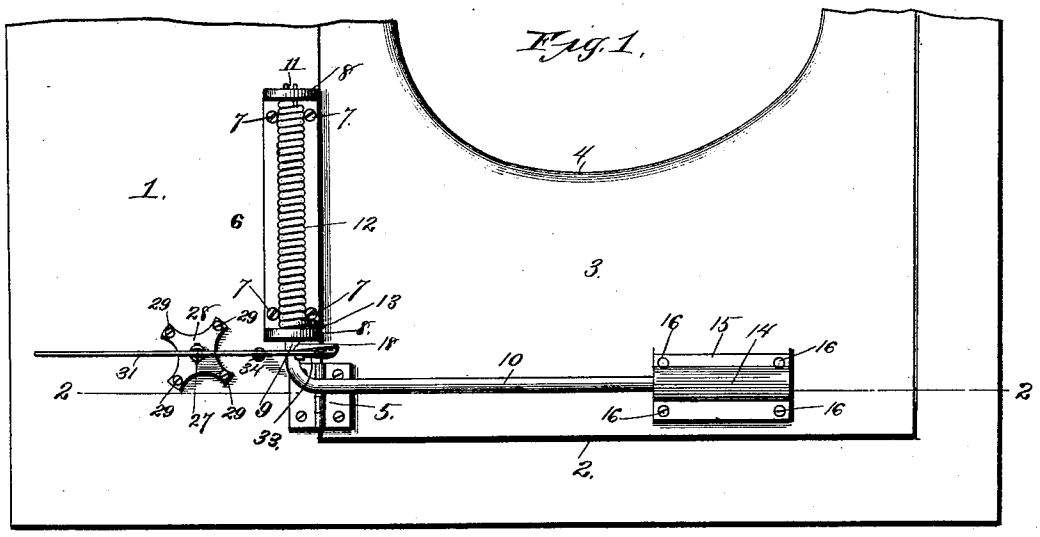
(No Model.)

J. S. DANIEL.

AUTOMATIC VALVE OPERATOR FOR WATER CLOSETS.

No. 480,494. Patented Aug. 9, 1892.

Fig. 1.



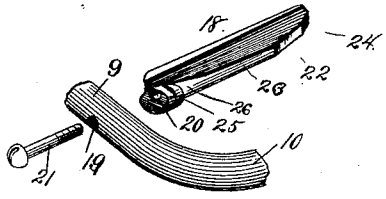


Fig. 5.

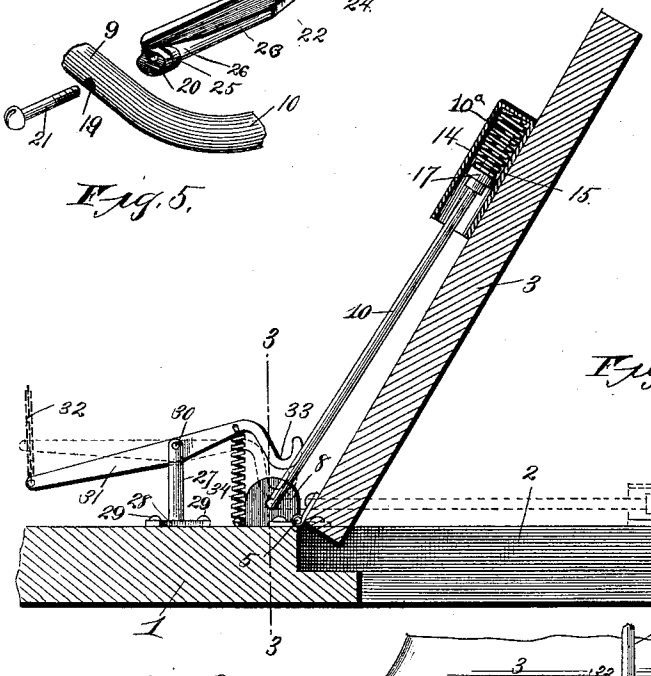


Fig. 2.

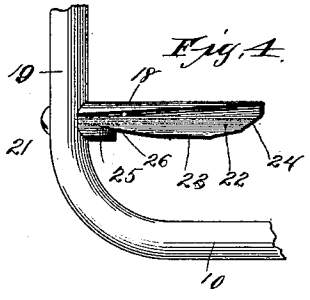


Fig. 4.

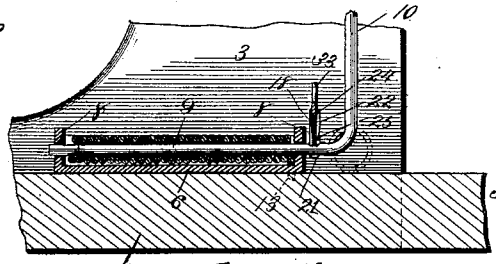


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOSEPH S. DANIEL, OF KANSAS CITY, MISSOURI.

AUTOMATIC VALVE-OPERATOR FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 480,494, dated August 9, 1892.

Application filed March 1, 1892. Serial No. 423,396. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. DANIEL, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Automatic Valve-Operators for Water-Closets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to appliances for operating the valves of water-closets; and the objects of my invention are to produce attachments which shall be simple, compact, strong, and durable in construction, and also entirely automatic in their action, and which can be readily applied to all types of water-closets having flushing-tanks connected therewith.

A further object of my invention is to produce attachments which shall supersede the usual pull-down cord or chain for flushing the closets and which shall operate solely in consequence of the user of the closet rising from the seat thereof.

To the above purpose my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a plan view of my attachments applied to the seat of a water-closet, the said seat being in lowered position and partly broken away. Fig. 2 is a vertical section of the same on the line 2 2 of Fig. 1, the seat being shown in raised position. Fig. 3 is a vertical section of the same on the line 3 3 of Fig. 2. Fig. 4 is a detached plan view of a portion of the main operating-rod and its attached guide for the flushing-lever. Fig. 5 is a detached perspective view of the parts shown in Fig. 4, the guide being disconnected from the rod.

In the said drawings, 1 designates the top of a water-closet, said top having the usual opening 2, and 3 designates the seat of the closet, said seat having, also, the usual opening 4 and being connected to the top 1 by any suitable number of hinges 5, the latter being of any suitable or preferred type.

6 designates the bearing-plate for the main operating-rod, the base of said plate being of elongated form and being attached to the top 1, just back of the seat 3, by any suitable number of screws 7 or equivalent devices. At each end this bearing-plate 6 is formed with an upwardly-extending standard 8, through which extends the rod 9 of the main operating-rod 10, the said arm 9 extending at right angles from the body portion of the rod 10. The bearing-plate 6 is therefore of approximately U form, while the operating-rod 10, with its arm 9, is of approximately L form. The outer extremity of the arm 9 is bifurcated longitudinally, as at 11, and through this bifurcated end 11 is passed one end of a spiral torsion-spring 12, said spring surrounding the arm 9 between the standards 8 and having its opposite end 13 extended laterally and inserted beneath the corresponding end of the bearing-plate 6. It will thus be seen that the tendency of the spring 12 is to so rotate the arm 9 as to raise the operating-rod 10 and retain it in raised position. The outer or free end of the operating-rod 10 is inserted into a casing 14, which is preferably of cylindrical form, and the base 15 of which is attached to the upper side of the seat 3 at one side thereof by suitable screws 16 or equivalent means. The outer end of this casing 14 is closed, and that portion of the rod 10 which works within said casing is surrounded by a spiral cushioning-spring 10^a, the outer end of which abuts against the closed end of the casing 14, the opposite end of said spring abutting against a collar or enlargement 17 upon the rod. It will thus be seen that when the rod 10 is thrown upward by the torsion-spring 12 the cushioning-spring 10^a will be compressed, and will consequently prevent too violent movement of the parts.

Upon the arm 9, near its point of union with the operating-rod 10, is secured a guide-arm 18, said arm projecting parallel with and in the same plane as the operating-rod 10. An opening 19 is formed transversely through the arm 9, and an internally-screw-threaded socket 20 is formed in the inner end of the arm 18. A screw 21 is passed through the opening 19, and the threaded end of the screw is inserted into the socket 20 of the arm 18, and thus firmly attaches the arm 18 to the arm 9 of the operating-rod in the position

above described. On its upper side the arm 18 is formed with a longitudinal guide-groove 22, and the flange 23 thus formed on the upper side of arm next to the rod 10 is tapered upwardly, as shown at 24. A shoulder 25 is formed at the inner end of the arm 18 at that side of the arm which is next to the rod 10, and the inner end 26 of the flange 23 is inclined slightly inward or away from the rod 10, the purposes of these conformations of the flange 23 and of the shoulder 25 being hereinafter explained.

27 designates a standard, the lower end of which is formed with a base 28, which is secured by screws 29 to the top 1 of the closet, just back of the seat 3 and at a point in direct rear alignment with the guide-arm 18. The upper end of the standard 27 is bifurcated, and in this bifurcation is pivoted by a cross-pin 30 a tilting lever 31. This tilting lever extends about equally as to length in opposite directions from its pivotal point, and to its rear end is connected the lower end of a pull-down chain 32 or a cord or other suitable connection, the upper end of which is connected to the usual lever of the flushing-tank. (Not shown.) The front end 33 of the tilting lever 31 is of approximately U shape, and the under side of the bend of said end works in the guide-groove 22 and upon the beveled portions 24 and 26 of the flange 23, and also upon the shoulder 20, as hereinafter fully explained. A spiral spring 34 is shown as connected at its upper end to the front part of the tilting lever 31, just back of its U-shaped end 33, and the lower end of said spring is connected to the top 1 of the water-closet.

As will be understood from the ensuing description of the operation of the above-described attachments, the spring 34 may be dispensed with or employed, as preferred.

The operation is as follows: Normally the seat 3 is held by the spring 13 in partly-raised position, the end 33 of the tilting lever 31 resting upon the shoulder 25, as shown in dotted lines in Fig. 2. Now when the closet is to be used the seat 3 is lowered upon the top 1 by the weight of the user's body, and as soon as the seat is so lowered the end 33 of the tilting lever 31 jumps from the shoulder 25 into the guide-groove 22, this jumping being due either to the action of the spring 34 or to the natural resilience of the lever when such spring is dispensed with, the lever being slightly strained laterally upon its pivot 30 so long as its end 33 rests upon the shoulder 25 and against the side of the partly-raised arm 18. Now as soon as the user of the closet rises from the same the spring 12 throws the rod 10 upward, raising the seat 3 and causing the arm 18 to similarly rise. The arm 18 thus raises the front end of the tilting lever and depresses its rear end. This depression of the rear end of lever 31 pulls downward upon the chain 32 for an instant and opens the valve of the flushing-tank. As soon as the arm 18 rises the end of the lever 31 reaches the front end of the groove 22 and the tension of the spring 34 pulls said end of the lever over the inclined portion 24 of the flange 23 of the arm 18 and snaps the front end of the lever quickly downward upon the shoulder 25, thus resetting the lever 31 for a subsequent operation. It is to be understood that the spring 34 may be dispensed with, as before stated, because the valve-levers of flushing-tanks are usually counterweighted or are provided with returning-springs, and consequently the action of the tank weight or spring will effectively return the tilting lever 31 to its normal position without the presence of the spring 34. The water from the flushing-tank will continue to flow until stopped by the usual float, so that the quick pull given by the rear end of the lever 31 upon the chain 32 is sufficient for flushing purposes. It will be further seen that the valve-operating appliances cause the seat of the water-closet to rise as soon as the user leaves the seat and retains the seat in such raised position until the seat is again lowered for use. In this way the seat is always kept neat and clean, thus adding to the usefulness of the appliance.

From the above description it will be seen that I have produced water-closet-valve-operating appliances which are simple, strong, durable, and compact, and also inexpensive in construction, and which are positive and direct in their action; also, that the devices can be applied to all forms of closets and tanks without necessitating material change of any of the parts.

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

1. In a valve-operating mechanism for water-closets, an L-shaped main operating-rod, a torsion-spring secured at one end to and surrounding one arm of said rod and also engaging the frame of the closet and operating to raise the rod, a casing surrounding the free end of the rod, and a cushion-spring inclosed within said casing and also surrounding the free end of the rod, substantially as set forth.

2. In a valve-operating mechanism for water-closets, a main operating-rod of L form, a bearing-plate having vertical standards, through which one arm of the operating-rod passes, a torsion-spring interposed between the standards of the bearing-plate and surrounding said arm of the rod and connecting at one end to the rod and at the other end to the closet-seat and serving to raise the rod, a casing surrounding the free end of the rod, a shoulder upon said free end of the rod, and a spring surrounding the free end of the rod and located within the casing and also interposed between the closed end of the casing and the said shoulder, substantially as set forth.

3. In a valve-operating mechanism for wa-

ter-closets, a tilting lever designed to be connected at one end to the pull-down connection of a flushing-tank and an oscillating rod carrying an arm provided on its upper side with a longitudinal guide-groove for engaging the opposite end of the said tilting lever and located below the end of said lever, substantially as set forth.

4. In a valve-operating mechanism for water-closets, an oscillating rod operated by the closet-seat, a tilting lever connected to the pull-down connection of a flushing-tank, and an arm carried by the oscillating rod and having a longitudinal guide-groove provided with a flange beveled at its inner and outer ends and a shoulder for engaging the tilting lever, said shoulder being located adjacent to the inner end of the arm, substantially as set forth.

5. In a valve-operating mechanism for water-closets, an oscillating rod, a tilting lever connected to the pull-down of the flushing-tank, a spring connected to the tilting lever and serving to return said lever to normal position, and an arm carried by the oscillating rod and engaging the tilting lever to move the same against the action of its spring, substantially as set forth.

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

JOSEPH S. DANIEL.

Witnesses:
H. E. PRICE,
JNO. L. CONDRON.