

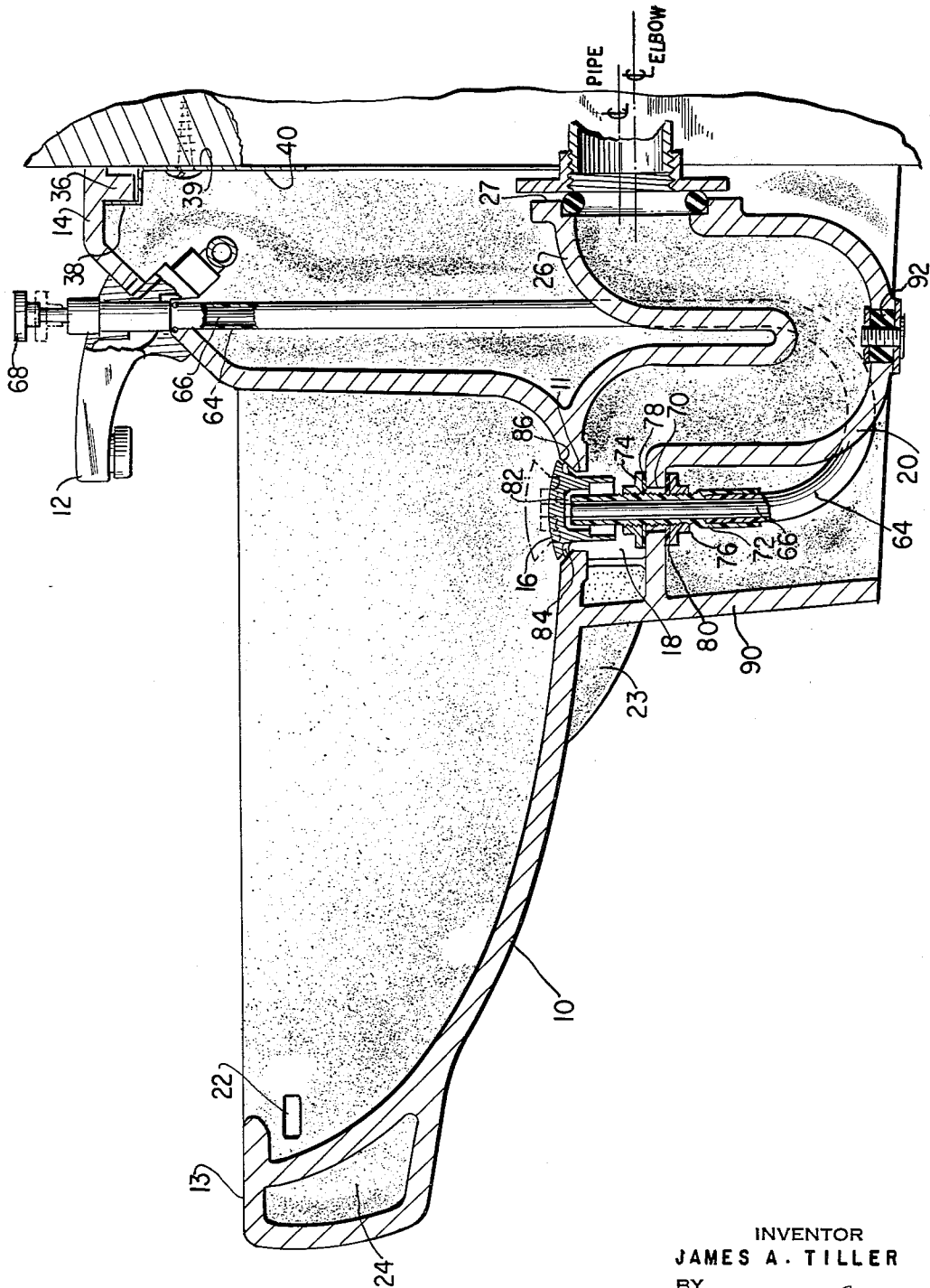
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DRAIN PLUG MECHANISM

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DRAIN PLUG MECHANISM

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This invention relates to an improved lavatory, and a drain cast integrally therewith having a remotely operated stopper.

Lavatories commonly used heretofore have usually had separate metal traps connected to the lavatory. After the lavatory was hung, it was the practice to then install the trap and any stopper mechanisms used with the separate metal drain. This construction sometimes presented leakage problems where the metal traps were joined with the lavatory and between the joints of the trap itself and the stopper operating mechanism.

It is an object of this invention to provide a lavatory of simplified construction which not only eliminates the leakage problems mentioned, but is also easy to install.

It is a further object of this invention to provide a lavatory having an integrally cast trap wherein improved means are provided for remotely operating said stopper.

Another object is to provide a lavatory having an integral trap which is concealed from view within the lavatory structure.

Other objects and features of the invention will appear as the description of the particular embodiment selected to illustrate the invention progresses.

The drawing is a middle vertical-sectional side view of the improved lavatory of the present invention showing the integral trap.

Referring to the drawing, a lavatory basin 10 having an upper rim 13 is shown having a combination faucet 12 extending from the rear portion 14 and a drain plug 16 carried in a drain opening 11 at the bottom of the basin 10. Just below the drain opening 11 is a passageway 18 which conducts fluid from the drain opening 11 to a trap 20.

As can be seen in the drawing, the walls of the passageway 18 and the trap 20 are cast integrally with the lavatory basin 10. Consequently, a separate trap leading from the bottom of the basin 10 is not required. Also a connection between the basin and a separate trap is not required thereby eliminating the possibility of leakage associated with such connections.

The passageway 18 is also adapted to receive the overflow from the upper overflow opening 22 at the upper edge of the basin 10. A passageway 23 (partially shown) formed integrally with the basin 10 conducts any overflow from the frontal passageway 24, which is in communication with the overflow openings 22, to the passageway 18.

The trap 20 is formed as a U-shaped conduit having an integral elbow 26 terminating in a general vertical face 27.

The upper portion of the lavatory is prevented from coming away from the wall 39 by means of a downwardly extending lip or flange 36 which is formed integral with the lavatory and which also fits into a channel member 38 forming part of the bracket 40 which is secured to the wall 39.

In order to provide a means for raising and lowering the drain plug 16 in the basin discharge opening 11, a tube 64 having a flexible rod 66 therein is provided. The flexible rod 66 is adapted to slide longitudinally and around bends in the tubing 64. The flexible rod 66 and tubing 64 extend in U shape fashion from the underside of the drain plug 16 to the upper rear portion 14 of the basin 10 where it terminates in a push rod knob 68.

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By raising and lowering this knob 68, the drain plug 16 will be raised and lowered to open and close the drain opening 11.

The opposite end of the flexible rod 66 passes through an opening 70 in the bottom portion of the passageway 18. The tubing 64 terminates short of the opening 70 in the passageway 18 where it fits into one end of an adapter tube 72 which passes through the opening 70 in the passageway 18.

The end of the tubing 64 abuts a shoulder in the adapter 72 and suitable sealing means, such as water tight cement, is provided to seal the tubing 64 to the adapter 72.

The opening 70 in the passageway 18 through which the adapter 72 passes is sealed by means of a pair of nuts 74, 76 which engage external thread on the adapter 72. The nuts 74, 76 hold suitable sealing means, such as rubber washers 78, 80, firmly against the bottom wall of the passageway 18. The rubber washers 78, 80 are compressed slightly by the nuts 74 and 76 so that they bear laterally on the thread of the adapter 72 to prevent leakage along the thread as well as against the bottom wall of the passageway 18.

The upper end of the adapter 72 terminates within a hollowed out portion 82 of the drain plug 16 such that the drain plug 16 may be guided as it moves up and down by the walls of the adapter 72.

The drain plug 16 is raised and lowered by the end of the flexible rod 66 which is adapted to contact the underside of the drain plug in the hollowed out portion 82. The drain plug 16 is raised by sliding the flexible rod 66 in the tube 64 beyond the end of the adapter 72 such that the rod 66 contacts the underside of the hollowed out portion 82 to raise the drain plug 16. When the rod 66 is withdrawn into the tube 64, the drain plug 16 will fall down into a closed position due to its own weight.

It will be noted that there is no seal between the flexible rod 66 and the adapter 72. However, the ends of the adapter 72 and rod 66 are shielded by the drain plug 16 to prevent fluid from getting into the tube 64. In any event, if the fluid should get into the tube 64 it would merely be trapped therein and cause no harm. The drain plug is provided with a rubber seat 84 adapted to engage a beveled edge 86 on the drain opening 11.

Because of the horizontally extending passageway 18, underneath the drain opening 11, the adapter 72 and the flexible rod 66 for opening and closing the drain plug 16 may conveniently pass through the passageway 18 in a vertical direction for operating the vertically movable drain plug 16. A gentle bend is then provided in the flexible rod 66 to extend it to the push knob 68.

It will be noted that an integral lavatory cover 90 is provided in the front of the basin to conceal from view the bend of the flexible tube 64, the trap 20 and the supply connections to the combination faucet 12. The trap 20 is provided with a suitable clean out plug 92 held securely in an opening formed in the bottom of the trap 20.

The invention hereinabove described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. A drain operating structure comprising a bathroom fixture, a drain opening formed in said fixture, a drain plug adapted to close said opening, an annular flange depending from said drain plug, a flexible cable operating plunger for engaging the underside of said plug within said flange, said plug having free play clearance between said drain opening and said operating plunger and means

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to support the end of said cable underneath and inside of said drain plug flange to prevent drain water from entering into the end of said flexible cable.

2. A lavatory comprising a basin, a stopper having a downwardly extending skirt moveable in a drain opening at a lower portion of said basin, a flexible rod extending axially along the center of a cable and moveable relative thereto for operating said stopper, said flexible rod and cable having one end portion inside of the skirt of said stopper, another end portion of said cable and actuating rod forming an operative connection with an operating handle, said stopper having free play between said actuating rod and cable to freely seat itself in said drain opening when the actuating rod has been moved to closed position.

3. A lavatory drain comprising a plug having a hollowed out underportion, and a flexible rod carried in a tube for operating said drain plug, said tube having a terminating end section in said hollowed out underportion and spaced from the inner walls of said drain plug defining said hollowed out underportion whereby the drain plug is positioned in said drain opening independently of the position of said terminating end section of said tube relative to the center line of said drain opening.

4. A drain operating structure comprising a bathroom fixture, a drain opening formed in said fixture, a drain plug adapted to close said opening, an annular flange depending from said drain plug, a flexible cable having the operating terminal end thereof fixedly secured beneath said drain plug so that the terminal end extends inside the annular flange of said plug to prevent drain water from entering into the end of said flexible cable, a flex-

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ible operating member movable along the axial core of said cable and extending out of the terminal end thereof to engage the underside of said drain inside of said annular flange to raise and lower said plug in said drain opening, to thereby open and close said opening, the end of said operating member engaging said plug having free play clearance with the depending annular flange of said plug.

5. A drain operating structure having the features provided for in claim 4 wherein means are provided for supporting the opposite end of said cable to permit the flexible operating member to be operated at a position remote from said drain plug.

6. A drain for a bathroom fixture comprising a drain plug having depending walls forming a hollowed out portion on the underside of said plug, and a flexible rod carried in a tube for raising and lowering said drain plug, said tube having an end section terminating in said hollowed out portion and spaced from the inside surfaces of said depending walls whereby the drain plug is positioned in said drain opening independently of the position of the terminating end section of said tube relative to the center line of said drain opening.

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