

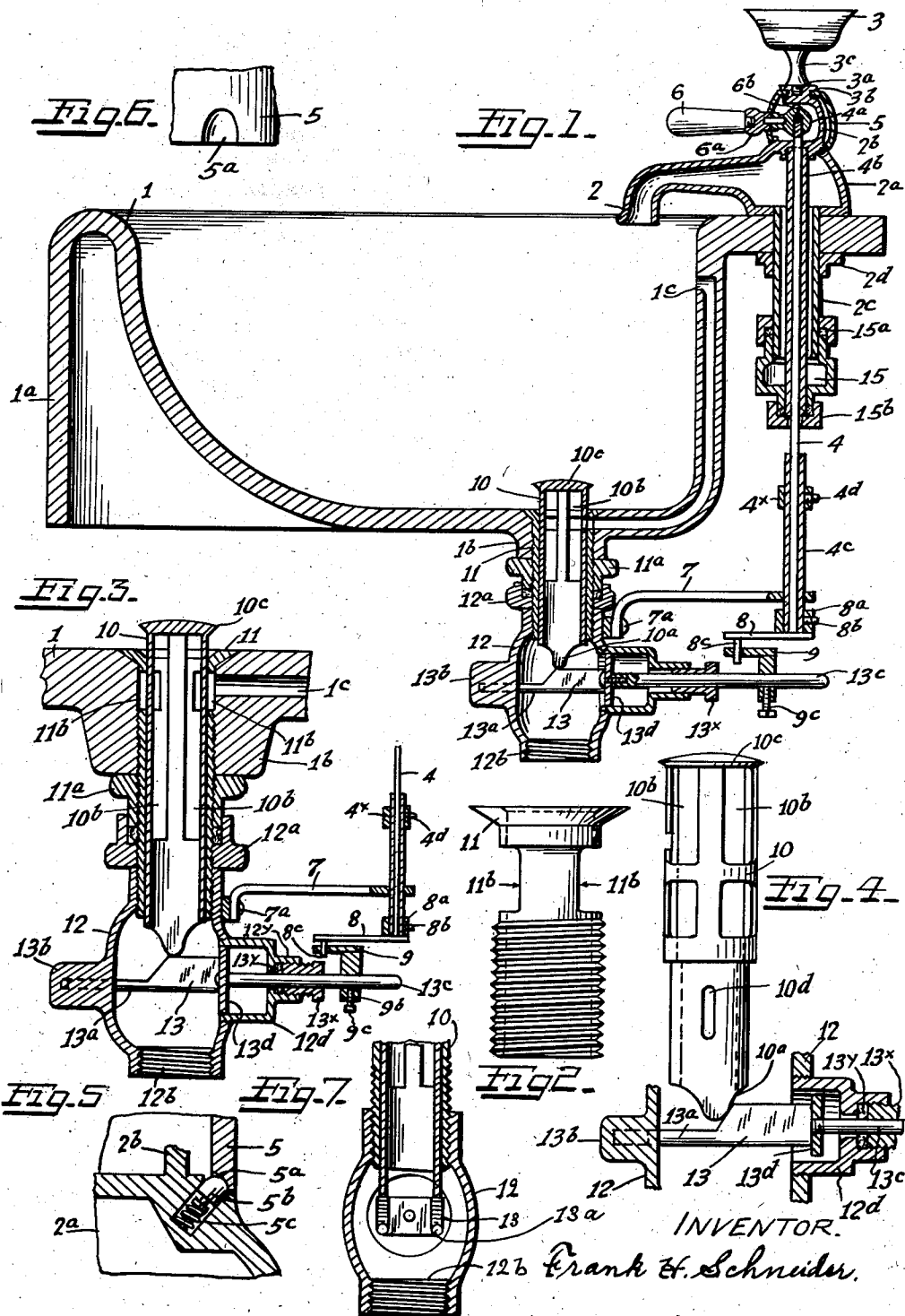
Dec. 8, 1936.

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2,063,632

LAVATORY DRAIN VALVE

Filed April 24, 1933



UNITED STATES PATENT OFFICE

2,063,632

LAVATORY DRAIN VALVE

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Application April 24, 1933, Serial No. 667,635

3 Claims. (Cl. 4—201)

My invention relates to drain valves for wash-bowls and such vessels and, also, to the means of operating such valves. And the objects of my invention are,—first, to devise neatly-appearing and practical means for operating such drain valves; second, to provide novel form of the valves now in use to render them adaptable to my new means of operation; third, to design new and useful contiguous parts therefor, and four, to devise means for locking the drain valve in its casing so that it cannot be drawn therefrom without the use of a key or other suitable tools.

All of these objects I attain in my present invention; and my new and useful lavatory drain valve illustrated in the accompanying drawing which forms a part of this specification, is a practical device embodying the aforesaid novel means and other new and useful details of construction, arrangement and combination of parts; all of which, together with their functions, will be described in detail with reference to said drawing and will be definitely pointed out in the claims that follow the description.

In said drawing:

Figure 1 is a longitudinal section of my new drain valve, contiguous parts and its operative mechanism installed on an ordinary washbowl here shown in section.

Fig. 2 is a side elevation of the cylindrical valve casing embodied in my invention.

Fig. 3 is a detail view in longitudinal section of my drain valve and its contiguous parts; the bowl and operative mechanism being shown in part.

Fig. 4 is a side elevation of the vertically-sliding lavatory drain valve, also a side elevation of one of the cam-tappets and of the tappet housing in fragmentary section together with a sectional view of the integral knob and a fragment of the threaded nipple in their relatively operative positions.

Fig. 5 is a fragmentary detail view in section, showing the spring-pressed, marker detent in the back of the crown base and a part of the oscillating cap of the spindle head.

Fig. 6 is a fragmentary detail view in elevation of the inside of the oscillating cap of the spindle head and the marker notch therein.

Fig. 7 is a longitudinal section in detail of the housing for the valve-tappets, showing the double cam-tappets adapted to lift the drain valve and the header that connects them; the valve being shown only in part.

This present invention of mine is a practical apparatus embodying the aforesaid novel means

and other new and useful features of construction, arrangement and combination of parts as illustrated in the accompanying drawing; but it should be understood, of course, that various modifications, to facilitate economical fabrication or otherwise, may be made in the dimensions and particular details of the construction herein illustrated, without departing from the scope of my invention as set out in this specification and the appended claims. And with this general purpose and these special objects in view, therefore, I will now proceed to describe my invention in detail, pointing out the new and useful features and explaining the uses and operations of the individual parts and combinations thereof, as illustrated in the drawing herein delineated in which similar characters refer to similar parts throughout the several views.

Referring to the drawing, the lavatory bowl 1 is of the ordinary wall type but, for the sake of clearness in representation, is here shown without visible means of support and may be made of metal or vitreous material; and the supply faucet 2 may be separate from the bowl and set above the upper edge of the bowl or set below as an integral supply faucet.

The present form, however, as illustrated in Fig. 1 of the drawing, is sufficient to show the construction and principle of my invention, wherein I have devised a vertically disposed oscillating crank-spindle 4 whose lower end is rigidly locked in its lower casing 4c which is rotatably secured in a rigidly fixed horizontal bracket 7; and whose upper end is operative in a watertight casing 4b which is threaded tightly into the upper side of the supply-head 2a.

This construction allows the oscillating crank-spindle to pass operatively up into the integral crown 2b of the supply-head 2a, where in assembling the parts the spindle-head 4a is threaded on over the upper end of the crank-spindle 4 and is securely fastened in that position by means of the set-screw 6b centrally threaded down into the end of the crank-spindle.

In assembling these parts, we next place the oscillating cap 5 of the spindle-head 4a down over the integral crown 2b and rotate it until the perforation in the cap 5, as shown in Fig. 1 coincides with the threaded matrix in the spindle-head 4a; then we insert therein the threaded base 6a of the oscillating handle 6 and screw it securely into the spindle-head. Now when we swing the handle 6 horizontally, the cap 5 and the spindle 4 both rotate.

Now the integral horizontal plate over the

upper part of the crown 2b is provided with a threaded perforation adapted to receive the threaded base 3b of the supporting rod 3a; and when this rod-base 3b is screwed down tightly into the crown 2b, the oscillating cap 5 is securely held in its normal operative position; and the shank 3c of the soap dish 3 is fitted down over the supporting rod 3a, as shown in Fig. 1.

In Fig. 1, a sectional view, the washbowl 1 is shown provided with its broad apron 1a and the overflow channel 1c and the usual drain opening surrounded with the boss 1b at the bottom of the bowl, adapted for the installation of drain fixtures. The bowl is, also, shown provided at the back with the usual flat, horizontal shelf, through the large round holes in which the usual fixtures are installed; and through the middle hole in this shelf is installed as an essential element of my invention, the oscillating crank-spindle 4 that operates my improved drain valve. For, down through this middle hole, as shown in Fig. 1, is extended the threaded neck 2c of the supply head 2a, where both these parts are securely held in their normal, functional position by means of the lock-nut 2d. And on the lower end of the neck 2c is fitted the water-mixing chamber 15 by means of the upper packing-nut 15a. And the lower end of the mixing chamber 15 is tightly closed by means of the lower packing-nut 15b. The mixing chamber 15 has threaded borings on either side adapted for taking the threaded ends of the hot and cold supply pipes which might be connected thereto.

Now, this lower packing-nut 15b acts not only as a stopper for the lower end of the mixing chamber 15, but it is provided on the inside with an ordinary packing ring and thus adapted to close the lower end of the upper casing 4b of the crank-spindle 4; said spindle casing extending down through the neck 2c and the mixing chamber 15 a predetermined distance. The central boring in the packing-nut 15b, as shown in Fig. 1 allows the spindle 4 to pass down through it and enter the lower casing 4c; and the spindle 4 is long enough to reach a little way below the reinforcing ring 4x brazed about the casing 4c to form an extended bearing for the lock-screw 4d which is adapted to pass through the reinforcing ring 4x and the walls of the casing 4c and to be screwed tightly against a long facet in one side of the round crank-spindle 4, for the purpose of locking together the crank-spindle 4 and its lower casing 4c, so that, when the crank-spindle or shaft is rocked back and forth in a rotatory way, the spindle-casing 4c, also, will be rotated to the same extent.

The oscillating crank 8 is rigidly fastened onto the lower end of the lower casing 4c of the spindle 4, by means of a thick-walled socket 8a rigidly brazed onto the broader end of the crank 8, as shown in Figs. 1 and 3; the crank being removably fastened to the lower end of the casing 4c by means of the set screw 8b. Consequently, it is obvious that when the oscillating handle 6 fixed in the head 4a of the crank spindle or shaft is horizontally swung back and forth in normal operation, the crank 8, also, will be swung horizontally to the same extent. These coacting parts are adapted to be adjusted in properly assembling them.

Now at the bottom of the washbowl 1, in the usual drain opening I have operatively placed a vertically-sliding waste valve 10 adapted to be operated up and down in a thick-walled casing 11 of a predetermined length provided with a

flanged head and waste-openings, 11b, 11b, in either side, shown in Fig. 3, to allow the passage of waste-water from the over-flow channel 1c; said valve-casing being further provided with threads around its outer side and adapted to be fixed water-tight in its functional place by means of a lock-nut 11a. And to be threaded onto the lower end of the casing 11, I have designed a housing 12 for valve tappets adapted to be screwed up a certain distance on the lower end of casing 11 and to be securely held in this position by means of a lock-nut 12a. And the lock-nuts 11a and 12a are so designed with extensions of certain lengths reaching out towards each other that the socket-like extension of lock-nut 12a telescopes over the extension of lock-nut 11a when they are set in their functional positions; the object being to cover the threads on the casing 11 intervening between said nuts when they are functionally set.

In the backside of the tappet housing 12 I have provided a threaded opening into which is screwed water-tight the threaded nipple 12d which terminates at its outer end in a solid knob 12y, centrally bored to allow the horizontal sliding rod 13c to pass therethrough, the outer end of said boring being counterbored and threaded to a certain depth and adapted for the installation of a packing ring 13y and its retaining packing nut 13x which, also, is centrally bored for the passage of said sliding rod 13c.

The vertically-sliding waste valve 10 is provided with longitudinal side-slucices, 10b, 10b, and is long enough to reach normally down into the tappet housing 12 and its lower end terminates in two similar contact cams, 10a, 10a diametrically opposite each other and adapted to function in a predetermined position fixed by the lock screw 12c threaded through the side of the housing 12 and the valve casing 11 into the slot 10d in the side of the sliding waste valve 10, as shown in Figs. 1, 2, and 3.

This sliding drain valve 10 is opened by means of the double cam tappets 13, 13, which I have provided in the housing 12, adapted to slide horizontally back and forth actuated by the oscillating crank 8. These double tappets 13, 13, are made up of two broad thick slabs of bronze having their butts square-cut and brazed against the inner flat surface of the rectangular header 13d shown in Figs. 1, 3 and 7, where they are set with their edges vertically disposed parallel to each other, the same distance apart as the two contact cams 10a, 10a are set at the lower ends of the vertically-sliding waste valve 10. The outer ends of these two sliding tappets terminate in two round, integral arms, 13a, 13a adapted to slide functionally back and forth in two parallel borings in the integral knob 13b on the front side of the housing 12; while the broad portions of the tappet slabs 13, 13, terminate in bevels adapted in normal operation to strike against the contact cams 10a, 10a in such a manner as to actuate the vertically-sliding waste valve 10 upward a predetermined distance sufficient to open the gate 10c and allow the waste water to flow entirely out of the washbowl 1, as shown in Figs. 1 and 3.

Now into the central part of the back of the rectangular header 13d is securely fastened a round rod 13c at right angles thereto, which is long enough to reach out through the packing-nut 13x which is screwed into the counterbore in knob 12y of the extension 12d of the housing 12, and through the bracket 9b of the slot-plate 9, where the rod 13c is securely held locked in its

operative place with the set-screw 9c, shown in Figs. 1 and 3.

It can, now, be readily understood that when the oscillating handle 6 of the spindle-head 4a is swung through its operative arc, the spindle 4 and its lower casing 4c which is rigidly attached to the spindle 4, will be rotated, taking along with it the oscillating crank 8 through its predetermined arc; and its rigid crank-pin 8c operative in the slot of the slot-plate 9 will force the slot-plate 9 and its rigid bracket 9b backward carrying the rigidly attached round rod 13c outward to the completion of its normally-operative stroke, a movement which will draw backward the attached header 13d and the double cam-tappets 13, 13, into the extension chamber 12d of the housing 12, their functional distance sufficient to allow the contact-cams 10a, 10a, to slide down over the beveled ends of the double cam-tappets 13, 13, which will allow the waste valve 10 to sink down by gravity and thus close the gate 10c of the waste valve 10. And the bowl can then be filled with fresh water at the desired temperature if both hot and cold water-supply pipes are connected up and adapted to allow the water to flow into the mixing chamber 15 and up through the supply-head 2a and the faucet 2 into the washbowl 1.

It is believed that no recapitulation of the operation of my invention or of the relations of its parts, is necessary, except that I might mention that adjustments of the co-acting parts may be clearly seen and easily made so that the gate 10c may be set open or closed, as preferred, when the oscillating handle 6 is stopped in a position at the front parallel to the faucet 2.

And, now, having described the various features of my invention, the detail construction, arrangement, purposes and methods of operation; those features and combinations of my invention that I consider new and useful and representative of utility and efficiency on which I desire Letters Patent granted to me, I have hereinbelow set forth and specifically described in the following claims:—

1. In a lavatory fixture of the kind described, having a bowl provided with overflow and bottom waste-vents and having water-pipes with controlling valves: a drain-valve comprising, a stationary, cylindrical valve-casing having a flange-head and waste openings on either side adapted for the passage of the overflow water and provided with exterior screw-threads to engage other parts, said casing being fitted water-tight in the bottom waste-vent of the bowl; lock-nuts to fasten said casing to the bowl; a hollow, cylindrical waste-valve slidably installed in said casing and adapted with a cap-gate on its top to stop the water in the bowl when the waste-valve is down in its closed position and with longitudinal side-sluices to allow the ingress of waste-water from the bowl when the valve is raised up in its normal open position and also to allow the overflow-water to pass on when said valve is normally closed, and designed with two diametrically opposite contact-cams on its lower end, integral with the sides thereof to aid in the normal operation of the waste-valve; a cam-tappet housing screwed to the lower end of said casing and provided with an integral knob on its front side and a threaded opening with a hollow nipple attached therein on its back side; double cam-tappets horizontally installed parallel to each other in said housing on a common header adapted to be moved back and forth in

said hollow nipple by means of a sliding shaft attached thereto and extending out through the back end of said nipple, said cam-tappets having their front ends slidably supported in said knob and their back ends rigidly fixed to said header and adapted to strike operatively the contact-cams on the lower end of said sliding waste-valve, raising the valve to open it, as the cam-tappets are moved forward, thus affording a full, clear passage way, for the waste-water and inter-mingled lint; and a waste-valve handle and coacting mechanism adapted to actuate said sliding shaft back and forth to close and open said waste-valve, as described.

2. In a lavatory drain valve, the combination with a lavatory bowl having supply water-pipes with controlling valves and provided with overflow and bottom waste-vents, of a cylindrical valve-casing having a flange-head and waste-openings on either side near the flange-head thereof for the passage of water from the overflow channel, said casing being provided with exterior threads along the lower part thereof and being fitted water-tight in the bottom waste-vent of said bowl by means of lock-nuts; a hollow cylindrical waste-valve, smooth inside and outside and designed to be slidably installed in said valve-casing slip-fitting closely therein; means on the top of said sliding valve designed to stop the water in the bowl when the valve is down in its closed position; vertical sluices in the sides of the hollow waste-valve adapted to allow the ingress of water from the bowl when the valve is raised up to its open position and, also, to allow any water from the overflow-vent to pass on when said waste-valve is down and the bottom waste-vent of the bowl is closed; two diametrically opposite contact-cams on the lower end of said sliding waste-valve, integral therewith and in line with the walls thereof and adapted to aid in the normal operation of the said waste-valve; a cam-tappet housing screwed to the lower end of said valve-casing; an integral knob on its front side and a threaded opening and a hollow nipple attached therein on the back side; double cam-tappets horizontally installed parallel with each other, in said housing, on a common header adapted to be moved back and forth in said hollow nipple by means of a sliding shaft rigidly attached to the back side of said header and extending out through the back end of said nipple, said cam-tappets having their front ends slidably supported in said knob and their back ends rigidly fixed to said header, the cam-tappets being adapted to strike operatively the contact-cams on the lower end of said sliding waste-valve, raising the valve to open it, as the cam-tappets are moved forward, affording a full clear passage way for the waste-water down through the hollow waste-valve; and manually operative mechanism connected with said sliding shaft and attached to said bowl and adapted to operate said sliding-shaft to open and close said waste-valve, as described.

3. In a lavatory bowl of the kind described provided with water supply pipes and having an overflow-vent and an over-flow channel up in the side thereof and a waste-vent in the bottom of said bowl: a lavatory drain-valve comprising, a valve casing fixed in the waste-vent in the bottom of said bowl; a sliding waste-valve installed in the valve casing; means to prevent its rotation therein; means for allowing the water to pass from the bottom of the bowl when the valve is open and from the overflow-vent when the

valve is open or closed; two contact-cams on the lower end of said waste-valve, integral therewith and in line with the walls of the valve; a cam-tappet housing attached to the lower end of said casing; two cam-tappets horizontally installed parallel with each other in said housing in such a position that the distance between them is equal to the inside diameter of said

waste-valve, said cam-tappets being adapted to open and close said valve as they are moved forward and backward; and manually operative means attached to said bowl adapted to move said cam-tappet forward and backwards to open and close said valve, as described.

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