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(54) Fluctuating water cascade generator, in particular for fitted shower booths

(57) A rocking vessel (1) is adapted to alternately commutate, so as to deliver a fluctuating water cascade, between a resting position, when it is empty, in which it is capable of collecting the water delivered by a tap (7), and an unstable position, when the vessel (1) is full, in which the collected water is delivered through an overflow wall (12).

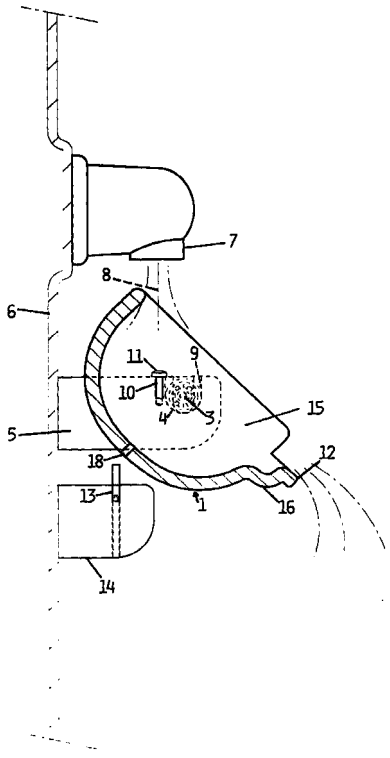

FIG.3

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Description

[0001] The present invention refers to a fluctuating water cascade generator, adapted in particular for use in a fitted-type shower booth or the like.

[0002] Shower booths of the fitted-type are known in the art to be variously equipped with devices adapted to deliver water and/or steam, scents, sounds, chromatic rays, etc., in view of ensuring a beneficial combined treatment of the human body. Among these various delivery devices, the practice is in particular known in the art of equipping such booths with a generator of a cascade-like flow of water coming out with a substantially laminar flow from a delivery wall arranged at a certain height in correspondence of an inner support surface. A solution of this kind is disclosed for instance in the Italian industrial model application PN95 O 000001, filed by this same Applicant.

[0003] In view of improving the treatment effectiveness, said water cascade should preferably be delivered in a fluctuating manner (ie. in a sequence of successive waves) and, to this purpose, the practice is known of providing a water-carrying circuit with a circulation pump that is appropriately controlled so as to supply the delivery wall with a variable water flow. However, such a solution is undesirably complicated and costly, since it requires sophisticated control means which, on top of that, do not ensure any adequate extent of reliability of the entire water carrying and circulating system.

[0004] It therefore is a purpose of the present invention to provide a fluctuating water cascade generator, in particular for fitted shower booths, which is particularly simple and low-cost, while at the same time capable of ensuring the required extent of effectiveness and reliability.

[0005] According to the present invention, such an aim is reached in a fluctuating water cascade generator, in particular for fitted-type shower booths, embodying the characteristics as recited in the appended claims.

[0006] The features and advantages of the present invention will anyway be more readily and clearly understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a schematical front view of a preferred embodiment of the generator according to the present invention; and

- Figures 2 and 3 are enlarged-scale schematical, partially cut-away side views of the generator illustrated in Figure 1, in respective operating conditions thereof.

[0007] With reference to the above cited Figures, the fluctuating water cascade generator must be understood as preferably, although not solely adapted for use in fitted-type shower booths. It can be noticed to mainly comprise at least a vessel 1 that is freely rocking about a longitudinal axis 2 defined by two side pins 3. These pins are mounted, by means of respective ball bearings 4, on respective side brackets 5 attached to a rear support wall 6.

[0008] In particular, each such bracket 5 is so shaped in its upper portion as to feature a recessed seat 9 adapted to accommodate the respective ball bearing 4, which may be simply locked in position by means of an adjacent screw 10, or the like, inserted in the bracket in such a manner as to enable at least the enlarged head portion 11 thereof to interfere with the same bearing.

[0009] The vessel 1 is adapted to be filled by a tap 7 provided thereabove with a preferably constant flow of water 8. In a preferred manner, even such a tap 7 is mounted on the wall 6 and must be understood as being associated to appropriate adjustment means that are not shown here for reasons of greater simplicity.

[0010] The upper portion of the vessel 1 is open and has at least a front overflow wall 12.

[0011] The centre of gravity of the vessel 1 is such (with respect to the hinging axis 2 thereof) that it is capable of moving, when it is substantially empty, into an angular resting position that is normally erect, as shown in Figure 2, so as to enable the same vessel to substantially collect the water delivered by the tap 7. In other words, the centre of gravity of the vessel 1 is staggered , ie. offset with respect to the axis 2 in the opposite direction with respect to the overflow wall 12, in such a manner that the vessel itself tends to turn towards the above mentioned resting position (in the anti-clockwise direction, in Figure 2), which is defined by a proper abutment.

[0012] The latter is preferably constituted by a threaded stud 13, or the like, mounted in an adjustably protruding manner on a central bracket 14 that is firmly joined to the support wall 6 below the vessel 1. The rear surface of the vessel strikes against the abutment 13, thereby determining the normal resting position.

[0013] The above cited staggered or offset arrangement of the centre of gravity of the vessel 1 with respect to the axis 2 can be obtained in a variety of manners. Preferably, the vessel 1 has walls having a constant thickness, as shown in the Figures, and has a substantially U-shaped cross-section that is longitudinally variable from a maximum at the centre, to a minimum towards the sides, in correspondence of the pins 3.

[0014] As an alternative thereto, such a staggered arrangement can be obtained through a corresponding offset arrangement of the hinging axis 2 with respect to the geometric centre of the cross-section of the vessel.

[0015] As a further alternative thereto, with reference to Figure 2, the overflow edge or spillway of the overflow wall 12 will preferably extend to a lower level with respect to the remaining portions of the upper edge of the vessel 1, so as to suitably unbalance the mass of the same vessel.

[0016] According to a further non-limiting variant of the present invention, it is sufficient for the thickness of the walls of the vessel 1 to be given an uneven profile in such a manner as to bring about a suitable unbalance of the same vessel with respect to the hinging axis 2 thereof.

[0017] In all cases, the vessel 1 has a water collecting cavity 15 that is so shaped and/or arranged as to make it possible, when said vessel 1 is substantially full of water, for the weight of the water collected in the same cavity to determine an unbalance of the vessel, with respect to the hinging axis 2, which is opposite to and greater than the unbalance of the same vessel when the latter is empty. In other words, when the vessel 1 is full of water, the resulting centre of gravity thereof is offset, ie. staggered with respect to the hinging axis 2 in the direction of the overflow wall 12. As a result, when the vessel 1 is substantially full (up to a level indicated at 17 in Figure 2), the weight of the water causes the same vessel to rotate about the hinging axis 2 thereof, so as to cause the overflow wall 12 thereof to lower into an unstable position, as this is shown in Figure 3.

[0018] By commutating into such an unstable position, the vessel 1 is capable of rapidly emptying by pouring its water content through the overflow wall 12. In this way, it therefore is capable of automatically rocking back into its resting position shown in Figure 2.

[0019] The operation of the whole generator assembly then goes on in the above described manner, until the tap 7 is eventually turned off, through a cyclic alternate sequence of oscillations of the vessel 1 between said resting position and said unstable position thereof, in such a manner as to produce a fluctuating water cascade in correspondence of said overflow wall 12.

[0020] It should be noticed that such a fluctuating water cascade is advantageously obtained in an automatic manner, without any need whatsoever for complicated water-flow control means to be provided to this purpose. As a matter of fact, just a few, very simple mechanical parts are used, which are capable of being rapidly and easily assembled and disassembled in view of possible cleaning or maintenance operations.

[0021] Furthermore, the rate of the "waves", ie. the fluctuating flushes of the so produced water cascade can be varied in a most simple manner by either adjusting the abutment or limit stop 13 and, therefore, the angle of rotation of the vessel 1 towards the resting position shown in Figure 2, or by varying the flow-rate of the tap 7.

[0022] It will be appreciated that the afore described fluctuating water cascade generator may be subject to a number of modifications and variants without departing from the scope of the present invention.

[0023] So, for instance, the operation of the water cascade generator itself may be further improved, in view of making it capable of delivering the water flushes in a more sudden and impetuous manner, by providing the overflow wall 12 in correspondence of a protruding portion 16 of the vessel 1, in which the cross-section of the same vessel abruptly widens out outwardly. As a result, when the water collecting in the vessel 1 reaches up to a level corresponding to the one of said protruding portion 16, the weight of the so collected water mass rapidly shifts outwardly, thereby bringing about a sudden imbalance state of the vessel and causing the latter to tilt towards the delivery unstable position shown in Figure 3.

[0024] Furthermore, the bottom of the vessel 1 is provided with at least a calibrated port 18 which enables the remaining water to fully flow off, ie. the vessel to be fully emptied, when the operation of the generator is stopped, thereby avoiding any undesired water stagnation in the same vessel 1.

Claims

1. Fluctuating water cascade generator, in particular for fitted-type shower booths, **characterized in that** it comprises at least a vessel (1), which is rocking about a hinging axis (2) thereof, is provided with at least a cavity (15) adapted to collect a flow (8) of water delivered by at least a tap (7), and comprises at least an overflow wall (12), said vessel being adapted to commutate alternately, so as to deliver said fluctuating water cascade, between a normal resting position, when it is substantially empty, in which said cavity (15) is able to collect said water flow (8), and an unstable position, when said vessel (1) is substantially full, in which the water collected in said cavity (15) is discharged through said overflow wall (12).

2. Fluctuating water cascade generator according to claim 1, **characterized in that**, when the vessel (1) is substantially empty, the centre of gravity thereof is staggered, ie. offset with respect to said hinging axis (2) in the opposite direction with respect to said overflow wall (12), in such a manner as to keep the same vessel in said resting position.

3. Fluctuating water cascade generator according to claim 1, **characterized in that**, when the vessel (1) is substantially full, the centre of gravity thereof is staggered, ie. offset, with respect to said hinging axis (2), in the direction of the overflow wall (12), in such a manner as to cause the same vessel to rock into said unstable position thereof.

4. Fluctuating water cascade generator according to claim 1, **characterized in that** said overflow wall (12) extends in correspondence of a protruding portion (16) of the rocking vessel (1) in which the cross-section of the same vessel suddenly widens out outwardly.

5. Fluctuating water cascade generator according to claim 1, **characterized in that** said resting position is defined by a limit stop (13) against which the rocking vessel (1) is adapted to abut.

6. Fluctuating water cascade generator according to claim 5, **characterized in that** said limit stop or abutment (13) is adjustable in a such a manner as to allow for the rate of the flushes of the water cascade delivered through the overflow wail (12) to be varied.

7. Fluctuating water cascade generator according to claim 1, **characterized in that** said vessel (1) has a bottom provided with at least a calibrated port (18) for emptying the residual water from said cavity (15).

8. Fluctuating water cascade generator according to claim 1, **characterized in that** said hinging axis (2) is defined by at least a pin (3) mounted by means of ball bearing (4), or the like, in a support seat (9) in which said bearing is fastened in place by means of a screw (10), or the like, adapted to interfere with the same bearing.

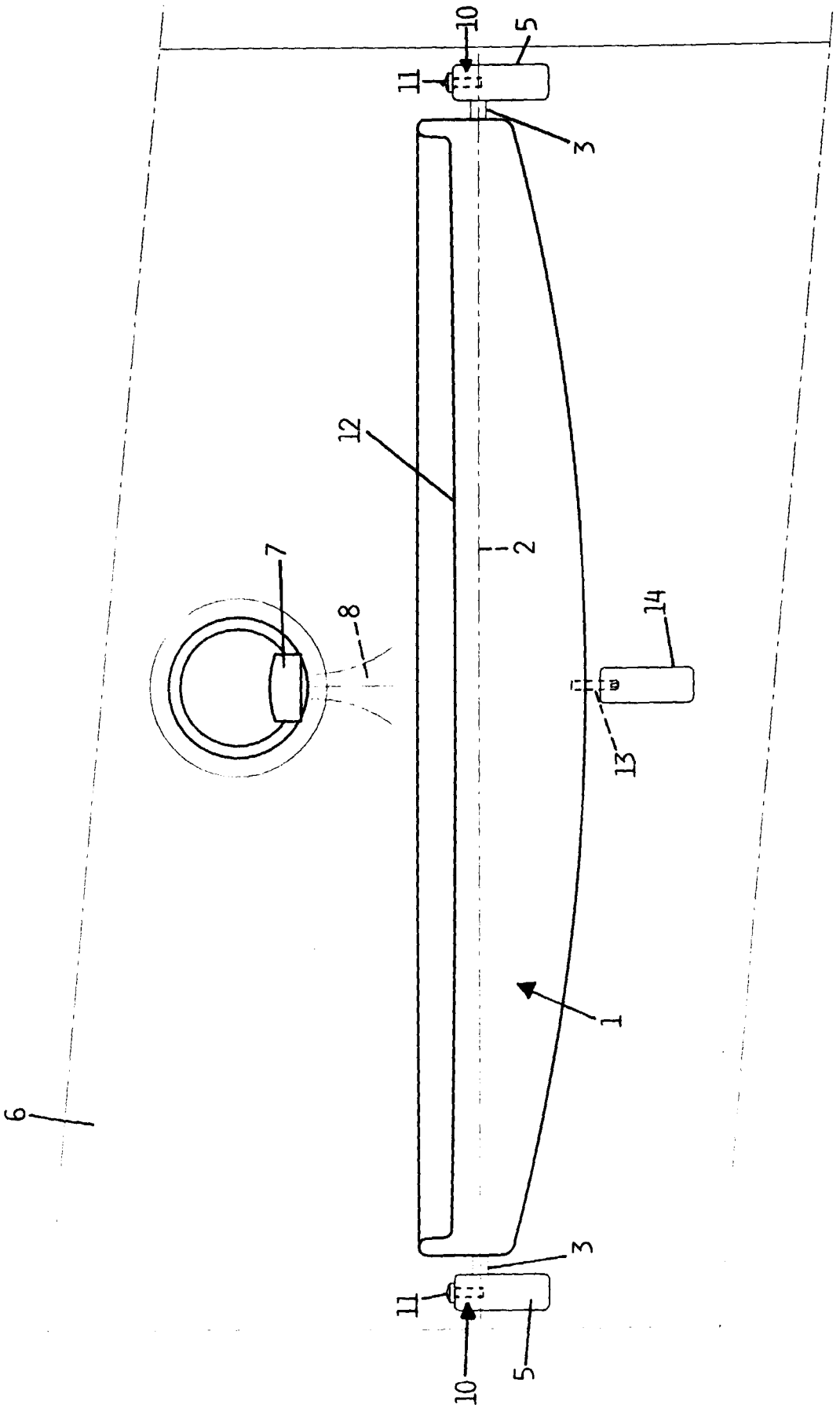

FIG.1

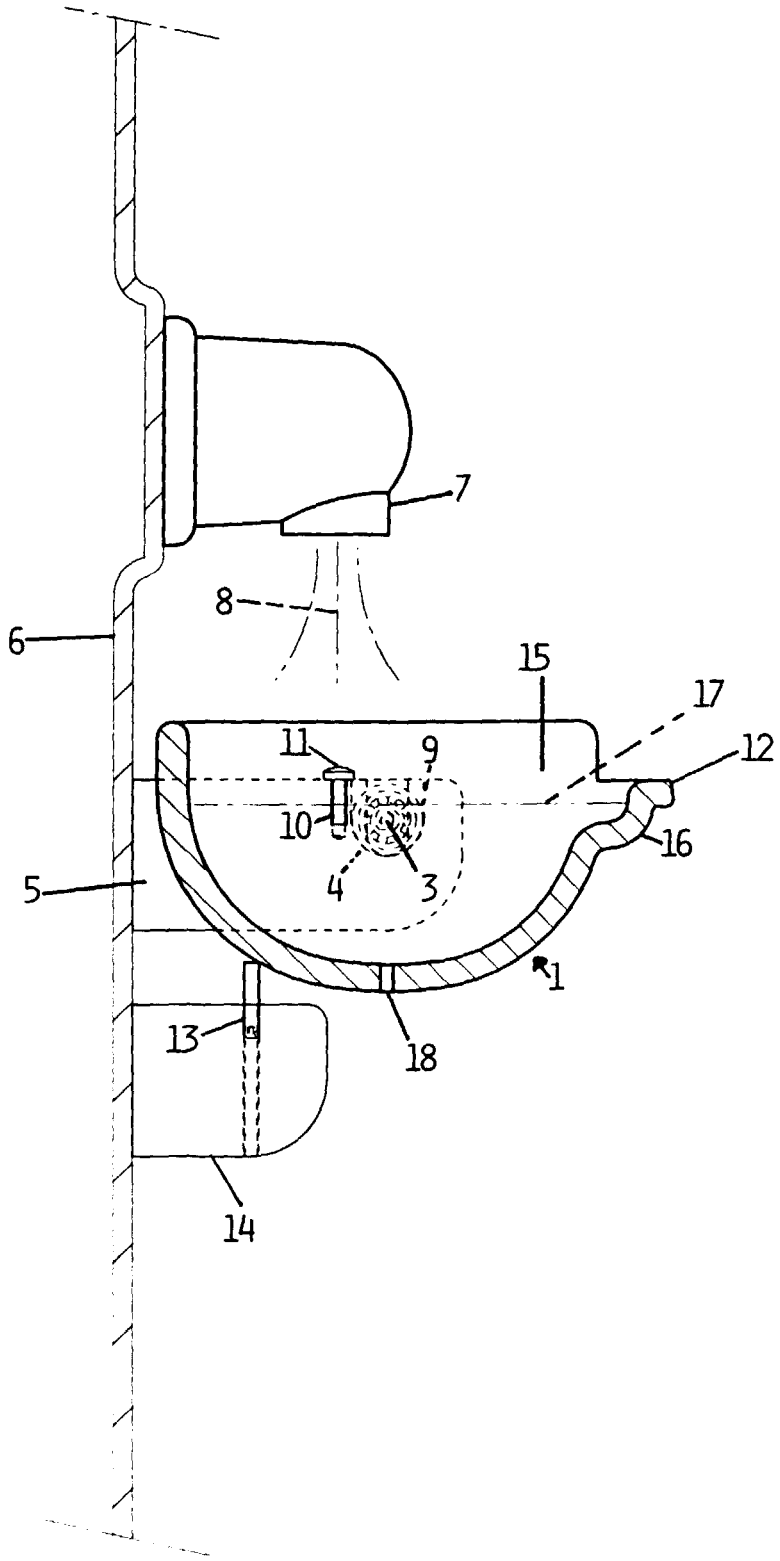

FIG.2

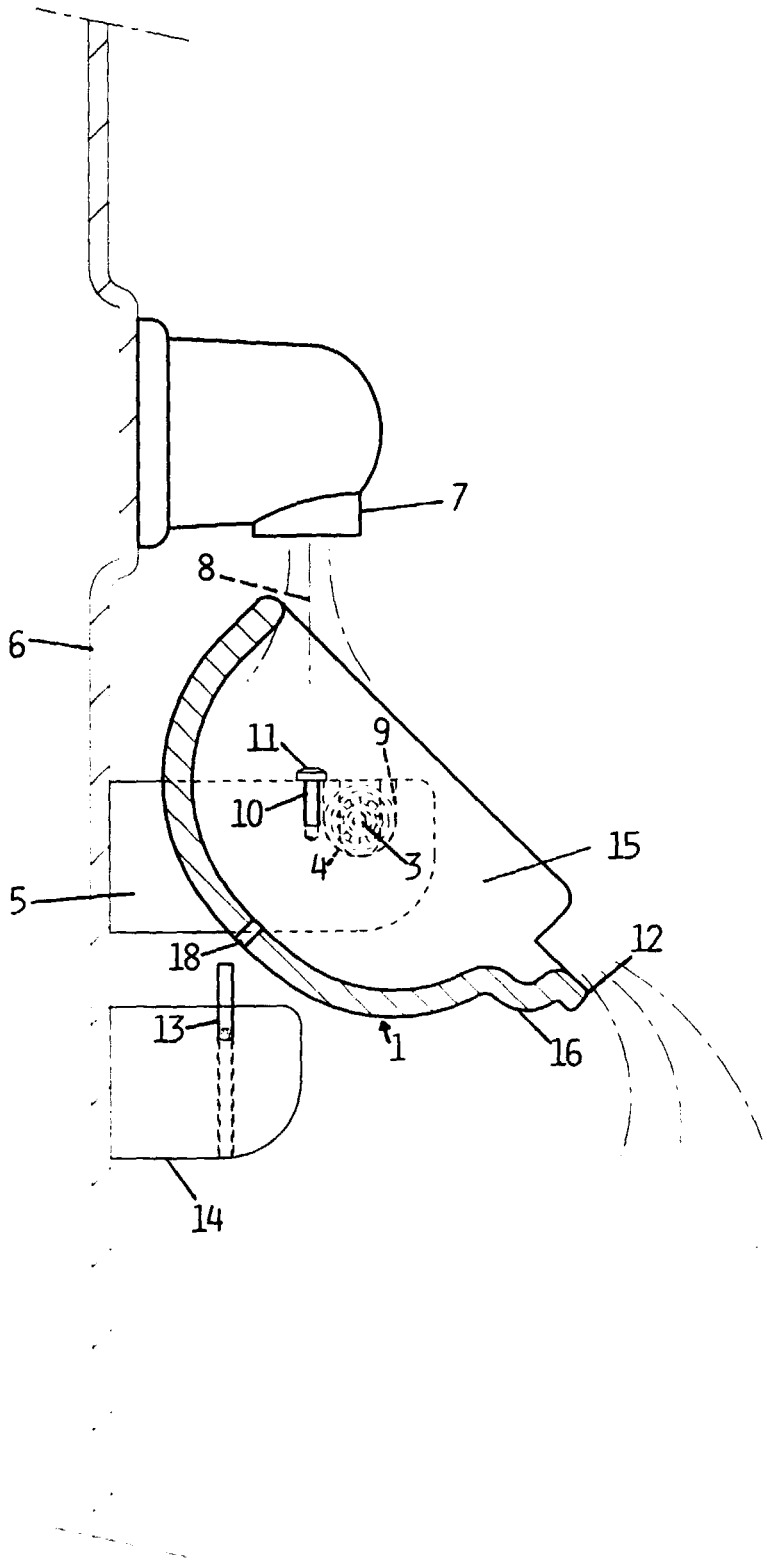

FIG.3