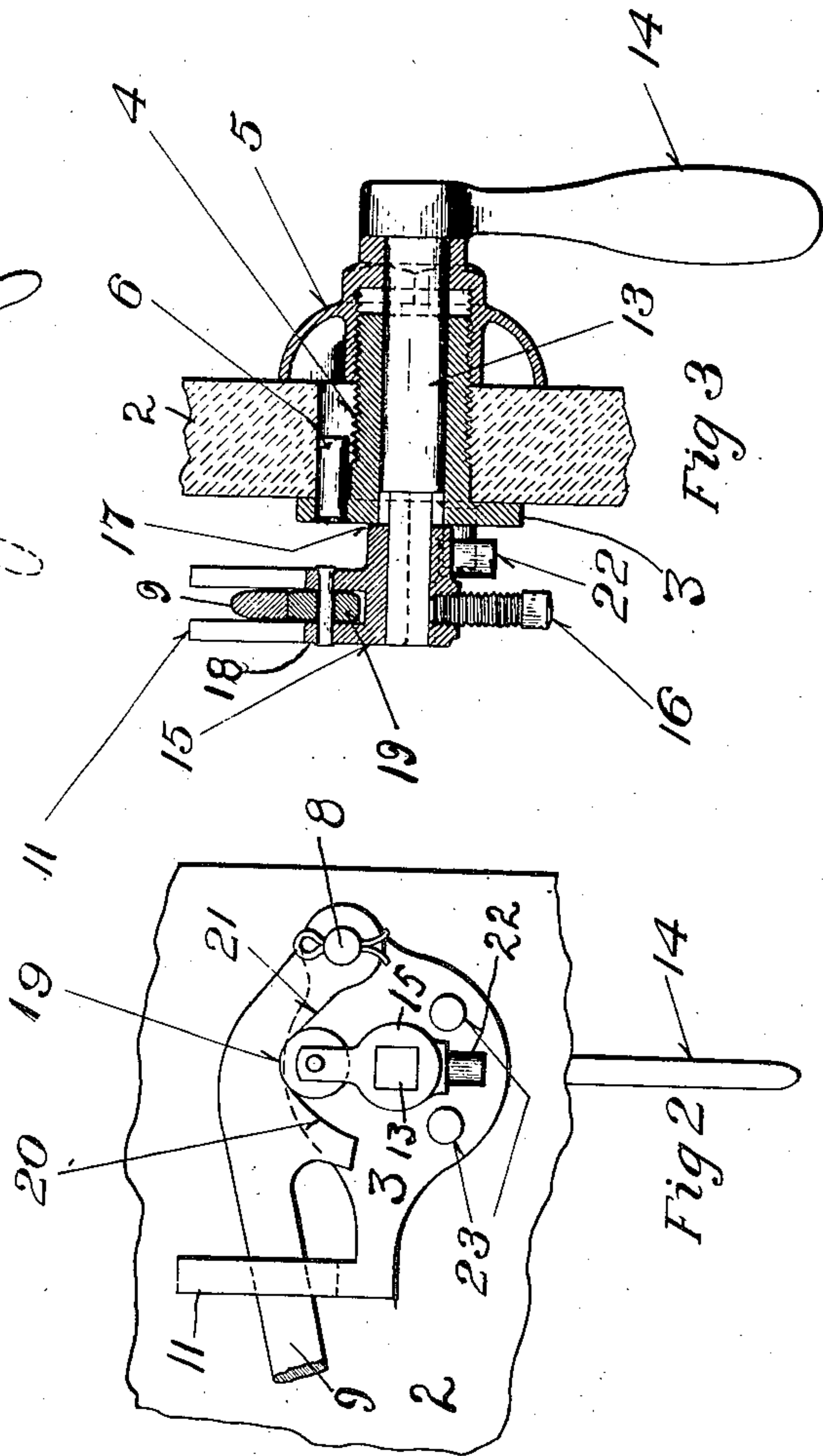
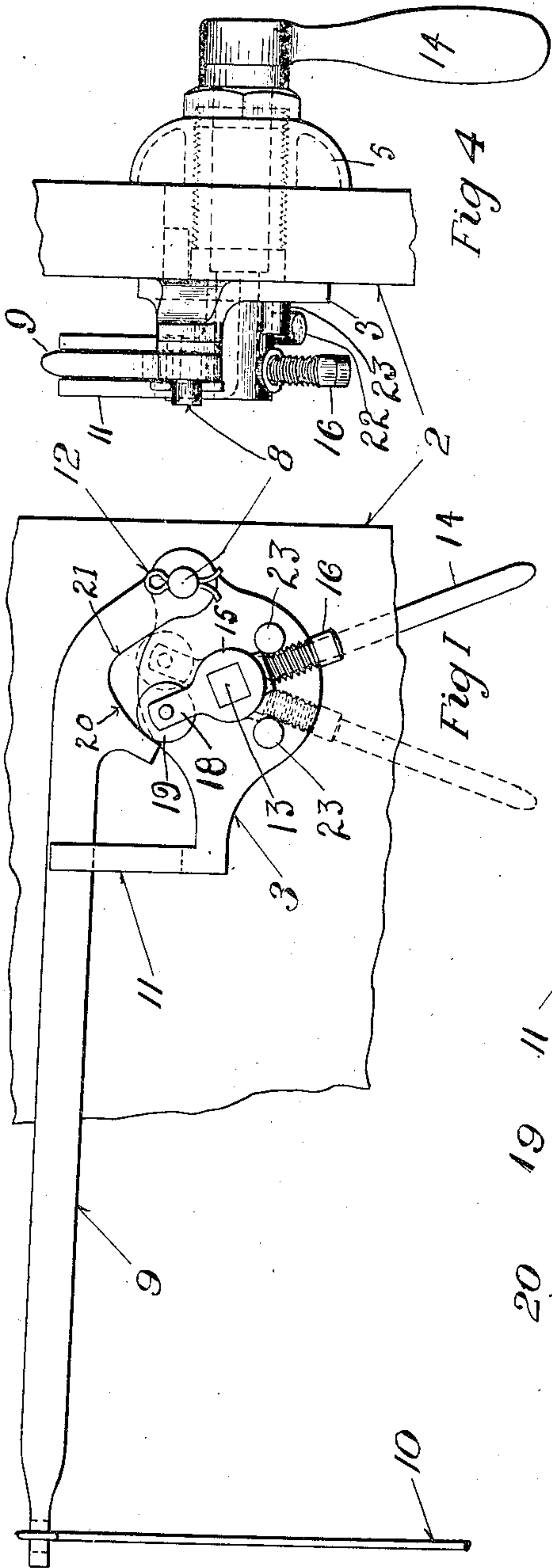


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MECHANISM FOR OPERATING FLUSH VALVES.
APPLICATION FILED DEC. 14, 1908.

925,550.

Patented June 22, 1909.



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MECHANISM FOR OPERATING FLUSH-VALVES.

No. 925,550.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed December 14, 1908. Serial No. 467,552.

To all whom it may concern:

Be it known that we, JAMES M. YOUNG and FREDERICK W. ROBERTSHAW, both residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mechanism for Operating Flush-Valves, of which the following is a specification.

This invention relates to mechanism for operating flushing valves of water closet tanks and the like.

The object of the invention is to provide mechanism for this purpose which is of simple, strong and compact construction and which comprises a minimum number of parts, and especially which has only a single means of attachment or connection to the tank, thereby particularly adapting the fitting to tanks of metal, porcelain or other material to which the attachment of parts is difficult and costly.

For the attainment of the foregoing and other objects the invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawing Figure 1 is an inside elevation of the valve operating mechanism with the parts in position to open the flush valve; Fig. 2 is a similar view showing the parts in position to keep the flush valve closed, the set screw being omitted; Fig. 3 is a vertical section taken through the operating shaft or spindle; and Fig. 4 is an end elevation of the device.

In the drawing the tank wall is indicated by 2. This may be metal, wood, porcelain or other suitable material. The flush valve operating mechanism comprises a fitting consisting of a plate 3 arranged to lie against the inner face of the tank wall and having projecting outwardly therefrom the hollow projection or sleeve 4 which is adapted to project through a hole in the tank wall and at its outer end is threaded to receive a cap nut 5 which serves to secure the fitting to the tank and also to give the finish on the outside of the tank. A projection 6 on the fitting enters a suitable slot or hole in the tank wall and prevents the fitting from turning. The nut 5 is the only fastening means necessary to secure the entire mechanism in place and the fitting requires only a single hole through the tank wall.

The plate 3 on its inner face is provided on

one side of the opening therethrough with a fulcrum 8 for the valve operating lever 9, the latter having its free end connected to the rod 10 which carries the usual flushing valve, not shown. On its opposite side said plate is provided with the forked guide 11 for guiding and steadying the movements of the lever 9. The lever 9 is secured on the fulcrum 8 in any suitable way, such as by means of cotter pin 12.

Projecting through the hollow sleeve 4 is an operating shaft 13 provided on its outer end with a suitable operating member, such as lever 14, and having its inner end operatively connected to the flushing lever 9. The operative connection shown comprises a sleeve 15 adapted to fit on the square inner end of shaft 13, and secured thereto by suitable means such as by set screw 16, or cotter pin, and fitting up against a shoulder 17 on the plate 3. This sleeve is provided with a forked arm 18 in which is mounted a roller 19 adapted to contact with cam faces 20 and 21 on the valve operating lever 9. Preferably two such cam faces, reversely arranged, are provided in order that the lever 9 may be lifted to open the flush valve irrespective of the direction in which the operating lever 14 is moved, as is apparent from Fig. 1. Suitable stops are provided to limit the movements of the actuating shaft 13 and prevent the roller 19 from moving too far in either direction. The stops shown comprise a projection 22 on sleeve 15 moving between a pair of projections 23 on the plate 3.

The construction and operation of the mechanism will be readily understood from the foregoing description in connection with the drawings. The flush valve is opened by moving the operating member 14 in either direction. The mechanism described has only a single connection with the tank, this being by means of the threaded sleeve 4 and nut 5. Both the center of the operating shaft 13 and also the center on which the valve operating lever 9 is fulcrumed are carried by this one fitting. The consequence is that the device can be secured to a tank with a minimum number of attachments, particularly adapting it to metal, porcelain and similar tanks to which attachments cannot be easily secured. With all prior valve mechanism the tank or wall had to have separately attached thereto at least

two centers, sometimes more. With the mechanism described the fitting of the tank is very much simplified and a more slightly and much more durable construction is provided. The entire fitting is compact, strong and reliable in operation.

What we claim is:

1. Mechanism for operating flushing valves, comprising a plate for attachment to the inside of the tank and provided with an opening for an operating shaft and with a lever fulcrum center at the side of said opening and with its axis substantially parallel to the axis of said opening, a lever mounted on said fulcrum, and an operating shaft rotatably mounted in the hole in the plate and provided on its outer end with an operating member and on its inner end with an arm having operative engagement with the lever.

2. Mechanism for operating flushing valves, comprising a plate for attachment to the inside of the tank and provided with an opening for an operating shaft and with a lever fulcrum center at the side of said opening, a lever mounted on said fulcrum and provided with a cam face, and an operating shaft rotatably mounted in the hole in the plate and provided on its outer end with an operating member and on its inner end with an arm arranged to engage the cam face on the lever.

3. Mechanism for operating flushing valves, comprising a plate for attachment to the inside of the tank and provided with an opening for an operating shaft and with a lever fulcrum center at the side of the opening, a lever fulcrumed on said center and provided with reversely arranged cam faces, and an operating shaft projecting through the opening in the plate and provided on its outer end with an operating member and on its inner end with an arm arranged to cooperate with the cam faces on the lever.

4. Mechanism for operating flushing valves, comprising a plate provided with a threaded sleeve projecting therefrom and arranged to extend through the wall of the tank and with a lever fulcrum center at the side of said sleeve, a lever fulcrumed on said center, a rotatable actuating shaft projecting through the sleeve and operatively connected to said lever, and a finishing nut on the outer end of the sleeve serving to secure the fitting to the tank and conceal the opening.

5. Mechanism for operating flushing valves comprising a plate having a threaded sleeve projecting therefrom and arranged to extend through the wall of the tank and provided with a lever fulcrum center at the side

of said sleeve, a lever fulcrumed on said center, a rotatable actuating shaft projecting through the sleeve, an arm on said shaft operatively connected to the lever, and a finishing nut on the outer end of said threaded sleeve.

6. Mechanism for operating flushing valves, comprising a plate provided with a threaded sleeve projecting therefrom and arranged to extend through the wall of the tank and with a lever fulcrum center at the side of said sleeve, a lever fulcrumed on said center and provided with a cam face, a rotatable actuating shaft extending through the sleeve and provided with an arm arranged to engage the cam face on the lever, and a nut on said sleeve arranged to secure the fitting to the tank and conceal the opening.

7. Mechanism for operating flushing valves, comprising a plate having a threaded hollow sleeve projecting from one face thereof and a lever fulcrum projecting from the opposite face thereof, a nut on said threaded sleeve arranged to secure the fitting to the tank and conceal the opening, a rotatable actuating shaft projecting through the sleeve, and operative connections between the inner end of said shaft and said lever.

8. Mechanism for operating flushing valves, comprising a plate having a threaded hollow projection extending from one face and having a lever fulcrum and a lever guide fork projecting from its opposite face, a lever mounted on said fulcrum, an actuating shaft projecting through the sleeve and operatively connected with the lever, and a nut on said threaded hollow projection.

9. Mechanism for operating flushing valves, comprising a plate having a threaded hollow projection extending from one face and a lever fulcrum projecting from the opposite face, and stop projections on said last face, a lever mounted on said fulcrum, an actuating shaft extending through said sleeve, an arm on the inner end of said shaft operatively connected to the lever and provided with a stop cooperating with the stop projections on the plate, and a nut on said hollow threaded projection arranged to secure the fitting to the tank and conceal the opening.

In testimony whereof, we have hereunto set our hands.

JAMES M. YOUNG.

FREDERICK W. ROBERTSHAW.

Witnesses:

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F. W. WINTER.