example of a foam dispensing device is presented in GB 2,446,785. The invention describes a disposable can of foam attached to an adapter and linked to a gun with a tube. The tube can rotate slidingly along the axis of the gun body structure. Further, a flexible tube is provided, linking the adapter to the spray head, the adapter being held in a bracket and being rotatable and locked at a pivot in the gun.

[0005] Although the above invention describes a foam dispensing gun providing means to adjust the height of the container relative to the axis of the gun body, no means are provided to adjust the height of the container easily during operation. A drawback of the foam dispensing device described in GB 2,446,785 is thus that it is not possible for an operator to apply the foam with a simple handling to different obstructions such as structural members, such as the ceiling and the floor during operation.

[0006] The problem of positioning a gun nozzle for applications of plastic foam, while avoiding obstruction of a foam container on the gun is resolved by providing a manually operable means for positioning a container thereon at a desired height relative to a gun body axis, and retaining the container carrier in selected height.

[0007] Given the above, the present invention provides a gun for dispensing pressurized fluids whereby the container can be substantially vertically moved in the body of the gun to give better access in different situations to areas to which foam is to be applied.

[0008] In addition, a gun is provided dispensing pressurized fluids which height of the container relative to the axis of the body is easily adjustable during operation and therefore will avoid that the container needs to be detached from the gun while dispensing the foam.

[0009] Further, a gun is provided which is lightweight and ergonomically designed so the operator can handle the gun easily.

[0010] None of the prior art discloses the valve according to the present invention nor do these documents suggest the presently obtained benefits associated therefrom.

SUMMARY OF THE INVENTION

[0011] The present invention is directed to a gun for dispensing foam comprising a body structure, a handle structure, a means for securing a container to said body structure and a flexible tube for connecting the container to said gun by means of an adapter ring, **characterized in that** the container can be substantially vertically moved in said body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG 1 schematically represents a gun for dispensing foam according to the present invention.

FIG. 2 represents a sectional view on the gun for dispensing foam according to the present invention.

FIG. 3 represents the activation of the trigger of a gun for dispensing foam according to the present invention.

FIG. 4 represents the flow of foam in a gun for dispensing foam according to the present invention.

FIG. 5 represents a height adjustable gun for dispensing foam according to the present invention.

FIG. 6 represents the mechanisms for adjusting the can position of a gun for dispensing foam according to the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0013] According to the present invention, a gun (1) for dispensing foam is provided, the gun (1) comprising a body structure (2), a handle structure (3), a means (4) for securing a container (5) to said body structure (2), and a flexible tube (6) for connecting the container (5) to said gun (1) by means of an adapter ring (10). The container (5) can be substantially vertically moved in said body structure (2).

[0014] Referring to figure 1 and 2, and in accordance with the present invention, the gun (1) is provided with a handle structure (3) and a body structure (2). The handle structure (3) comprises a trigger (11) connected to a spring (12). The spring (12) is preferably directed along the axis of the body structure (2) of the gun (1).

[0015] In a preferred embodiment, the body structure (2) comprises a central opening (8) wherein the container (5) comprising pressurized fluids can be fixed by means of a means (4). When mounted in the opening (8) of the body structure (2), the valve cup (9) of the container (5) is preferably connected with a ring structure (7), preferably a plastic ring, which is preferably attached to an adapter (10) with a non return ball. The adapter (10) is connected with the handle structure (3) via a flexible tube (6). The flexible tube (6) is fixed in the handle structure (3) and is preferably directed along the axis of the body structure (2).

[0016] The flexible tube (6) and the spring (12) are fixed in a housing (18) by means of a hexagonal screw (13). A barrel (15) housing a needle (14) is fixed in the housing (18). The barrel (15) comprises a nozzle (16).

[0017] The body structure (2) and handle structure (3) of the gun (1) according to the present invention preferably are made of hard plastic which is light weight, such as polypropylene, polyethylene or polyvinylchloride. The structures (2) and (3) can additionally be reinforced with glass fiber. Alternative materials, such as metal may also be used to construct the structure (2) and handle structure (3) of the gun (1). The gun (1) is designed to be ergonomic and easy to handle. The operator holds the handle structure (3) in his hand. By pulling the trigger (11) backwards with his finger, the spring (12) is activated and pushed together. The needle (14) will be pulled backwards. The needle (14) is pulled out of the nozzle (17) as illustrated in figure 3, which leads to the release of foam that is flowing from the container through the adapter (10) with non return ball into the tube (6) and gun body structure (2). Foam can then flow from the container (5) through the flexible tube (6) towards the nozzle (16) of the gun (1, as illustrated in figure 4.

[0018] The container (5) is mounted in the central opening (8) of the gun (1) and fixed with a means (4) for securing the container (5) to the body structure (2) of the gun (1), such as a clamp, or preferably a screw. The height of the container (5) fixed into the body structure (2) of the gun (1) is adjustable depending on the application. In this way, the gun (1) can be used for both floor insulation, without the container (5) obstructed by the floor, illustrated in figure 5a, and ceiling insulation, without the container (5) obstructed by the ceiling, illustrated in figure 5b. The operator can easily adjust the height of the container (5) in the gun (1) during operation. As shown in figure 6, the means (4) for securing the container (5), preferably a screw or clamp, is opened, whereby the container (5) can be substantially vertically moved in the body structure (2) of the gun (1) to give better access in different situations to areas to which foam is to be applied. After sliding the container (5) in a position suitable for operation, the screw is turned back and the container (5) is fixed in the central opening (8) of the body structure (2) of the gun (1). It is thus not necessary to detach the container (5) from the gun (1), which allows simple, save and easy handling of the foam dispensing gun (1).

[0019] In another preferred embodiment, the container (5) can be mounted on the side of the body structure (2) of the gun (1). The container (5) is fixed with a means (4) for securing the container (5) to the body structure (2) of the gun (1), such as a clamp, or preferably a screw. The height of the container (5) fixed next to the body structure (2) of the gun (1) is adjustable depending on the application. In this way, the gun (1) can be used for both floor insulation, without the container (5) obstructed by the floor and ceiling insulation, without the container (5) obstructed by the ceiling. The operator can easily adjust the height of the container (5) next to the body structure (2) of the gun (1) during operation.

[0020] A person skilled in the art will understand that the examples described above are merely illustrative in accordance with the present invention and not limiting the intended scope of the invention. Other applications of the present invention may also be considered.

Claims

1. A gun (1) for dispensing foam comprising:

- a body structure (2);
- a handle structure (3);
- a means (4) for securing a container (5) to said body structure (2); and
- a flexible tube (6) for connecting the container (5) to said gun (1) by means of an adapter ring (10);

characterized in that the container (5) can be substantially vertically moved in said body structure (2).

2. A gun (1) for dispensing foam according to claim 1, whereby the flexible tube (6) has one end (8) removable attached to the handle structure (3).

3. A gun (1) for dispensing foam according to claim 2, whereby the length of the flexible tube (6) is adjustable.

4. A gun (1) for dispensing foam according to claim 1, whereby said means (4) for securing the container (5) to said body structure (2) is a screw.

5. A gun (1) for dispensing foam according to claim 1, whereby said means (4) for securing the container (5) to said body structure (2) is a clamp.

6. A gun (1) for dispensing foam according to claim 1, whereby the body structure (2) and the handle structure (3) are made of polypropylene, polyethylene and/or polyvinylchloride.

FIG. 1

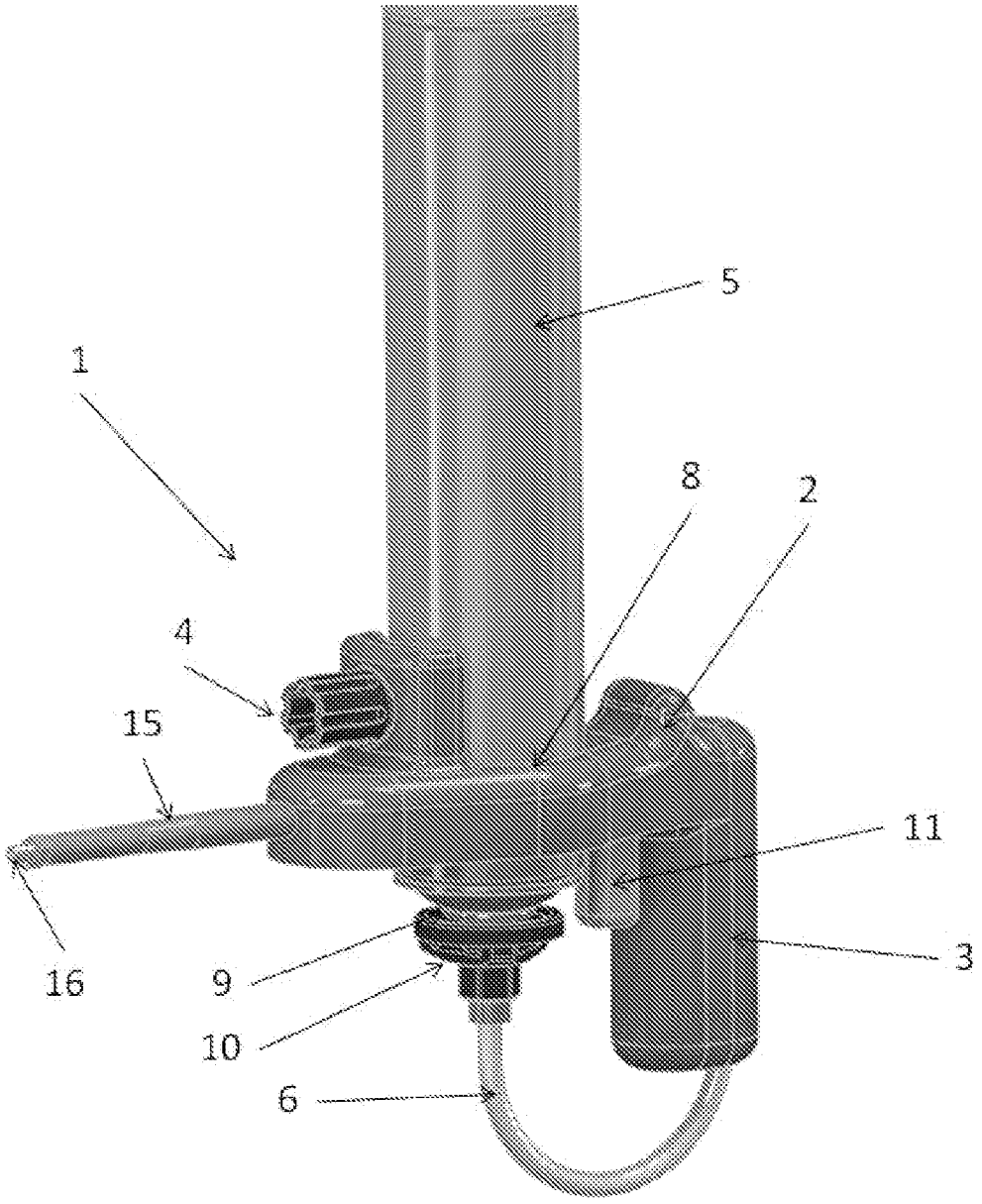


FIG. 2

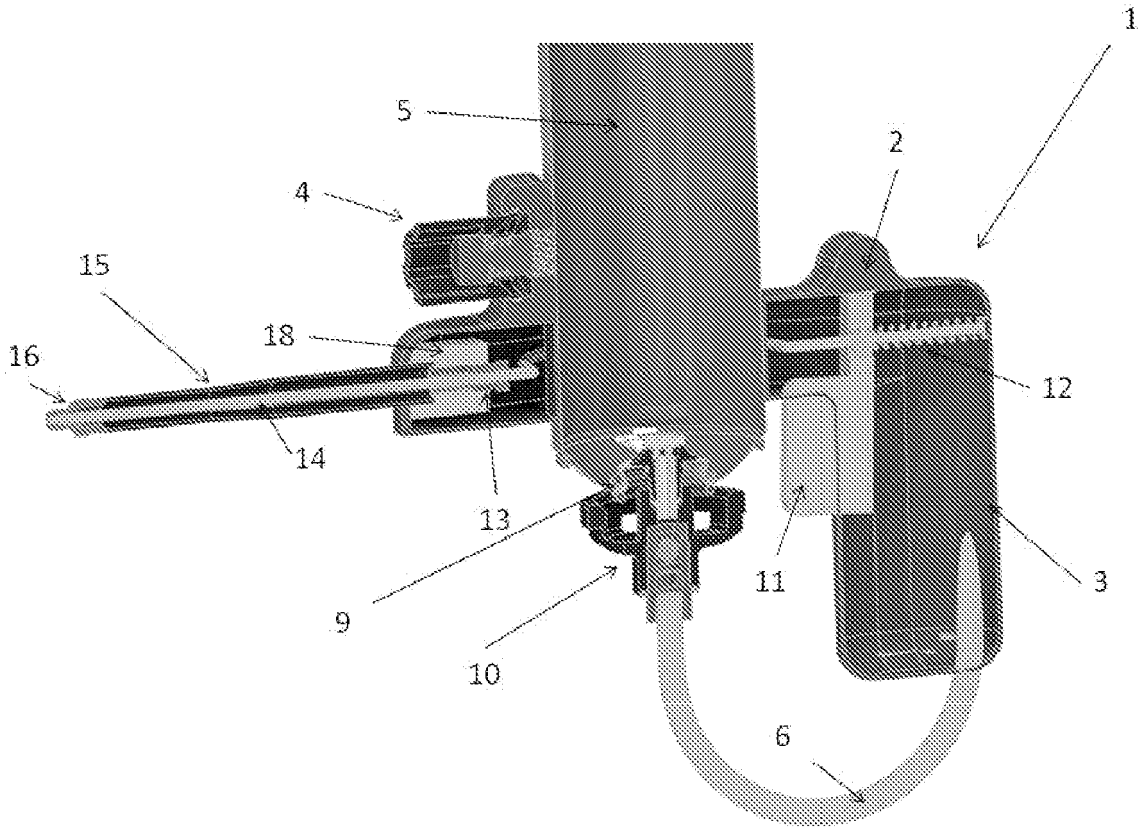


FIG. 3

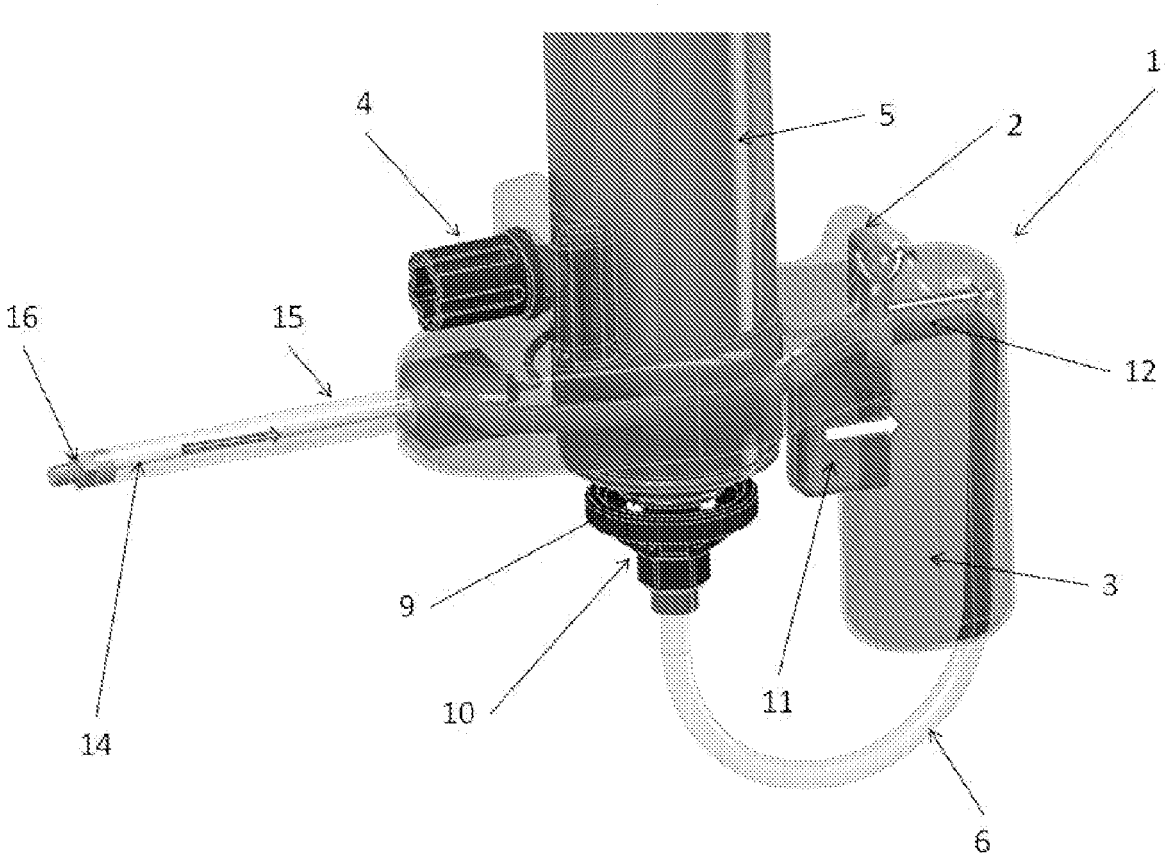


FIG. 4

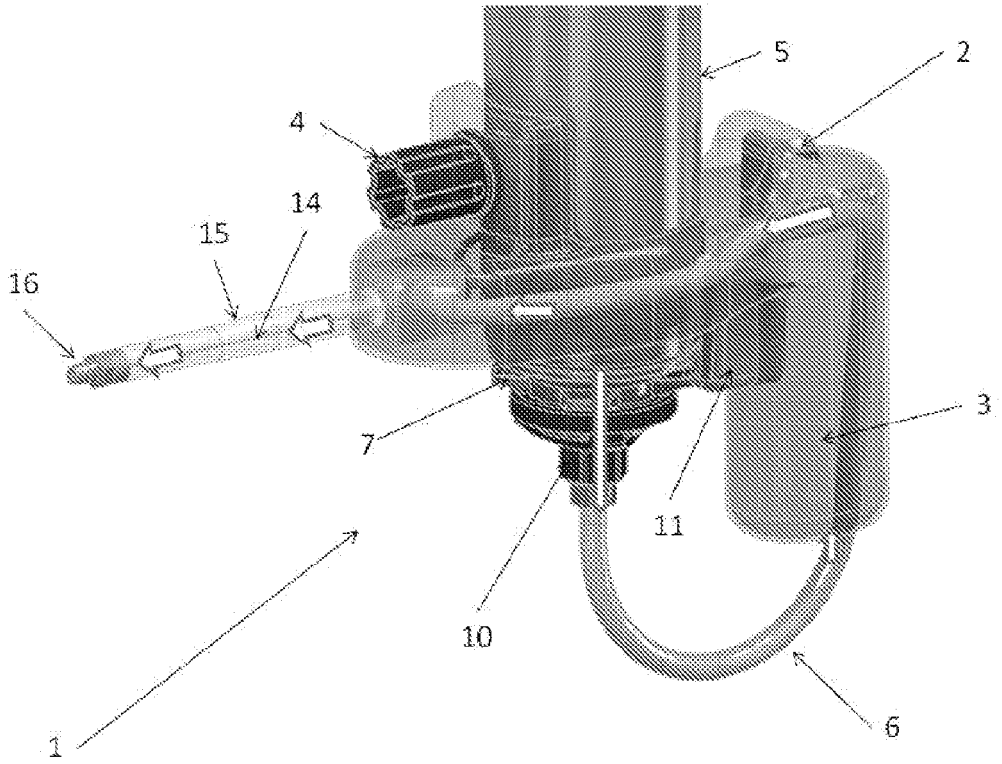
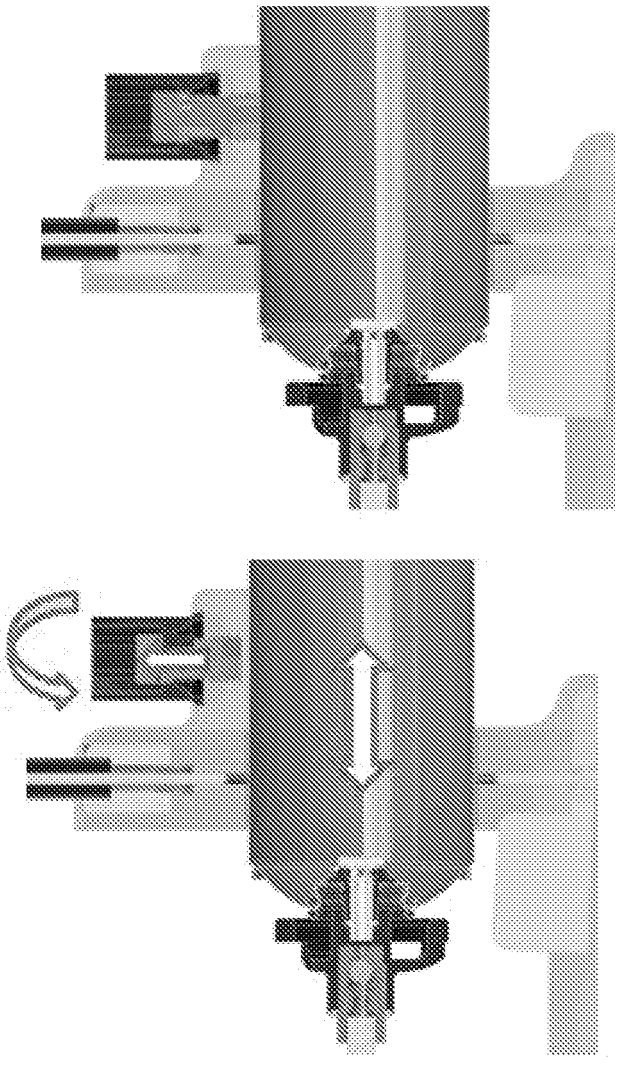


FIG. 5b

FIG. 5a

FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 09 16 5822

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 43 02 911 A1 (MINARI CO [JP]) 5 August 1993 (1993-08-05) * column 4, line 10 - line 28; figures 1,4 *	1,3,5,6	INV. B05B9/08 B65D83/14
X	FR 2 248 681 A (CIRON PRODUITS CHIMIQUES [FR]) 16 May 1975 (1975-05-16) * page 2, line 22 - line 34; figure 1 *	1,4,6	
A	WO 2008/088759 A (HOMAX PRODUCTS INC [US]; HICKMAN RALPH [US]; CASTEEL STEPHEN P [US]; J) 24 July 2008 (2008-07-24) * page 9, line 24 - page 11, line 15; figure 3 *	1	
A	GB 1 593 718 A (K & C MOULDINGS ENGLAND LTD) 22 July 1981 (1981-07-22) * figure 1 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

B05B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 November 2009	Rente, Tanja

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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1

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 16 5822

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16-11-2009

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- GB 2446785 A **[0004] [0005]**