July 28, 1925.

1,547,764

H. W. KUEHL

WASTE VALVE MECHANISM

Filed Oct. 18, 1924

Fig 1

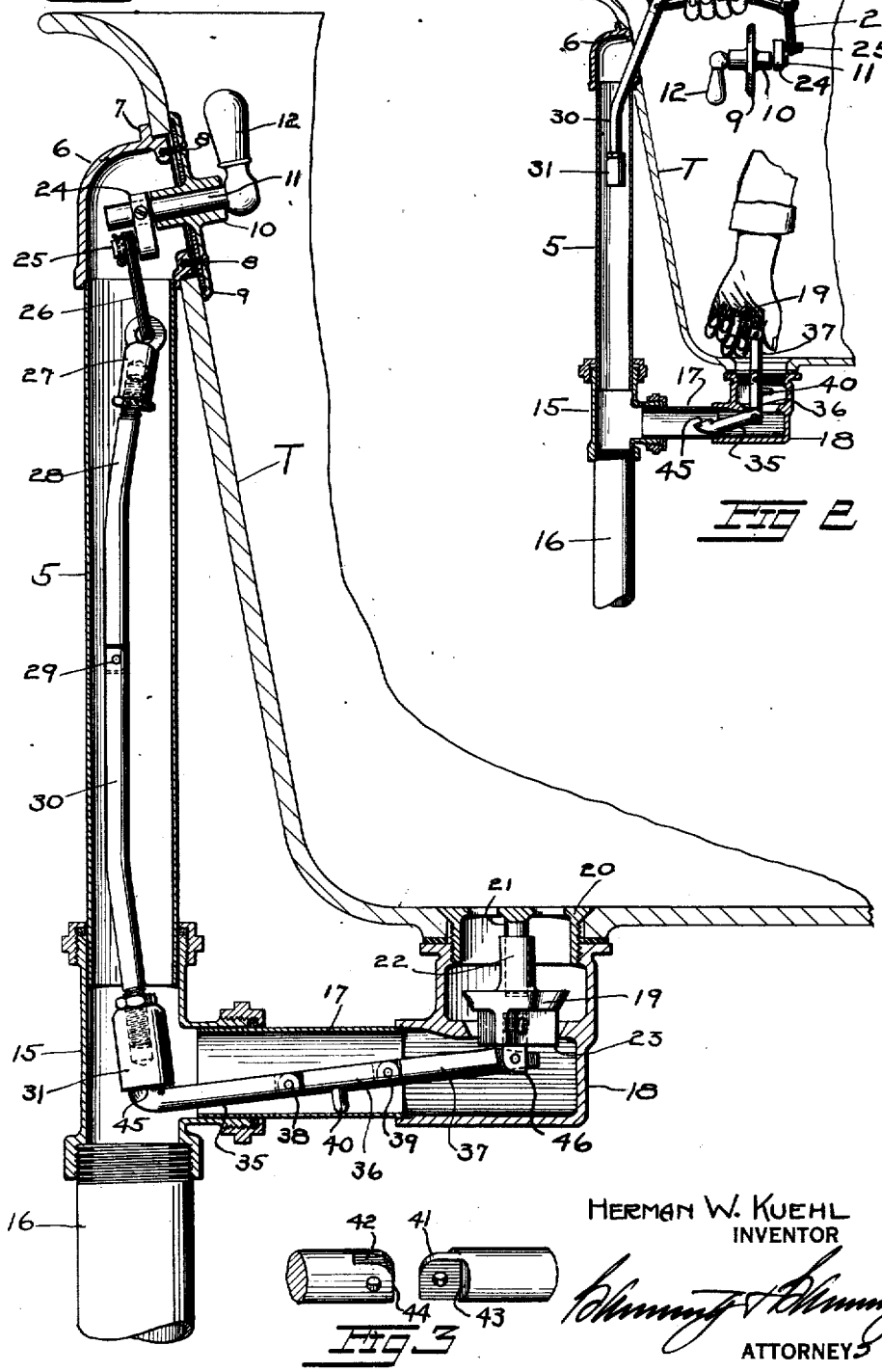


Fig 2

Fig 3

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Patented July 28, 1925. 1,547,764

UNITED STATES PATENT OFFICE.

HERMAN W. KUEHL, OF CHICAGO, ILLINOIS, ASSIGNOR TO BRASS PRODUCTS COMPANY, A COPARTNERSHIP CONSISTING OF HARRY W. ANDERSON AND HIMSELF, OF CHICAGO, ILLINOIS.

WASTE-VALVE MECHANISM.

Application filed October 18, 1924. Serial No. 744,306.

To all whom it may concern:

Be it known that I, HERMAN W. KUEHL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Waste-Valve Mechanism, of which the following is a specification.

This invention relates to a waste valve such as may be employed advantageously with bath tubs, lavatories, etc., and is particularly concerned with an operating mechanism therefor which may be readily installed or removed.

The embodiment of my invention set forth in the accompanying drawings and in the description to follow is especially suited for use with plumbing fixtures of the kind which are employed with built-in bath tubs. With such installations, accessibility to the operating parts of a waste valve is greatly reduced in consequence of which there is an increased need for an operating assembly which may be conveniently installed or removed. It is largely to meet such conditions that the present invention has been designed, the objects and purposes served thereby being set forth fully in the specification and claims to follow, taken in conjunction with the accompanying drawing wherein—

Figure 1 is a vertical section through one end of a tub, together with fittings which constitute the overflow and waste outlets therefrom;

Fig. 2 is a similar view on a reduced scale showing the valve operating parts in process of installation or removal; and

Fig. 3 which is a detail in perspective shows the adjacent ends of two elements forming part of the linkage for operating the waste valve.

Referring now to the drawings in detail in all of which like letters and numerals represent like or equivalent parts wherever used, I have shown one end of a bath tub T with which is associated a vertically disposed stand pipe or overflow tube 5. This tube is connected at its upper end to the tub in the usual manner as by means of an overflow L 6 having a flange 7 which bears against the outer face of the tub wall. Connected with this L as by screws 8 is an apertured plate 9 which bears against the inner face of the tub wall, a suitable gasket or packing being interposed to prevent leakage. This plate carries a bearing 10 in which is mounted for rotation a stem 11 having an operating handle 12 at one end thereof.

The lower end of the overflow tube is connected with a T-fitting 15 with which is also connected a pipe 16 leading to the trap (not shown). By this arrangement the pipe 16 may be aligned with the over-flow tube. Connected also with the T, so as to extend laterally from the overflow tube, is a waste arm 17 which has connection with a waste shoe 18 wherein is mounted a pop-up valve 19. The waste shoe may have threaded connection with a cage 20, the head of which is shown as flush with the inner face of the tub wall adjacent its bottom. Depending centrally within the cage is a stem 21 slidably received within a sleeve 22 which upstands from the waste valve. Also guiding ribs 23 may depend from the valve, as shown, to cooperate with the surrounding walls of the valve seat so as to assure a proper up and down movement of the valve.

The mechanism by which the present valve is operated comprises a two-unit linkage of peculiar formation. Included in the first unit in this linkage is a crank arm 24 carried by the rotatable stem 11, a pin 25 extending laterally therefrom, a link 26 connected to the pin and to a head 27 which is adjustably mounted on the upper end of an arm 28, wherein may be formed a slight bend as shown. The lower end of this arm has a pivotal connection as at 29 with a second arm 30 wherein may also be formed a bend similar to that in the arm 28, there being adjustably mounted at the lower end of the arm 30, a foot 31 of appreciable weight. The link 26 and the two arms 28 and 30 which depend from the crank arm 24 are unsupported within the overflow tube, but because of its vertical disposition and the size to which the several parts may be formed, the foot 31 is held against any extended lateral movement. The perforated plate 9, together with the stem 11 and operating parts suspended therefrom, constitute one unit in the operating linkage for the present waste valve.

A second linkage unit is disposed within

the waste arm 17 and shoe 18. This comprises, by preference, a lever which is formed of three stems 35, 36, and 37, extended in straight-line relation and pivotally connected together as at 38 and 39. Depending from the intermediate stem 36 is a pin or lug 40 adapted to rest against the inner face of the waste arm 17 adjacent its bottom, to thereby provide a fulcrum about which the lever may rock. It is contemplated that the pivotal connection between the three stems shall be of some such kind as is illustrated in Fig. 3 wherein a tongue 41 projects from the end of one to lie within a groove 42 in the adjacent end of the next, there being interengaging shoulders 43 and 44 which sustain the stems in a straight line as indicated. By some such connection as this, the lever is twice foldable in one direction, but not the other. One end of the rocking lever is formed with a seat 45 whereon may be rested the foot 31. At the opposite lever end, a connection is made with a tongue 46 which depends from the waste valve 19. This last connection completes the linkage between the waste valve and the associated parts which constitute the second unit in the operating mechanism.

In the use of the present valve, it is necessary merely that the handle 12 be turned to raise the foot 31. This rotation may continue through 180° at which point the link 26 will engage with the stem 11 to arrest further movement. In this position the crank arm is in a dead center position so as to sustain indefinitely the parts which depend therefrom. With lifting of the foot 31 the rocking lever is also moved in response to the weight of the valve 19 upon the stem 37. When this takes place, the valve is permitted to drop into its seat, thus shutting off communication from the tub to the waste outlet. The valve may be raised, however, by a reverse movement of the handle 12 whereupon the foot 31 in its operative relation to the rocking lever again over-balances the valve to thereby effect a lift of the latter. In either position of operation it will be noted that communication between the tub and overflow tube is preserved.

The mechanism herein described is particularly advantageous, in that it may be readily removed from the waste pipes in which it is installed for operation. To accomplish this the plate 9 is disconnected from the L 6 whereupon the first unit of the linkage may be withdrawn in the manner indicated in Fig. 2. The valve cage which is also disconnectable from the shoe 18, permits the valve and parts forming the second linkage unit, to be removed, as shown. It is important to note that between the two units in the linkage system there is no connection whatever, only a loose contact of the foot 31 upon the seat 45. For this reason it follows that either unit may be removed or re-installed independently of the other.

The parts forming the present invention are such as may be produced at small expense and are not liable to get out of order. At the same time, as is found to be the case with all plumbing fixtures, provision must be made for getting at the valve parts, in case it should become necessary to clean out the waste pipe or for any other purpose. It is for these reasons that the present construction has special advantages. It is possible, of course, to modify the construction herein shown and to do so within considerable limits without departing from the underlying principles of this invention, the scope of which is indicated by the claims below.

I claim:

1. A receptacle having overflow and waste outlets, means connecting said outlets with a source of waste disposal, a valve mounted adjacent one outlet, an operating member adjacent the other, and a linkage system comprising two units, one connected with the valve and the other with the operating member, each adapted for independent installation or removal, and having a loose but operative engagement with the other, substantially as described.

2. In a receptacle having waste and overflow outlets, means connecting said outlets with a source of waste disposal, a gravity valve for controlling the passage of liquid through the waste outlet, and operating means therefor including two units normally loosely connected, one being weighted to over-balance the valve whereby the latter tends to remain unseated, one unit being movable into and out of position through the waste outlet, and the other through the overflow outlet, substantially as described.

3. In combination with a receptacle having waste and overflow outlets, means connecting said outlets with a source of waste disposal, a valve for controlling the passage of liquid through the waste outlet, a foldable lever to one end of which the valve is secured, and a foldable linkage unit adapted to engage with the opposite lever end and movable into and out of position through the overflow outlet, substantially as described.

4. In combination with a receptacle having waste and overflow outlets, means connecting said outlets with a source of waste disposal, a valve adjacent the waste outlet, an operating member therefor adjacent the overflow outlet, a foldable linkage extending from the operating member, and a second foldable linkage extending from the valve, the one having a loose engagement with the other, and each being movable into and out of operative position through sep-

arate outlets, whereby the valve may be caused to reciprocate, substantially as described.

5. In combination with a receptacle having waste and overflow outlets, a waste shoe arranged adjacent to the former, a valve movable within the shoe to control the passage of liquid therethrough, an L secured adjacent to the overflow outlet, an overflow tube connected with the L and with a source of waste disposal, a waste arm connecting the overflow tube with the waste shoe, a plate detachably connected to the overflow L, a stem rotatably journaled in the plate, means for operating the stem, a crank arm carried by the stem, a link connected with the crank arm, a pair of interconnected foldable arms, to one of which the link is also loosely connected, a weighted foot at the bottom end of the lower arm, a lever within the waste arm comprising a plurality of foldable stems having means for maintaining a straight line relation, there being a fulcrum depending from one of the stems to rest upon the bottom of the waste arm, the weighted foot being loosely rested upon one lever end, and a connection between the opposite lever end and the valve such that the latter is reciprocated in response to movements of the weighted foot, the two linkage units being independently movable into and out of operative position, substantially as described.

6. In combination with a receptacle having interconnected waste and overflow outlets, two linkage units each movable into and out of operative position through separate outlets and adapted to interengage operatively, means connected to one unit for operating the same, and a valve connected to the other unit adapted to be operated by the first, substantially as described.

7. In combination with a receptacle having interconnected overflow and waste outlets, the latter being provided with a valve, a valve operating mechanism comprising two units one of which includes a lever whereon at one end the valve is rested and the other an overbalancing weight having normally a loose engagement with the opposite lever end, whereby the valve is unseated and means whereby each of said units may be moved into or out of operative relation through one of said outlets, substantially as described.

HERMAN W. KUEHL.

Witness:
EPHRAIM BANNING.

arate outlets, whereby the valve may be caused to reciprocate, substantially as described.

5. In combination with a receptacle having waste and overflow outlets, a waste shoe arranged adjacent to the former, a valve movable within the shoe to control the passage of liquid therethrough, an L secured adjacent to the overflow outlet, an overflow tube connected with the L and with a source of waste disposal, a waste arm connecting the overflow tube with the waste shoe, a plate detachably connected to the overflow L, a stem rotatably journaled in the plate, means for operating the stem, a crank arm carried by the stem, a link connected with the crank arm, a pair of interconnected foldable arms, to one of which the link is also loosely connected, a weighted foot at the bottom end of the lower arm, a lever within the waste arm comprising a plurality of foldable stems having means for maintaining a straight line relation, there being a fulcrum depending from one of the stems to rest upon the bottom of the waste arm, the weighted foot being loosely rested upon one lever end, and a connection between the opposite lever end and the valve such that the latter is reciprocated in response to movements of the weighted foot, the two linkage units being independently movable into and out of operative position, substantially as described.

6. In combination with a receptacle having interconnected waste and overflow outlets, two linkage units each movable into and out of operative position through separate outlets and adapted to interengage operatively, means connected to one unit for operating the same, and a valve connected to the other unit adapted to be operated by the first, substantially as described.

7. In combination with a receptacle having interconnected overflow and waste outlets, the latter being provided with a valve, a valve operating mechanism comprising two units one of which includes a lever whereon at one end the valve is rested and the other an overbalancing weight having normally a loose engagement with the opposite lever end, whereby the valve is unseated and means whereby each of said units may be moved into or out of operative relation through one of said outlets, substantially as described.

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Witness:
EPHRAIM BANNING.

DISCLAIMER

1,547,764.—*Herman W. Kuehl*, Chicago, Ill. WASTE-VALVE MECHANISM. Patent dated July 28, 1925. Disclaimer filed October 24, 1929, by the assignees, *Herman M. Kuehl* and *Harry W. Anderson*, a Copartnership.

Hereby enter a disclaimer limiting claim 1 of said patent as follows:

By restricting the elements "overflow and waste outlets" to an overflow outlet in a side wall of the receptacle and a waste outlet.

By restricting the element "means connecting said outlets with a source of waste disposal" to a waste pipe connected to the waste outlet, an overflow pipe connected to said waste pipe, an L connecting the overflow pipe to the overflow outlet.

By restricting the elements "units" to deformable units.

By restricting the term "independent installation or removal" to independent installation or removal through one of the outlets.

Your petitioners hereby enter a disclaimer limiting claim 6 of said patent as follows:

By restricting the elements "interconnected waste and overflow outlets" to waste and overflow outlets, communicating waste and overflow pipes, an L connecting each pipe to one outlet.

By restricting the elements "linkage units" to deformable linkage units.

[*Official Gazette November 12, 1929.*]

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