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(54) Paint spray booth with water curtain

(57) The Cabin with mirrors of water (5) for painting and surface finishing of high brilliance is essentially constituted by an area of application and an area of drying in which ground (6) and walls (5) are covered with water. This cabin, is constituted by two distinct spaces that communicate through a door of automatic opening and which give access to people, components or furniture, from the outside.

The walls are covered by a film of running water with around 1 to 2 mm, and the whole bordered ground is covered by 3 to 5 mm of running water on which people and objects move directly through thereby (the operators will wear waterproof shoes) preventing the lifting of dusts, that are harmful to the execution of the processes (5,6,7).

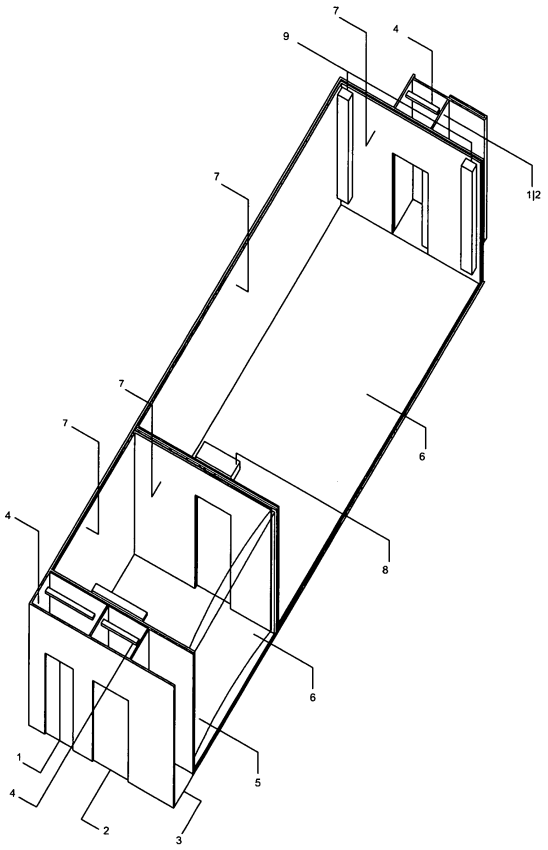

fig.1

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Description

[0001] The present Cabin refers to the process of painting and surface finishing of high Brilliance, which allows the components or furniture to be painted with quality without risk of eventual impurities.

[0002] The place where the painting and / or surface finishing of high brilliance and the respective drying are executed, correspond to the two bigger spaces identified in the fig. 1. These spaces communicate between themselves through two sliding doors of automatic opening that they gather inside the double wall (1 and 2).

[0003] The access, from the outside to the first one of these spaces, of people and objects, happens from two parallel pre-chambers (fig. 1) (1 and 2), whose doors, before and after, open automatically and temporised. The (3) is a chamber for placing of the machines of application.

[0004] The presence of the operator in the interior of the pre-chamber turns the blower on electronically (4) and the vacuum cleaner (9) that is under a grill under his feet (10).

[0005] Both elements working simultaneously, removes any caught particle in the suit anti static that is wearing.

[0006] The blower and vacuum cleaner (4, 9) shut automatically off after 30 seconds. Five seconds later, the second door opens in front of the operator giving him access to the chamber of application.

[0007] The space of application, it is constituted by a curtain of water (5), by a ground covered with a film of running water with 3 to 5 mm thickness (6) and by the other three walls that border the space, all with 1 to 2 mm of running water (7).

[0008] Here we will have the support of pistol to proceed to the told painting and surface finishing (fig.3), having as a detail a permanent curtain of air that pushes eventual impurities towards the water (4).

[0009] There will be a table of application to put the components subject to the process (fig. 4), being constituted by a hydraulic or fixed system according to the necessity, with a cylindrical structure in steel or iron for the support of the components and with a pin of round tip that allows to spin the whole cylindrical structure and any excess of painting to slide and to fall in the ground.

[0010] The space of drying, represented in the fig. 1 as the biggest of the spaces, is constituted by a covered ground with a film of running water (6) and by four walls all with a film of running water (7).

[0011] The space is also constituted by a battery of heating and pressurization (8).

[0012] The present Cabin is going to be now explained with more detail with the help of the attached drawings, in which:

- The fig. 1 is the axonometric perspective of the cabin, here we can check the spaces what she is composed of.
- The fig. 2 is the detail of the pre-chamber of passage (entry and exit) for people.
- The fig. 3 is a detail of the support of the pistol.
- The fig. 4 is the detail of the pre-chamber for the component or furniture.
- The fig. 5 is the detail of the table of application.
- The fig. 6 is the detail of the third space of the cabin (drying versus pressurization)
- The fig. 7 is the detail of the ground with 0.5 cm of water on which the applicator walks and in which moves the transport cars.
- The fig. 8 is the detail of the inclination that the ground has.

[0013] Making reference to the drawings, in the fig. 1 is represented the cabin with mirrors of water for painting and surface finishing of high brilliance which is composed by two spaces.

[0014] The first space has access through a pre-chamber of passage for people and components or furniture equipped with doors of temporised opening (1) and (2).

[0015] While opening the any of the doors, there is a system that attaches an air curtain to remove any type of dust. (4). It also (3) integrates the camera for placing of the machines of surface finishing.

[0016] In fig. 2 we see the detail of the pre-chamber of passage (entry and exit) for people, with a system of aspiration (9) with a drilled a hole / levelled grill (10) and with an air curtain to remove dusts (4). They are temporised opening doors with a 30 seconds difference (1) and with opening amplitude of approximately of 2.1 meters for people.

[0017] The first space (fig. 1) with Dimension approximately of 6 meters of length per 4 meters of width in which the side walls will have a film of running water for elimination of eventual dusts, such as the ground that will have the peculiarity to be in running water on which the objects and people move, here the people will wear waterproof shoes. (5), (6) and (7).

[0018] The fig. 3 shows the detail of the support of the pistol that makes part of the space for the painting. The support of the pistol of application is subject to a curtain of humidified air (4) with a length of 20 cm, approximately, and a width approximately of 1 meter.

[0019] The fig. 4 shows the detail of the pre-chamber for the components or furniture, of access to the first space. Here we also have a system of aspiration (9) and a transporter (11) with amplitude of opening approximately of 1 Meter for furniture and of 30 centimetres approximately for the components. This pre-chamber also has a system that ties an air curtain to remove any type of dust (4).

[0020] The fig. 5 shows the detail of the table of application being composed by a hydraulic or fixed system according to the necessity (14), a cylindrical structure in steel or iron (13) with a film anti adherent and with a pin of tip rounded up with 0.5 cm of height (12). This table will be integrated in the ground with 0.5 cm of running water with an inclination of 5 % (6).

[0021] The last space (fig.1) with a dimension approximately of 4 meters of width per 10 meters of length, here a system of drying will be introduced by hot air current and forced. Here also it will have the peculiarity of the walls having running water (7) and (5) as well as the ground will also have running water(6). It will have a pressurization zone: the batteries of forced air used for the heating and / or pressurization must be lightly inclined for the wet wall for which the air that enters there juts directly out in the water any dust that eventually transports (8), we will be able to see in detail in the fig. 6 (8);

[0022] In the fig. 8 we will be able to see the detail of the ground that has the peculiarity of being all covered by running water with an inclination of 5 % approximately, having as aim the removal of whole type of impurities. Here the people, the components and the furniture move on the water (6). Also we will be able to see that the walls are wrapped by a film of running water (5).

[0023] This invention belongs to the technical domain of the cabins of painting and surface finishing in furniture or similar and complementary surfaces.

[0024] This invention allows that the painting and the surface finishing of high brilliance could be executed in the total absence of solid particles (commonly known as dusts) that, in other conditions would be contaminating the finished surfaces in a serious way, obliging to a final operation of polishing in a machine and manual that raises the price of the costs of the operation to very elevated levels.

[0025] With the cabin with mirrors of water for painting and surface finishing of high brilliance the manufacturer can obtain direct brilliances with equal or superior quality to the polished brilliances approximately half of the price.

[0026] Another problem that the cabin with mirrors of water for painting and surface finishing from high brilliance will resolve is related with the significant reduction of the emission of VOC's (volatile organic components) and respective environmental implication. This because a Polished brilliance obliges at least to the application of more than three final coats of product of painting than a direct brilliance done in the cabin with mirrors of water for painting and surface finishing of high brilliance.

Claims

1. Cabin with mirrors of water for Painting and Surface finishing of high brilliance, constituted by two spaces that communicate through automatic doors of opening that allow the passage of people and components and in each one of the spaces the ground is **characterized by** the fact that the operators who apply and / or move objects or transport cars are covered by running water with around 3 to 5 mm of thickness (6) not allowing the movement to lift of any type of dust, using for that appropriate shoes to this effect, impervious to the water and non-skid.

2. Cabin with mirrors of water for Painting and Surface finishing of high brilliance, in accordance with the claim 1, **characterized by** the fact of being constituted by a pre-chamber of access stipulated through the automatic opening and temporized doors, one for passage of people and other one for passage of components or furniture (1) and (2).

3. Cabin with mirrors of water for painting and surface finishing of high brilliance, in accordance with the Claim 1, **characterized by** the fact of being constituted by a camera of application and other one of drying, which walls are filled out by a film of running water which thickness is the sufficiently necessary one to cover integrally the surface, obstructing in this way the fixation or the registration of any particle of dust that would damage the finished surface (7).

4. Cabin with mirrors of water for Painting and Surface finishing of high brilliance, in accordance with the claim 1, **characterized by** the fact of having batteries of forced air lightly tilted to the wet wall for which the air that enters if it projects straight in the running water washing it out and removing any dust that eventually carries forward.

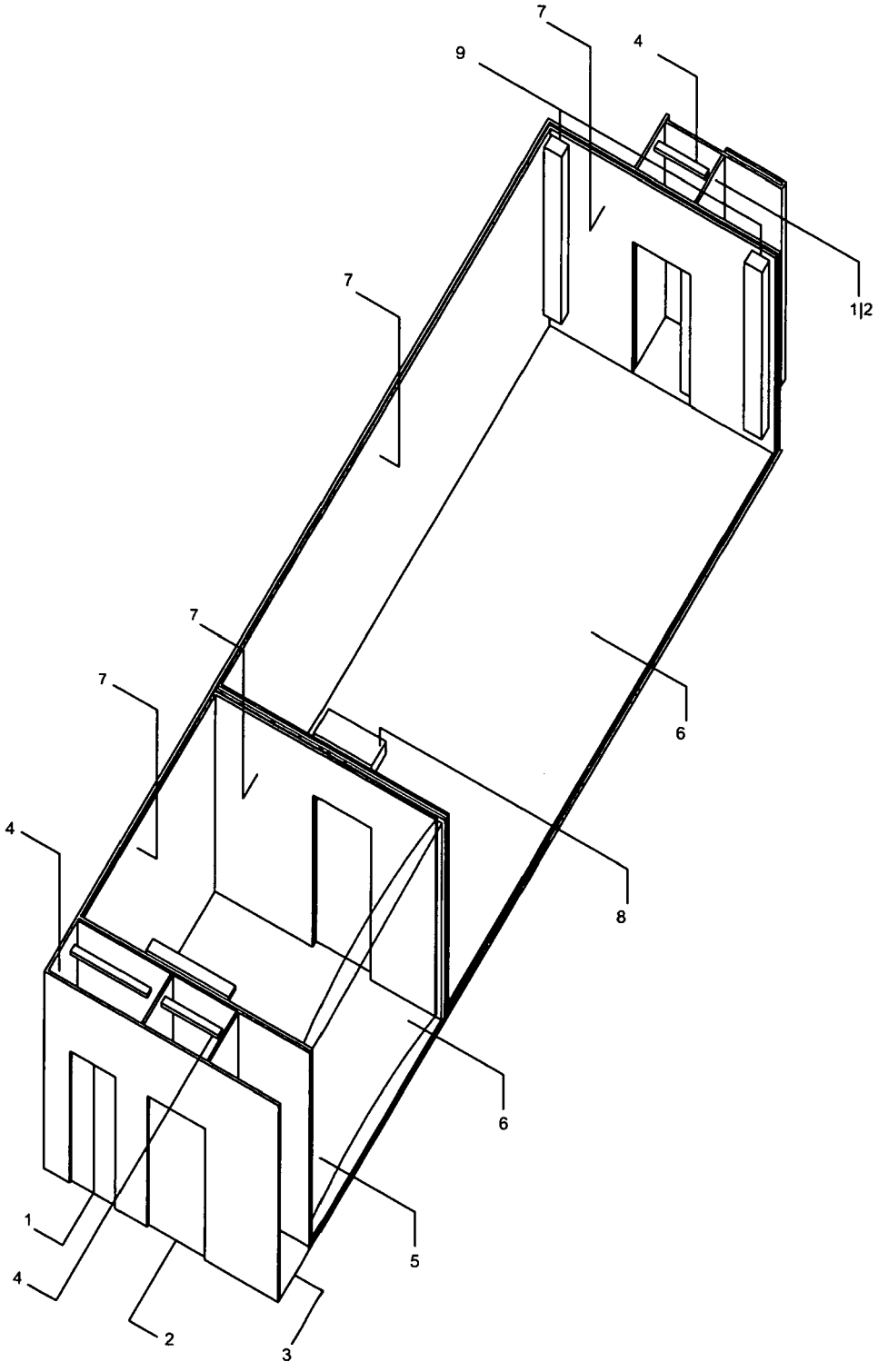

fig.1

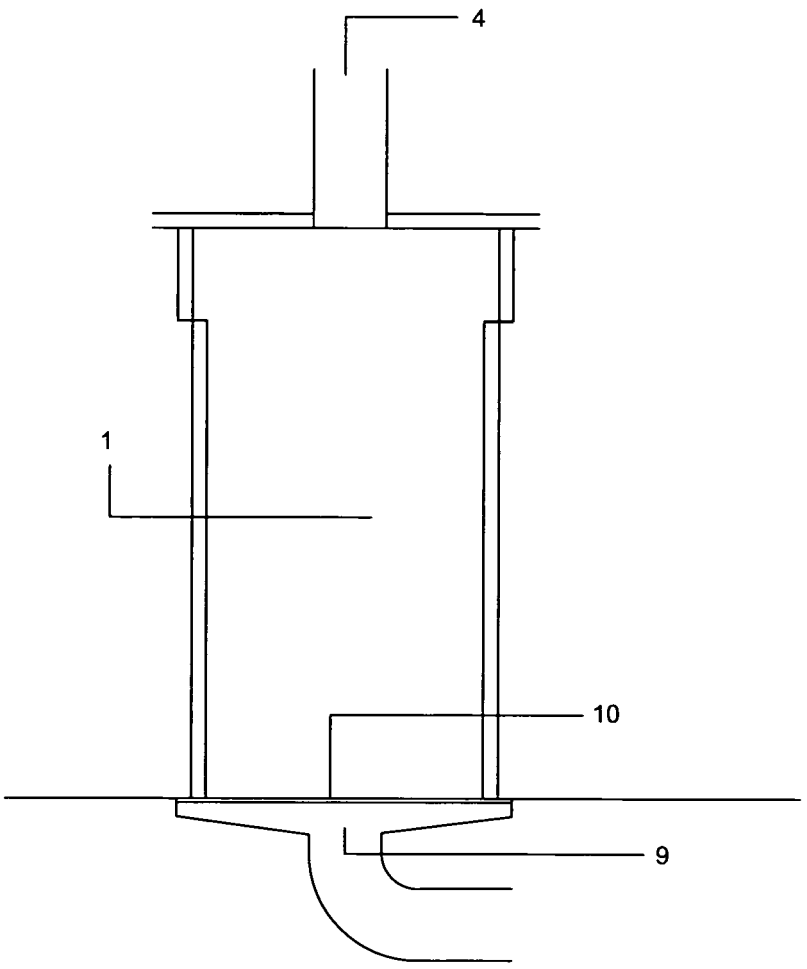

fig.2

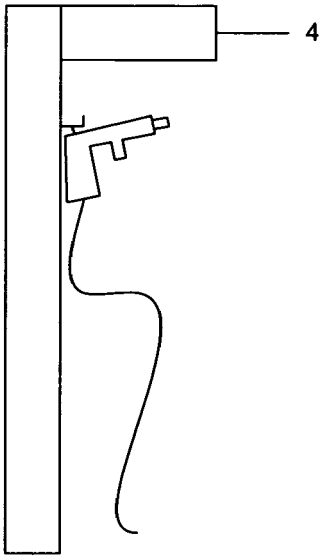

fig.3

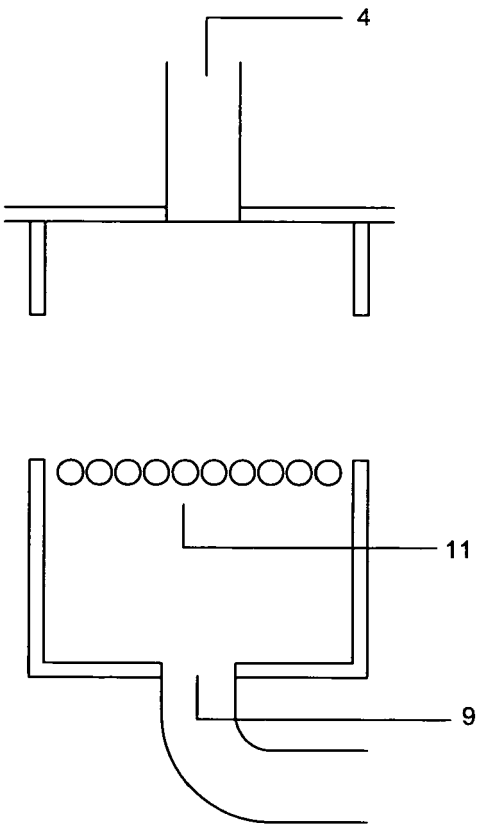

fig.4

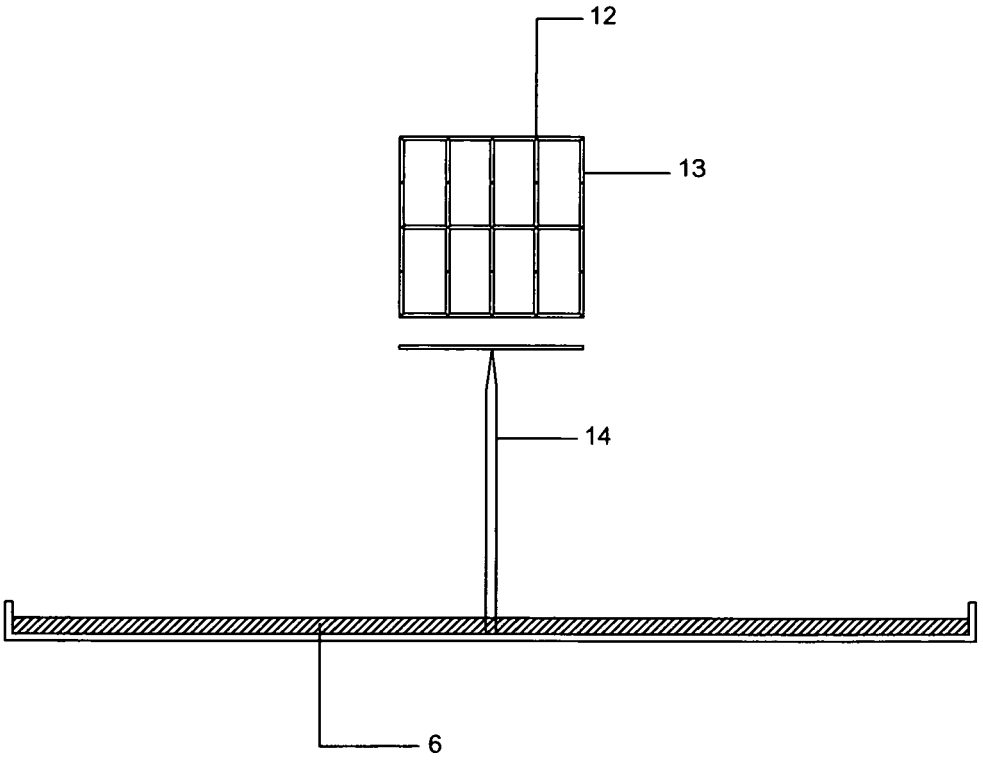

fig.5

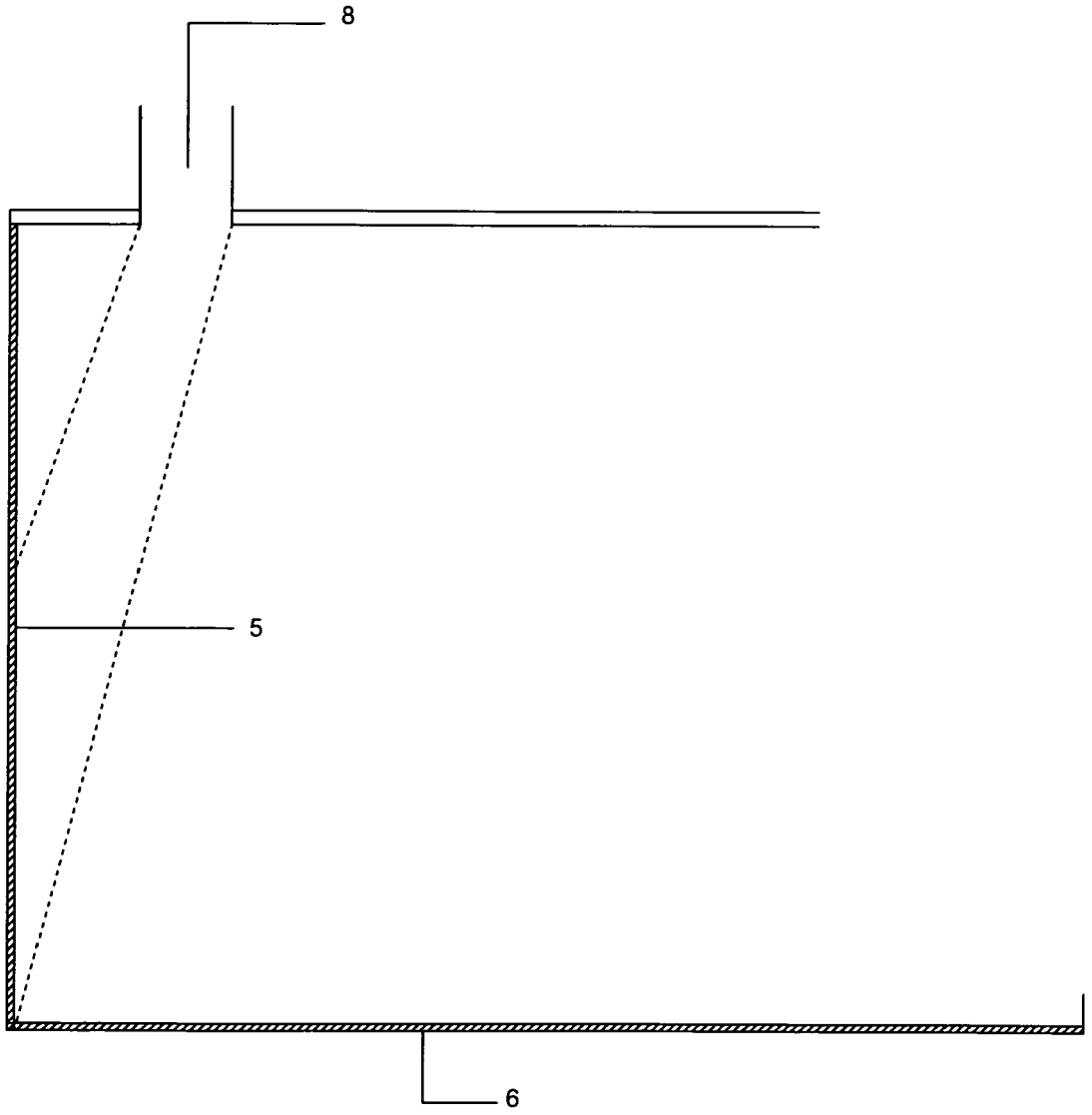

fig.6

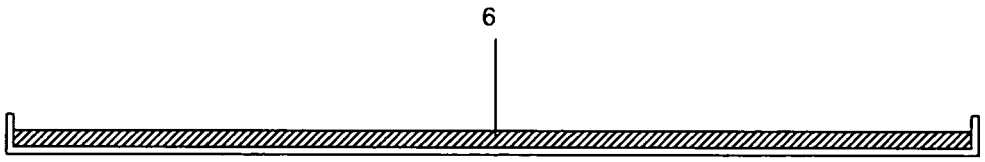

fig.7

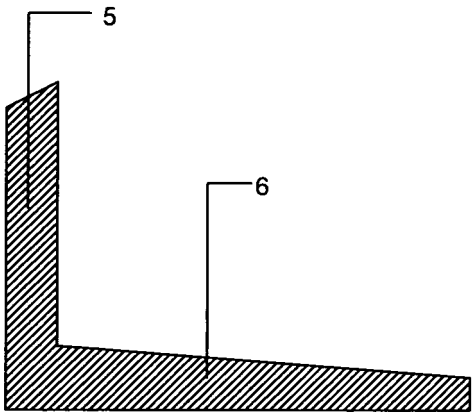

fig.8

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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 3402

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X	DE 42 34 527 A1 (MUELLER OTTO GMBH [DE]) 14 April 1994 (1994-04-14) * column 6, line 20 - line 65 * * figures 1,4 *	1-3	
X	US 3 123 455 A (JENS A. PAASCHE) 3 March 1964 (1964-03-03) * column 2, line 46 - line 60 * * figures 1-3 *	1-3	
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X	US 5 135 550 A (TELCHUK STEVE E [US] ET AL) 4 August 1992 (1992-08-04) * column 8, line 24 *	1	TECHNICAL FIELDS SEARCHED (IPC) B05B
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 May 2008	Roldán Abalos, Jaime

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82