R. STICKDORN.

AIR CHAMBER FLUSHING APPARATUS.

APPLICATION FILED MAR. 17, 1908.

918,216.

Patented Apr. 13, 1909.

FIG.1.

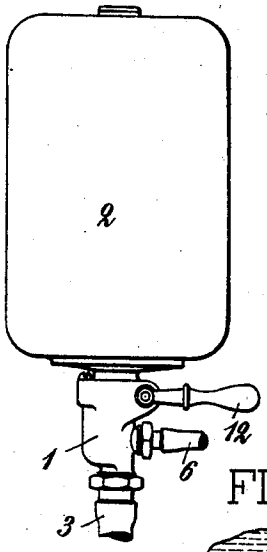


FIG.2.

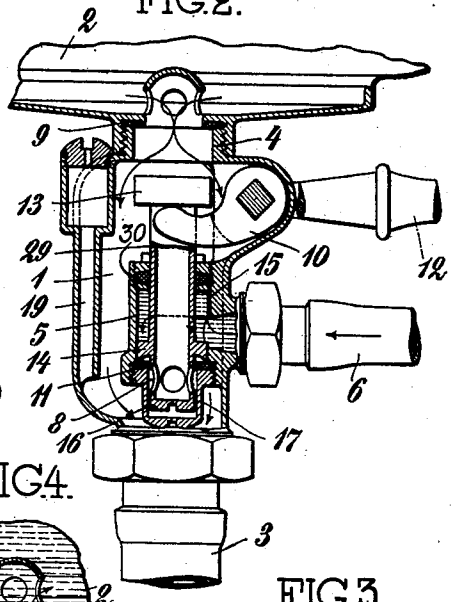


FIG.4.

FIG.5.

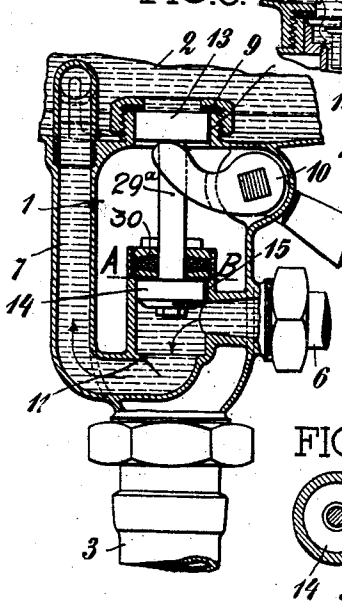


FIG.3.

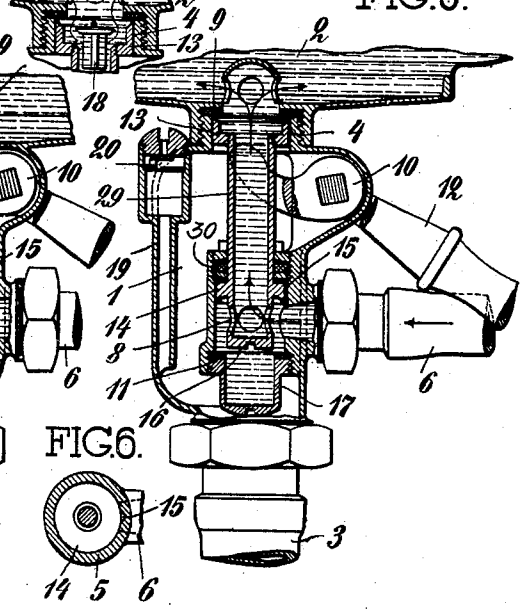


FIG.6.

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ROBERT STICKDORN, OF DUSSELDORF, GERMANY.

AIR-CHAMBER FLUSHING APPARATUS.

No. 918,216. Specification of Letters Patent. Patented April 13, 1909.

Application filed March 17, 1908. Serial No. 421,618.

To all whom it may concern:

Be it known that I, ROBERT STICKDORN, a subject of the German Empire, residing at Dusseldorf, in the Kingdom of Prussia, Germany, have invented a new and useful Air-Chamber Flushing Apparatus, of which the following is a complete and full specification.

The subject then, of the present application is a flushing apparatus for water-closets which consists of an air-chamber and is furnished with a differential piston and by moving a lever or a pull, is filled and emptied, the tank or chamber remaining empty until it is again required to be used. The new flushing apparatus is especially characterized in that the water tank itself serves as a counter-pressure chamber for the differential piston, over pressure being induced during the filling process whereby the differential piston which serves to close the water feed and open the flush, is so actuated that it performs these functions automatically.

On the accompanying drawing Figure 1, represents the water tank, somewhat resembling an air-chamber with the valve casings and with the hand lever for opening the water feed. Figs. 2 and 3 are longitudinal sections, principally of the valve casings, in somewhat larger scale, while Fig. 4 is a detail. Fig. 5 shows the apparatus in another form and Fig. 6 is a section on line A—B of Fig. 5.

The differential pistons 13 and 14 and their respective valve-seats are inside the flush pipe *i. e.* inside the housing 1. The latter is narrowed at the top to a cylinder 4 for the large piston 13. The smaller piston 14 works in the cylinder 5 provided with a stuffing box 30 for the accommodation of rod 29, connecting pistons 13 and 14. Cylinder 5 is provided with the pressure water inlet 6 for the flush tank. In the case of the modes of construction shown in Figs. 2 and 3 the water feed is controlled by the piston rod 29, which is hollow and is furnished at its bottom with inlet holes 8 for the water. Beneath the inlet 6 is the valve seat 11 for the small piston 14. For the purpose of raising the differential piston there is a hand lever 12, carrying a finger or fork 10. The flushing apparatus works in the following manner:

The tank 2 is, as already mentioned, empty as a rule, and the differential piston 13, 14 is in the position shown in Fig. 2. The small piston 14 rests on the valve seat 11 and the entry of the pressure water is prevented. On the other hand, the larger piston 13 has left the narrowed cylindrical part 4 and the seat 9, so that the fall pipe 3 is connected with the tank 2. Therefore, when the lever 12 is depressed (Fig. 3), the piston is raised from the seat 11, and the pressure water is free to pass through hollow piston rod 29 to the tank 2. On the piston 14 being raised the water above piston 14, escapes downward through a groove 15 on the inner wall of cylinder 5. Simultaneously with the raising of the piston 14 from the valve seat 11, the larger piston 13 is pressed on to its seat 9 so that the tank is filled. The lever 12 may be released immediately after it has been depressed, as its weight and the pressure water streaming in under the smaller piston prevents the fall of the differential piston.

When the water tank is filled so that there is the same pressure as in the feed pipe, it exercises great pressure on the larger piston which is depressed and takes up the position shown in Fig. 2, so that the feed is cut off and the tank run empty. Before the piston 13 leaves the cylinder, the water feed 6 has already been closed so that the entry of water is interrupted before the flush begins. In order to prevent the piston 14 falling with too great force on to its seat 11, which is induced by the pressure of the water feed, the piston rod 29 has an extension 16, which, during the descent engages into a suitable bore 17, in the cylinder 5 so that the movement is retarded.

In order to obviate the counter suction of the water out of the tank, it is advisable to fit a recoil valve (see Fig. 4). It is also necessary, after emptying the tank, to fill with fresh air, which is effected through the pipe 19 which is kept closed by the valve 20, so that the falling water itself can suck in the air but cannot escape.

In the modification shown in Fig. 5, piston rod 29^a is made solid, the water passing from inlet 6 through branch 7 into tank 2.

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

1. In a flushing apparatus, a water tank, a communicating first cylinder, an upper piston head movable therein and adapted to be withdrawn therefrom, a lower piston head connected to the upper head and having a smaller area than said head, a second cylinder engaged by the lower piston head, a water inlet communicating with the second cylinder, and a water outlet communicat-

ing with the first cylinder, substantially as specified.

2. In a flushing apparatus, a water tank, a housing depending therefrom, a first cylinder formed by the top of said housing and adapted to communicate with the tank, a second cylinder within the housing arranged vertically below the first cylinder, a differential piston engaging both cylinders, a water inlet communicating with the second cylinder and adapted to be controlled by the differential piston, a water outlet at the bottom of the housing, and a hand lever operatively connected to the differential piston, substantially as specified.

Signed by me at Dusseldorf Germany this fifth day of March 1908.

ROBERT STICKDORN.

Witnesses:
PETER LIEBER,
WILHELM FLASCHE.