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1,616,509

SEAT OPERATING MECHANISM FOR TOILETS, ETC

Filed Jan. 26, 1924

3 Sheets-Sheet 1

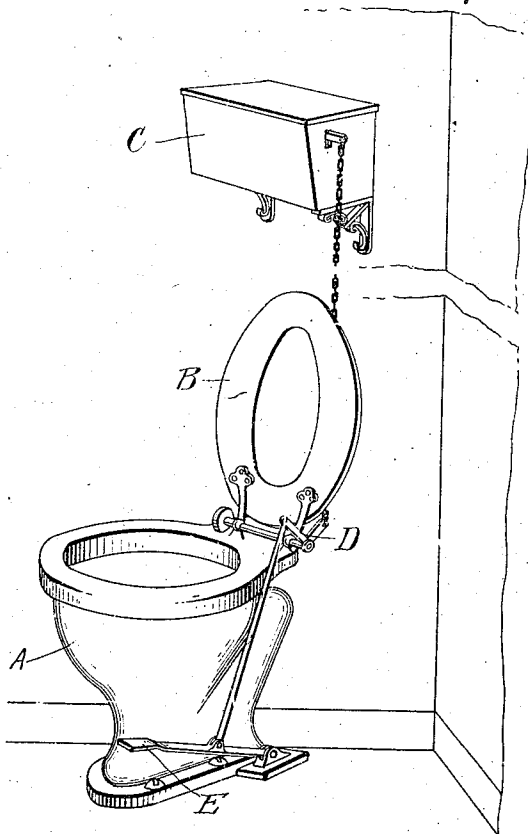


Fig. 1.

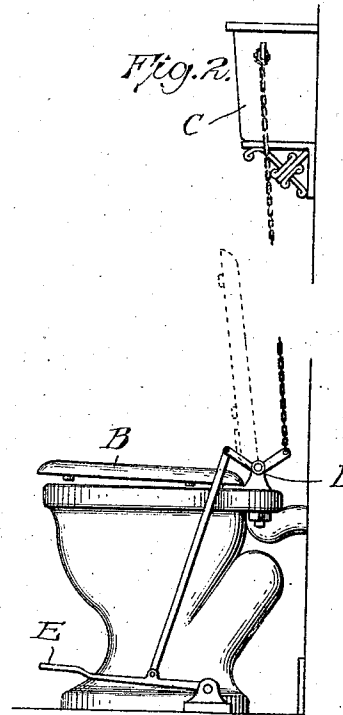


Fig. 2.

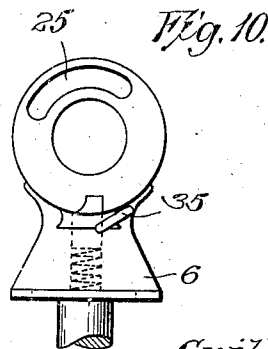


Fig. 10.

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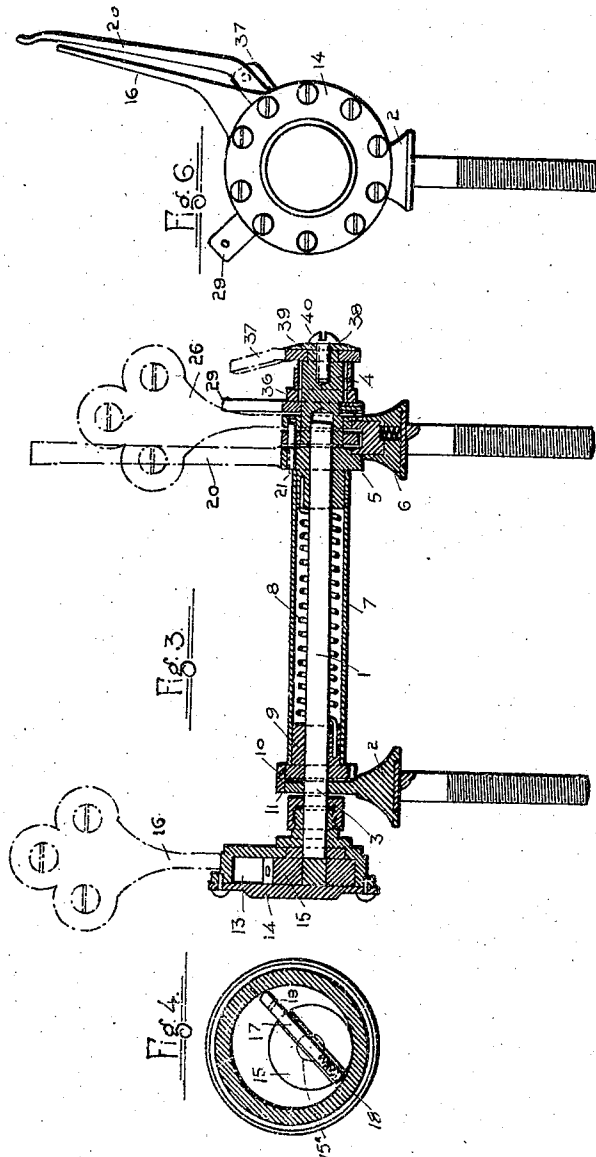
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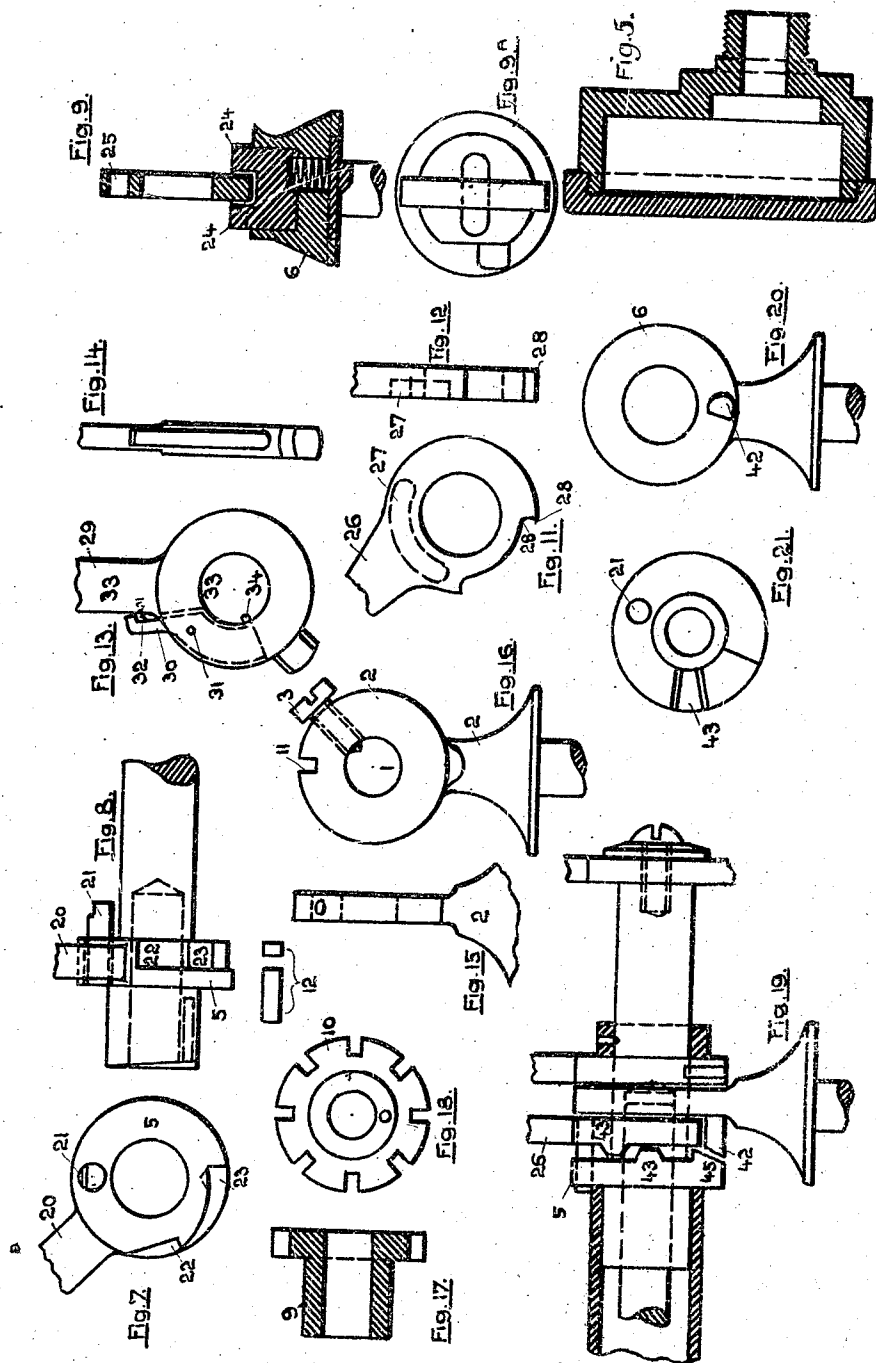
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SEAT OPERATING MECHANISM FOR TOILETS, ETC

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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SEAT-OPERATING MECHANISM FOR TOILETS, ETC.

Application filed January 26, 1924. Serial No. 688,875.

The object of the invention is an arrangement which can be applied to any water-closet in order to avoid the raising or lowering of the seat by hand, and working the discharge of water automatically without the help of the hand, after using the water-closet. With the new system it will never happen that the seat will move either up or down with a shock or noise, seeing that its movement is restrained by an arrangement under pressure of oil, as described below. With the device now invented, by means of a pedal and an apparatus described below, the seat descends to a position almost horizontal and only after the seat has been brought into contact with the water-closet by the weight of the person using it, does the mechanism of the said apparatus set itself to work the discharge of the water, and that too, only after the water-closet has been disoccupied; the downward pressure on the seat having ceased, then, owing to the same apparatus, a slow return of the seat to its vertical position is worked.

The annexed drawings represent the invention as an example, Figs. 1 and 2 shewing respectively views in perspective and in front elevation of a water-closet with respective seat and cistern. Fig. 3 is a cross section of the apparatus for the automatic working of the seat and the discharge of water. Figs. 4 to 21 are views in detail. In the drawings in which the same letters and the same reference numbers indicate identical parts. A is the water-closet, B the seat, C the water reservoir, D the device mounted on the water-closet, bearer of the seat B and the pedal E. The device D, which is properly speaking the object of the invention, consists of the apparatus F and the pedal E. The apparatus F (Figs. 3 to 21) is composed of a shaft I, fixed on one side to the eye of a support 2, by means of one or more screws and on the other side mounted, to revolve, inside a clutch 4, with flange 5, mounted, to revolve, on the eye of another support 6, connected by a slot 11 and a pin 12, to support 2, to maintain the tension given to the spring. The axle I carries on its free end, beyond the support 2, the mechanism to restrict the action of the spring, consisting of a circular oil vessel 13, with cap 14 (Figs. 3, 4, 5, 6) and by a disc fixed to the axle I. The vessel 13 has an arm 16 to fasten it to the seat of the water-closet and being able to revolve round the disc 15, which has a diametrical slot 15^a in which is mounted a small, smooth, extendible rod 17, in two parts connected by a spring 18, with a hole 19 at one end. The flange 5 of the clutch 4 has, projecting from its front face, an arm 20 (Figs. 7 and 8) and in the side face a pin 21, and in part of its circumference grooves 22 and 23 for the temporary introduction of a small projection 24, under the action of a spring in support 6, (Figs. 3, 9 and 10). This support has in its eye a slot 25, in which moves the pin 21 of the flange 5; at the side of this flange is the arm 26 (Figs. 3, 11 and 12) to which the seat of the water-closet is connected, having an eye to mount it, with an oscillating movement round the clutch 4, and this eye has a slot 27, in which the pin 21 of the flange 5 enters, and it has on its circumference a projection 28^a and a groove 28 for the said projection 24 to fit into, under the action of the spring in the support 6. An arm of a lever 29 (Figs. 3, 13 and 14) is mounted with a revolving motion, on the eye of the clutch 4, at the side of the arm 26, to serve for fixing the chain or cable for working the discharge of water, having in one part of the eye a small balance member 30, oscillating on its pivot 31, by a spring 32 on one end, and a nose 33 on the other end, which projects over the clutch, where in an orifice 34 the nose is capable of fitting in, and disattaching itself whenever the prop 35 in the support 6 neutralizes the action of the spring 32, by the upward movement of the seat. Immediately the arm of the lever 29 meets over the clutch 4 a small sleeve 36 and an arm 37, fixed on the square end of the clutch 38, where it is maintained by a washer 39 and a screw 40, serving to be connected with a pedal E. Instead of furnishing, as described and represented in Figs. 3 and 6, the base of the support 6 with projections 24, it is possible, as shown in Figs. 7 and 8, to

furnish the base of the support 6 with a side pin and the side faces opposite to the eyes of the flange 5 and of the arm 26 with conical projections 43, to attain the same object.

Method of working.—The apparatus F (Fig. 3) exactly as described and represented by the annexed drawings is fixed by its supports 2 and 6 to the back part of the water-closet, preferably by nuts and counter-nuts, having, however, first attached, with screws, the same apparatus to the seat of the water-closet by the arms 16 and 26. When it has been fixed in this way, adjust the spring 8 to the desired tension, i. e. until the seat when lowered, rises with the necessary facility. After the chain of the water reservoir has been connected to the arm 29, and the connecting rod 44 (Fig. 2) of the pedal E to the arm 37, the device is ready for working. Thus, when a person wishes to use the water-closet, it is sufficient to tread on the pedal E to cause the seat to come gently down, until it is very little above the mouth of the water-closet, as shown in Fig. 2. The movement produced by the pedal causes the arm 37, fixed to the clutch 4, to disconnect in the same way the said clutch, i. e. until the projection 24, under the action of the spring in the support 6 fits into the groove in front 22 of the clutch to take up the action of the large spiral springs 8, and to leave the arm 26 free, or in other words, to release the seat, which can then descend on to the mouth of the water-closet. The downward movement of the seat is slow owing to the action of the oil retarder, in the opposite end of the apparatus, the working of which is described below. As soon as it is in the position shown in Fig. 2, the person sits, with all his weight, on the seat, lowering it as far as it will go. This causes the arm 26, with the projection 28, at the end of its groove 28, to press down the projection 24, under the action of the spring in the support 6, releasing in this way the connection established before with the large spring 8, which again attempts to make the seat rise. At the same time also, i. e. when the water closet is occupied, owing to the slight twist given to the clutch 4 the arm 29 becomes rigidly fixed to the clutch, owing to the nose 33 fitting into the orifice 34 of the clutch 4. Now, when the person rises from the water-closet, the large spring 8 makes the seat rise again slowly, compelled to move slowly by the oil restriction; at this point the lever 29 puts the valve of the water discharge into action, and by the time the seat has reached its highest position, the prop 35 of the support 6 makes the arm 29 free itself from its connection with the clutch, to return to its original position pulling by means of the chain, the valve of the discharge of water. So that

all the mechanism of the apparatus is once more in its original position ready to work again.

The oil retarder, just as described and represented in the drawings, is a small vessel 13 full of oil, capable of revolving eccentrically round a disc 15 of smaller dimensions, which carries an extensible rod 17, with a side hole 19 at one end and which divides the vessel 13 into two watertight parts, it, therefore, has the same width as the vessel, and accompanies it from its tops in its movements. The retension is caused by the fact of the oil in one part of the vessel, when the seat of the water-closet to which it is fastened, is moved becomes compressed and compelled to pass by the side hole 19, of the dividing rod 17 to the other side of the vessel, which it does slowly owing to the compression of the oil. Said retarding mechanism is adapted for use in other connections where the movement of a hinged or pivoted element is to be retarded.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In apparatus of the class described, in combination, a seat; seat raising means tending normally to raise said seat and to maintain it in upright raised position; manually operable means to render said seat raising means inoperative and allow said seat to descend into substantially horizontal position for occupation; and means, rendered operative by further downward movement of said seat upon the application of downward pressure thereon, to render said seat raising means operative to raise said seat again into upright position when said downward pressure is removed.

2. In apparatus of the class described, in combination, a seat; seat raising means normally to maintain said seat in upright raised position; manually operable means to render said seat raising means inoperative and allow said seat to descend into substantially horizontal position; means, rendered operative by further downward movement of said seat upon the application of downward pressure thereon, to render said seat raising means operative to raise said seat again into upright position when said downward pressure is removed; a water reservoir; means to discharge the water therefrom; and means whereby said subsequent raising of said seat effects actuation of said water discharging means.

3. In apparatus of the class described, in combination, a seat; seat raising means tending normally to raise said seat and to maintain it in upright raised position; manually operable means to render said seat raising means inoperative and allow said seat to descend by gravity into substantially horizontal position; means, rendered opera-

tive by further downward movement of said seat upon the application of downward pressure thereon, to render said seat raising means operative to raise said seat again into upright position when said downward pressure is removed; and means to retard the movement of said seat in both directions.

4. In apparatus of the class described, in combination, a seat having a normal upright raised position, spring means tending normally to raise said seat and to maintain it in said raised position, means to render said spring means inoperative and thereby to allow the seat to descend by gravity into substantially horizontal position for occupation, mechanism for retarding said descending movement of the seat, and means for returning said spring means to operative relation with the seat upon further downward movement of the latter by downward pressure thereon, whereby said seat will again be raised when said downward pressure is removed.

5. In apparatus of the class described, in combination, a seat having a normal upright raised position, spring means tending normally to raise said seat and to maintain it in said raised position, means to render said spring means inoperative and thereby to allow the seat to descend by gravity into substantially horizontal position for occupation, mechanism for retarding said descending movement of the seat, means for return-

ing said spring means to operative relation with the seat upon further downward movement of the latter by downward pressure thereon, whereby said seat will again be raised when said downward pressure is removed, said retarding mechanism also being effective to retard upward movement of the seat, and means to adjust the tension of said spring means.

6. In apparatus of the class described, in combination, a seat, seat raising means normally to maintain said seat in upright raised position, manually operable means to render said seat raising means inoperative and allow said seat to descend into substantially horizontal position, means, rendered operative by further downward movement of said seat upon the application of downward pressure thereon, to render said seat raising means operative to raise said seat again into upright position when said downward pressure is removed, a water reservoir, means to discharge the water therefrom, connecting means for actuating said water discharging means by upward movement of the seat, and clutch mechanism for rendering said connecting means operative by said further downward movement of the seat and again inoperative upon completion of the full upward movement thereof.

In testimony whereof, I have signed my name to this specification.

GUILHERME REHN.