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(54) **Straight trap toilet apparatus**

(57) The straight trap toilet apparatus of the present invention mainly comprises a main body (1) with a straight trap, a piston (2), and a toilet bowl (3). The water outlet (11) of the main body (1) is connected to waste pipe (4), and the top of the main body (1) is mounted below the toilet bowl (3). The main body (1) has a water valve (12), wherein one end of the water valve (12) is connected to an inlet tube (13) connected to a water-faucet, and the other end of water valve (12) is connected to an outlet tube (17) that corresponds to the spurt water hole (31) of toilet bowl (3). In normal condition, water flows from the outlet tube (17) into the toilet bowl (3) and the main body (1). A water tank (14) is in fluid

communication with the main body (1) by a linking tube (18) such that the water in the toilet bowl (3) and the water tank (14) are at the same level. The motion of the float ball (15) will control a valve handle (16) to control the water valve (12) for controlling the water intake. The water from the outlet tube (17) may gather together in the main body (1), the toilet bowl (3), and is in fluid communication with the water tank (14) by a linking tube (18). The water in the main body (1) is drained from a drainage outlet (19) which is controlled by a piston (2). When in use, the user only treads the treadle of a controlling handle (23), the piston (2) will open the drainage outlet (19) and feces or excreta will be flushed out very quickly.

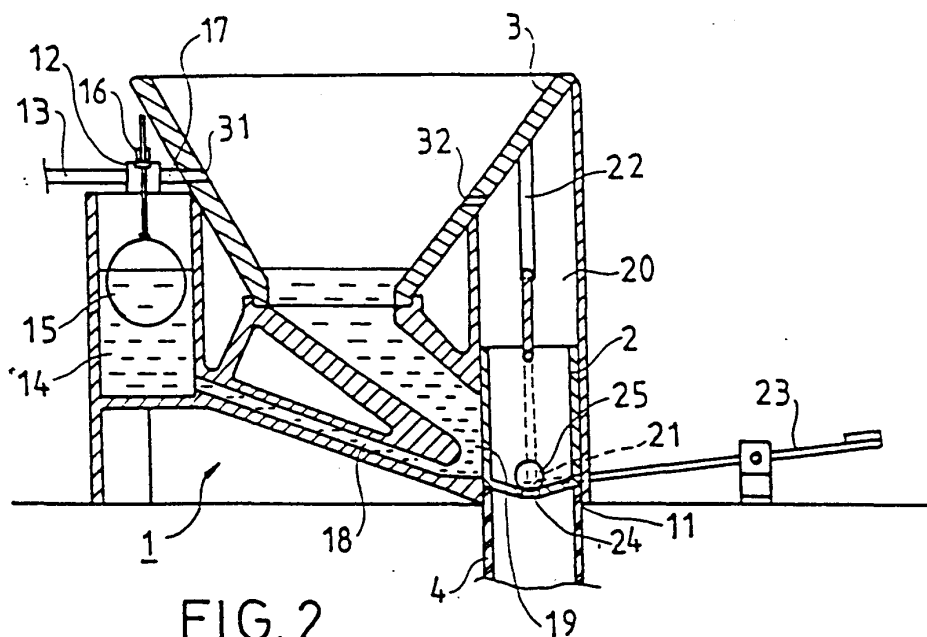


FIG. 2

Description

Background of the Invention

1. Field of the Invention

[0001] The present invention relates to a straight trap toilet apparatus and, more particularly, to a straight trap toilet apparatus which may flush out the feces or the filth with less water and will not stink with the feces.

2. Description of the Related Art

[0002] Conventional toilet utilities the water in the toilet tank to scrub and flush out the feces and the filth through the waste pipe into the fertilizer pool. In order to avoid stink of the feces, the conventional toilet bowl is usually designed as siphon-type with a "S" shape trap such that the curve trap accumulates water to form an obstacle for the stink from the waste pipe. However, as the conventional siphon-type toilet needs a large quantity of water to flush out the feces from the toilet bowel through the trap into the waste pipe, the toilet is easily blocked, and consumes a large quantity of water.

[0003] The present invention is intended to provide a straight trap toilet apparatus which mitigates and/or obviates the above problems.

Summary of the Invention

[0004] It is a main object of the present invention to provide a straight trap toilet apparatus which may flush out the feces or the filth with less water.

[0005] It is another object of the present invention to provide a straight trap toilet apparatus which will not stink with the feces.

[0006] The straight trap toilet apparatus in accordance with the present invention mainly comprises a main body with a straight trap, a piston, and a toilet bowl. The water outlet of the main body is connected to waste pipe, and the top of the main body is mounted below the toilet bowl. The main body has a water valve, wherein one end of the water valve is connected to an inlet tube connected to a water-faucet, and the other end of water valve is connected to an outlet tube that corresponds to the spurt water hole of toilet bowl. In normal condition, water flows from the outlet tube into the toilet bowel and the main body. A water tank is in fluid communication with the main body by a linking tube such that the water in the toilet bowel and the water tank are at the same level. The motion of the float ball will control a valve handle to control the water valve for controlling the water intake. The water from the outlet tube may gather together in the main body, the toilet bowel, and is in fluid communication with the water tank by a linking tube. The water in the main body is drained from a drainage outlet which is controlled by a piston. When in use, the user only treads the treadle of a controlling handle, the piston

will open the drainage outlet and feces or excreta will be flushed out totally in about two second.

[0007] Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

Brief Description of the Drawings

[0008] The invention can be more fully understood by reading the following detailed description of the preferred embodiments, with reference made to the accompanying drawings, wherein:

Fig.1 is an exploded perspective view of a straight trap toilet apparatus in accordance with the present invention;

Fig.2 is a cross-section view of the straight trap toilet apparatus in closed state in accordance with the present invention;

Fig.3 is a cross-section view of the straight trap toilet apparatus in open state in accordance with the present invention;

Fig.4 is a cross-section view along the 4-4 line of Fig.3 in accordance with the present invention;

Fig.5 is a cross-section view of the straight trap toilet apparatus in accordance with the present invention when the water is in normal state; and

Fig.6 is a cross-section view of the straight trap toilet apparatus in accordance with the present invention when the water is in overflow state.

Detailed Description of the Preferred Embodiment

[0009] Referring to Figs. 1 and 2, it shows an exploded perspective view of the straight trap toilet apparatus in accordance with the present invention which mainly comprises a main body 1, a piston 2, and a toilet bowl 3. The water outlet 11 of the main body 1 is connected to waste pipe 4, and the top of the main body 1 is mounted below the toilet bowl 3. The main body 1 has a water valve 12, wherein one end of the water valve 12 is connected to an inlet tube 13 connecting to a water-faucet, and the other end of water valve 12 is connected to an outlet tube 17 that corresponds to the spurt water hole 31 of toilet bowl 3. In normal condition, water flows from the outlet tube 17 into the toilet bowel 13 and the main body 1. A water tank 14 is in fluid communication with the main body 1 by a linking tube 18 such that the water in the toilet bowel 3 and the water tank 14 are at the same level. Inside the water tank 14 is provided with a float ball 15, wherein the float ball 15 may fall down depending on its weight and is lifted by the buoyancy of

water. The motion of the float ball 15 will control a valve handle 16 to control the water valve 12 for controlling the water intake from the inlet tube 12. The water from the outlet tube 17 may gather together in the toilet bowl 3 and the main body 1, and is in fluid communication with the water tank 14 by a linking tube 18, wherein the linking tube 18 is a tube of which the diameter is about 10 cm, and connects the water tank 14 and the main body 1 for accumulating suitable water in the main body 1. In general, the surface width of the water is about 20 cm to 25 cm, and the depth of water is above 7.5 cm. The water in the main body 1 is drained from a drainage outlet 19 which is controlled by a piston 2. When in use, the user only treads the treadle of a controlling handle 23, the piston 2 will open the drainage outlet 19 and feces or excreta will be flushed out totally in about two seconds.

[0010] The piston 2 is disposed at a piston chamber 20 of the main body 1, and a pair of guide handles 21 of the piston 2 moves vertically inside the concavity 22 of piston chamber 20. The piston 2 may close or open the drainage outlet 19, and the piston 2 is controlled by the controlling handle 23. The piston 2 itself is a hollow cylinder and has a drainage hole 24 in the bottom portion, wherein the drainage hole 24 is disposed at the lowest position of the piston 2, and is closed by a ball 25 to prevent the stink from the waste pipe 4.

[0011] The toilet bowl 3 is used for receiving and containing feces or filth, and is mounted above the main body 1. The toilet bowl 3 comprises a spurt water hole 31 corresponding to the outlet tube 17 of the main body 1 and an overflow tube 32. When the water valve 12 can not close, the water will flow from overflow tube 32 into the piston chamber 20 and the ball 25 will be floated up by the buoyancy of water such that the drainage hole 24 is open and the overflow water flows from the drainage hole 24 to the waste pipe 4.

[0012] Now referring to Fig.2 again, it shows that the present invention is in the normal reservoir state. In this state, the water valve 12 opens, the water flows through the outlet tube 17 into the main body 1, and the drainage outlet 19 is blocked by the piston 2 such that the water is kept inside the main body 1 and the float ball 15 is floated to a proper position to close the water valve 12 to stop the water intake from the inlet tube 12. Therefore, the water accumulates in the the toilet bowl 3, the main body 1 and the water tank 14. Accordingly, the stink from the waste pipe 4 is blocked by the water inside the main body land the drainage hole 24, and can not escape therefrom.

[0013] Furthermore, referring to Fig. 3, showing a cross-section view of the straight trap toilet apparatus in an open state in accordance with the present invention. As showing in the Fig.3, when there is feces or filth in the main body 1, the user can press or tread the controlling handle 23 to lift the piston 2 so as to open the drainage outlet 19. The feces, the filth and the water in the main body 1 are flushed out through the drainage

outlet 19 into the waste pipe 4 quickly. At the same time, the water valve 12 is open and the water continues spurting from the outlet tube 17 to flush out the feces inside the toilet bowl 13.

[0014] Further referring to Fig.4, it shows a cross-section view along the 4-4 line of Fig.3. Water flows from the inlet tube 13 through the water valve 12 and the outlet tube 17 into the water tank 14. The float ball 15 is provided in the water tank 14 to control the water valve. The position of the float ball 15 changes corresponding to the water level in the water tank 14. The float ball 15 is connected to a valve handle 16 to control the water valve 12.

[0015] Fig. 5 is a cross-section view of the straight trap toilet apparatus in accordance with the present invention when the water is in normal state. When the pressing action on the controlling handle 23 is released, the piston 2 returns back to its original position to close the drainage outlet such that the water through outlet tube 17 can accumulate in the main body 1, the toilet bowl 3 and the water tank 14 again. When the water in the water tank 14 reaches to its predetermined intake level, the float bull 15 together the valve handle 16 close the water valve 12. At this time, the ball 25 in the piston 2 also closes the drainage hole 24, so the stink from the waste pipe 4 can not escape therefrom.

[0016] Fig.6 is a cross-section view of the straight trap toilet apparatus in accordance with the present invention when the water is in overflow state. When the water valve 12 fails to close the water from the inlet tube 13 to the outlet tube 17, the water inside the water tank 14 will flow into the piston chamber 20 from the overflow tube 32. Accordingly, the ball 25 inside piston chamber 20 is floated up by the buoyancy of water, and the drainage hole 24 is open such that the water can flow into the waste pipe 4.

[0017] The straight trap toilet apparatus of the present invention can flush out the feces or the filth with less water and will not stink with the feces form the waste pipe. In views of the above descriptions, the advantages and features of the present invention is summarized as following:

1. The present invention only requires water about 2.5 to 3 liter to flush out the feces each time. Accordingly, it may save above two thirds water as compared with the conventional siphon-type toilet.
2. The diameter of linking tube is about 10 cm, it will not be blocked by the filth.
3. The surface width of the water in the toilet bowl is about 20 cm to 25 cm, and the depth of the water is above 7.5 cm,. It is easy to clean and no stink will come out from the waste pipe.

[0018] While there has been shown and described a preferred embodiment of the straight trap toilet appara-

tus in accordance with the present invention, it will be appreciated that many changes or modifications may be made therein without, however, departing from the spirits of the present invention. It is to be distinctly understood that the present invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims. 5

Claims

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1. A straight trap toilet apparatus comprising.

a toilet bowl having a spurt water hole;

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a main body mounted below the toilet bowl, the main body having a drainage outlet extending downwardly from the toilet bowl, and a linking tube in fluid communication with the drainage outlet;

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a water tank water in fluid communication with the linking tube, the water tank having an inlet tube, an outlet tube and a water valve for controlling the water flow from the inlet tube to the outlet tube, the outlet tube terminating at the spurt water hole of the toilet bowl;

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a waste pipe disposed at the downstream of the drainage outlet; and

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a piston disposed between the drainage outlet and the waste pipe for closing the drainage outlet, the piston being connected by a controlling handle such that the piston does not close the drainage outlet when the controlling handle is treaded.

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2. The straight trap toilet apparatus according to Claim 1, wherein the water tank comprises a float ball for controlling the water valve.

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3. The straight trap toilet apparatus according to Claim 1, wherein the diameter of linking tube is about 10 cm.

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4. The straight trap toilet apparatus according to Claim 1, wherein the surface width of water for said toilet bowl is about 20 cm to 25 cm, and the depth of water is above 7.5 cm.

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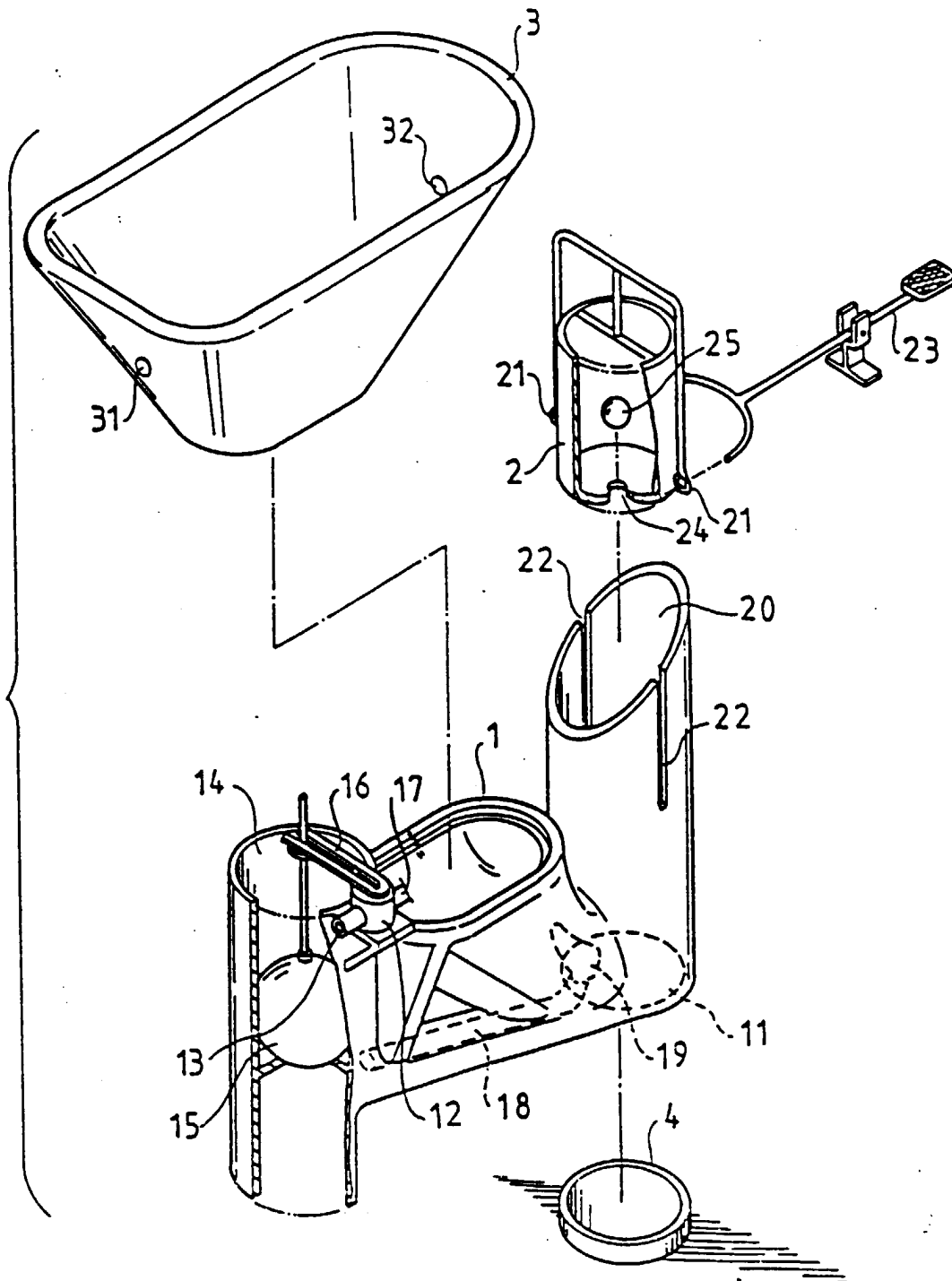
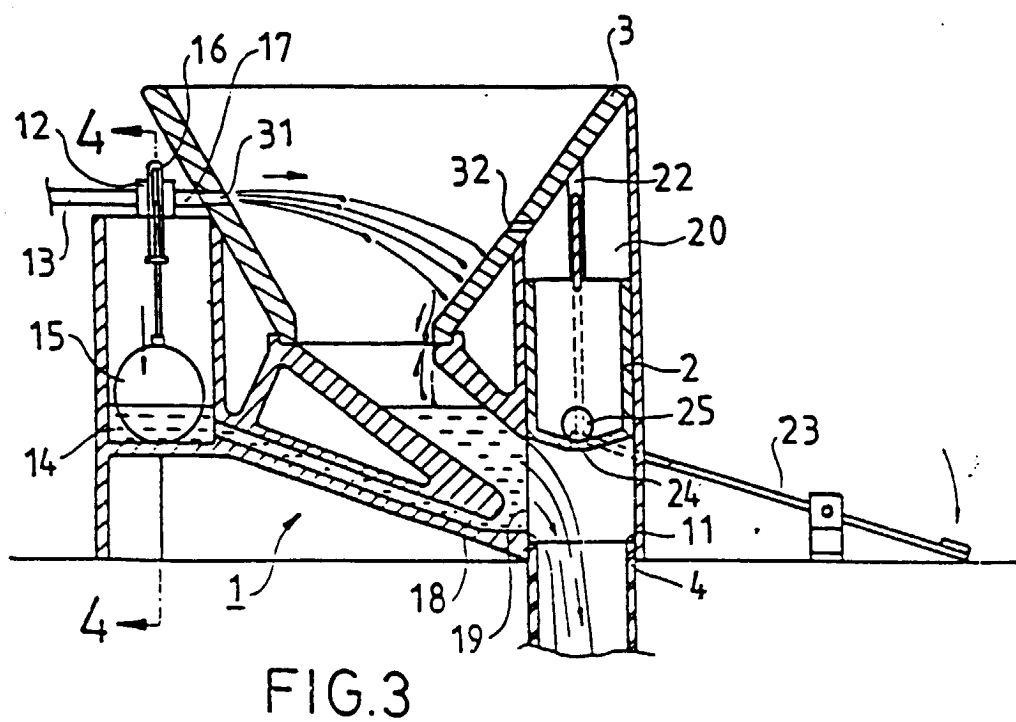
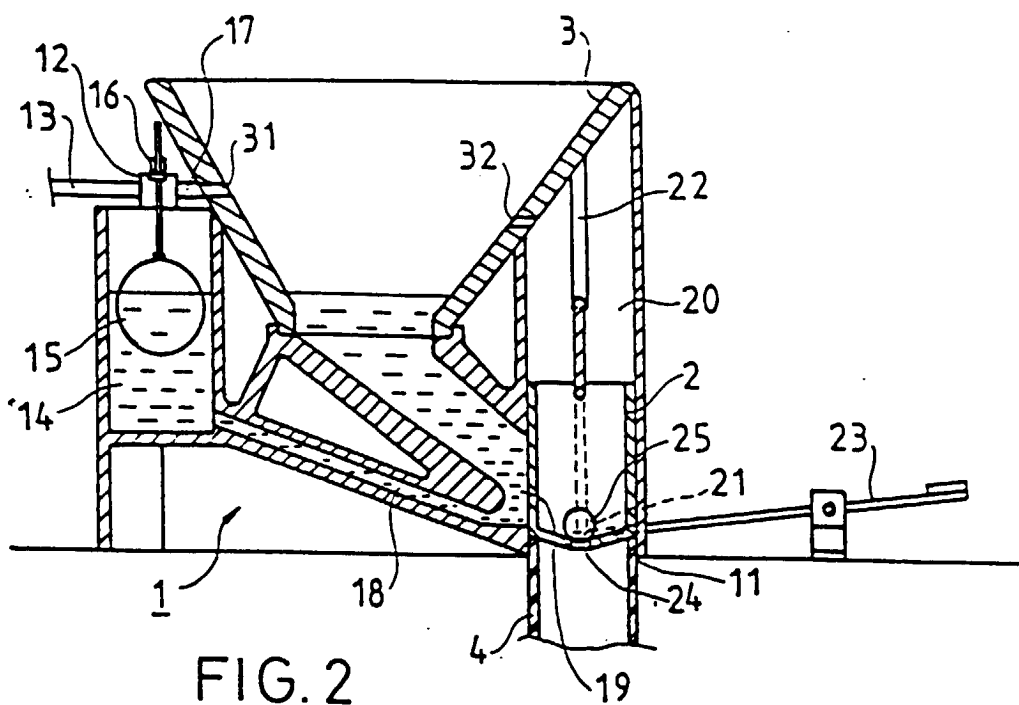


FIG.1



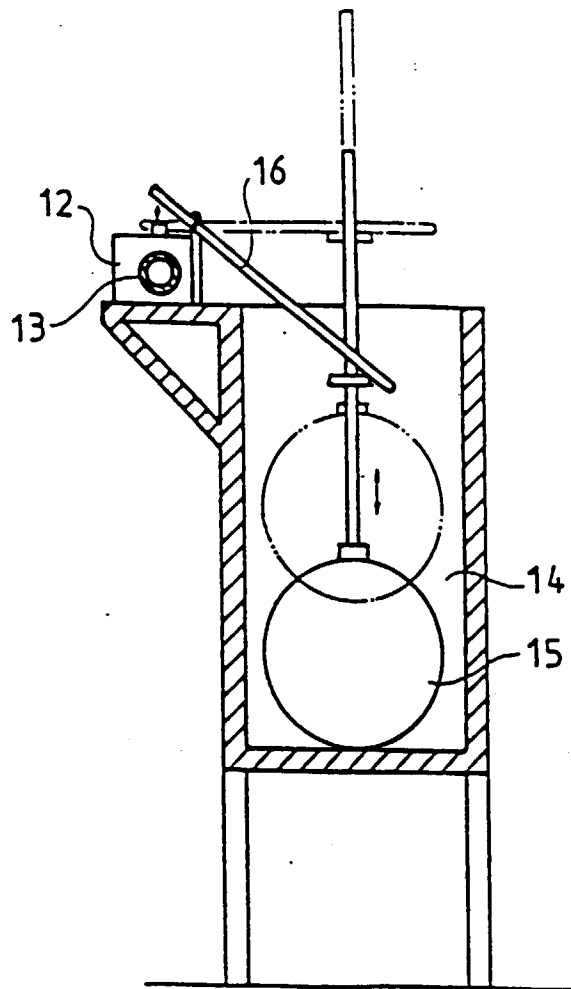


FIG.4

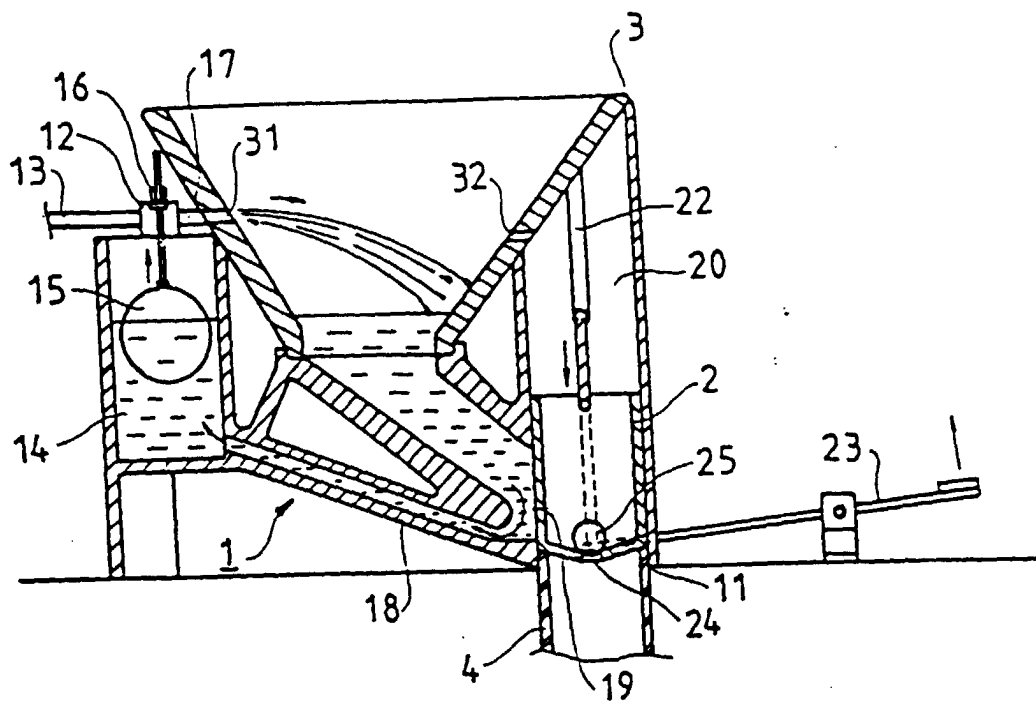


FIG. 5

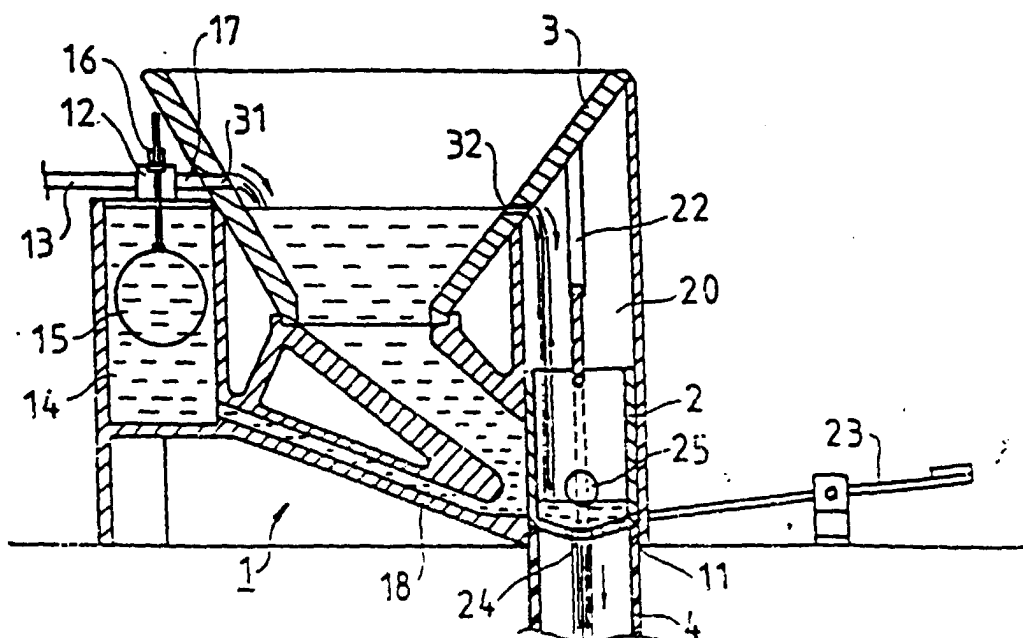


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 10 7579

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 4 016 609 A (GRAHAM J THOMAS) 12 April 1977 (1977-04-12) * column 3, line 35 - line 54 * * figures 1,2 * ---	1,2	E03D5/012
A	DE 10 503 C (ASCHEMANN A.) 5 August 1880 (1880-08-05) * column 1, line 9 - column 2, line 10 * * figures 1,2,4 * ---	1	
A	FR 2 435 566 A (PIAT MOISE) 4 April 1980 (1980-04-04) * page 1, line 35 - page 4, line 32 * * figures * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E03D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		28 September 1999	Urbahn, S
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 10 7579

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