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(54) Washing and rinsing unit with lever actuator for cover members to be applied to water closet bowls

(57) Inside a w.c. bowl (7) a washing and rinsing unit (1) is provided, composed of a supplying duct (17) and of a delivering duct (19) equipped with holes for rainy (3) and parabolic (5) water jets. The unit (1) is equipped with means to be adapted to the bowl width and with intensity-adjusting means for the water flow to be delivered inside the bowl. A lever actuator (47) is provided aside the board (9) to lift it without the unit (1) being hit by urine jets.

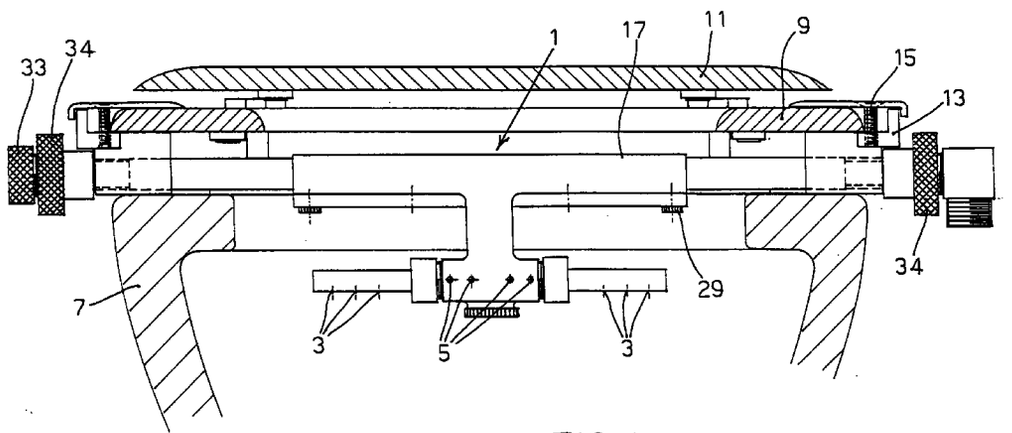

FIG. 1

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Description

The present invention refers to a washing and rinsing unit to be applied to water closet bowls and to an adjustable lever actuator for cover members thereof.

It is known how the problem of hygiene in water closets (w.c.), as regards both hygienic devices and users thereof, is getting increasing attention, and how attempts are getting more and more frequent to apply hygienic devices both to bowls cover members and inside bowls.

The major problem for said devices is that frequently these devices are designed for new bowls and can be applied only with difficulty to existing bowls; this latter case usually requiring the intervention of at least a plumber and/or a mason.

Object of the present invention is solving these inconveniences, by providing a simple and practical device, that can be applied without particular skillness to w.c. cover boards, made either of plastics or of wood, independently from the format type of existing w.c. bowls, and that allows rationalizing these members in view of the latest hygienic needs.

The device object of the invention is substantially composed of a washing and rinsing unit with a rainy jet and a parabolic jet provided inside the bowl, applied to the mobile board of the overlying w.c. cover through brackets locked with a clamp, said unit being composed of a supplying-batching duct and a parallel delivering duct, connected thereto through a perpendicular duct thereto; the supplying duct being connected to the water main through a coaxial distribution sleeve that is inside said supplying duct; the batching duct being similarly connected to a coaxial batching sleeve and being inside it; said two sleeves being provided equipped with suitable positioning and locking means in their respective ducts to allow fitting them to the w.c.-covering ring which the unit is applied to; the adjusting sleeve being provided inside a length-adjustable threaded rod secured on one side to a rotating control head to adjust the water flow to be output from the unit; the flow adjusting members being composed of a closing member and of a batching member, equipped with resilient means, provided next to the unit center line; said adjusting members being mutually in contact on the internal side and in contact with the distribution sleeve and the adjusting sleeve on the external side; when the adjusting sleeve is closed, a holding member locking the closing member in such a position as to prevent any outward water flow through the unit; a slight screwing of the rod head inserted into the adjusting sleeve making the rod point advance and move the closing member from its closing position, thus opening in the desired order the water passage openings, water thereby passing therethrough and then to the delivering duct, enabling rainy and parabolic jets of the desired intensity from said delivering duct to inside the w.c. bowl.

The delivering duct is composed of a frontally-holed central member to allow the parabolic jet; to said central member two radially-holed side branches will be applied with holes oriented at about 9Ø° with respect to the above-listed central member holes, said two branches being composed of a central core with a rounded section made of aluminium or the like, outside which two pipes made of plastic material are applied, one on each side, as a jacket; said aluminium rounded section allowing a suitable bend and maintaining it to the supplying duct branches, necessary to fit said supplying duct to the internal w.c. bowl outline.

The unit under a rest position is stable in its position due to suitable hooking means that prevent the water flow from going out of the bowl; other orienting positions being obtained after releasing said hooking means.

Another unit rotation limiting means ensures that the unit does not interfere with the bowl in repositioning operations.

It must be noted that the unit is provided equipped with quick-releasing means from securing clamps in order to allow efficient cleaning operations for the unit and the application area thereof.

Inside the duct joining together the supplying-adjusting duct and the delivering duct, it is provided to insert a disinfecting, deodorizing and/or sweet-smelling candle, suitable to be lapped by the water going out of the unit in order to remove possible unpleasant smells exhaling from the bowl and quickly replace them with other ones providing a feeling of cleanness.

It must be noted that a user, sit on the bowl, can adjust the parabolic and rainy jets at will, depending on his needs and desires; said jets being able to lap the body side resting on the bowl to allow the final washing thereof without using hands and also to soften the feces to facilitate the ejection thereof.

Aside the bowl a lever actuator is provided to clamp and turn the w.c. bowl board over, said actuator enabling the removal of the water delivering unit from the bowl to avoid it from being hit by urine jets; said actuator being composed of a lever member adapted to hook the w.c. cover board on its front side and pivoting with its read side in a knuckle block connected to a bracket placed on the rear bowl area through a stepped pivot secured on one end to the above knuckle block and movably, vertically rotatingly secured to said bracket; said horizontal pivot steps being in turn engaged with a shaped upright, upwards projecting and equipped with a screw adjusting means on which the bowl cover rests once lifted; the above-said horizontal pivot steps (rounded areas with a smaller diameter) allowing a suitable adjustment of said pivot and of the actuating lever depending on the bowl width; a spring member in said lever knuckle block allowing an angular horizontal displacement for said actuating lever; the upright member resting against the cover when the cover is lifted being provided of rubber or suitable material not to damage said w.c. cover.

The invention will now be described in detail with particular reference to the enclosed drawings, provided as a non-limiting example and showing a preferred

embodiment of the invention, in which:

Fig. 1 is a front view of the washing and rinsing unit applied to a w.c. bowl;
Fig. 2 is a longitudinal section view of the washing and rinsing unit in Fig. 1;
Fig. 3 is a front view of the unit in Fig. 2;
Fig. 4 is a plan view of the board-lifting device applied to a w.c. bowl;
Fig. 5 is a side elevational view of the device in Fig. 4 with the board lifted;
Fig. 6 is a side elevational view of the device in Fig. 4 with the board lowered;
Fig. 7 is a similar view to Fig. 6 with the device applied to the cover;
Fig. 8 is a global view showing the components for the washing and rinsing unit;
Fig. 9 is a global view showing the components of the board-lifting device.

As clearly appears from the Figures, the inventive device is substantially composed of a washing and rinsing unit 1 with a rainy jet 3 and a parabolic jet 5 provided inside the bowl 7, applied to the mobile board 9 of the overlying w.c. cover 11 through brackets 13 locked with a clamp 15.

Said unit 1 is composed of a supplying-batching duct 17 and a parallel delivering duct 19, connected thereto through a perpendicular duct 21 thereto; the supplying 17 duct being connected on one side to the water main through a coaxial distribution sleeve 23 that is inside said supplying duct 17, while on the other side said batching duct 17 is similarly connected to a coaxial batching sleeve 25 that is inside it.

Said two sleeves 23 and 25 are provided equipped with suitable positioning means 27 and locking means 29 in their respective duct 17 to allow fitting them to the board 9 of the w.c. cover 11 which the unit 1 is applied to. The adjusting sleeve 25 is provided inside a length-adjustable threaded rod 31 resting on one side to a rotating control head 33 to adjust the water flow to be output from the unit 1; the flow adjusting members being composed of a closing member 35 and of a batching member 37, equipped with resilient means 39. Said adjusting members 35 and 37 are mutually in contact on the internal side and in contact with the distribution sleeve 23 and the adjusting sleeve 25 on the external side.

When the adjusting sleeve 25 is closed, a holding member locks the closing member 35 in such a position as to prevent any outward water flow through the unit 1; a slight screwing of the head 33 of the rod 31 inserted into the adjusting sleeve 25 making the rod 31 point advance and move the closing member 35 from its closing position, thus opening in the desired order the water passage openings, water thereby passing therethrough and then to the delivering duct 19, enabling rainy jets 3 and parabolic jets 5 of the desired intensity from said delivering duct 19 to inside the w.c. bowl 7.

The delivering duct 19 is composed of a central member 41 that is frontally holed in 5 to allow the parabolic jet; to said central member 41 two radially-holed side pipes 43 are applied with holes 3 oriented at about 9Ø° with respect to the above-listed holes 5 of the member 41, said two pipes 43 being composed of a central core made of aluminium 45 or the like, outside which two pipes made of plastic material are applied, one on each side, as a jacket; said aluminium core 45 allowing a suitable bend and maintaining it to the branches 43 of the supplying duct 19, said bend being necessary to fit said supplying duct 19 to the internal w.c. bowl 7 outline.

The unit 1 under a rest position is stable in its position due to suitable hooking means (not shown) that prevent the water flow from going out of the bowl 7; other orienting positions being obtained after releasing said hooking means.

Another unit 1 rotation limiting means (not shown) ensures that the unit itself does not interfere with the bowl 7 in repositioning operations.

It must be noted that the unit 1 is provided equipped with quick-releasing means from securing clamps 15 in order to allow efficient cleaning operations for the unit 1 and the application area thereof.

Inside the duct 21 joining together the supplying-adjusting duct 17 and the delivering duct 19, it is provided to insert a disinfecting, deodorizing and/or sweet-smelling candle 22, suitable to be lapped by the water going out of the unit 1 in order to remove possible unpleasant smells exhaling from the bowl 7 and quickly replace them with other ones providing a feeling of cleanness.

It must be noted that a user, sit on the bowl 7, due to the knobs 34, can adjust the parabolic jet 5 and the rainy jet 3 at will, depending on his needs and desires; said jets 3, 5 being able to lap the body side resting on the bowl to allow the final washing thereof without using hands and also to soften the feces to facilitate the ejection thereof.

Aside the bowl 7 a lever actuator 47 is provided to clamp and turn the board 9 of the w.c. bowl 7 over, said actuator enabling the removal of the water delivering unit 1 from the bowl 7 to avoid it from being hit by urine jets.

Said actuator 47 is composed of a lever member 49 adapted to hook the w.c. cover board 9 on its front side and pivoting with its read side 51 in a knuckle block 53 connected to a bracket 55 placed on the rear area 57 of the bowl 7 through a stepped pivot 59 secured on one end to the above knuckle block 53 and movably, vertically rotatingly secured to said bracket 55.

The steps 61 of said horizontal pivot 59 are in turn engaged with a shaped upright 63, upwards projecting and equipped with a screw adjusting means 65 on which the bowl cover 11 rests once lifted. Said steps 61 (rounded areas with a smaller diameter) of said horizontal pivot 59 allow a suitable adjustment of said pivot 59 and of the actuating lever 49 depending on the bowl width 7; a spring member 67 in said lever knuckle block

52 allows an angular horizontal displacement for said actuating lever 49. The member 69 of the upright 63 resting against the cover 11 when the board 9 is lifted, is provided of rubber or suitable material not to damage said w.c.-covering cover 11.

Claims

1. Washing ans rinsing unit with lever actuator for cover members, to be applied to water closet (w.c.) bowls, characterized in that it is substantially composed of a washing and rinsing unit (1) with a rainy jet (3) and a parabolic jet (5) provided inside the bowl (7), applied to the mobile board (9) of the overlying w.c. cover (11) through brackets (13) locked with a clamp (15), said unit (1) being composed of a supplying-batching duct (17) and a parallel delivering duct (19), connected thereto through a perpendicular duct (21) thereto; the supplying duct (17) being connected to the water main through a coaxial distribution sleeve (23) that is inside said supplying duct (17); the batching duct (17) being similarly connected to a coaxial batching sleeve (25) and being inside it; said two sleeves (23, 25) being provided equipped with suitable positioning means (27) and locking means (29) in their respective ducts to allow fitting them to the w.c.-covering ring (9) which the unit (1) is applied to; the adjusting sleeve (17) being provided inside a length-adjustable threaded rod (31) secured on one side to a rotating control head (33) to adjust the water flow to be output from the unit (1); the flow adjusting members being composed of a closing member (35) and of a batching member (37), equipped with resilient means (39), provided next to the unit center line; said adjusting members being mutually in contact on the internal side and in contact with the distribution sleeve (23) and the adjusting sleeve (25) on the external side; when the adjusting sleeve (25) is closed, a holding member locking the closing member (35) in such a position as to prevent any outward water flow through the unit (1); a slight screwing of the rod head (31) inserted into the adjusting sleeve (25) making the rod (31) point advance and move the closing member (35) from its closing position, thus opening in the desired order the water passage openings, water thereby passing therethrough and then to the delivering duct (19), enabling rainy jets (3) and parabolic jets (5) of the desired intensity from said delivering duct (19) to inside the w.c. bowl (7).

2. Washing and rinsing unit to be applied to w.c. bowls according to claim 1, characterized in that the delivering duct (19) is composed of a central member (41) frontally holed (in 5) to allow the parabolic jet; to said central member (41) two side branches (43) are applied also radially holed with holes (3) oriented at about 9Ø° with respect to the above-listed holes (5) of the central member (41), said two branches (43) being composed of a central core (45) made of aluminium or the like, outside which two pipes made of plastic material are applied, one on each side, as a jacket with radial holes (5); said aluminium or similar core (45) allowing a suitable bend and maintaining it to the branches (43) of the supplying duct (19), bend that is necessary to fit said supplying duct (19) to the internal w.c. bowl (7) outline.

3. Washing and rinsing unit according to claim 1, characterized in that said unit (1) under a rest position is stable due to suitable hooking means (not shown) that prevent the water flow from going out of the bowl (7); other orienting positions being obtained after releasing said hooking means.

4. Unit according to claim 1, characterized in that a unit (1) rotation limiting means (not shown) ensures that said unit does not interfere with the bowl in repositioning operations.

5. Unit according to claim 1, characterized in that it is provided equipped with quick-releasing means from securing clamps (15) in order to allow efficient cleaning operations for the unit and the application area thereof.

6. Unit according to any one of the previous claims, characterized in that inside the duct (21) joining together the supplying-adjusting duct (17) and the delivering duct (19) it is provided to insert a disinfecting, deodorizing and/or sweet-smelling candle (22), suitable to be lapped by the water going out of the unit (1) in order to remove possible unpleasant smells exhaling from the bowl (7) and quickly replace them with other ones providing a feeling of cleanness.

7. Washing and rinsing unit for w.c. bowls characterized in that, aside the bowl (7), a lever actuator (47) is provided to clamp and turn the board (9) of the w.c. bowl (7) over, said actuator enabling the removal of the water delivering unit (1) from the bowl (7) to avoid it from being hit by urine jets; said actuator (47) being composed of a lever member (49) adapted to hook the w.c. cover board (9) on its front side and pivoting with its read side (51) in a knuckle block (53) connected to a bracket (55) placed on the rear bowl area (57) through a stepped pivot (59) secured on one end to the above knuckle block (53) and movably, vertically rotatingly secured to said bracket (55); the steps (61) of said horizontal pivot (59) being in turn engaged with a shaped upright (63), upwards projecting and equipped with a screw adjusting means (65) on which the bowl cover (11) rests once lifted; the above-said steps (61) (rounded areas with a

smaller diameter) of said horizontal pivot (59) allowing a suitable adjustment of said pivot (59) and of the actuating lever (49) depending on the bowl (7) width; a spring member (67) in said lever knuckle block (53) allowing an angular horizontal displacement for said actuating lever (49); the member (69) of the upright (63) resting against the cover (11) when the cover is lifted being provided of rubber or suitable material not to damage said w.c. cover.

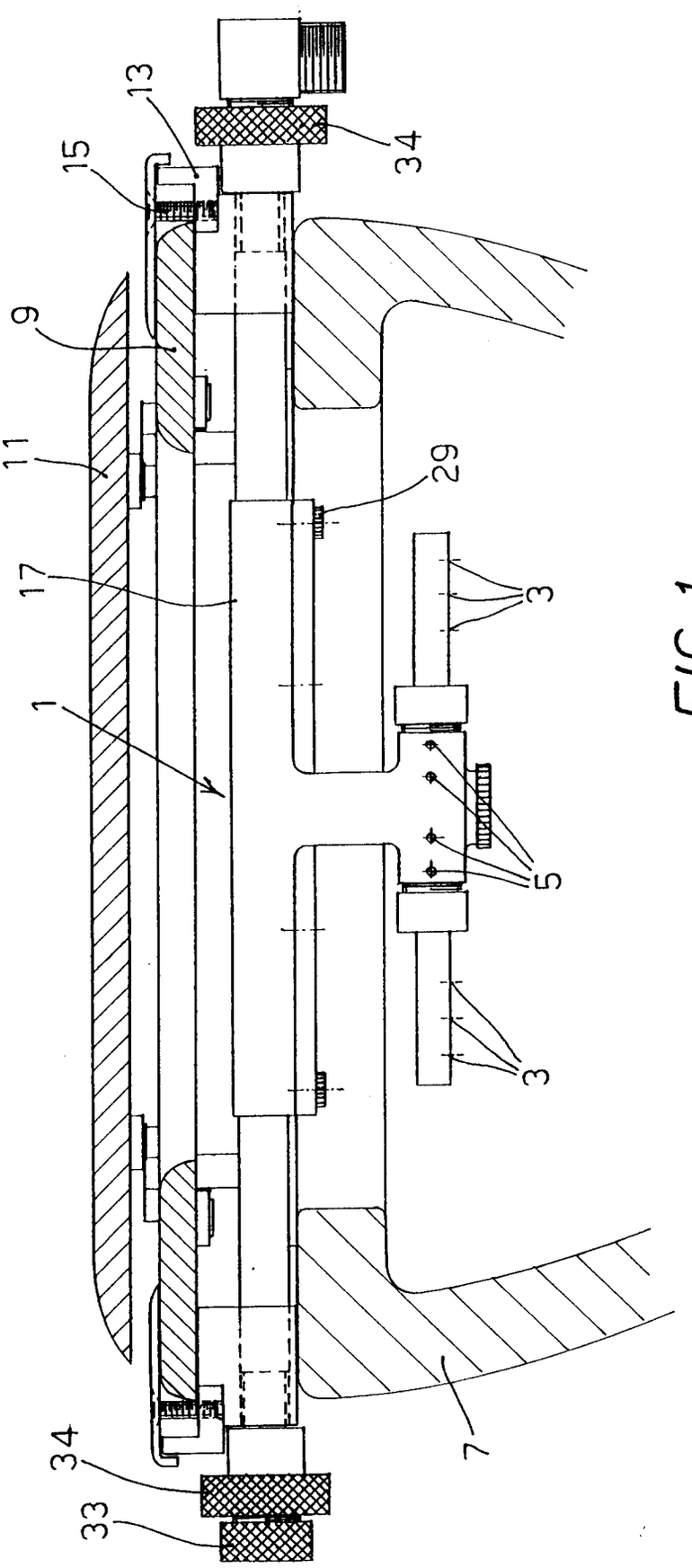

FIG. 1

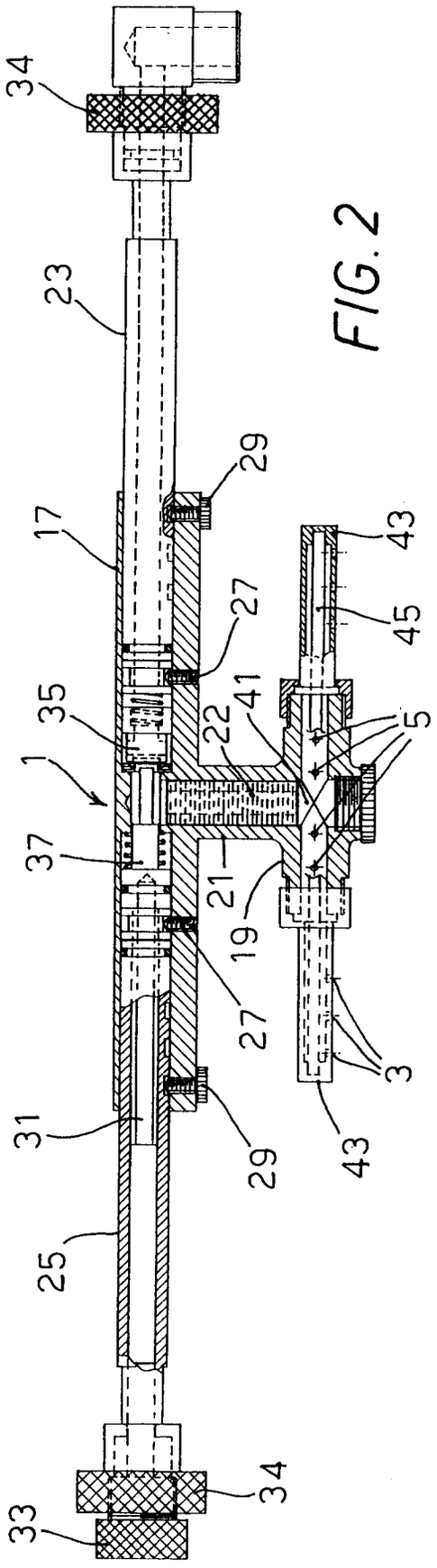
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FIG. 2

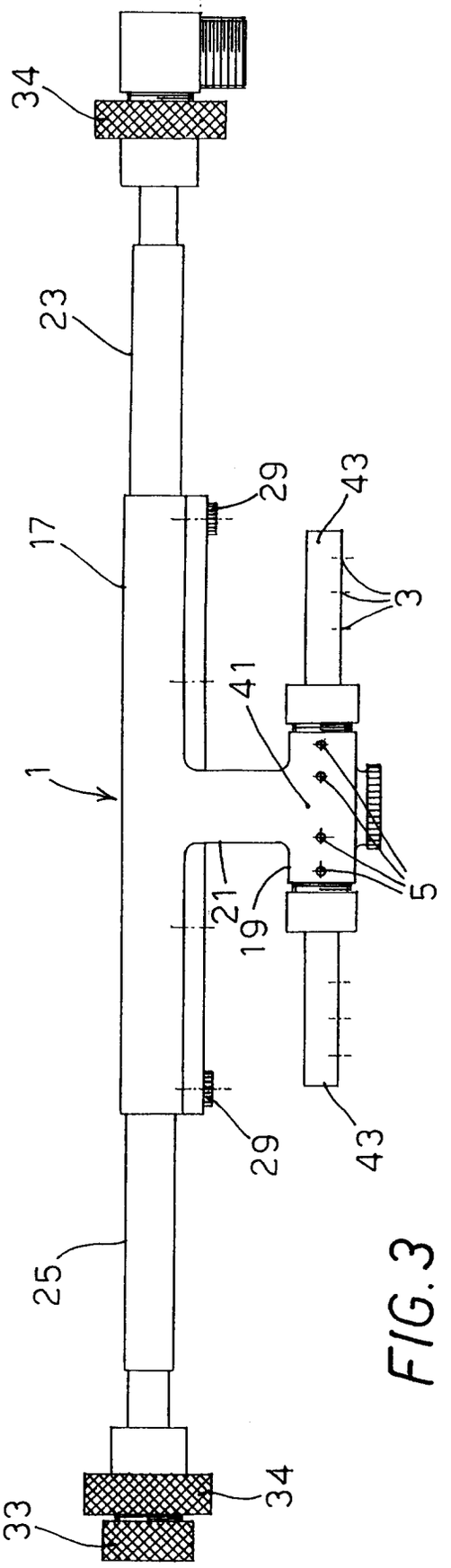
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FIG. 3

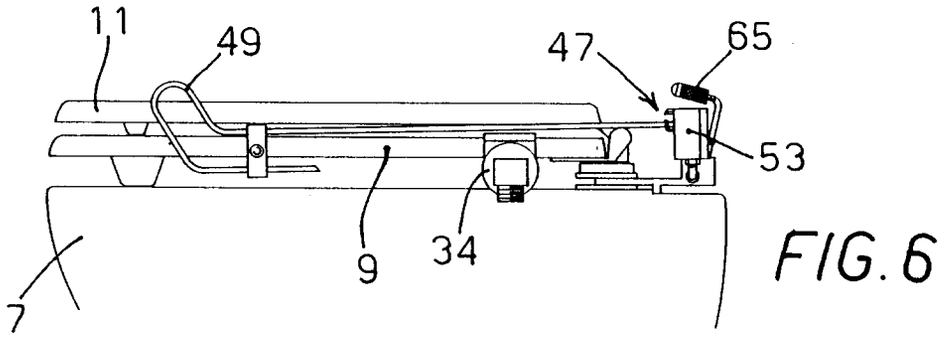

FIG. 6

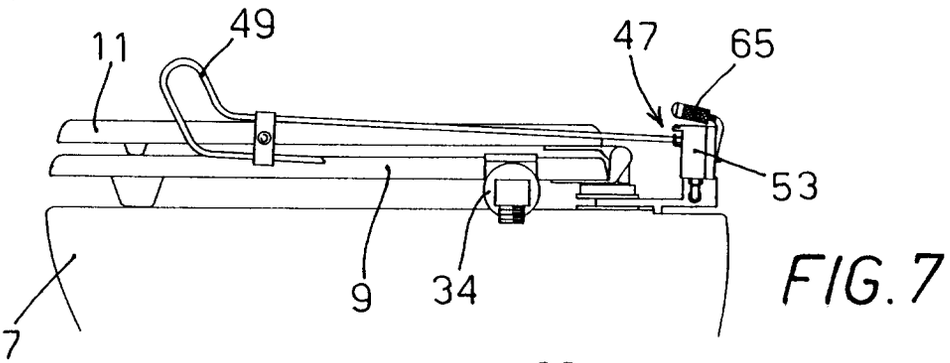

FIG. 7

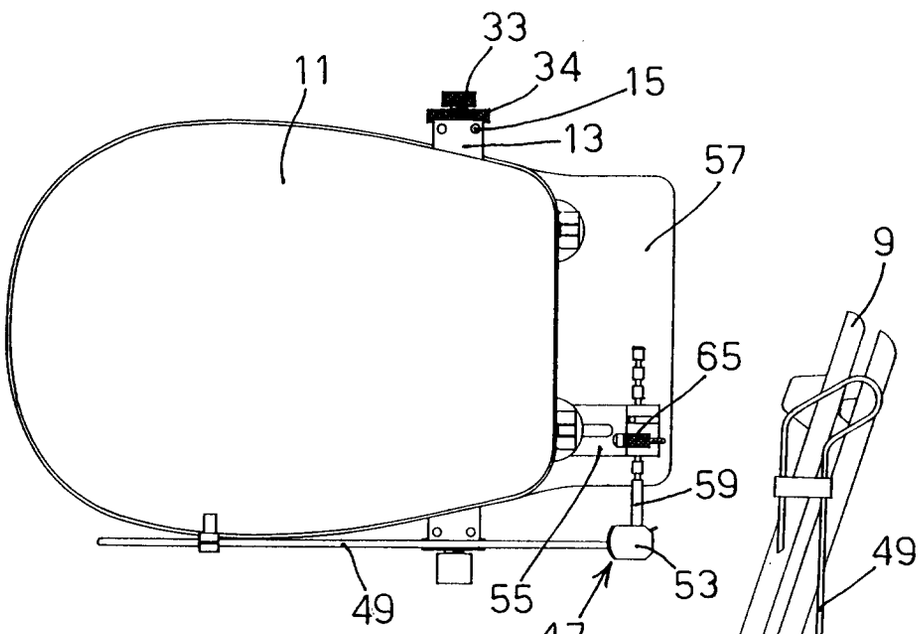

FIG. 4

FIG. 5

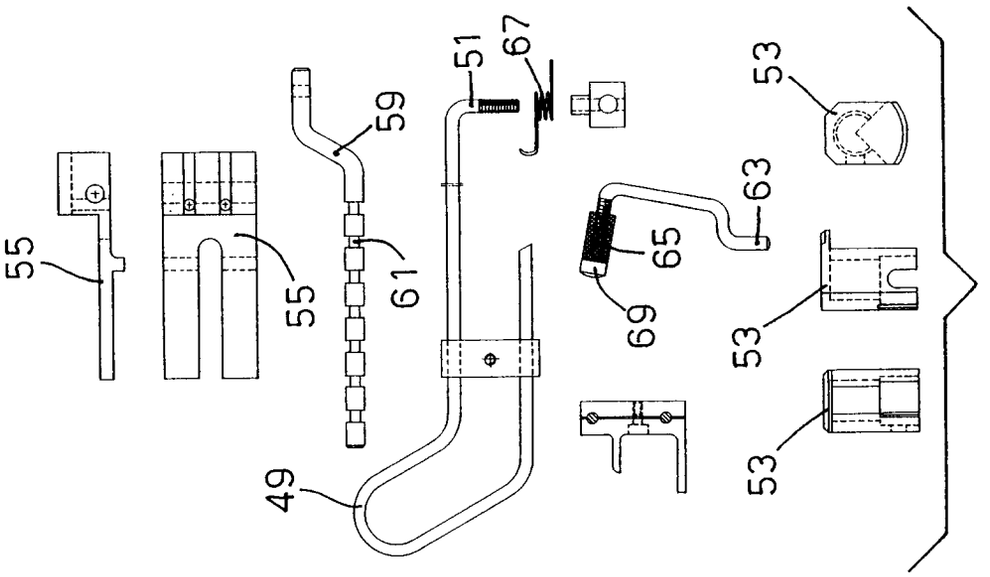
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FIG. 9

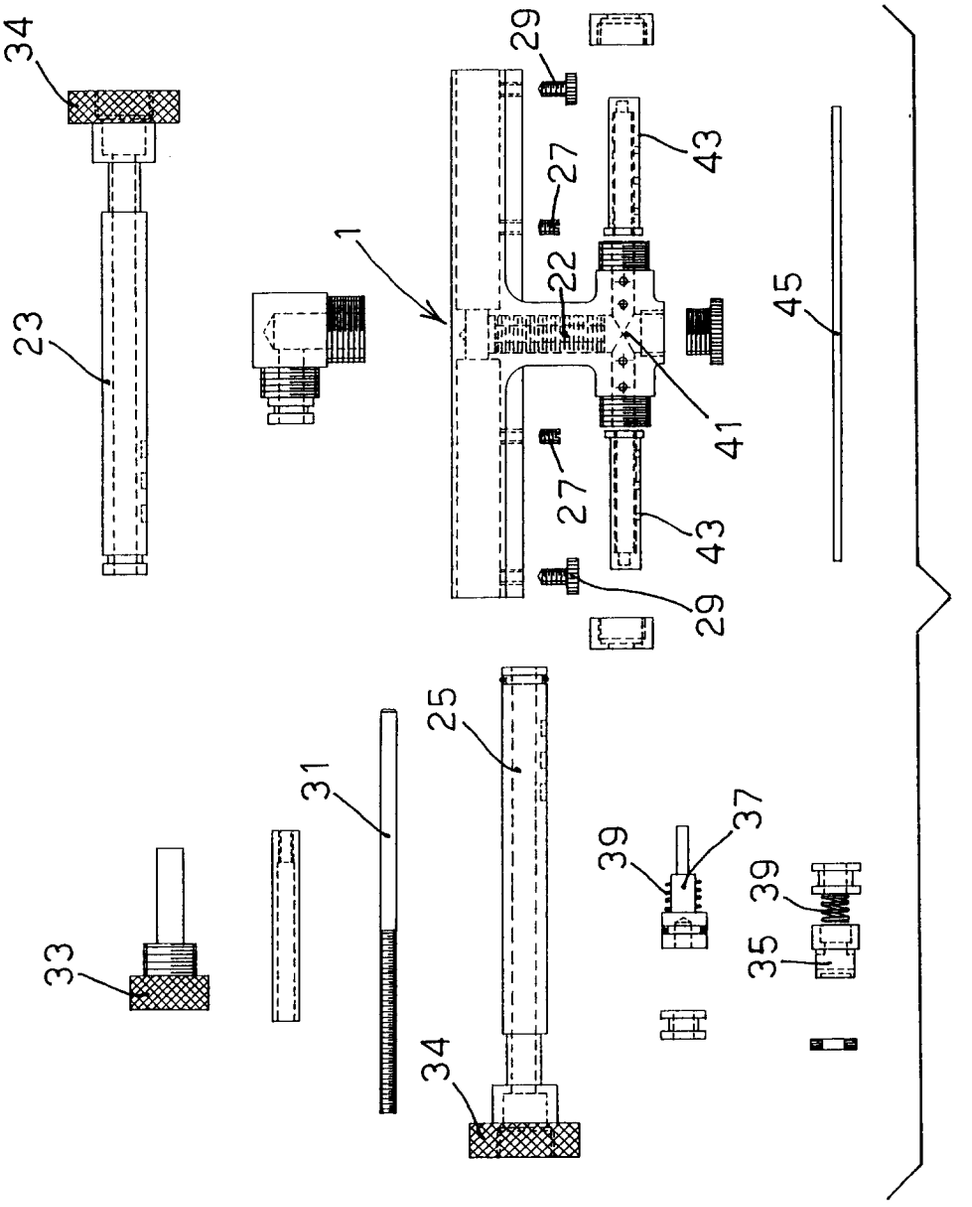
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FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 96 11 4430

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.6)
A	US-A-5 210 885 (RUO) * column 1, line 57 - column 2, line 50; figures 1-3 *	1,7	E03D9/08
A	DE-A-27 23 537 (BAST) * page 9, line 22 - page 14, line 17; figures 1-4 *	1	
A	DE-U-94 03 037 (AOUKAL) * claim; figure *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) E03D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 December 1996	Kergueno, J

CATEGORY OF CITED DOCUMENTS

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