Feb. 17, 1953 A. STEIN 2,628,363

AUTOMATIC TOILET FLUSH DEVICE

Filed April 1, 1950

Fig. 1.

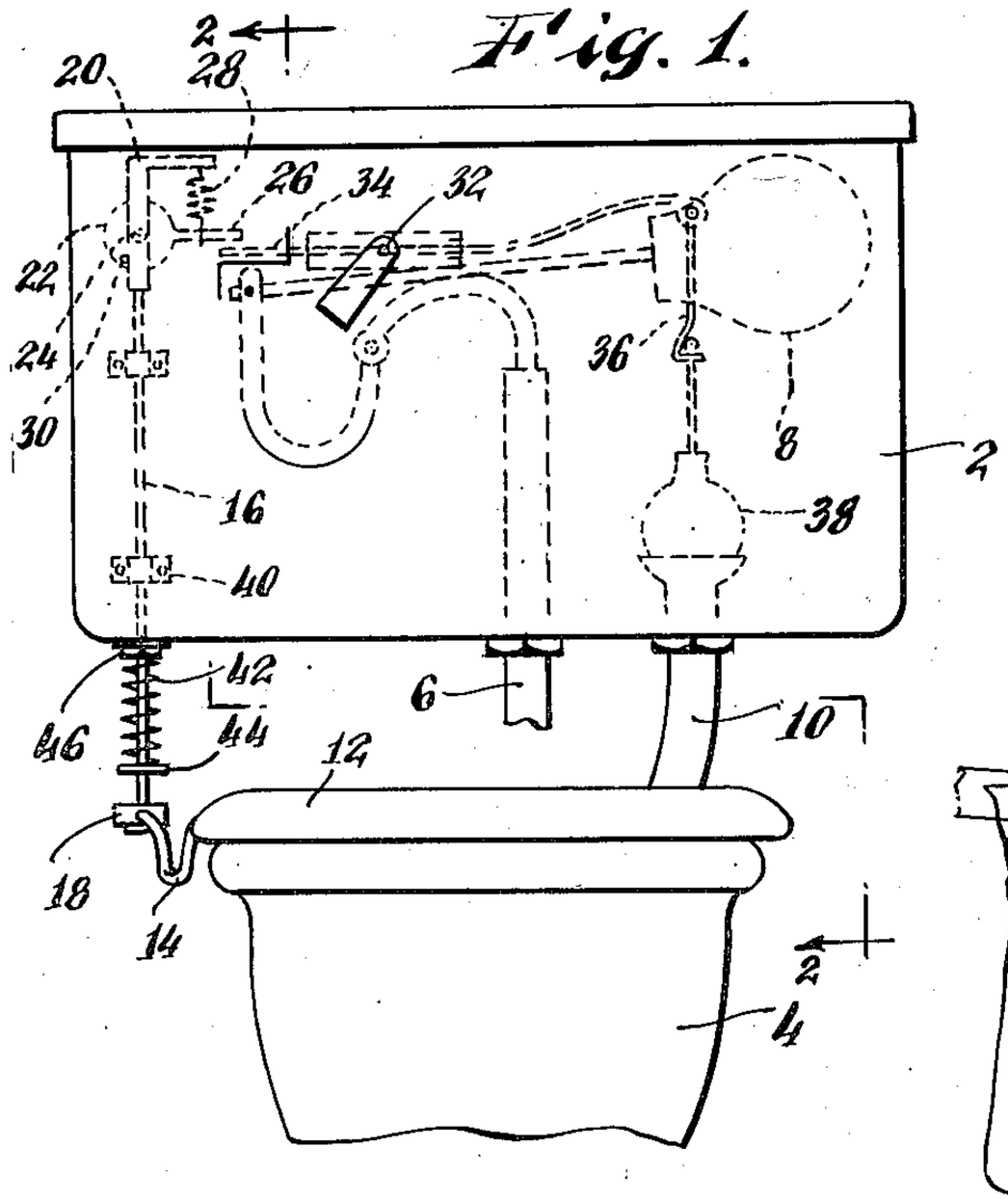


Fig. 2.

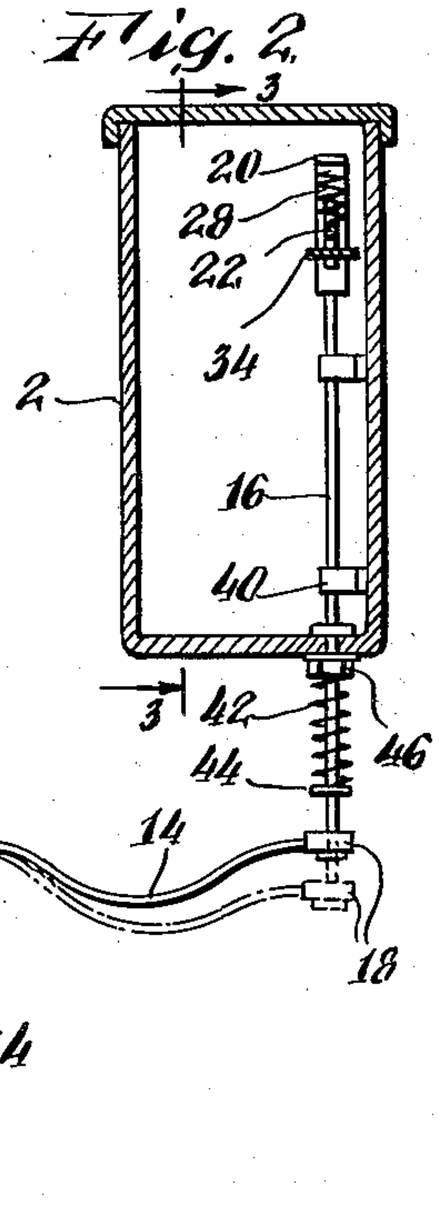


Fig. 3.

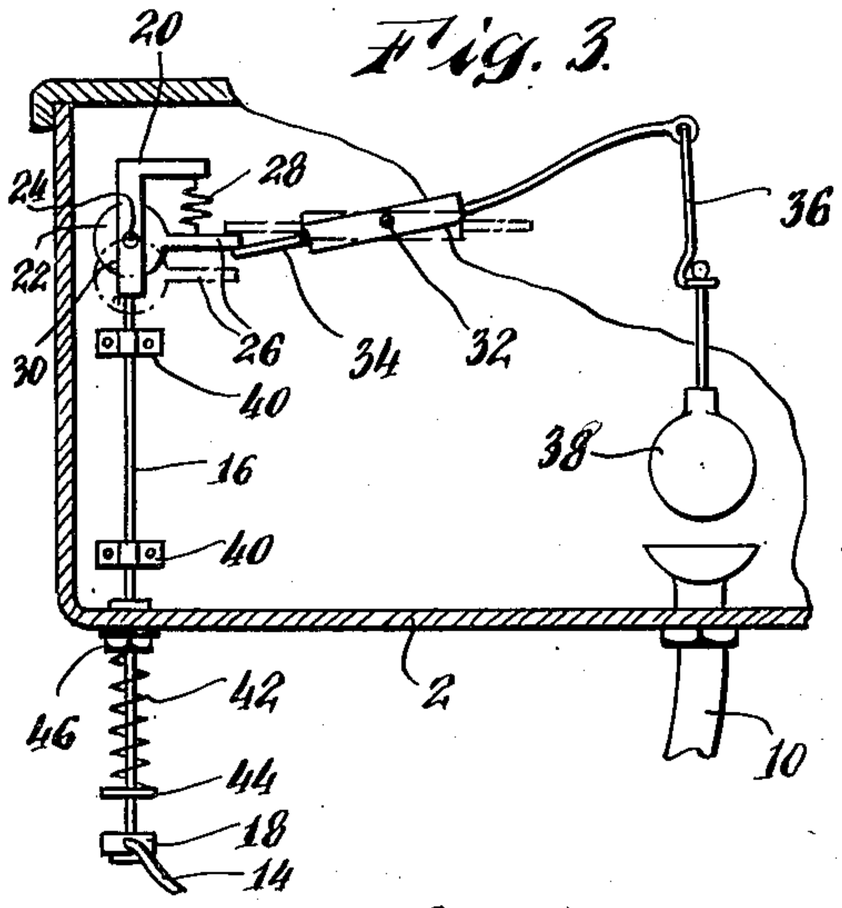


Fig. 4.

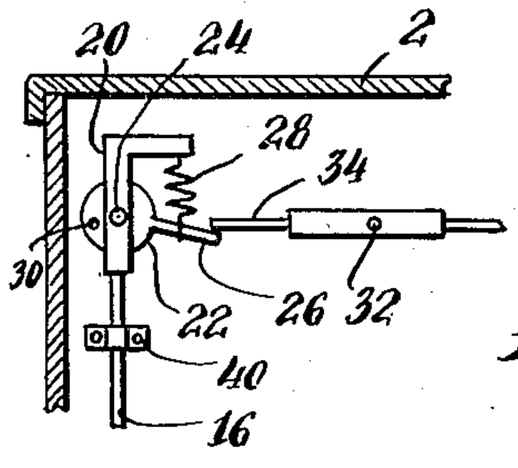


Fig. 5.

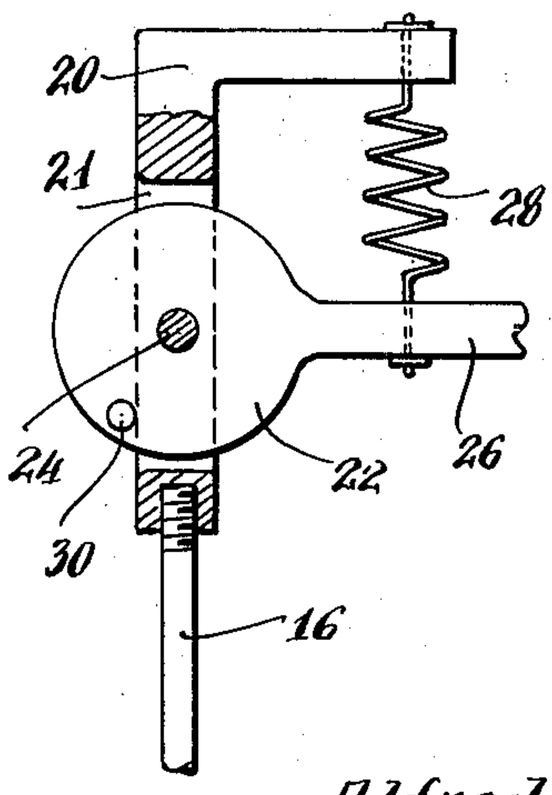
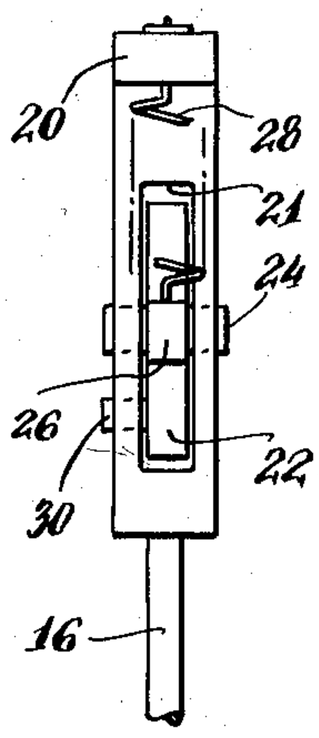


Fig. 6.



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AUTOMATIC TOILET FLUSH DEVICE

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Application April 1, 1950, Serial No. 153,418

2 Claims. (Cl. 4—59)

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The present invention relates to improvements in flush toilets and, more specifically, to a new and improved automatic toilet flush device.

One object of the present invention is the provision of a device of the character described which automatically raises the toilet seat to a slightly inclined position after the toilet has been used, and which simultaneously actuates the flushing mechanism in the same manner as if it had been actuated manually. The fact that my new and improved device raises the seat only slightly, about fifteen degrees, makes it unnecessary for users of the toilet to manipulate the seat with their hands before sitting down. As soon as a person sits down on the toilet seat, the seat is brought into a horizontal position, and the device is moved into a position in which it is ready to cause a flushing of the toilet immediately when the occupant of the toilet gets up from the seat. Thus my new and improved device is highly sanitary and requires no action whatsoever by users of toilets in public buildings, transportation vehicles, homes, hotels, restaurants, schools, and the like.

Another object of the present invention is the provision of a device of the character described which can be installed in presently used toilets without any substantial structural alterations of the same, irrespective of whether a pull chain flush box or a low flush tank is used, and which also can be provided on newly manufactured toilets without any substantial increase in cost.

A further object of the present invention is the provision of a device of the character described which is simple in construction, consisting of only a few inexpensive parts that can be assembled and installed easily and quickly, and which is also durable, sturdy, and well adapted for withstanding the rough usage to which devices of this type frequently are subjected.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain new details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing a preferred form of the invention has been shown.

In said drawing:

Figure 1 is a side elevation of a toilet with a preferred embodiment of my invention attached thereto;

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Fig. 2 is a sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a fractional sectional view on the line 3—3 of Fig. 2, showing the movable parts in a position which differs from that of Figs. 1 and 2;

Fig. 4 is a fractional sectional view as Fig. 3 showing the movable parts of the device in a position which differs from their position shown in Fig. 3;

Fig. 5 is a detailed fractional side view of means for actuating the trip lever of a flush mechanism; and,

Fig. 6 is a front view of the detail of Fig. 5.

Similar reference characters refer to similar parts throughout the several views.

In the drawing the numeral 2 denotes an ordinary toilet flush tank provided above a toilet bowl 4 on a wall, and receiving water through an inlet pipe 6, having a float 8, and being connected by an outlet pipe 10 to the bowl 4 which is provided with a toilet seat 12. The parts of the toilet mentioned above form no part of my present invention and may be of any approved shape or design.

The numeral 14 denotes a substantially horizontal lever which extends outwardly from that portion of the seat 12 that is hinged to the bowl 4. The lever 14 preferably is substantially right angularly disposed to the axis of the hinges (not shown) which connect the seat 12 to the bowl 4. A rod 16 has its lower end at 18 pivotally secured to the outer extremity of the lever 14, and is provided at its upper end with an angular head member 20. The latter has a vertical slot 21 in its vertical portion, and the disk-shaped portion 22 of a finger member is rotatable in the slot 21 on a cross-pin 24, which extends horizontally through the slotted vertical portion of the member 20. A longitudinal portion 26 is extended radially from the disk-shaped portion 22 of said finger member, and a tension spring 28 is interposed between the portion 26 and the horizontal portion of the member 20. The numeral 30 denotes a knob laterally protruding from the disk-shaped portion 22 and secured to the same and located thereon in such a manner that it rests against the member 20 when the portion 26 is parallel to the horizontal portion of the head member 20. Thus said finger member can revolve around the pin 24 from the position shown in Fig. 5 only in a clockwise direction, and its return movement is limited by the knob 30.

To the trip lever of the flush tank 2, which trip lever is secured to an axis 32, there is attached an extension 34 adapted to be engaged

by the portion 26 of said finger member in a manner referred to hereinafter for the purpose of moving a link 36 as well as a ball valve 38 in the tank 2.

The rod 16 is vertically shiftable in any suitable guiding means, for instance in a pair of lugs 40, one of which is beneath the vertical portion of the member 20 at such a distance therefrom as to limit the downward movement of the parts 16 and 20; the part 20 resting against the upper lug 40 when the parts 16 and 20 are in their lowermost position.

Any suitable resilient means provided at the rod 16 is adapted for forcing the rod 16 into its lowermost position. In the instance shown, a coiled pressure spring 42 is interposed between the bottom of the tank 2 and a ring member 44, which is secured to the lower portion of the rod 16 by means of welding or the like.

As long as the toilet is not being used, the spring 42 keeps the parts 16, 18 and 20 in their lowermost position, and keeps the lever 14 downwardly inclined and the seat 12 upwardly inclined as is indicated in Fig. 2 in dash-and-dotted lines. In this position the extension 34 is in a substantially horizontal position, and the valve 38 closes the pipe 10, so that no water can pass from the tank 2 into the bowl 4. If a person sits on the seat 12, the parts 12, 14, 16, 18 and 20 assume the position shown in full lines in Figs 2 and 3, and the spring 42 is compressed. While the parts 16 and 20 are moving upwardly, the portion 26 moves around the pin 24 in a clockwise direction and slides along the extension 34 (Fig. 4) without moving the latter, and the spring 28 is expanded. At the end of said upward movement, the portion 26 has passed the extension 34, has been pulled back to its original position by the spring 28, and is above the extension 34, as may be seen in Fig. 1. As soon as the person gets up from the seat 12, the spring 42 moves the parts 16, 18 and 20 down from the position shown in full lines in Fig. 3 to the position shown in dash-and-dotted lines in Fig. 3. Thereby the portion 26, which is prevented, by the knob 30 on the portion 22, from moving further in a counter-clockwise direction around the pin 24, depresses the extension 34 and swings the trip lever, causing a counter-clockwise rotation of the axis 32, so that the valve 38 will be lifted and will permit the water in the tank 2 to flow into the bowl 4, flushing the same. As the tank 2 is being re-filled with water in the usual manner, and the float 8 is being lifted, the extension 34 moves from the position indicated in full lines in Fig. 3 to its horizontal position shown in dash-and-dotted lines in Fig. 3 because in a well-known manner the float 8 is connected by those mechanical means which do not form part of my present invention to the flush valve 38 in such a way that the valve 38 will be lowered upon the valve seat as the float 8 is being lifted by the water flowing into the tank. Thus the float 8 causes a rotary movement of the axis 32 to which is secured the trip lever from which the extension 34 is extended. During this movement the extension 34 is in spaced relation to the portion 26, because during this movement the portion 26 remains beneath the extension 34, as is indicated in dash-and-dotted lines in Fig. 3, so that the extension 34 can move without touching the portion 26. The portion 26 remains in this position as long as nobody sits down on the seat 12; thus, as long as the seat 12 remains in the upwardly inclined position.

The parts 16, 20, 22, 24, 26, 28, 30, 34 and 40

can be mounted within the tank 2; if the opening through which the rod 16 extends into the tank 2 is provided with suitable packing means at 46, said parts can be partially in the water if the tank 2 is full.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent in the United States is:

1. In a toilet flush tank having a pivotable trip lever which is actuated by a float and operating a flush valve seated in a valve seat that surrounds the outlet opening of the flush tank, an automatic toilet flush device comprising a longitudinal member extending outwardly from that portion of a toilet seat which is hinged to a toilet bowl and substantially rightangularly disposed to the axis of the hinges which connect the seat to the bowl, a vertical rod pivotally secured with its lower end to the outer end of said longitudinal member, guiding means, in which said rod is slidable, being provided on the toilet flush tank, a head piece shaped as an inverted L having a slotted vertical portion in alignment with and secured to the upper end of said rod and terminating in a horizontal portion, a normally horizontally disposed extension pointing toward said head piece being mounted to the pivotable trip lever of the toilet flush tank, a normally horizontally disposed finger member which normally is parallel to the horizontal portion of said head piece having a disk-shaped hub portion pivotally mounted in the slotted vertical portion of said head piece, tension spring means interposed between said finger member and the horizontal portion of said head piece being adapted for forcing said finger member into a position in which it is parallel to the horizontal portion of said head piece, a knob extending from the hub portion of said finger member and resting against said head piece when said finger member is parallel to the horizontal portion of said head piece for the purpose of limiting the movement of said finger member in a counterclockwise direction, and resilient means on said rod adapted for forcing the latter and said head piece downwardly and for tilting said longitudinal member into a position in which said toilet seat is in an upwardly inclined position, in said last mentioned position of said rod, the finger member being beneath said extension which is substantially horizontal when the flush valve is closed, and upon occupation of said toilet seat the rod and the finger member thereby are raised the latter being tilted as it passes said extension without moving the same and upon having passed said extension said finger member being forced by said tension spring into a horizontal position above said extension, so that upon release of said seat and forcing of said rod downwardly, said finger member during its downward travel will engage said extension thus tilting the trip lever and causing a lifting of the flush valve from the valve seat.

2. In a flush toilet having a bowl to which a seat is hinged and having a flush tank with a flush valve seated in a valve seat that surrounds the outlet opening of the tank actuated by tilting a pivotable trip lever, in combination, a longitudinal member outwardly extended from that portion of the seat which is hinged to the bowl and being substantially rightangularly disposed to the axis of the hinges which connect the seat to the bowl, a vertical rod pivotally secured at its lower end to the outer extremity of said longitudinal member, a head piece shaped as an inverted L having a slotted vertical portion in alignment with and secured to the upper end of said rod and terminating in a horizontal portion, a normally horizontally disposed extension pointing toward said head piece being mounted to the pivotal trip lever of the toilet flush tank, a cross-pin extending through the slotted vertical portion of said head piece, a finger member having a disk-shaped hub portion through which said cross-pin is extended so as to permit the finger member to rotate thereon tnd having a longitudinal portion which projects beyond the horizontal portion of said head piece toward said extension and is adapted for engaging the latter, a knob laterally protruding from the disk-shaped hub portion of said finger member secured to the same and being located thereon in such a manner that it rests against said head piece when the longitudinal portion of the finger member is parallel to the horizontal portion of the head piece, a tension spring interposed between the horizontal portion of the head piece and the longitudinal portion of the finger member adapted for forcing said longitudinal finger member portion into a position in which the same is parallel to the horizontal portion of the head member, guiding means in which said rod is slidable provided on a vertical

surface beneath said head piece and spaced therefrom at a predetermined distance so that the lower end of the head piece rests against the guiding means when the rod is in its lowermost position, and a tension spring interposed between the lower end of said rod and a stationary member being adapted for forcing said rod into its lowermost position in which the toilet seat is upwardly inclined, in the last mentioned position of said rod, the longitudinal finger member portion being beneath said extension which is substantially horizontal when said flush valve is closed, and upon occupation of said toilet seat, the rod and the finger member thereby are raised, the finger member being tilted as its longitudinal portion passes said extension without moving the latter and upon having passed said extension said longitudinal finger member portion being forced by said tension spring into a horizontal position above said extension, so that upon release of said seat and forcing of said rod downwardly said longitudinal portion of said finger member during the downward travel of the latter will engage said extension thus tilting the trip lever and causing a lifting of the flush valve from the valve seat.

ALFRED STEIN.

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