May 19, 1942. R. P. LANDIS 2,283,678

COMBINATION LIFT AND FLUSHING DEVICE FOR TOILETS

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Fig. 1

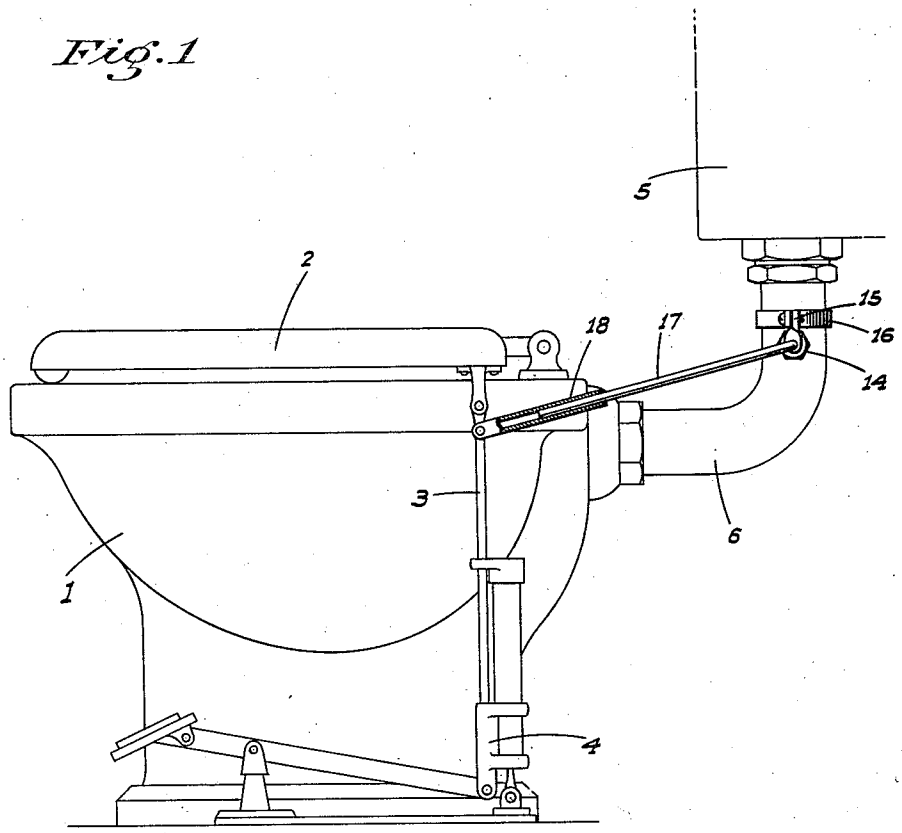
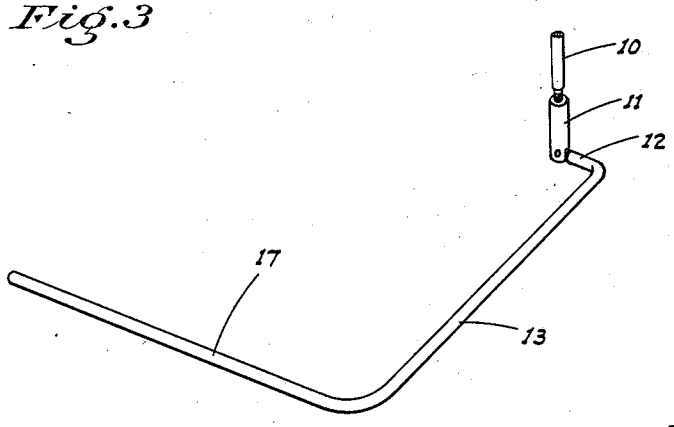


Fig. 3



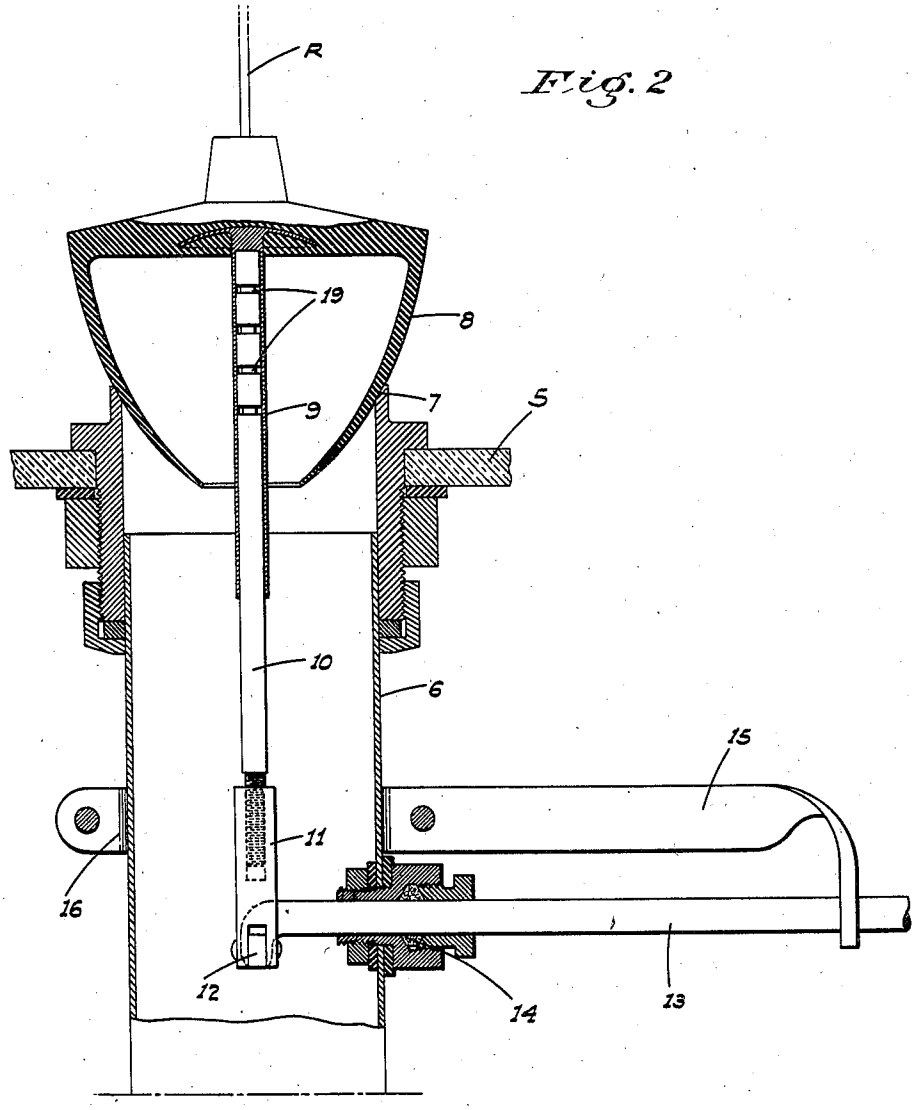
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Fig. 2



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COMBINATION LIFT AND FLUSHING DEVICE FOR TOILETS

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Fig. 4

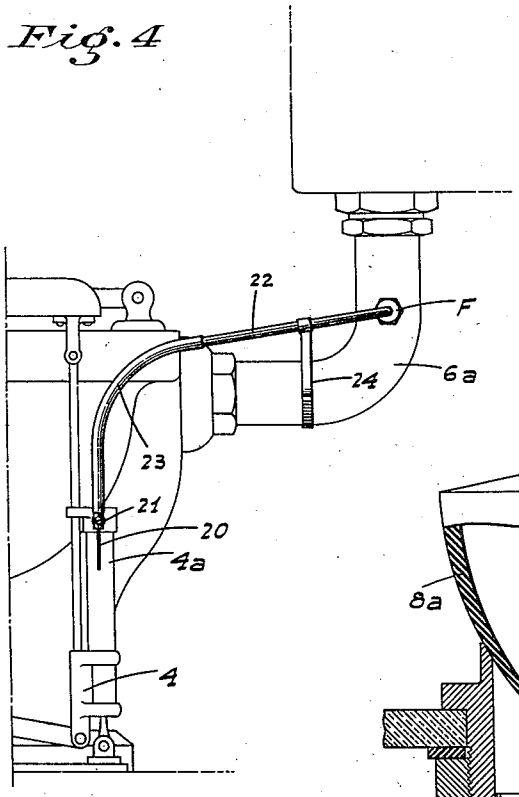
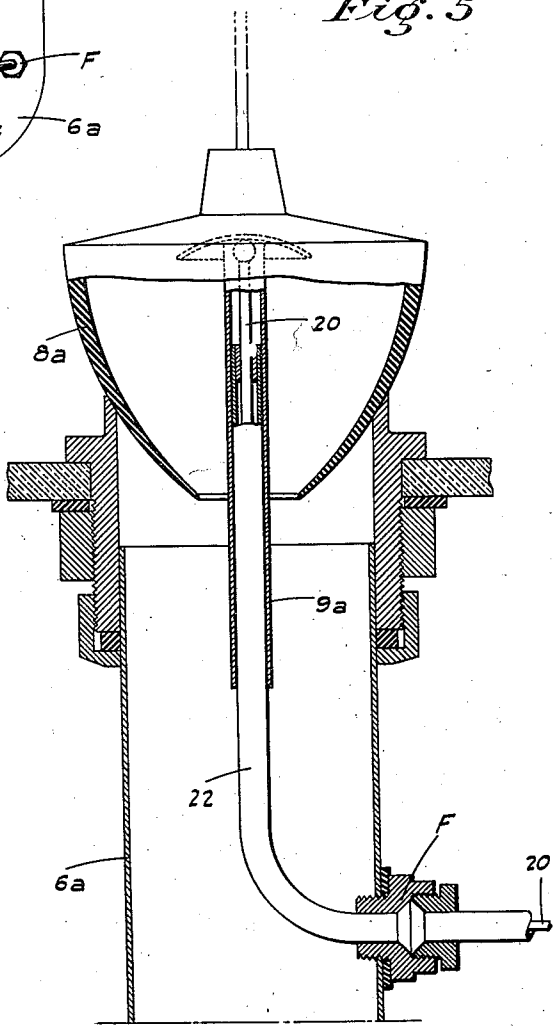


Fig. 5



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COMBINATION LIFT AND FLUSHING DEVICE FOR TOILETS

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Fig. 6

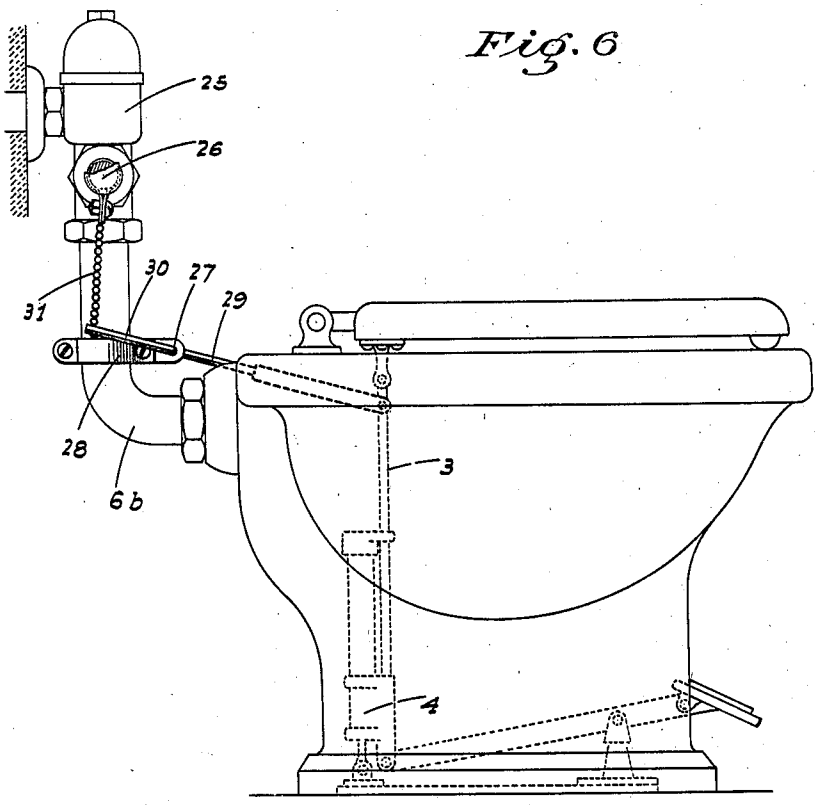
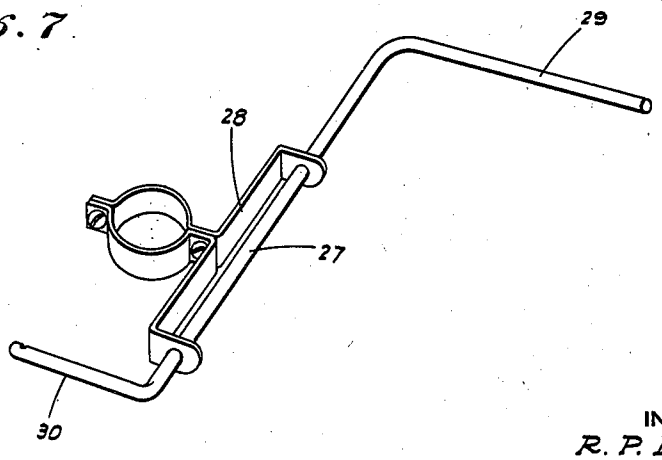


Fig. 7



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Patented May 19, 1942

2,283,678

UNITED STATES PATENT OFFICE

2,283,678

COMBINATION LIFT AND FLUSHING DEVICE FOR TOILETS

Richard P. Landis, Grass Valley, Calif., assignor to Diamond Sanilift Company, Inc., San Francisco, Calif., a corporation of California

Application July 23, 1940, Serial No. 346,930

3 Claims. (Cl. 4—251)

This invention relates to toilets and particularly represents a carrying forward of the sanitary features of toilet operation as set forth in my Patent No. 1,590,298, dated June 29, 1926.

In this patent, means is provided to raise the toilet seat when desired, and to cause the same to again drop, without touching the same with the hands, and the principal object of the present invention is to provide a means for flushing the toilet in connection with the operation of the seat raising device, so that flushing is accomplished automatically and while the seat is raised.

A further object is to provide a structure for the purpose which may be applied to different types of standard flushing mechanisms with equal facility and efficiency.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side outline of a toilet unit of the tank and ball valve type, shown in connection with my patented seat raising device and illustrating one form of flushing connection applied to the valve.

Figure 2 is an enlarged sectional view of a standard toilet flush pipe and ball valve, showing the connection of my improved operating means therewith.

Figure 3 is a perspective view of a portion of the flush actuating mechanism, detached.

Figure 4 is a fragmentary side view similar to Fig. 1, showing a modified form of flush actuating connection unit.

Figure 5 is a view similar to Fig. 2, showing the connection of the modified structure with the ball valve.

Figure 6 is a side elevation of a toilet equipped with a standard flush valve, showing the operating connection between the valve handle and the seat raising device.

Figure 7 is a perspective view of a portion of the flush valve operating unit detached.

Referring now more particularly to the characters of reference on the drawings, and particularly at present to Figs. 1 to 3, the seat 1 of the toilet bowl 2 is connected to the vertically movable rod 3 of the seat raising device 4 of said Patent No. 1,590,298.

This toilet is equipped with a flush tank 5 behind the same, the flush pipe 6 depending from the tank and communicating with bowl 2 at the back as usual. The pipe within the tank forms a seat 7 for the vertically movable hollow ball valve 8, to which the lifting rod R for the conventional hand operating mechanism is applied.

In order to lift this valve by the upward movement of the seat raising rod 2, I provide the following structure:

Mounted in and depending from the valve 8 is a sleeve 9 open at its lower end. A rigid stem 10 slides in this sleeve and normally engages the upper closed end thereof. At its lower end, this stem is adjustably screwed in an extension 11 pivoted at its lower end on the outer end of a short crank arm 12. This arm is preferably formed integral with a rod 13 which projects horizontally through the vertical portion of flush pipe 6 below the tank on the same side as the seat raising device 4. The rod is turnably guided in a packing gland 14 mounted in pipe 6, and further out by a bracket 15 having a yoke 16 on one end which surrounds pipe 6 above the gland in clamping engagement.

At its outer end, rod 13 is formed with a forwardly projecting arm 17, which slides in a sleeve 18 pivoted on rod 3 adjacent its upper end as plainly shown in Fig. 1.

In operation, it will be seen that as the rod 3 is moved up to raise the seat, the rod 13 will be turned, lifting rod 10 and the ball valve engaged thereby. The difference in actual distance between the fixed axis of rod 13 and the relatively movable pivot point between rod 3 and sleeve 18 is of course taken up as the rod 3 moves, by reason of the sliding fit between extension 17 and sleeve 18. The rod 10 having a sliding fit in sleeve 9, does not prevent the ball valve being lifted by the hand operating mechanism in the usual manner when necessary. In order to easily accommodate the structure to different toilets in which the height of the vertical portion of pipe 6 may vary, the rod 10 is formed at its upper end with a number of vertically spaced weakening grooves 19, so that the rod may be easily shortened if necessary by severing one or more of the short weakened sections; accurate adjustment for length being obtained by reason of the threaded connection between rod 10 and extension 11.

In the structure of Figs. 4 and 5, a modified form of valve lifting unit is shown. In this device, a flexible wire or light rod 20 engages the

sleeve 9a in ball valve 8a and extends thence to an adjustable swivel connection 21 with seat raising unit 4, preferably at the top of the vertically movable operating cylinder 4a of said unit.

A housing or sleeve 22 surrounds the rod 20 in guiding relation from within sleeve 9a to a point short of connection 21; a flexible length of housing 23 surrounding the rod from said connection to and overlapping the adjacent end of housing 22 in sliding relation. The housing 22 where it passes through the flush pipe 6a is engaged by a compression fitting unit F, and outwardly of said pipe some distance is supported by a bracket 24 secured on pipe 6a.

In the operation of this form of the device, it will be seen that the upward movement of rod 20 at its outer lower end, is imparted directly at its opposite upper end to the ball valve; the rod 20 and flexible housing 23 straightening out, and swivel connection 21 turning accordingly, as the cylinder 4a lifts.

In the type of structure shown in Figs. 6 and 7, the toilet flush pipe 6b is connected to a standard flush valve 25 having a laterally projecting operating handle 26 whose downward movement effects a flushing operation.

To impart such downward movement to this handle with the raising of the seat by the lifting device 4, I provide a transverse rod 27 between the toilet bowl and the flush pipe 6b. This is turnably supported in a bracket 28 clamped on said flush pipe. On the same side of the toilet as device 4, the adjacent end of rod 27 is provided with a forward arm 29, corresponding to arm 17 of the first described type, and similarly connected to the vertically movable rod 3 of device 4. At its opposite end, rod 27 is provided with a relatively short rearward arm 30, terminating below handle 26.

A chain 31 or similar flexible element connects the handle 26 and said arm 30.

It will therefore be seen that the upward movement of arm 29, had with upward movement of rod 3, turns arm 30 down, pulling handle 26 down also and causing a flushing action to be had. At the same time, the flush valve handle may be actuated by hand without interference when necessary.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In a toilet having a raisable seat and a normally closed flush valve behind the seat; the combination with a device to lift the seat and including a vertical member disposed to one side of the seat and mounted for substantially vertical movement in a guided path, of a valve actuating mechanism including a rod pivoted rearwardly of and projecting forwardly on said side of the seat to a forward termination rearwardly of said member, and a sleeve pivoted on the member and slidably engaging over the forward end of the rod.

2. In a toilet having a raisable seat and a normally closed flush valve behind the seat; the combination with a device to lift the seat and including a vertical member disposed to one side of the seat and mounted for substantially vertical movement in a guided path, of a valve actuating mechanism including a flexible push element projecting forwardly from a point rearwardly of the seat and then curving down to a forward termination substantially parallel to and overlapping the member, a swivel connection between the element and member, a fixed relatively inflexible housing enclosing the rear portion of the element and a flexible housing enclosing the forward portion of the element and extending from and engaging the connection to rearward termination overlapping the forward end of the fixed housing.

3. In a toilet structure having a flush pipe including a vertical portion, a normally closed valve over the upper end of the pipe and movable upwardly to provide a flushing action, a sleeve mounted in and depending from the valve, said sleeve being closed at its upper end, a vertical rod slidable in the sleeve and normally engaging the closed end thereof, means to lift the rod including a horizontal rod projecting through one side of the pipe below the valve and means weakening the rod at spaced points in the upper end portion thereof whereby to facilitate altering the length of the rod to conform to the requirements of flush pipes having vertical portions of different lengths.

RICHARD P. LANDIS.