

1,049,895.

Fig. 1.



A schematic diagram of a circular structure. It consists of a large outer circle and a smaller inner circle, both with hatched outlines. Four radial lines (spokes) connect the inner and outer circles, dividing the annular region into four quadrants. The outer boundary is labeled with the letter 'G' at the top right, and the inner boundary is labeled with 'C1' at the top left.



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SIPHON FLUSHING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN J. MEYER, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Siphon Flushing Apparatus, of which the following is a full, clear, and exact description.

The invention relates to flushing tanks for water closets, urinals and other fixtures, and its object is to provide a new and improved siphon flushing apparatus arranged to draw the water out of the tank from above the water level in the tank so that all leakage and waste of water is prevented, and the tank is properly emptied of its contents by a siphon action. In order to accomplish the result, use is made of a siphon having a long leg extending in the tank, and having its upper end above the normal level of the water in the tank, the short leg of the siphon being in the form of a bell surrounding the long leg and adapted to be raised or lowered, and a valve in the long leg adapted to close on raising the bell to permit of producing a decrease of air pressure with a view to start a siphoning action and thus draw the water out of the tank and discharge the same by way of the long leg into the flushing pipe.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the flushing tank provided with the flushing valve, the parts being in normal position of rest; Fig. 2 is a similar view of the same and showing the bell raised for charging the stand pipe; and Fig. 3 is an enlarged sectional plan view of the stand pipe and bell.

The flushing tank A is filled to a desired level with water, in the usual manner, and in the flushing tank A is arranged a siphon having a long leg and a short leg. A stand-pipe B is screwed at its lower end into a thimble B' passing through the bottom of the flushing tank A and being secured thereto by a nipple B² screwing on the thimble B' against a washer on the under side of the bottom of the tank, the nipple being connected at its lower end with the flushing pipe leading to the bowl of the water closet, urinal or other fixture. The long leg of the

siphon consists of the pipe B, the thimble B', and the nipple B². The short leg of the siphon is in the form of a bell C surrounding the upper portion of the stand pipe B, and the said bell C is provided with interior guide arms C' adapted to abut against the outer face of the stand pipe B so as to guide the bell C in its up and down movement. The bell C when in its normal position, as shown in Fig. 1, has its lower end within a distance from the bottom of the tank A while the top of the bell C is a distance above the upper end of the stand pipe B, and which upper end of the stand pipe is a short distance above the normal level of the water in the tank A. The top of the bell C is provided with a stuffing box D through which extends a rod E terminating at its outer end in a head E', pressed on by a spring F coiled on the rod E and resting on the stuffing box D. The head E' is adapted to be engaged by a detachable clutch, link or other connection G, connected with the inner end of an operating lever H fulcrumed at H' on the top of the tank A and having its outer end connected with the usual pulling mechanism under the control of the user, to impart a swinging motion to the lever H with a view to raise and lower the bell C.

The nipple B² of the stand pipe B is provided with a valve seat B³ adapted to be engaged by a flap or a swing valve I, normally in an open position, as indicated in Fig. 1. The valve I is connected by a chain I' with the lower end of a stem I² mounted to slide up and down in bearings B⁴, B⁵ held in the nipple B², and in the upper end of the stand pipe B, respectively. The upper end of the stem I² terminates in a head I³ adapted to be engaged by a head E² on the lower or inner end of the rod E previously mentioned, and on the upper end of the stem I² is coiled a spring J pressing against the under side of the head I³ and resting on the top bearing B⁵.

The top of the bell C is provided with a pressure relief valve or vent K, of any approved construction, to allow escape of air from the bell C when the latter drops, as hereinafter more fully described.

The stuffing box D is provided with a set screw L for fastening the rod E against movement in case it is desired to do so.

The operation is as follows: When the

several parts are in the normal position shown in Fig. 1, the water level in the tank A is a distance below the upper end of the stand pipe B and a distance below the top of the bell C. When the user imparts a swinging motion to the lever H then the bell C is raised and in doing so the head E² of the rod E moves out of engagement with the head I³ so that the spring J moves the stem I² upward, thus causing the valve I to move into a closed position onto the seat B³. On a further raising of the bell C a decrease of pressure is produced in the upper sealed end of the bell C and in the stand pipe B temporarily closed by the valve I, and consequently the water in the bell C rises by atmospheric pressure on the water in the tank A, the water finally overflowing into the stand pipe B to fill the same. It will be observed that the jaws of the clutch G are rounded at their ends, and when the lever H passes above its pivotal point, the clutch, which is being moved on the arc of a circle, is pulled far enough out of alinement so as to cause its rounded ends to disengage the head E' thereby permitting the bell C to drop, and in doing so the air in the bell C escapes by way of the vent K. When the operator releases the lever H it swings downward and the clutch G re-engages the head E', (the rounded ends of the jaws of the clutch G being forced apart by the rounded head E' so as to engage underneath the head) and presses the rod E downward so that the head E² of the rod E comes in contact with the head I³ of the stem I², whereby the stem I² is moved downward, and in doing so the valve I is released, and by its own weight and the weight of the column of water in the stand pipe B is caused to swing downward into an open position. As soon as this takes place the water flows down the stand pipe B into the flushing pipe, so that the siphoning action is started and the tank A is emptied of its water by way of the siphon, consisting of the stand pipe B and the bell C. The water flowing down the stand pipe and flushing pipe finally reaches the bowl, urinal or other fixture to flush the same.

In case a permanent connection is made between the lever H and the pin E, the bell C is raised and lowered by the lever H. Various connections can be made between the operating lever H and the bell C for raising and lowering the same, and hence I do not limit myself to any particular construction.

It is understood that after the bell C is raised and the long leg filled with water, the bell C is released, and drops, and in doing so the valve I is opened and the siphoning action is started to empty the tank of its contents to the lower edge of the bell C. Air now passing into the bell C

at the lower edge thereof breaks the siphoning action and further overflow of the water ceases.

From the foregoing it will be seen that the water is drawn out of the tank A from above the water level of the tank, and as no valves or the like are located in the tank below the water level no leakage is likely to take place and waste of water is prevented.

The valve I may be located in the long leg of the siphon at any point below the lower edge of the bell C.

It is understood that the spring F holds the pin E normally in an uppermost position so that when the bell C drops the head E² does not engage the head I³ until the operator releases the lever H and the clutch G re-engages the head E', and by its weight and that of the lever H presses the pin E downward to press the stem I² downward for the valve I to move into an open position. By this arrangement a light bell C can be used.

When it is desired to open the valve I irrespective of the operator releasing the lever H, use is made of the set screw L for fastening the pin E in place when in a lowermost position so that when the bell C drops the now fixed pin E strikes the stem I² and the valve I is allowed to open at the time the bell reaches a lowermost position. In this case a heavier bell is desirable.

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

1. In a siphon flushing apparatus, a tank, a lever pivotally mounted thereon and provided at one end with a clutch, a long siphon leg passing through the bottom of the tank, a valve hingedly disposed therein, a spring-pressed stem disposed in said long leg for normally holding the valve in closed position, a bell, a spring-pressed pin carried by said bell and arranged to engage said spring-pressed stem, a head carried by said spring-pressed pin and arranged to be engaged by said clutch, the weight of the lever and clutch serving to press the spring-pressed pin downwardly against the spring-pressed stem, thereby causing the opening of the valve.

2. In a siphon flushing apparatus, a tank, a hand-operated actuating mechanism mounted thereon, a long siphon leg passing through the bottom of the tank, a valve hingedly disposed therein, a spring-pressed stem disposed in said long leg for normally holding the valve in closed position, a bell, a spring-pressed pin carried by said bell and arranged to engage said spring-pressed stem, a head carried by said spring-pressed pin and arranged to be engaged by said hand-operated actuating mechanism, the weight of the hand-operated actuating

mechanism serving to press the spring-pressed pin downwardly against the spring-pressed stem, thereby causing the opening of the valve.

5 3. In a siphon flushing apparatus, a tank, a lever pivotally mounted thereon and provided at one end with a clutch, a long siphon leg passing through the bottom of the tank, the top of said long siphon leg being
10 above the normal level of the water, a bell surrounding the upper portion of said long leg, said bell being provided on the inside with guides arranged to engage said long siphon leg, a pin arranged to extend through
15 the top of said bell, a set-screw carried by the bell for adjusting the position of the

pin, an air relief valve in the top of said bell, a valve disposed in said long leg below the bottom of the bell in its normal position, a valve stem for operating said valve
20 arranged to be engaged by said pin, said clutch being adapted to engage said pin in one position and to release it in another position.

In testimony whereof I have signed my
25 name to this specification in the presence of two subscribing witnesses.

JOHN J. MEYER.

Witnesses:

THEO. G. HOSTER,
PHILIP D. ROLLHAUS.

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