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FLUSHING MECHANISM.

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1,083,161. Patented Dec. 30, 1913.

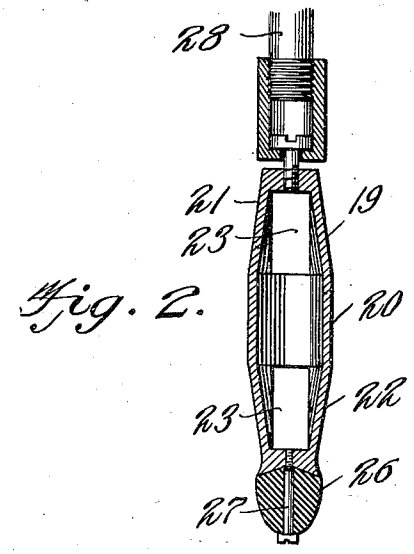


Fig. 2.

Fig. 1.

Witnesses

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To all whom it may concern:

Be it known that I, JOSEPH A. VOGEL, a citizen of the United States, residing at Wilmington, in the county of Newcastle and State of Delaware, have invented new and useful Improvements in Flushing Mechanisms, of which the following is a specification.

The invention relates to an improvement in flushing mechanisms for closets, and is particularly directed to a flushing mechanism operatively controlled by the pressure of the seat and utilizing the direct service current and pressure as a flush.

The main object of the present invention is the provision of a flushing apparatus in which the use of washers or similar parts subjected to wear and requiring frequent renewal is entirely dispensed with, and the entire flow of the water controlled by a single valve having a double function.

Another object of the invention is the provision of a valve designed to simultaneously control the water inlet and waste outlet from the flushing apparatus, said valve being so formed as to avoid the necessity for the use of washers or similar wearable parts.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation, partly in section, showing the improved flushing mechanism in connection with a bowl. Fig. 2 is an enlarged sectional view illustrating particularly the construction of the valve for the flushing mechanism.

Referring particularly to the accompanying drawings, my improved flushing apparatus is designed for use in connection with the ordinary bowl 1 adapted to be secured in position on a floor or other base 2 through the use of the bowl flange 3, the bowl having the usual outlet 4 in open communication with the waste.

The flushing apparatus proper includes a stand pipe 5 of appropriate diameter designed to be arranged in vertical relation adjacent the bowl. At the lower end the stand pipe is exteriorly threaded to receive the upper end of a valve seat section 6. The central portion of the valve seat section is exteriorly of equal diameter throughout, while the upper section is of larger diameter than the central portion, and the lower portion of less diameter, as clearly shown in Fig. 1. The upper portion of the interior of the central section of the valve seat coupling is of a uniform diameter to provide a valve seat 7, while the lower portion of the central section is of greater diameter than the valve seat 7, providing a chamber 8. That portion of the wall of the valve seat coupling connecting the central section with the lower section is arranged on an incline, as at 9, forming at its juncture with the lower portion a main valve seat 10. The lower portion of the valve seat coupling is designed to be connected to the service pipe from any source of supply under pressure, while the upper portion of the coupling is designed to be directly secured to the lower end of the stand pipe 5.

The upper end of the stand pipe adjacent the upper end of the bowl 1 is provided with a T-coupling 11, one section of the latter being connected directly to the stand pipe with the lateral extension 12 thereof projecting toward and in horizontal alinement with the threaded inlet 13 of the bowl.

Arranged within the valve section 6 of the stand pipe is a valve body 19, more clearly shown in Fig. 2. The valve body is an integral structure, having a central portion 20 of uniform diameter throughout and designed to more or less snugly fit the valve section 7 of the central portion of the valve seat member 6. The upper and lower portions 21 and 22 of the valve body are of conical formation, being gradually reduced in diameter from their connection with the central portions to the end of the valve body. The valve body is hollow throughout its length, being closed at the ends, and in the portions 21 and 22 formed with diametrically opposed openings 23 extending throughout the length of the respective sections and establishing communication between the interior of the valve body and the valve seat member above and below the central portion 20 of said body. The external

surface 20 of the valve body is ground to provide an accurate closure for a waste port 24 formed in the wall of the valve seat member 6 within the limits of the section 7 thereof, and said port 24 is connected by a waste pipe 25 with the waste section 4 of the bowl. The lower end of the valve body is formed with a conical depression to receive a valve proper 26, preferably removably secured in place by a bolt 27 and designed for effective coöperation with the seat 10 in the valve seat section 6. The construction of the parts at this point is such that when the valve body is in such position that the valve 26 will effectively coöperate with the valve seat 10, the seat 20 of the valve body will be below the waste port 24, and while the valve 26 is beyond or off of the valve seat 10 the valve portion 20 will be in position to close the waste port 24. By this arrangement when the valve body is in position to shut off the supply, the interior of the stand pipe 5 is in communication with the waste port, and when the main supply is open to the stand pipe, the waste port is cut off.

The valve body is removably connected to a valve stem 28, preferably constructed in sections united by a coupling 29. The upper section 30 passes through an opening formed in a plug 31 closing the upper end of the T-coupling 11, the opening in the plug having the usual packing and gland nut 32 to prevent leakage. The upper end of the valve stem is provided with a removable disk 33, for a purpose which will presently appear. A spring 34 is coiled about the upper section of the valve stem, bearing at one end on the coupling 29 and at the opposite end against the lower surface of the plug 31, the spring being tensioned and normally operating to maintain the valve body in such position as to cause the valve 26 to cut off the supply from the main supply pipe. The fan section 14 carries upstanding ears 35 between which is pivotally mounted the strap 36 carrying the usual seat 37, the lower end of the strap carrying wings 38 designed when the seat is in lowered position to engage the disk 33 and elevate the valve body to open the supply pipe to inclose the waste port.

The operation of the construction will be fully apparent from the above description taken in connection with the drawings, it being understood that the device is flushing continually during the use of the bowl and that immediately upon release of the pressure upon the seat the valve body 19 is forced to the lowered position by the spring 34 shutting off the supply and permitting the water remaining in the stand pipe to discharge through the waste. In outside closets this is particularly effective as it prevents freezing, it being understood that the valve seat section 6 and connected parts are in the ground below the frost line.

The salient feature of the present invention is the provision of a flushing mechanism in which the parts are fully operative without the use of washers or similar wearable parts; the provision of a single valve for such mechanism capable of simultaneously controlling the water supply and waste outlet; and the provision of a fan integrally formed with a pipe section and set in applied position in securing said section in place.

The construction tends to the maximum simplicity of parts and operation, requiring no particular skill in assembling or in repairing and avoiding entirely the use of such parts as require frequent renewal and which at best tend to an imperfect result after a slight use.

Having thus described the invention what is claimed as new, is:—

1. A flushing system including a stand pipe and a valve seat section removably connected to the lower end of the stand pipe, said seat section being interiorly formed with an intermediate valve seat having a maximum diameter less than the similar dimension of the stand pipe, the valve seat section being also formed at its lower end with a conical valve seat, a valve body mounted for movement within the valve seat section, and centrally formed with a packless valve surface coöperating with said intermediate valve seat of the valve seat section throughout the full movement of said valve body, a terminal valve carried by the valve body to coöperate with the conical seat of the valve seat section, said body above and below the valve surface being gradually reduced in diameter toward the respective ends, a valve stem operative in the stand pipe, a cup member removably engaging the end of the stem and a bolt passed loosely through the cup member and having threaded engagement with the valve body whereby a limited independent movement of the stem or body is permitted.

2. A flushing system including a stand pipe and a valve seat section removably connected to the lower end of the stand pipe, said seat section being interiorly formed with an intermediate valve seat having a maximum diameter less than the similar dimension of the stand pipe, the valve seat section being also formed at its lower end with a conical valve seat, a valve body mounted for movement within the valve seat section, and centrally formed with a packless valve surface, coöperating with said intermediate valve seat of the valve seat section throughout the full movement of said valve body, a terminal valve carried by the valve body to coöperate with the conical seat of the valve

seat section, said body above and below the valve surface being gradually reduced in diameter toward the respective ends, a valve stem operative in the stand pipe, and a connection intermediate the valve stem and valve body to permit a limited independent movement of said parts.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH A. VOGEL.

Witnesses:
LAWRENCE J. BROMAN,
CHAS. F. PARK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."