July 24, 1934. H. CHARMATZ 1,967,607

COMBINED STRAINER OUTLET AND SHUT-OFF

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Fig. 1

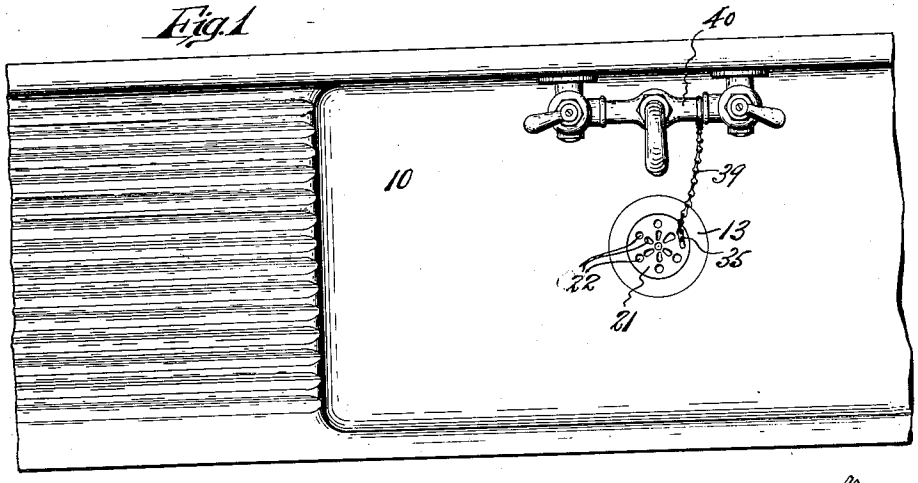


Fig. 2

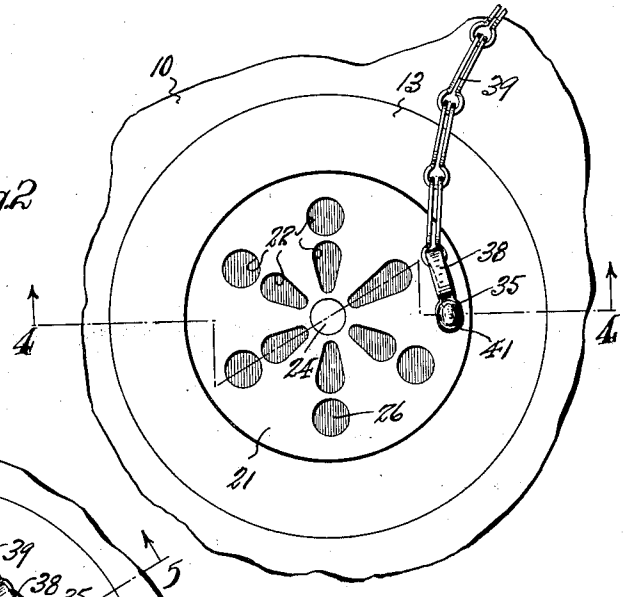
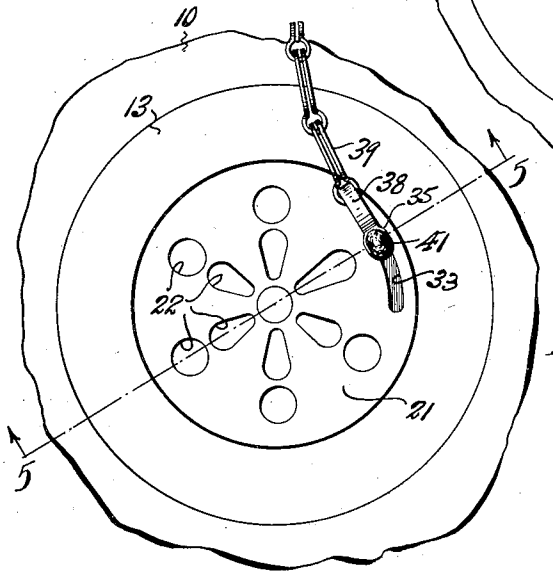


Fig. 3



INVENTOR
Harry Charmatz,
BY
George D. Richards
ATTORNEY

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Fig. 4

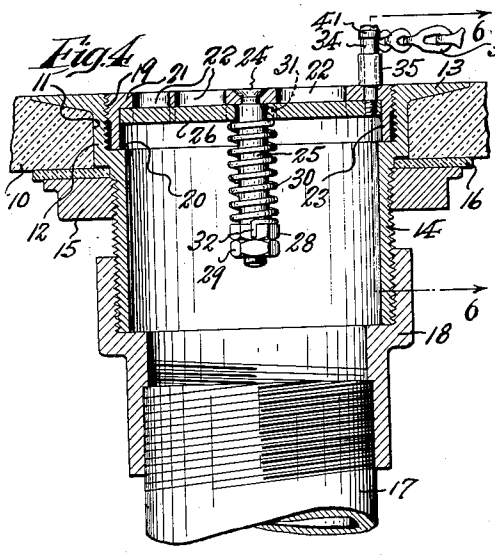
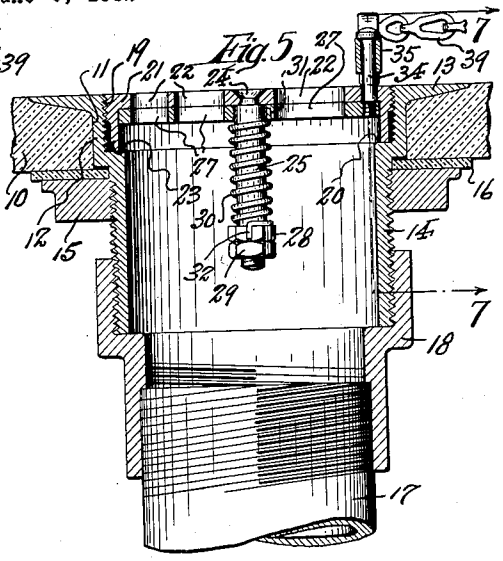


Fig. 5



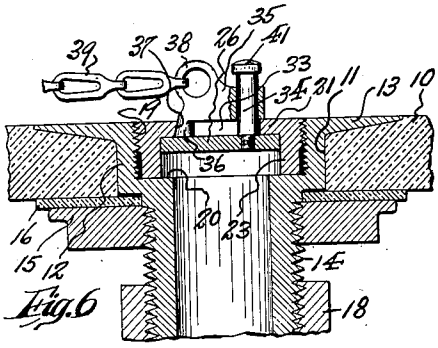


Fig. 6

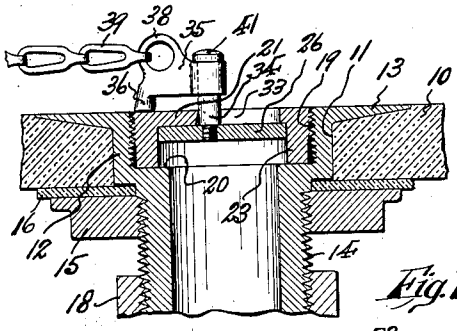


Fig. 7

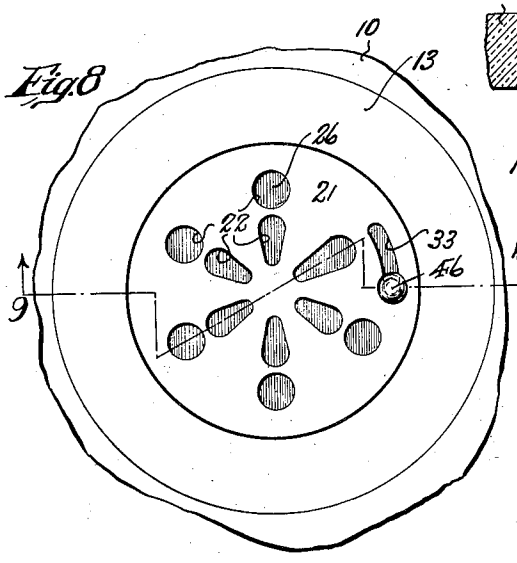


Fig. 8

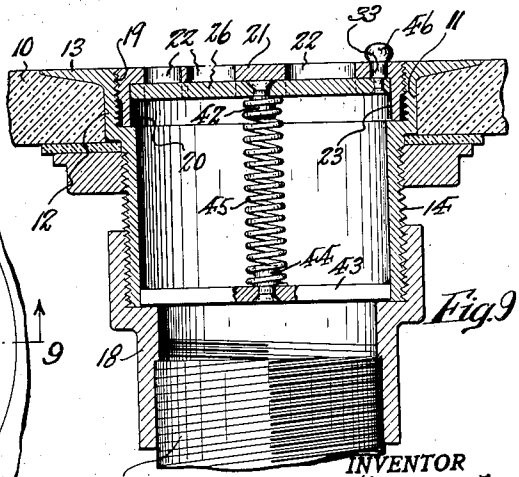


Fig. 9

INVENTOR
Harry Charmatz,
BY
George D. Richards
ATTORNEY

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UNITED STATES PATENT OFFICE

1,967,607

COMBINED STRAINER OUTLET AND SHUT-OFF

Harry Charmatz, East Orange, N. J.

Application June 8, 1932, Serial No. 615,977

3 Claims. (Cl. 4—287)

This invention relates to a combined strainer outlet and shut-off for sinks, stationary wash-tubs, tanks, bath tubs, wash basins, and the like.

This invention has for its principal object to provide a novel construction of combined strainer outlet and shut-off for sinks, stationary wash-tubs and similar structures, so that the outlet or drain of the latter may be quickly and easily opened or closed at will; and whereby, when closed the sink or the like may be filled to a desired depth, and whereby, when opened, the liquid content may be drained away while separating or straining therefrom solid substances or refuse so as to prevent the latter from entering into drains and outlet conduits with risk of stopping up or obstructing the same.

This invention has for a further object to provide a novel combined strainer outlet and shut-off for the purposes described having a novel releasable detent means for holding the same in closed condition, but which is subject to release by an exposed pull means without necessity of the operator immersing the hands in soiled water or reaching down through the latter to manipulate such detent means, and in this connection the shut-off element of the device is arranged to be spring actuated to open position.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

Illustrative embodiments of this invention are shown in the accompanying drawings, in which:

Fig. 1 is a plan view in part of a sink equipped with one form of the novel combined strainer outlet and shut-off according to this invention; Fig. 2 is a top plan view, on an enlarged scale, of said form of strainer outlet and shut-off device, the same being shown in closed condition; Fig. 3 is a similar top plan view showing the device in open condition; Fig. 4 is a vertical longitudinal section, taken on line 4—4 in said Fig. 2; Fig. 5 is a similar vertical longitudinal section, taken on line 5—5 in Fig. 3; Fig. 6 is a transverse vertical section, taken on line 6—6 in Fig. 4; and Fig. 7 is a transverse vertical section, taken on line 7—7 in Fig. 5.

Fig. 8 is a top plan view of a simplified form of the novel combined strainer outlet and shut-off embodying the general principles of this invention; and Fig. 9 is a vertical longitudinal section through the same, taken on line 9—9 in Fig. 8.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring now to the drawings, the reference character 10 indicates, for the purposes of illustration, a kitchen sink, in the bottom of which is arranged the novel combined strainer outlet and shut-off for communication with the discharge drain pipe thereof. The bottom wall of the sink 10 is provided with an opening 11 in which is inserted a bushing 12, the latter having at its upper end a seating flange 13, to engage the marginal portions of the sink bottom surrounding said opening 11, thereby retaining the bushing against downward displacement from its operative assembled relation to the sink bottom. Said bushing 12 is further provided with a depending neck-portion 14, which is preferably of reduced diameter, and which is externally screw-threaded. Threaded upon said neck-portion 14 is a keeper nut 15, which is screwed upwardly thereon to abut the underside of the sink bottom, thus securely holding said bushing in assembled relation to the latter and against upward displacement therefrom. A suitable gasket or washer 16 is interposed between the sink bottom and said keeper nut 15 to assure a leak tight joint between said sink bottom and said bushing as assembled therewith. The lower end of said neck-portion 14 is coupled to the outlet or drain pipe 17 of the sink by any suitable form of coupling member or union 18.

Formed in the upper end of the bushing 12 is an internally screw-threaded socket 19 limited at its lower end by an internal annular shoulder 20. Threaded into said socket 19, so as to be fixedly attached to the bushing 12 across the mouth thereof, is a strainer plate 21 provided with suitably shaped and distributed openings 22 therethrough to provide necessary strainer outlets. Said strainer plate 21 is preferably provided with a depending annular skirt flange 23 which, by engagement with the shoulder 20 of the bushing 12, fixes the strainer plate in such position that it is substantially flush with the sink bottom. Centrally fixed to said strainer plate 21, as by the rivet end-portion 24 or in any other convenient manner, is a depending post 25, which extends downwardly into the interior of the bushing 12. Rotatably mounted on said post 25, so as to underlie said strainer plate 21, is a shut-off plate 26 which is provided with openings 27 to match the openings 22 of said strainer plate 21 when the shut-off plate is turned to such position as to bring said open-

ings 27 into alignment or registration with the openings 22. The lower free end of said post 25 is screw-threaded to receive an abutment nut 28, which is fixed in desired position thereon by a jamb nut 29. Arranged around said post 25 between said shut-off plate 26 and said abutment nut 28, is spring member 30. The upper terminal 31 of said spring 30 is suitably affixed to or imbedded in the body of said shut-off plate 26, while its lower terminal 32 is suitably affixed to or imbedded in the body of said abutment nut 28. The tension of said spring member 30 provides a torsional component tending, when free to exert itself, to rotate said shut-off plate 26 from a closed position, in which its openings 27 are out of register with the openings 22 of said strainer plate, to an open position, in which said openings 27 are aligned or registered with the openings 22. The tension of said spring member 30 further provides a compressional component tending to urge said shut-off plate 26 tightly against the underside of said strainer plate 21, so as to effect a leak tight joint therebetween.

The shut-off plate 26, when desired, is maintained in closed relation to said strainer plate 21 by a suitable manipulatable detent means. In preferred form this detent means comprises the following arrangement:

Provided in said strainer plate 21, in the marginal portion thereof, is an arcuate slot 33. Suitably affixed to said shut-off plate 26 is an upstanding stud 34 which extends upwardly through the slot 33 of said strainer plate 21. Vertically slidable on said stud 34 is a detent member 35 provided with a latch-nosing 36 which is engageable in said slot 33. Said latch-nosing 36 is preferably somewhat beveled at its forward side to engage an undercut end wall 37 at the forward end of said slot, thus not only holding the shut-off plate in closed relation to the strainer plate, but also engaging the detent member so as to prevent accidental displacement thereof from such operative folding position. Said detent member is provided with an eye-portion 38 whereby a flexible pull means, such e. g. as the chain 39, may be attached thereto, and then led upwardly out of the sink to a suitable place of attachment for the opposite or free end thereof; for example, the free end of the chain 39 may be attached to the faucet element 40 which serves the sink. The stud 34 is provided at its upper end with a head 41 to retain the detent member against removal therefrom.

When it is desired to fill and maintain in the sink a desired depth of water, the operator draws the stud 34 rearwardly through the slot 33 until the latch-nosing 36 of the detent member 35 is retracted past the forward end wall of said slot, so that the detent member may be slid downwardly on the stud to enter the latch-nosing into the slot for holding engagement with said forward end wall of the latter. Such manipulation rotates the shut-off plate 26 so as to bring the unperforate body portions thereof in covering relation to the openings 22 of the strainer plate 21 thus closing the latter against escape of water from the sink to the drain pipe 17. Such rotation of the shut-off plate increases the torsional tension of the spring member 30. When the shut-off plate 26 is thus disposed and held in closed relation to the strainer plate 21, the desired volume water may be supplied to the sink from faucet means 40, and such use of the water may be made as desired. When it is desired to discharge the water to the drain pipe 17, after desired use thereof, the operator may reach into the water and by direct application of the fingers to the detent member 35 manipulate the same to release it. In many cases it may not be desirable to immerse the hand in the water for this purpose, and consequently the pull means 39 is provided. By grasping the exterior end portion of the pull means above the point where it emerges from the water, and pulling upwardly thereon, the detent member 35 is caused to slide upwardly upon the stud 34 until the latch-nosing 36 is withdrawn from the slot 33, whereupon the torsional tension of the spring member 30 will rotate the shut-off plate 26 to such degree, as determined by the engagement of the stud 34 with the forward end of the slot 33, whereby the openings 27 of the shut-off plate 26 register in alignment with the openings 22 of the strainer plate 21, thereby opening communication between the interior of the sink and the drain pipe 17. It will be obvious that the registered openings 22 and 27 will permit escape of water from the sink interior while at the same time, by reason of their distribution, providing for a strainer effect tending to restrain the movement of refuse and coarse solids from passing therethrough and into the drain pipe with the escaping water.

The above described arrangement and construction of combined strainer outlet and shut-off, provides a very convenient form thereof, and one in which the associated strainer and shut-off plates, together with the spring-member co-operating therewith, are arranged as a unit removable from the bushing 12, without necessity of disconnecting the latter from the sink or drain pipe. Any adjustment of tension of spring-member, or replacement thereof, or other necessary repair may be conveniently made since access thereto may be easily had by merely screwing the strainer plate out of the socket 19 of the bushing, thus exposing all parts of the unit for such work thereon as may be needed.

Referring to Figs. 8 and 9 of the drawings, there is illustrated therein a simplified form of combined strainer outlet and shut-off which embodies the general principles of this invention. In this simplified form, the bushing 12 and its relation to the sink or like body and drain pipe is the same as hereinabove described. The strainer plate 21 is of similar form and similarly connected to the bushing. The shut-off plate 26 is disposed to underlie the strainer plate 21 and is rotatable within the skirt flange 23 of the latter. Centrally affixed to said shut-off plate to project downwardly therefrom is a seating lug 42. Suitably affixed to and extending diametrically across the bore of the bushing 12 is a bridge-piece 43, to which is centrally affixed an upwardly projecting seating lug 44. Engaged between said shut-off plate 26 and said bridge-piece 43 is a compression spring 45 the upper end of which is engaged by said seating lug 42 and the lower end by said seating lug 44. Said compression spring 45 thrusts said shut-off plate upwardly against the underside of the strainer plate with a tight frictional contact therewith, so as to both establish a leak tight relation therebetween, as well as a sufficient frictional contact to hold the shut-off plate against displacement from either closed or open relation to the strainer plate when moved to

either of said positions. The strainer plate is provided with the arcuate slot 33, and the shut-off plate with an actuating finger piece 46 which projects upwardly through said slot 33, and which by engagement with the respective ends of the latter limits the movement of the shut-off plate to its respective open and closed positions relative to said strainer plate. The construction, as thus modified, provides a simple arrangement in which the opening and closing of the shut-off plate is governed by manual operation thereof through the finger piece 46.

As many changes could be made in the above-described constructions and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. In a device of the kind described, a bushing mounted in the drain outlet of a sink or the like, said bushing having an internally thread socket at its upper end, a perforate strainer plate threaded into said socket to affix the same across the bore of said bushing, said strainer plate having an annular skirt-flange dependent therefrom to provide a cavity at the underside thereof, a shut-off plate having perforations to match those of said strainer plate, said shut-off plate being rotatively movable within the cavity formed by said skirt-flange in underlying contacting relation to said strainer plate, a compression spring to thrust said shut-off plate into such engagement with said strainer plate, means to support said spring, said strainer plate having an arcuate slot, and said shut-off plate having means for manipulating the same extending upwardly and exteriorly through said strainer plate slot, the latter serving to limit movement of said manipulating means whereby said shut-off plate is disposed with its perforations either in or out of alignment with those of said strainer plate.

2. In a device of the kind described, a bushing mounted in the drain outlet of a sink or the like, a perforate strainer plate affixed across the mouth of said bushing, a post centrally dependent from said strainer plate, a shut-off plate having perforations to match those of said strainer plate, said shut-off plate being rotatively mounted on said post in underlying relation to said strainer plate, an abutment means on the free end portion of said post, a spring member on said post having its terminal portions respectively affixed to said shut-off plate and said abutment means, said spring member having a torsional component to yieldably impart rotative closing movement to said shut-off plate and a compressional component to thrust said shut-off plate into engagement with said strainer plate, and a manipulatable detent means for holding said shut-off plate in open relation to said strainer plate.

3. In a device of the kind described, a bushing mounted in the drain outlet of a sink or the like, a perforate strainer plate affixed across the mouth of said bushing, a post centrally dependent from said strainer plate, a shut-off plate having perforations to match those of said strainer plate, said shut-off plate being rotatively mounted on said post in underlying relation to said strainer plate, an abutment means on the free end portion of said post, a spring member on said post having its terminal portions respectively affixed to said shut-off plate and said abutment means, said spring member having a torsional component to yieldably impart rotative closing movement to said shut-off plate and a compressional component to thrust said shut-off plate into engagement with said strainer plate, said strainer plate having an arcuate slot, said shut-off plate having a stud extending upwardly and exteriorly through said slot, a manipulatable detent member movable on said stud, and said detent member having a latch-nosing engageable with an end of said slot for holding said shut-off plate in open relation to said strainer plate.

HARRY CHARMATZ.