Nov. 12, 1963 C. HELGUERA 3,110,323

DRAIN STRAINER

Filed April 16, 1962 2 Sheets-Sheet 1

FIG. 1

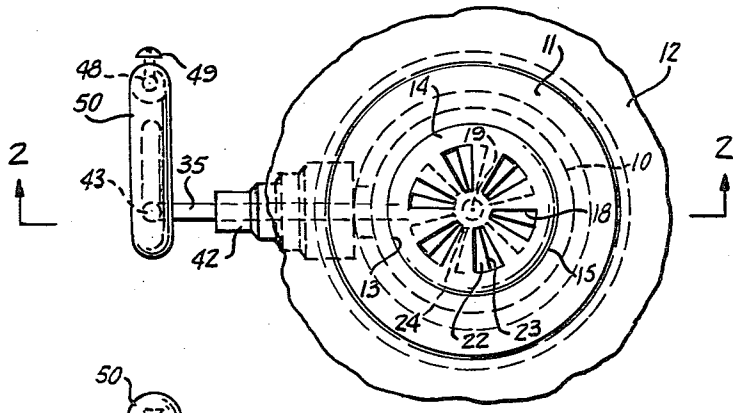


FIG. 2

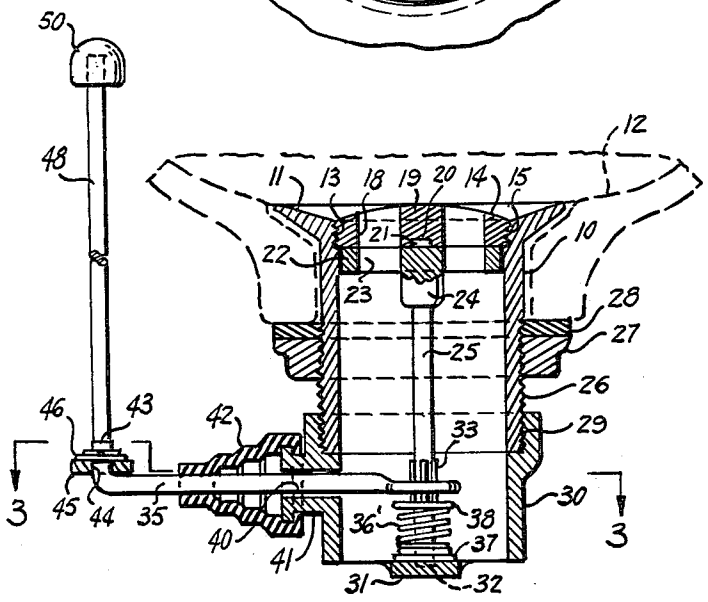
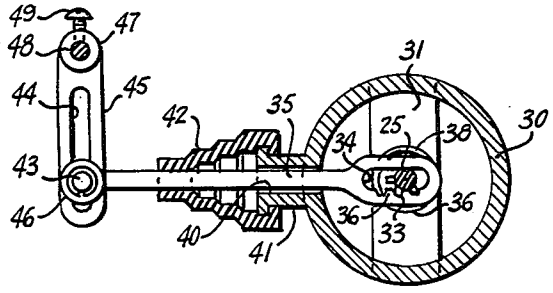


FIG. 3



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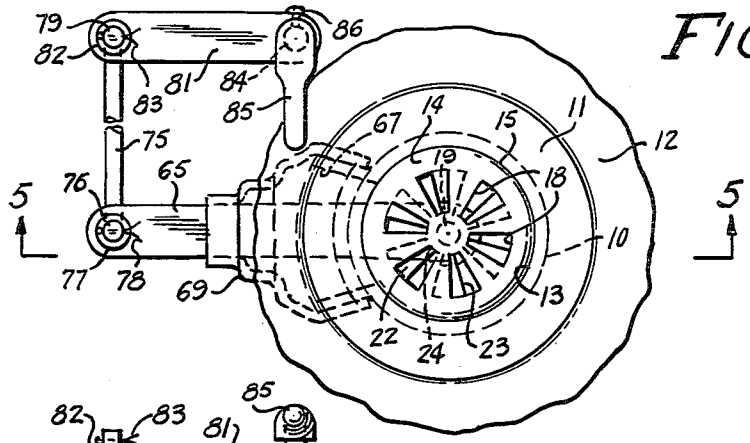


FIG. 4

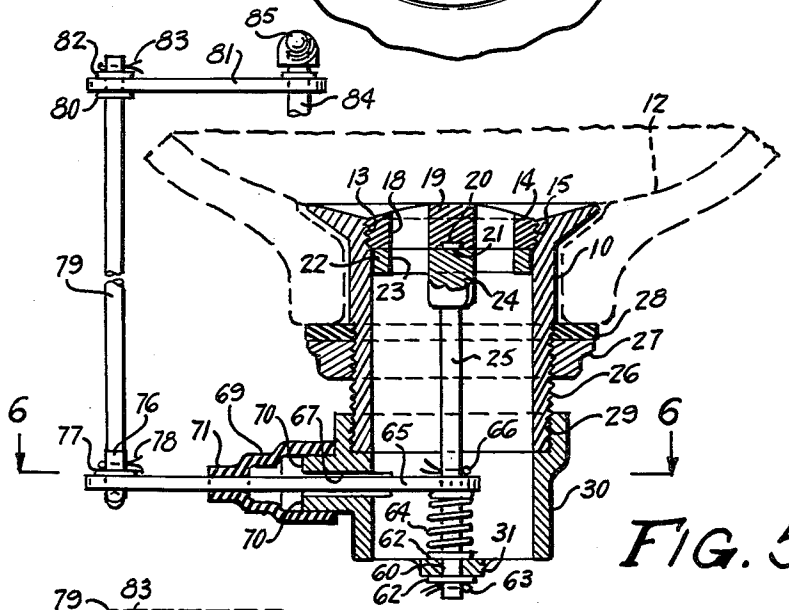


FIG. 5

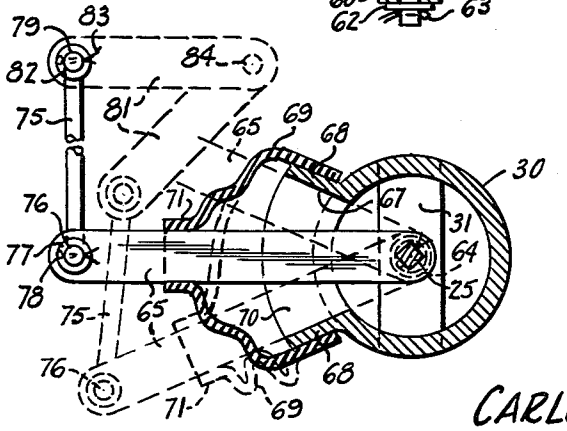


FIG. 6

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1 Claim. (Cl. 137—625.31)

This invention relates to a drain strainer and a closure therefor, and has particular application to a lavatory drain, a sink, a basin, or the like.

A primary object of the invention is the provision of a strainer of this character which is comprised of a radially slotted fixed plate and a rotatable closure plate positioned immediately therebeneath, and similarly slotted, whereby partial rotation of the movable plate will close or occlude the slots, and additional rotation, or partial rotation in a reverse direction will align the slots in the two plates to permit drainage of the material in the basin.

An additional object of the invention is the provision of a device of this character wherein the rotative movement of the lower valve closure is imparted by linear motion from a remotely positioned handle, extending exteriorly of the basin.

Still other objects reside in the combinations of elements, arrangements of parts, and details of construction, all as will be more fully pointed out hereinafter, and disclosed in the accompanying drawing wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

FIGURE 1 is a fragmentary top plan view of the bottom of a lavatory showing the strainer and closure in position therein, together with its associated operating handle.

FIGURE 2 is a sectional view taken substantially along the line 2—2 of FIGURE 1 as viewed in the direction indicated by the arrows; and

FIGURE 3 is a sectional view taken substantially along the line 3—3 of FIGURE 2 as viewed in the direction indicated by the arrows.

FIGURE 4 is a view similar to FIGURE 1 but showing a modified form of construction.

FIGURE 5 is a sectional view taken substantially along the line 5—5 of FIGURE 4 as viewed in the direction indicated by the arrows; and

FIGURE 6 is a sectional view taken substantially along the line 6—6 of FIGURE 5 as viewed in the direction indicated by the arrows, certain different positions of adjustment being indicated in dotted lines.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, and more particularly to FIGS. 1 to 3, one form of device embodying the instant invention is comprised of a pipe 10 having a flange 11 adapted to seat in the bottom of a wash basin, lavatory bowl, or the like, 12, the interior of the pipe adjacent the flange 11 being threaded as at 13, and having a central closure plate 14 provided with a threaded rim 15 secured therein, the closure plate including a plurality of sector-shaped slots 18. The hub or center 19 of closure plate 14 is provided at its lower end with a recess 20 in which seats a rotatable lug 21 carried by the center of a rotatable plate 22 of substantially the same size as the plate 14, and having a plurality of similar sector-shaped slots 23 therein. A hub 24 depends from the underside of plate 22, and is adapted to be rotated by means of a hexagonal rod 25 concentric with pipe 10, the arrangement being such that as the sector-shaped slots 23 are aligned with the slots 18, drainage will be effected, and conversely when the slots are so positioned as to occlude the openings of the slots 18, the liquid will be retained in the basin 12.

The lower end of pipe 10 is threaded as at 26, and has mounted thereon a locking nut 27 and a sealing gasket 28. The lower end of threaded portion 26 engages within the internally threaded flange 29 of a drainage pipe 30, which includes a transversely extending plate 31, which supports the journal 32 in which the lower end of the shaft 25 is adapted to rotate. A series of radial lugs 33 are positioned about the lower end of rod 25, and engage in a slot 34 of the linearly movable rod 35, which is provided along one side with teeth 36 engageable with the radial lugs 33, so that rotation of the rod 25 is effected by linear movement of the rod 35.

A spring 36 is positioned between a collar 37 and a washer 38 surrounding rod 25 beneath the lugs 33, the collar 37 seating on a transverse plate 31 and the spring 36 serving to bias the rod 25 and its associated slotted disc 22 upwardly into engagement with the underside of the disc 14.

Rod 35 extends outwardly through an opening 40 and a bushing 41 on the side of pipe 30, and is surrounded by a rubber sealing gasket 42 to prevent leakage. The outer end of the rod 35 is upturned as at 43, and is held in a slot 44 in a transverse link 45 by means of a lock washer 46. The other end of the link 45 carries a bushing 47 in which is secured an upright rod 48, as by means of a set screw 49 or the like, the rod 48 terminating at its upper extremity in a remote operating handle 50, the arrangement being such that rotation of the handle 50 will in turn rotate rod 48 to move arm 45 in an arcuate path, whereupon the upturned end 43 of rod 35 will move within the opening 40 as well as within the slot 44 to effect linear movement of the rod 35, which by means of the teeth 36 will engage the ribs 33 of rod 25 to rotate the disc 22 and either open or close the drain by the closing or opening of the related slots 18 in the plate 14.

Referring now to the form of the invention disclosed in FIGURES 4 to 6, inclusive, the pipe 10, flange 11, and the basin or bowl 12 are all substantially identical to those of the foregoing modification and carry the same reference characters. Similarly, the interior of the pipe 10 is threaded as at 13 and provided with a central closure plate 14 having a threaded rim 15 engaging the interior threads 13. Closure plate 14 includes a plurality of sector-shaped slots 18 as in the foregoing modification, and the hub or center 19 of plate 14 is provided at its lower end with a recess 20 in which seats a rotatable lug 21 carried by the center of a rotatable plate 22 of the same size as the plate 14 and having a plurality of similar sector-shaped slots 23 therein. A depending hub 24 extends from the underside of plate 22 and is adapted to be rotated by means of a rod 25 concentric with the pipe 10, the arrangement being such that as the sector-shaped slots 23 are aligned with the slots 18, drainage will be effected and conversely, when the slots are positioned to occlude the openings of the slots 18, water will be retained in the basin 12.

The lower end of pipe 10 is threaded as at 26 and has mounted thereon a locking nut 27 and a sealing gasket 28. The lower end of threaded portion 26 engages within the internally threaded flange 29 of a drain pipe 30, which has positioned therein a transversely extending plate 31. All of the previously described parts of the modification of FIGURES 4 to 6 have been identical with those employed in conjunction with the previous modification. However, instead of carrying a bearing, in this instance the bar 31 is apertured as at 60 and the lower end of the shaft 61 extends through the opening, washers 62 being provided on either side of the plate, and the lower end of post 25 being apertured to receive a cotter pin 63. A spring 64 is mounted on the upper washer 62 and extends upwardly to engage the underside

of a transversely extending arm 65, which is secured in position by means of a cotter pin 66 in engagement with the shaft 25, the shaft 25 being of polygonal shape, and the arm 65 having an opening therein, conforming in configuration to the shaft 25, so that radially rotative movement of arm 65 will serve to rotate shaft 25 for the purpose of aligning or disaligning the openings 23 with the openings 18. Arm 65 extends transversely through a slot 67 in the side of drainage pipe 30, the slot being provided with end closure 68, and extending a material distance radially of the side of the pipe so as to permit rotative movement of the arm 65 through a relatively wide range of positions as indicated in FIGURE 6.

A rubber sealing gasket 69 tightly engages the ends in top and bottom plates 70 of the slot 67 to afford a substantially fluid tight seal thereabout, and at its other end 71 tightly encircles the arm 65 thus providing a relatively fluid tight coupling similar to the previously described fluid seal 42.

A rod 75 has an upturned end 76 which extends through an opening in the end of arm 65 and is held in position by means of a washer 77 and a cotter pin 78. The other end of rod 75 is bent upwardly at right angles as indicated at 79, and extends upwardly a material distance above lever 65. The upturned end rod portion 79 is provided with a flange 80 and extends through an opening in the end of a link 81 being secured in position by means of a washer 82 and a cotter pin 83.

The opposite end of link 81 is mounted on a rotatable post 84 which carries an operating handle 85 secured to the post 84 by means of a set screw 86. The arrangement is thus such that rotation of the operating handle 85 rotates link 81 in accordance with the dotted line showing of FIGURE 6 which in turn through the upturned ends 79 and 76 of rod 75 swings arm 65 to rotate post 25 and in turn aligned or disaligned slots 18 and 23, the ultimate objective being identical to that of the previously described modification.

From the foregoing it will now be seen that there is herein provided an improved drain closure and strainer which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive

concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

In a drain construction for a bowl having a drain pipe, a fixed drain plate having a plurality of sector-shaped slots therein seated in the top of said pipe in the bottom of said bowl, a rotatable drain plate below said fixed drain plate having a corresponding plurality of sector-shaped slots therein selectively alignable with said slots in said fixed plate, a rotatable rod secured at its upper end to the center of said rotatable plate and depending into said drain pipe, a transverse plate in said drain pipe, the lower end of said first rod being journalled in said plate, an arm fixedly secured at one end to said rod, said drain pipe having a peripheral slot therein, said arm extending through said slot, a compression spring between said transverse plate and said arm biasing said rod and hence said rotatable drain plate toward engagement with said fixed plate, a flexible rubber sealing sleeve surrounding said arm and covering said slot in fluid tight sealing relation, a horizontal rod pivoted to the other end of said arm, a vertical rod portion integral with said horizontal rod, a link pivoted at one end to said vertical rod portion, a rotatable vertical shaft, said link having its other end fixed to said vertical rotatable shaft and an operating handle on said shaft whereby rotation of said shaft pivots said link to move said vertical rod portion and said horizontal rod to swing said arm arcuately to rotate said vertical rod in said drain pipe to align or disalign said slots in said fixed and rotatable drain plates.

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