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A water closet with a seat providing water jets for personal hygiene.

The seat (3) of the water closet (38) encompasses three chambers; a rear lower chamber (6), supplying a horizontal jet (GO) of water the temperature of which is controlled by a first mixer (19); also, a lateral chamber (7) on the right hand side, and a longer lateral chamber (8) on the left, which are in receipt of water from a second mixer (18) and supply jets (GD.GS) that are projected upward at an angle, from below the seat, such as to collide at a point on the median axis of the WC, toward the front.

The seat is hinged at rear about a transverse axis (A) coinciding with the axis of two pipes (4, 5) forming part of the plumbing through which mixed hot and cold water reach the rear chamber (6) and the two lateral chambers (7, 8), respectively.

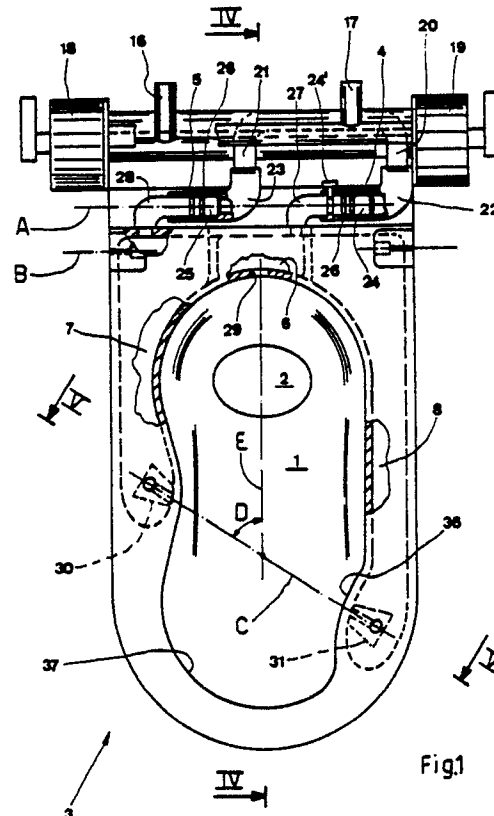


Fig1

A water closet with a seat providing water jets for personal hygiene.

The invention relates to a water closet, the seat of which incorporates water jets for personal hygiene purposes -that is: a combination of WC and bidet which is rendered possible by exploiting the seat as a means of supplying the water required by the user to wash his/her private parts.

The prior art in sanitary ware offers no specific personal hygiene appliance beyond the bidet, which is not adopted in all countries due to the insufficient level of general hygiene it can guarantee; moreover, use is not always made of a bidet even if installed, as in hotels for examples, due to the individual's fear of contracting infection from water with which the bowl must be at least partly filled in order to effect certain washing operations.

The prior art embraces a type of bidet fitted with jets directed up from the base of the bowl in the direction of the private parts, though this type of design has never tended to replace the traditional type, as it lacks efficiency in terms of operation and does not solve the hygiene problem.

The prior art thus stands in need of improvement, as regards the possibility of dispensing entirely with the bidet and replacing it with a more convenient appliance.

It will be discerned from the preamble that the need exists for an appliance able to ensure total hygiene as regards cleansing of the private parts, and this without the base of its bowl being either filled with water or fitted with upwardly directed jets, and at the same time, to afford improved operation and performance together with compact dimensions, all of which in an economic package.

Such an appliance is provided, according to the invention, by combining the functions of the bidet with those of the water closet; in effect, the bowl serves simply to support the individual and carry away fouled water, whereas the seat is converted into a plenum chamber serving a set of water jets, and accordingly, hinged in water-tight fashion about the transverses stretches of two supply pipes.

The temperature of the jets is controlled by two respective mixers located to the rear of the seat.

Water is thus directed from the supply pipes into respective chambers in the seat: a lower chamber at the rear, furnishing a longitudinal and essentially horizontal jet for cleansing of the hindmost parts, and two lateral chambers contained in the two sides of the seat, marginally above the rim of the bowl, that furnish two cross jets projected from a pair of vertical nozzles that extend down below the level of the seat and incorporate upwardly directed deflectors by which the jets are caused to collide marginally above the uppermost plane

of the seat, for cleansing the foremost parts.

The two nozzles are fitted to the forward ends of the two lateral chambers, which are of dissimilar length, in such a way that the two upwardly angled cross jets are contained within a vertical transverse plane preferably different to that which lies at right angles to the longitudinal axis of the seat.

Viewed in plan, the internal profile of the seat exhibits a bulge directly above the nozzle nearest the front, on which the individual's foot may rest when washed in the colliding cross jets, whilst the internal side opposite is cut away to provide greater freedom of movement to the individual's hand.

Advantages afforded by the invention are: greater hygiene; elimination of the bidet, its waste pipe, and related maintenance problems; recovery of space in the bathroom, and the option of utilizing the existing bidet plumbing for other appliances; a more functional bathroom; reduced maintenance; discharge of fouled water facilitated by the larger waste pipe of the WC, and permitted a greater fall than with a bidet; greater convenience for the user, especially if aged or infirm, who need no longer transfer from one appliance to another.

The invention will now be described in detail by way of example, with the aid of the four accompanying sheets of drawings, in which:

- fig 1 is the plan of a water closet fitted with the seat according to the invention, viewed in cutaway and minus the lid;

- fig 2 is a plan of the WC and seat of fig 1, viewed with the lid in the lowered position;

- fig 3 is the vertical cross section through III-III in fig 2, viewed on larger scale to illustrate the removable hinge of the lid;

- fig 4 is the longitudinal vertical section through IV-IV in fig 1, illustrating the manner in which the water is jetted from the lower rear outlet;

- fig 5 is the angled cross section through V-V in fig 1, illustrating the front jets;

- fig 6 is a schematic representation of the manner in which water is channelled from the two mixers into the horizontal jet, at rear, and into the two upwardly angled colliding jets, at front.

With reference to the drawings, 1 denotes the bottom of the WC bowl, from which fouled water flows into a waste trap 2.

The seat 3, embodied asymmetrically and functioning as plenum chamber from which water jets are projected, is hinged at rear about the axis A of two respective cylindrical stretches of pipe 4 and 5, transversely disposed, through which water is supplied to the seat 3; the pipe denoted 4 connects with a central, rear chamber 6 created internally of a lower central rear appendage of the

seat 3, and the pipe denoted 5 with a composite asymmetrical chamber which occupies the two sides of the seat 3, comprising one short lateral chamber 7, say, on the user's right hand side, and a second, longer lateral chamber 8 on the left.

B denotes the axis about which the lid 9 of the seat rotates (figs 2 and 3), mounted by way of a pair of hinge assemblies 10 incorporating relative lugs 11 that project upward from the rear of the seat 3; the lid 9 itself might be embodied in metal, of strength such as to take the weight of a sitting individual, and accordingly, will be provided with an anatomical contour.

12 denotes one of the pins of the two hinge assemblies 10, which is pushed outwards by a coil spring 13 and locates in a socket 14 offered by the corresponding lug 11. A transverse hole 15 formed in the lug, coaxial with the hinge axis B, serves to admit a percussion-pin inserted from the outside to the end of disengaging the pin 12 from the socket 14 whenever it becomes necessary to remove the lid 9.

16 and 17 denote water supply inlets, hot and cold respectively, to which two mixers 18 and 19 are connected; the mixers in turn connect with the two hinged stretches of pipe 4 and 5 by way of relative flow pipes 20 and 21 that join with corresponding elbows 22 and 23. 24 and 25 denote two straight lengths of pipe inserted rotatably into the two transverse stretches denoted 4 and 5 in combination with water-tight seals 26 and a radial retaining screw 24'. The two stretches 4 and 5 are connected ultimately to the relative chambers 6 and 7-8 in the seat 3 by way of respective elbows 27 and 28.

29 denotes an outlet located centrally in and at the front of the rear lower chamber 6, from which water is projected in a horizontal jet; further jets are projected from the bottom ends of two relatively short pendants 30 and 31 issuing from the underside of the seat 3, the first located at the forward end of the one lateral chamber 7, and the second at the forward end of the remaining lateral chamber 8.

The actual nozzles, denoted 30' and 31', are located at the same depth, say, 6 to 8cm from the underside of the seat 3, and occupy a vertical plane C that is displaced from the normal through a given excursion in such a way as to form an angle D with the median longitudinal vertical plane E of the seat, which, in a preferred embodiment, will fall within 45° to 90°.

32 and 33 denote the respective vertical bores of the nozzles 30 and 31, and 34 and 35 denote relative deflectors the axes of which are raked at a given angle F from the vertical in such a way that the two jets projected from the nozzles 30' and 31' will collide substantially at the intersection of the

two vertical planes denoted C and E, and at a height a few centimetres above the upper surface of the seat 3. In fig. 5, G denotes the slight, sub-horizontal angle at which the two uppermost surfaces of the sides of the seat 3 slope inward so as to afford comfortable support to the legs, to allow any splashes to drain off, and to permit of resting one foot on the seat; more exactly, a bulge 36 is created for this very purposes in the internal profile of the side which encompasses the larger lateral chamber 8, 37 denotes a recess formed in the internal profile of the seat at the side housing the shorter lateral chamber 7, the purpose of which is to reduce the width of the seat at that particular area from the inside and thus increase the space afforded to the user's hand when reaching under.

38 denotes the water closet bowl, and 39, a housing which projects upward at rear and serves to accommodate the pipework; the housing is clamped to the rear lip 40 of the bowl 38 with bolts 41 the heads of which are bayonnetted into the slidable along a matching slot 42 formed in the underside of the housing 39 itself.

Operation of the WC remains the same as in the case of any standard appliance, with the sole exception that one has an increased flow of water by addition of the second function according to the invention.

Operation of the seat will now be described.

Operating the mixer denoted 19, the user obtains a longitudinal and horizontal jet GO of pressure and temperature to suit, which will be directed at the hindmost private parts. By operating the remaining mixer 18, one obtains two upwardly directed cross jets GD and GS that collide at a given height within a transverse vertical plane, and where the user is seated, these will be directed at his/her foremost private parts; the same cross jets also serve for a foot bath, in which case the ball or the heel of the foot can be rested comfortably on the bulge 36 with which the side of the seat accommodating the longer lateral chamber 8 is provided.

By locating the right hand jet farther back, more space is provided for the user's hand when washing in the seated position, whereas the left hand jet, particularly convenient for a foot bath, in no way constitutes a hindrance; rather, effectiveness of the wash is enhanced.

The further forward of the cross jets GS could be eliminated altogether, in which event washing of the foremost private parts may still be accomplished equally well using the remaining jet, GD, by itself; a preferred embodiment would include both the cross jets, however.

Claims

1. A water closet with a seat providing water jets for personal hygiene comprising a bowl (38) with a waste trap (2), a seat to take the weight of the user, which rests on the rim of the bowl, and a tiltable lid hinged to and resting on the seat, characterized in that the seat (3) encompasses at least a lower central rear chamber (6) and an upper lateral chamber, both in receipt of water at a regulated temperature from respective mixers (19, 18) and provided respectively with a frontal, centrally located outlet (29) from which a horizontal jet (60) is projected, and with a vertical nozzles fixed to and extending down from the seat at the foremost end of the lateral chamber, the outlet of which is angled upward and toward the centre in such a way that the projected water jet will rise to a point above the level of the uppermost plane of the seat.

2. Water closet as in claim 1, characterized in that the seat (3) encompasses two lateral chambers, one short (7), one long (8), and carries two vertical nozzles (30, 31), each of which having a relative bore (32, 33) and a relative nozzle outlet (30', 31') angled up toward the centre of the seat, that extend down a short distance from the respective forward ends of the two lateral chambers; wherein the axes of the two nozzles and their outlets lie within a vertical plane (C) displaced through an angle (D) of 45° to 90° away from the median longitudinal vertical plane (E) of the WC and the two water jets (GD, GS) projected from the outlets (30', 31') collide at a centrally located point some few centimetres above the upper surface of the seat (3).

3. Water closet as in claim 1, characterised in that the transverse axis (A) about which the seat is hinged coincides with the axis of transverse cylindrical stretches of pipe (4, 5) forming a part of relative elbows (22, 23) connected with the flow pipes (20, 21) from the respective mixers (19, 18); and wherein each such transverse cylindrical stretch of pipe accommodates the straight transverse stretch of a relative elbow (27, 28), inserted therein to a water-tight fit, one of which connects with the rear chamber (6), housed in a lower appendage of the seat, and the other with at least one lateral chamber.

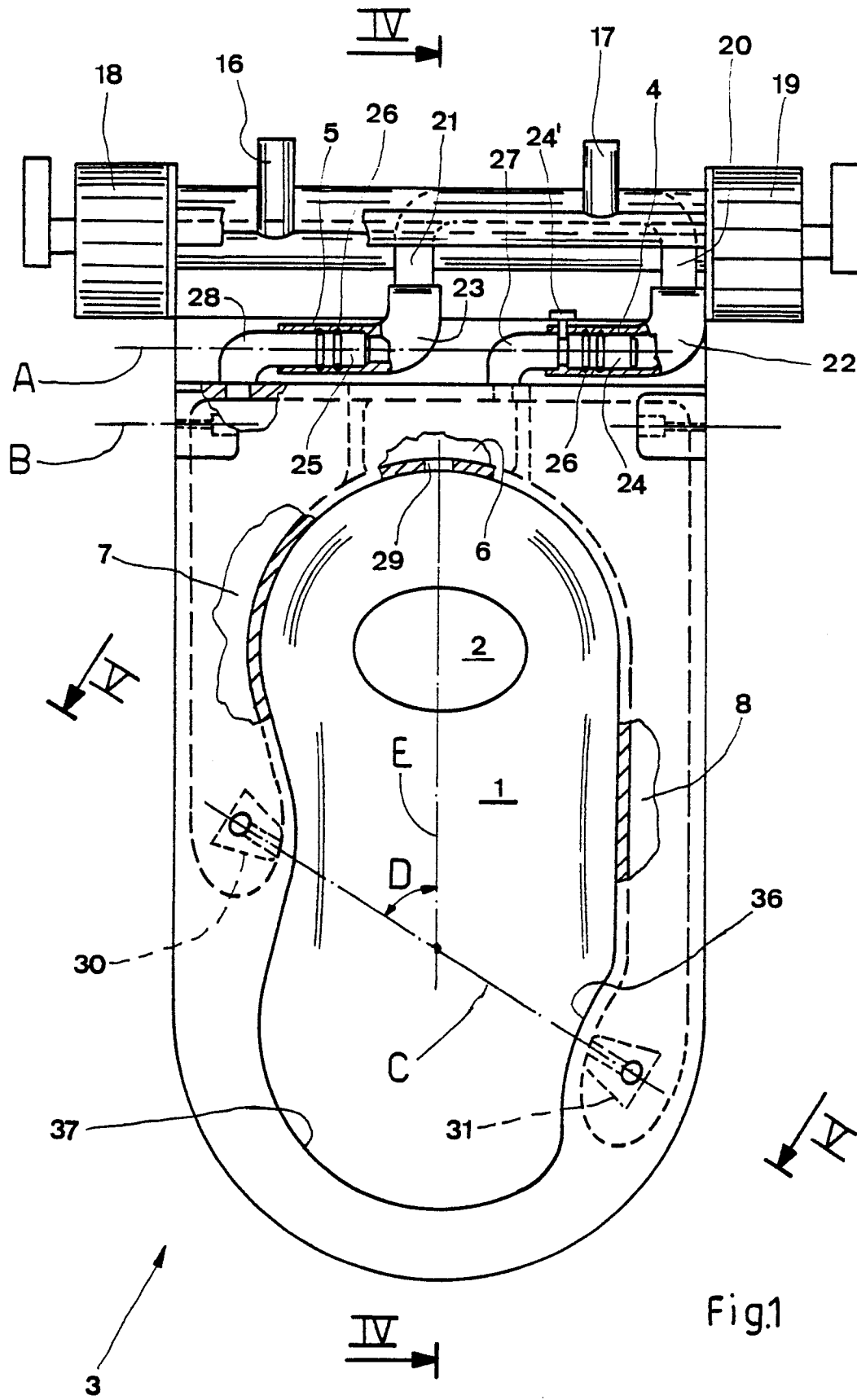
4. Water closet as in claim 3, characterized in that the mixers (19, 18), together with the relative inlet pipes (17, 16) and flow pipes (20, 21), are carried by a housing (39) that projects upward from the rear lip (40) of the bowl (38).

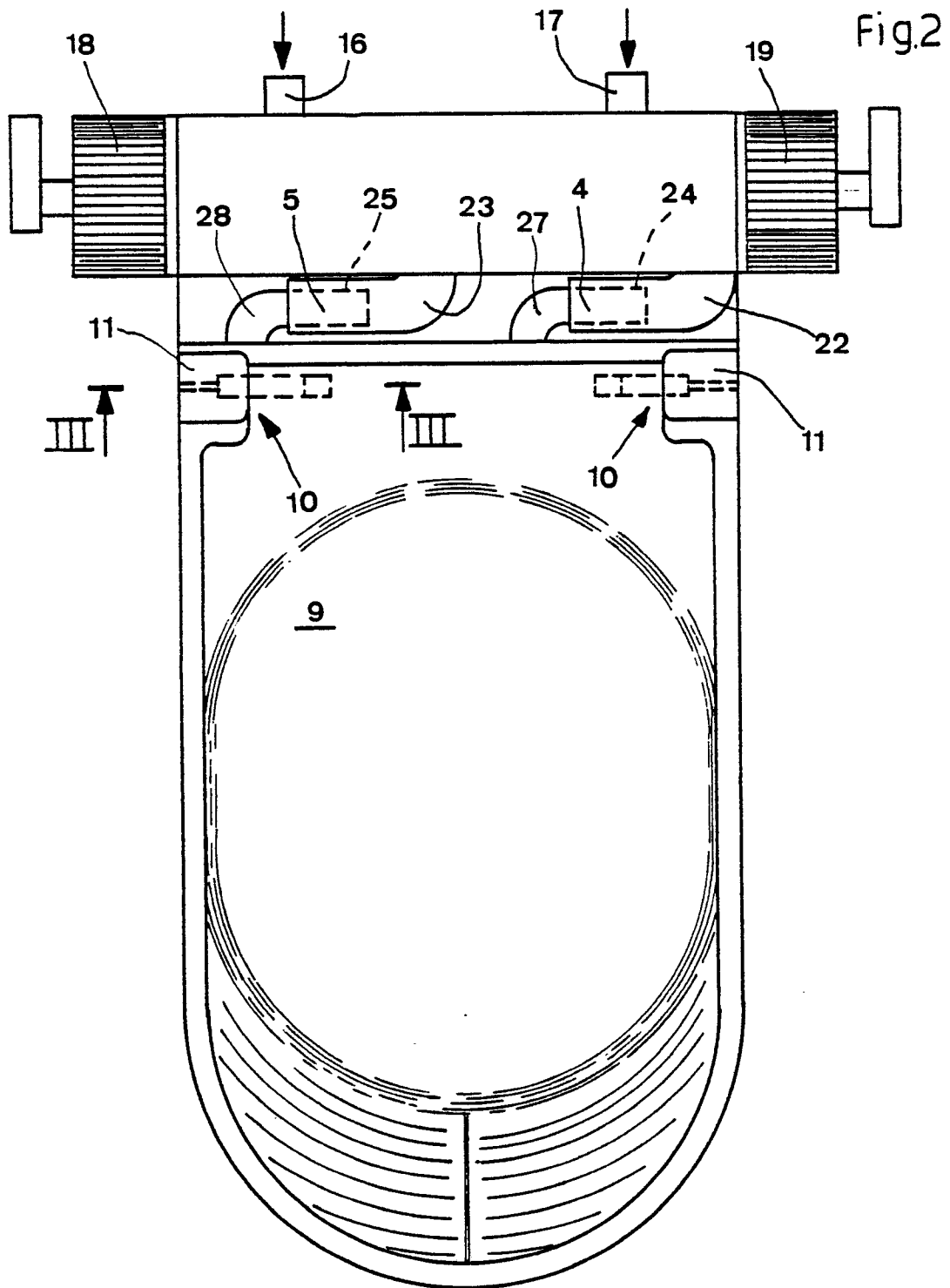
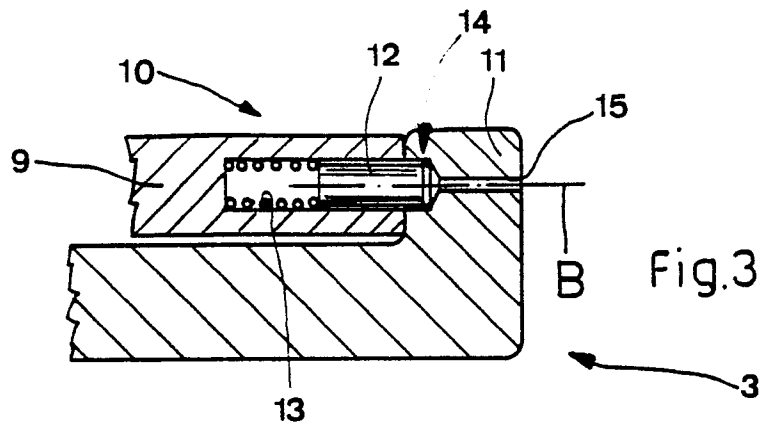
5. Water closet as in claim 1, characterized in that a contoured lid (9) is hinged to the rear part of the seat (3) about a transverse axis (B) disposed parallel to the transverse axis (A) of the cylindrical stretches of pipe (4, 5).

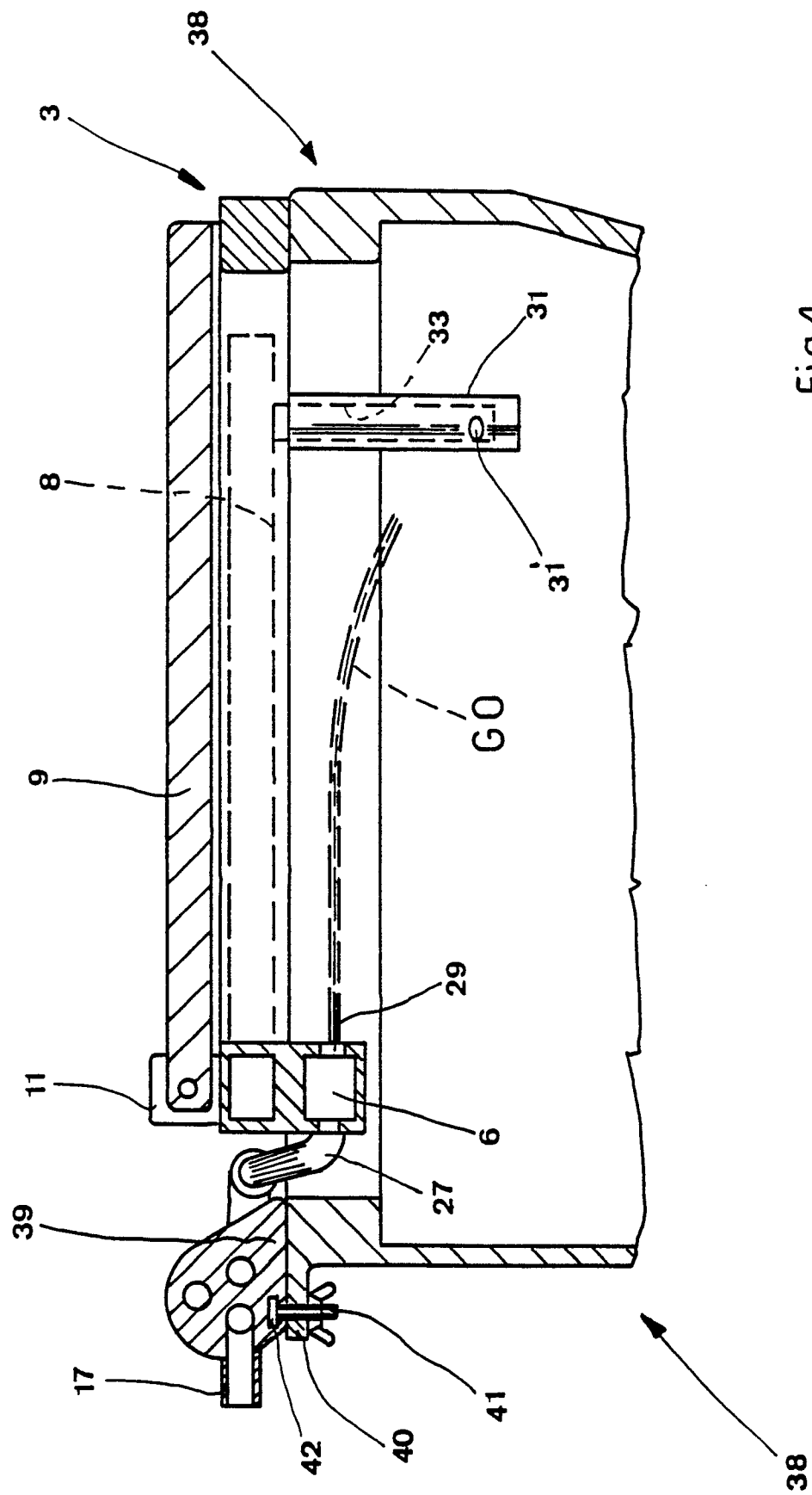
6. Water closet as in claim 1 and claim 2, characterized in that the internal profile of the side of the seat (3) that encompasses the shorter chamber (7), exhibits a recess (37).

7. Water closet as in claim 1 and claim 2, characterized in that the internal profile of the side of the seat (3) that encompasses the longer chamber (8) exhibits a bulge (36), positioned directly above the relative nozzle (31), on which the user's foot may rest.

8. Water closet as in claim 7, characterized in that the topmost surface of the seat (3) slopes gently inward at a slight angle (G).







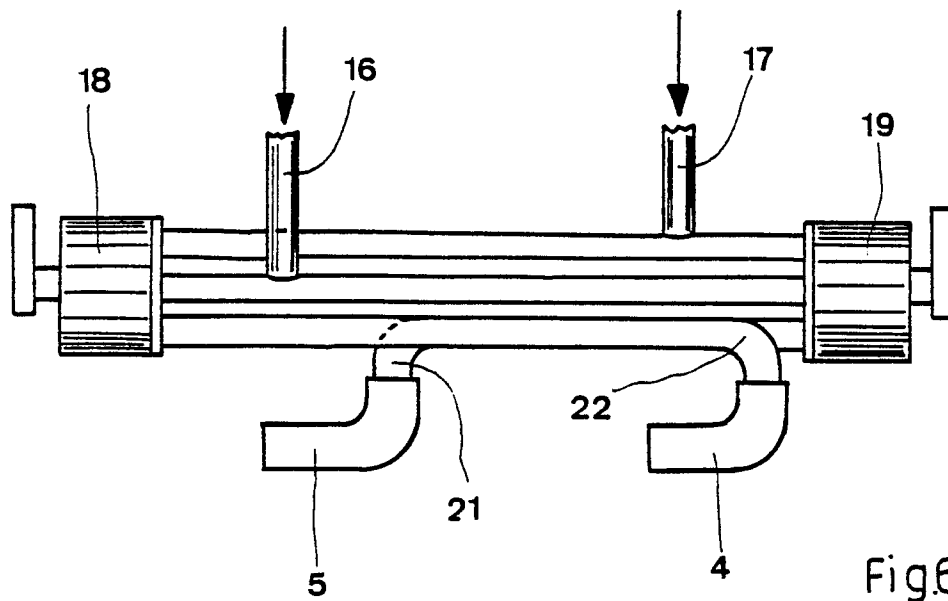


Fig.6

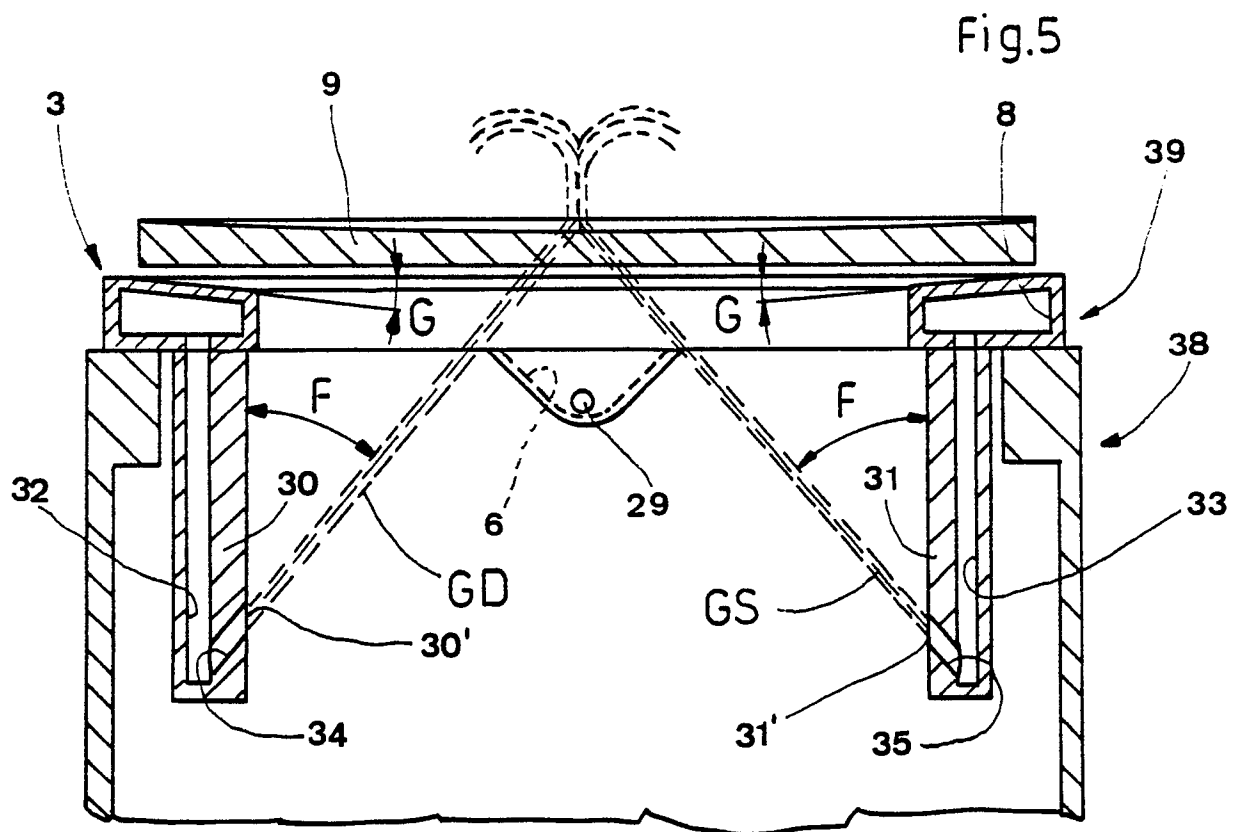


Fig.5



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.4)
A	US-A-4 617 688 (KUO) * Whole document * ----	1,2,5	E 03 D 9/08
A	WO-A-8 100 871 (STAMOULIS) * Pages 5-8; figures 1-4; claim 1 * ----	1,5	
A	GB-A-2 112 831 (ROWLEY) * Whole document * ----	3	
A	EP-A-0 059 888 (BAUS) * Figures 1,2 * ----	4	
A	DE-B-1 237 029 (UMANN) * Whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 03 D A 47 K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30-03-1988	Examiner HANNAART J.P.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			