

W. L. HEAP.
CLOSET FLUSHING MECHANISM.
APPLICATION FILED FEB. 11, 1910.

1,063,445.

Patented June 3, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

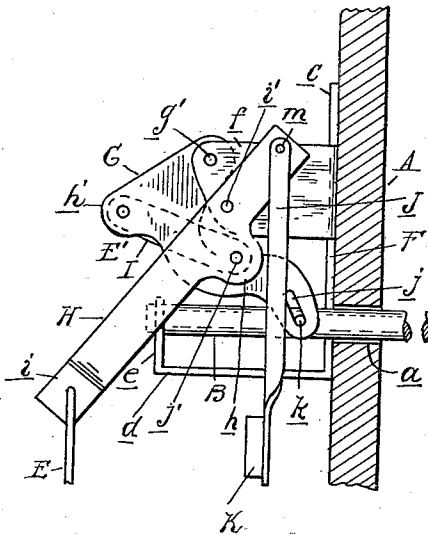
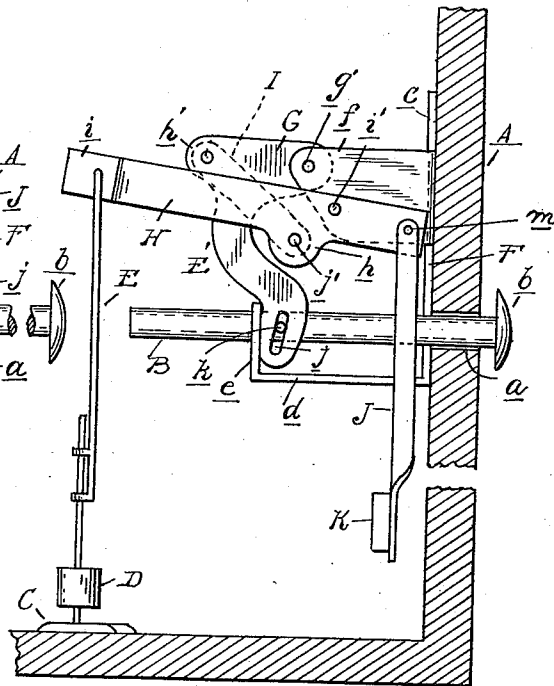


Fig. 2.



Witnesses
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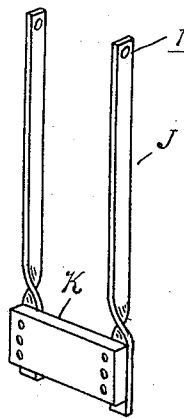
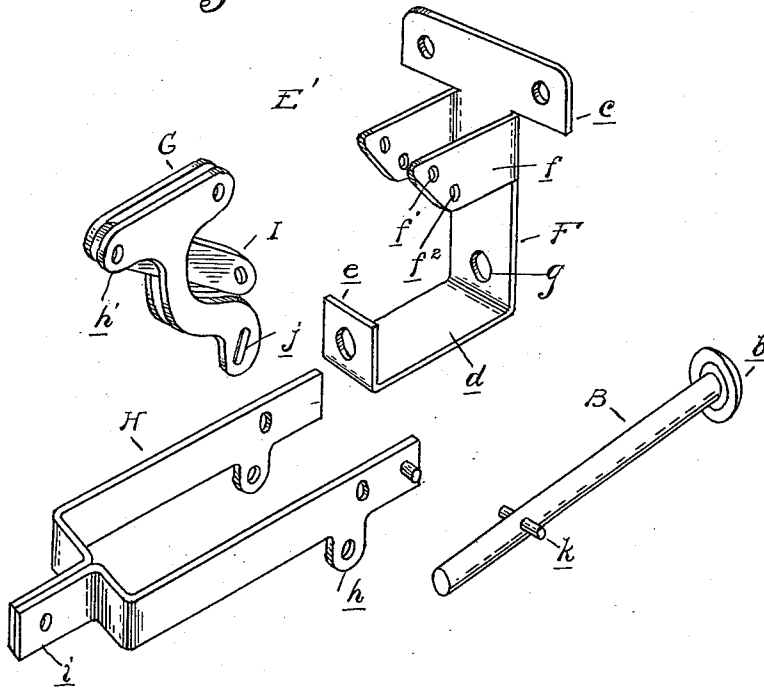
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM LIONEL HEAP, OF GRAND HAVEN, MICHIGAN, ASSIGNOR TO WILLIAM HEAP & SONS, OF GRAND HAVEN, MICHIGAN, A FIRM.

CLOSET-FLUSHING MECHANISM.

1,063,445.

Specification of Letters Patent.

Patented June 3, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM LIONEL HEAP, a citizen of the United States of America, residing at Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Closet-Flushing Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates generally to a flushing mechanism for closets, and more particularly to the control mechanism for the flushing valve, and it consists in the construction of the valve-actuating means, in the novel arrangement and combination of parts, and in various details of construction, all as will be more fully hereinafter described and more particularly pointed out in the claims.

In the drawings,—Figure 1 is a view in side elevation of a valve control mechanism embodying my invention; Fig. 2 is a similar view, showing the parts in a different position; and Fig. 3 is a view in perspective of the parts of the controlling mechanism, detached.

For the purpose of illustration, I have shown and will describe a valve controlling mechanism of the type wherein a push or slide rod governs the actuation of the valve, the button being arranged centrally of the tank above the seat and extending in right angular relation to the former.

The reference-letter A designates the tank, of any suitable construction, and in this instance of the low-down type.

B is the push or slide rod, extending through a suitable opening, as *a*, in the front wall of the tank, and *b* is the usual push button.

C indicates the flushing valve seat, D the valve, and E a connection—preferably in the form of a lift wire or rod—that serves to connect the valve with the operating means.

It is one of the objects of the present invention to obtain a construction that will

permit a maximum travel of the valve from its seat for flushing on a minimum travel or movement of the operating member, in whatever form it may be, usually located on the exterior of the tank.

In the particular case here illustrated, wherein the operating member is in the form of a push rod, such a construction as referred to is particularly advantageous, as owing to the short travel the rod is required to make it necessarily projects but a slight distance beyond the tank.

To accomplish the desired result, I interpose between the push rod and the lift wire, and suitably connect to each a multi-plying lever *E'*, which on slight movement of the rod is designed to lift the valve a maximum distance from its seat, permitting the tank contents to be readily and quickly discharged. Furthermore, by increasing the distance through which the operating force acts, as compared with the distance through which the weight or resisting force is moved, the operating force required to actuate the valve is decreased.

Within the tank interior opposite the opening *a* is positioned a bracket F, formed at its upper end with a pair of apertured depending ears *c*, for securing the bracket to the wall of the tank; at its lower end with an arm *d* having an upturned apertured end *e*; and intermediate the parts described with a pair of spaced inwardly projecting ears *f*, provided with bearing apertures *f'* *f''*. The lower portion of the bracket body is apertured, as at *g*, which registers with the opening in the upturned portion *e*, and these two openings constitute a double bearing for the push rod B.

Positioned between the ears *f*, and pivoted upon a pin *g'* engaging the apertures *f'*, is a bell-crank lever G, which is preferably formed of two spaced similarly-shaped sections having lugs *h'*, between which is pivoted a link I.

H is a yoke-shaped lever section, terminating at its forward end in a single laterally projecting apertured portion *i*, with

which the lift wire or rod is connected, having the spaced ends thereof positioned upon opposite sides of the ears *f*, and pivoted for vertical swinging movement upon the projecting ends of a pin *i'* engaging the bearing apertures *f'*. The bell-crank lever is pivotally connected to the section H through the medium of the link I, which has a pivotal connection with a pin *j'* carried by ears *h* depending from the lever H, and also has a pivotal connection with the push rod B, elongated openings *j* being formed in the bell-crank, which receive a cross-pin *k* extending transversely through the rod, as shown.

As constructed, it will be obvious that upon slight inward movement of the push rod the flushing valve will be raised the usual distance from its seat, and further that the extent of travel of the flushing valve is limited, so that there is no possibility of the valve being accidentally moved out of operative relation to its seat. The stop that acts to regulate the throw of the valve is the upturned end section *e* of the bracket, against which the lower end of the bell-crank strikes when the valve is at the proper distance from its seat to permit proper flushing.

In cases where a relatively heavy valve is employed for controlling the discharge of the tank contents, as for instance the usual glass float, I deem it advisable to offset the weight of the valve, so as to permit of more easy operation of the controlling means. With the construction of control mechanism described, the counterweight is formed by means of a yoke J, the lower portion K of which is properly weighted and the arm members apertured, as at L, at their upper ends to engage studs *m* upon the yoke section H of the multiplying lever.

By forming the bell crank and yoke-shaped levers of spaced members, not only is the strength of the lever mechanism increased, but also the spaced bearings prevent the levers from twisting or bending sideways, while the pivotal connection with the push rod is such as to prevent the button from rotating.

What I claim as my invention is,—

1. In a closet flushing apparatus, the combination with a tank formed with an opening in one of its walls, of a push rod located within the opening and projecting beyond the wall sides, a two-point bearing within the tank supporting the inwardly projecting portion of the rod, a flush valve, and a lever connection between the valve and the rod secured to said rod intermediate the two points of said bearings.

2. In a closet flushing apparatus, the combination with a tank, a push rod extending through the tank wall, a flush valve, a mem-

ber within the tank having a portion spaced from the wall thereof supporting the rod and limiting the travel of the latter, and a lever connection between the rod and the valve secured to the rod intermediate said member and said tank wall.

3. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, having spaced bearings, a push rod extending through the tank wall and engaging said bearings, and a lever connection between said rod and valve, the point of connection with said rod being intermediate of said bearings.

4. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, having spaced bearings, a push rod extending through the tank wall and engaging said bearings, a lever connection between said rod and valve, and means adapted to alternately engage said bearings, for limiting the travel of said rod.

5. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, a push rod for operating said valve, and a multiplying lever connecting said valve with the push rod, including a bell-crank lever fulcrumed upon the bracket and connected to said rod.

6. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, a push rod for operating said valve and a multiplying lever connecting said valve with the push rod comprising an arm having its opposite ends respectively pivoted to the bracket and connected to the valve, and a bell-crank lever fulcrumed upon the bracket and connected to said rod and said arm.

7. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, a push rod for operating the valve extending through the tank wall, and a multiplying lever connecting said valve with the push rod comprising an arm having one end pivoted to the bracket and the other end connected to the valve, a bell-crank lever pivoted in bearings upon the bracket, and having one end thereof connected to the push rod, and a link connecting the other end of the bell-crank with said arm, and a counterweight secured to the arm.

8. In closet flushing apparatus, the combination with the tank and the flushing valve, of a bracket secured to one wall of the tank, a push rod for actuating said valve, and a multiplying lever connecting the rod with the valve including a counter-

weighted arm pivotally secured to the bracket and having its opposite end connected to the valve.

5 9. In closet flushing apparatus, the combination with the tank and the flushing valve, of a push rod extending through one wall of the tank, a bracket secured to the tank wall and provided with a plurality of bearing lugs, and a counterweighted multi-

plying lever connecting the push rod and 10 valve, including a bell-crank and a counterweighted arm pivoted to said lugs.

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

WILLIAM LIONEL HEAP.

Witnesses:

ADDIE GRANT,
WALTER E. ROBISON.

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