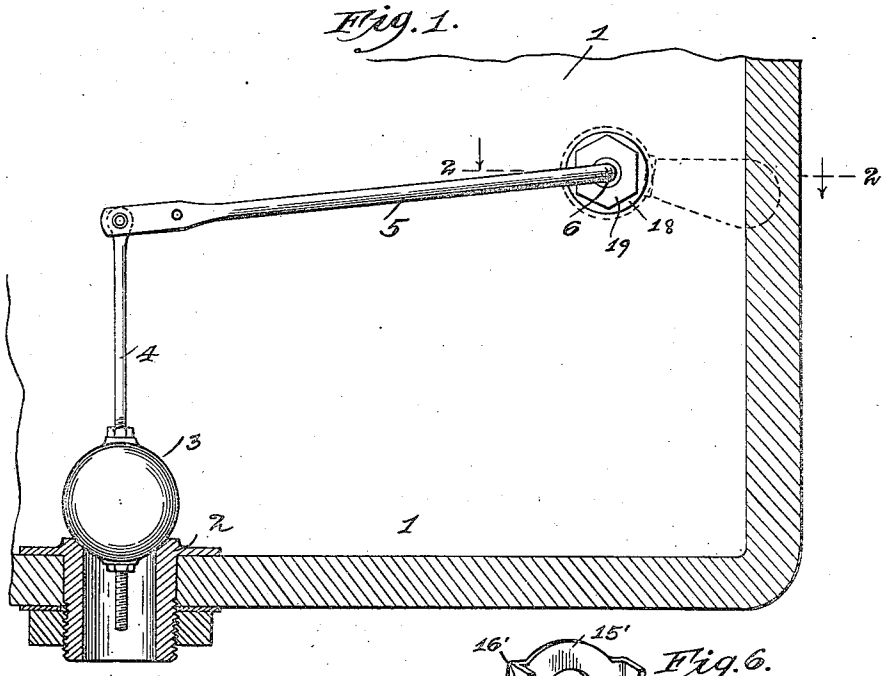
O. H. THELEEN.

LEVER OPERATING MECHANISM.

APPLICATION FILED MAR. 11, 1915.

1,147,764. Patented July 27, 1915.

Fig. 1.



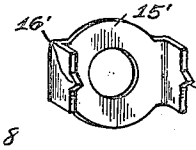


Fig. 6.

Fig. 2.

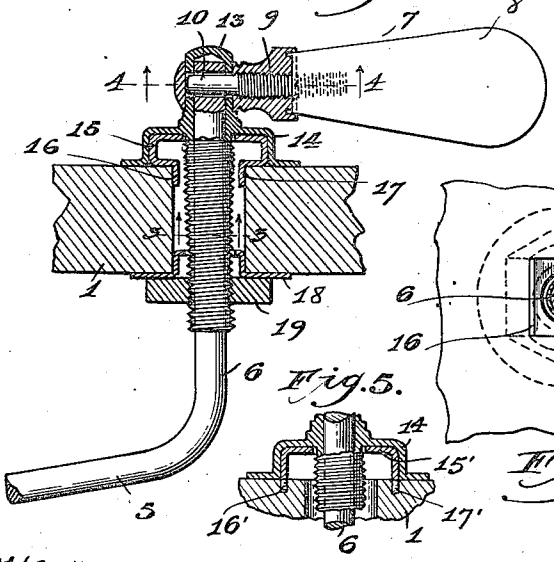


Fig. 4.

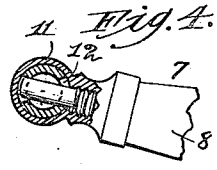


Fig. 5.

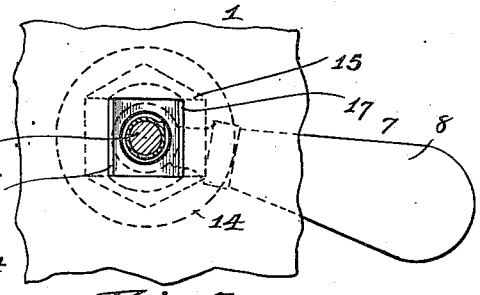


Fig. 3.

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LEVER-OPERATING MECHANISM.

1,147,764. Specification of Letters Patent. Patented July 27, 1915.

Application filed March 11, 1915. Serial No. 13,590.

To all whom it may concern:

Be it known that I, OSCAR H. THELEEN, a citizen of the United States, residing in the city of Kenosha, county of Kenosha, and State of Wisconsin, have invented certain new and useful Improvements in Lever-Operating Mechanism, of which the following is a specification.

This invention relates to lever operating mechanism for flushing tanks and the like in which the valve that controls the operation of the tank is actuated by a lever or handle, though in its broader aspects the invention is not limited to the particular use mentioned.

The salient objects of the invention are to provide an improved leverage mechanism which can be attached to the tank as a unitary structure; to employ a bushing extending through the wall as a bearing for the axial portion of the lever, this bushing having an escutcheon plate in conjunction with the handle forming a means for locking the parts against longitudinal movement; to provide a simple and efficient means for locking the bushing against rotative movement, the elements being so constructed and arranged that there will be no tendency for the lever to bind in its bearing; to provide a construction which is adjustable to clamp walls of varying thickness; to provide a lever-operating mechanism in which the various elements are secured together and the operating mechanism clamped to the tank by securing portions which are all concealed; to provide a novel means for securing the handle to the actuating mechanism without the use of an external set-screw or the like; to provide a simple and novel arrangement for limiting the throw of the lever; to provide the escutcheon plate or housing on the outer end of the bushing with a recessed portion adapted to receive a separate locking member, the latter being provided with flanges engaging the square hole usually formed in the wall of the tank during the construction of the latter, this separate member forming means for locking the bushing against rotative movement; to provide a mechanism the main parts of which can be accurately made of stampings; to avoid the necessity of an additional fulcrum for the lever, or cams or other moving parts for actuating the lever; to provide a construction which will have a neat and finished appearance; and in general to provide an improved construction of the character referred to, which can be economically manufactured and conveniently attached to the tank.

In the drawings—Figure 1 is a vertical section through the flushing tank showing the general arrangement of parts; Fig. 2 is a cross-section on the line 2—2 of Fig. 1; Fig. 3 is a cross-section on the line 3—3 of Fig. 2; Fig. 4 is a cross-section on the line 4—4 of Fig. 2; Fig. 5 is a fragmentary cross-section similar to Fig. 2, but showing a modified construction of locking members; Fig. 6 is a perspective view of the locking member shown in Fig. 5.

Referring to the particular embodiment of my invention shown in the drawings, 1 designates a flushing tank provided with the usual outlet 2. Communication through the latter is controlled by means of a float valve 3 suspended by a link 4 from the operating lever 5, all of these parts being of standard construction, and the arrangement of parts being such that the flushing tank is brought into operation when the lever 5 is rocked to lift the float from its seat. The shaft for rocking the lever is preferably formed integrally with the latter, and comprises an off-set rock shaft portion 6 extending through the wall of the tank as shown in Fig. 2. For rotating the rock shaft portion 6 from a position exterior to the tank, a handle 7 is secured to the outer end of the portion 6, the proportioning of parts being such that a relatively small movement of the handle will produce a much greater movement of that end of the lever to which the link 4 is secured.

The bearing for the rock shaft portion 6 comprises an externally threaded bushing sleeve 13 extending through the wall of the tank. In order to present a finished appearance to the portion of the bushing, which is positioned exterior to the tank, the bushing sleeve 13 is provided with an integral escutcheon plate 14, which engages the outer faces of the tank wall, and forms the only visible portion of the mechanism except the handle. The bushing sleeve 13 is hollow throughout substantially its entire length,

and is provided near its outer end with an aperture 12 which registers with a corresponding aperture formed in the outer end of the rock shaft portion. These parts are engaged by a concealed securing member carried by the handle, the particular construction of which forms a feature of my invention, and is hereinafter more fully described.

In the assembled position of the mechanism the securing member 10 prevents longitudinal movement of the rock shaft portion 6 relative to the bushing sleeve 13. The latter is in turn clamped against longitudinal movement by means of the nut 19 engaging the threaded portion of the bushing, and adapted, when adjusted toward the escutcheon plate 14 to tightly clamp the latter and the washer 18 against opposite faces of the tank wall. The escutcheon plate 14 and the washer are preferably of sufficient size to entirely cover the opening through the tank wall. The interior of the escutcheon plate is hexagonal in shape as shown in dotted lines in Fig. 3, and is adapted to house the key or locking member 15. The main portion of the latter has flat faces adapted to engage the flat faces on the interior of the escutcheon plate, thereby preventing relative movement between the locking member and the bushing sleeve. The free ends of the locking member are return bent to provide projecting flanges 16 and 17 which engage the flat faces of the opening in the tank wall through which the bushing sleeve 13 extends.

In the manufacture of iron or vitreous flushing tanks, it is usual to provide a square opening through which the lever operating mechanism can extend, and the employment of the novel construction of key or locking member 15 above described permits the bearing sleeve and its escutcheon plate being locked against rotative movement without the employment of additional securing means. For securing the bearing sleeve against rotation, when employed with wooden tanks, the modified construction shown in Figs. 5 and 6 is employed. The key 15′ differs from the key 15 in that the former does not have off-set flanges 16 and 17, but is provided with inwardly projecting spurs 16′ and 17′, which are forced into the wood when the nut 19 is tightened up. In both constructions, however, the locking member non-rotatably engages a seat in the escutcheon plate, and also non-rotatably engages the tank wall, and thus the bearing sleeve is locked from rotation by a member loosely sleeved upon the bearing for the rock shaft, and there is no danger of the latter binding in its bearing.

The external portions of the fixtures used with flushing tanks and the like are generally plated, and it is extremely desirable that the visible portions of the mechanism be free from set-screws, nuts or other securing elements, and my invention contemplates a handle construction in which the securing parts are entirely concealed. As shown in detail in Figs. 2 and 4, the handle comprises a main portion 8 and a socket portion 11, the opening of which extends transversely to the axis of the main portion 8. The latter is preferably formed of porcelain or the like, and has an axially extending screw member 9 adapted to engage a screw-threaded opening in the socket portion 11. The free end of the screw-threaded member 9 terminates in a plain cylindrical portion forming a securing member 10, and the construction is such that, when the socket portion 11 is placed over the registering apertures in the bushing 13 and the rock shaft portion 6, and the two portions of the handle are screwed together, the securing member 10 will extend through the apertures in the bushing 13 and the rock shaft 6.

The aperture in the rock shaft is of a size just sufficient to receive the securing member 10 so that, when the handle is rocked, the rock shaft portion 6 will rotate and rock the lever 5. As shown in detail in Fig. 4, the aperture 12 in the bearing sleeve is of slightly greater diameter than that of the securing member 10. Since the bearing sleeve 13 is locked from rotation by a member 15, the sides of the aperture 12 form the means for limiting the rocking movement of the shaft 6. This simple arrangement of parts guards against the excessive throw of the lever 5 and the valve carried thereby.

In attaching the valve operating mechanism to the tank, it is only necessary to slip the washer 18 and the nut 19 off from the free end of the lever, and then, after the latter has been inserted through the opening in the tank wall, the washer and nut are returned, and the nut screwed up on the threaded portion to the position shown in Fig. 2. This draws the flanges 16 and 17 of the securing member into the square opening in the tank wall, or the spurs 16′ and 17′ are forced into the wood in case the locking member 15′ is employed, and the entire apparatus is locked from both longitudinal and rotative movement except the slight rotative movement permitted the handle and the rock shaft by the enlarged opening 12.

The construction as an entity is one which can be very economically manufactured, and reduces to a minimum the care necessary in attaching the lever mechanism to the tank. While I have shown and described a particular embodiment of my invention, it is obvious that it is applicable to other constructions than the operating mechanism for flushing tanks, and that various changes in detail of construction and arrangement of parts can be made without departing from

the scope of my invention, and I do not desire to limit the latter except as specified in the appended claims.

I claim as my invention:

1. In leverage mechanism, the combination with a bearing sleeve, of a rockable shaft journaled therein, said bearing sleeve and rockable shaft having registering apertures, and a handle having a transverse socket fitting over said apertures and a concealed securing member extending through the registering apertures.

2. In leverage mechanism, the combination with a bearing sleeve, of a rockable shaft journaled therein, said bearing sleeve and rockable shaft having registering apertures and a handle comprising a main portion and a transverse socket portion, said socket portion and main portion being secured together by a screw-threaded portion projecting into the registering apertures.

3. In leverage mechanism, the combination with a bearing sleeve, of a rockable shaft journaled therein, said bearing sleeve and rockable shaft having registering apertures, and a handle having a transverse socket fitting over said apertured portion, said handle having a concealed securing member extending through the registering apertures, the aperture in the bearing sleeve being slightly larger than the securing member whereby a limited rotating movement of the rockable shaft is permitted.

4. In leverage mechanism, the combination with a wall having a flat-faced opening, of a rock shaft extending through said opening, a bearing sleeve for said rock shaft, an escutcheon plate fixed to said bearing sleeve, and a locking member non-rotatably housed within said escutcheon, said locking member having a flange extending within the wall opening and engaging a flat face thereof, for locking the bearing sleeve against rotation.

5. In leverage mechanism, the combination with a wall having an opening, of a rock shaft extending through said opening, a bearing sleeve for said rock shaft, an escutcheon plate fixed to said bearing sleeve, and means for locking said bearing sleeve from rotation comprising a member loosely sleeved on the bearing sleeve and non-rotatably engaging both the escutcheon plate and the wall.

6. In leverage mechanism, the combination with a wall having an opening, of a rock shaft extending through said opening, an externally threaded bearing sleeve for said rock shaft, an escutcheon plate fixed to said bearing sleeve, a clamping nut adjustable on the bearing sleeve for clamping the escutcheon plate against the outer face of the wall, and means for locking said bearing sleeve from rotation comprising a metal stamping loosely sleeved on the bearing sleeve and non-rotatably engaging the escutcheon plate and wall.

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