Sept. 18, 1956 J. DUNCAN 2,763,012

COMBINED STRAINER-BASKET AND VALVE STOPPER FOR SINKS
Filed May 10, 1954

Fig. 1.

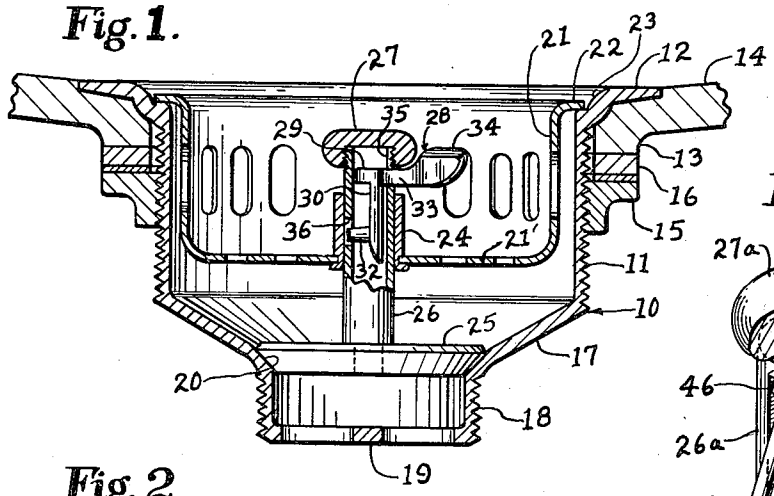


Fig. 2.

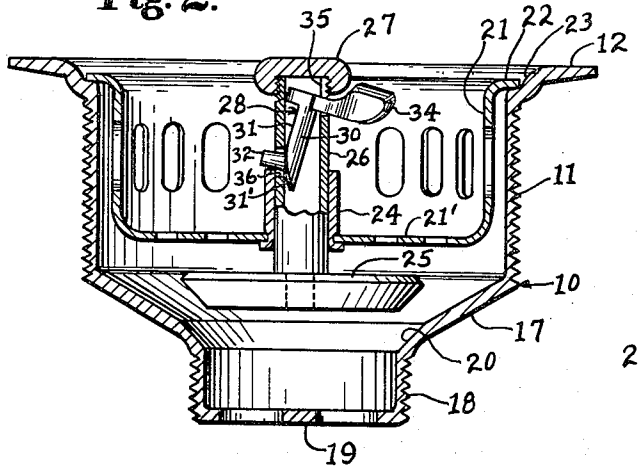


Fig. 3.

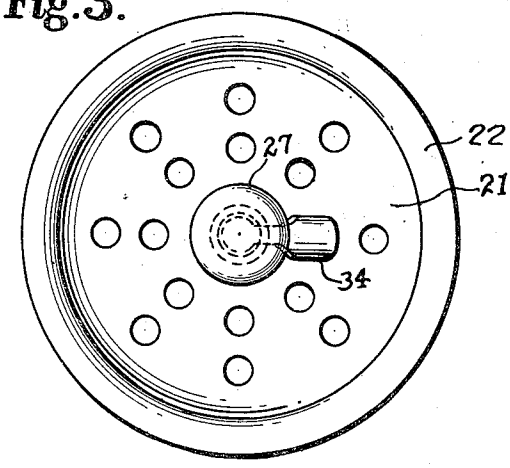


Fig. 6.

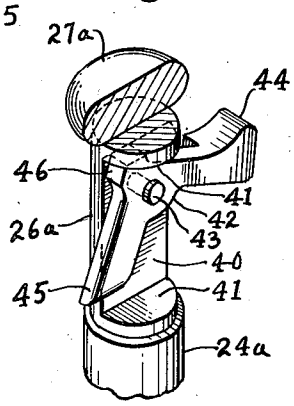


Fig. 4.

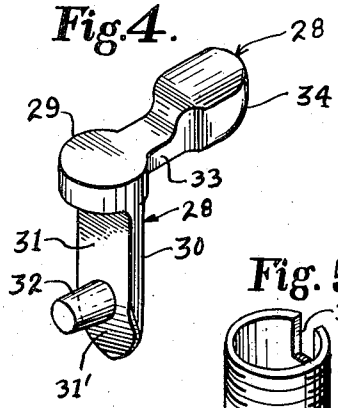
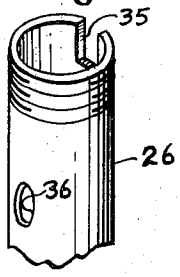


Fig. 5.



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COMBINED STRAINER-BASKET AND VALVE STOPPER FOR SINKS

James Duncan, Prospect, Conn.

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5 Claims. (Cl. 4—287)

This invention relates to a combination crumb-cup strainer and stopper or valve used in connection with drain openings of sinks or the like.

In sink strainers and stoppers or valves that are now in general use, it is necessary to register the stopper unit with some portion of the drain outlet or with the strainer cup in order to dispose the stopper in elevated, or drain-open position. In many instances this registration of one part to another has to be accomplished in a blind or concealed space that necessitates some amount of juggling of the stopper unit from one position to another before proper registration is made to the annoyance of the user.

It is the object of my invention to provide a combination strainer and stopper unit in which the stopper can be elevated to open position or lowered to closed position without the need of any registering operation, and wherein the stopper unit can be rotated 360° relative to the strainer unit without interfering with any detents or catches or in any way interfering with its open or closed position.

Another object is to provide a very simple mechanism to be manually tripped for the purpose of lowering the stopper to a closed position, and when the stopper is raised to open position, the mechanism will operate automatically to latch the stopper in elevated position.

A further object is to provide a trip mechanism for the stopper unit made with the minimum of parts and so arranged as to allow no pockets and crevices in which waste matter can collect that would be detrimental to the sanitary codes of the plumbing trade.

Other objects and advantages of the invention will become apparent from the following specifications and accompanying drawing wherein:

Fig. 1 is a vertical sectional view taken through a sink drain construction showing the improved stopper and crumb-cup assembly according to the present invention and showing the stopper in closed position.

Fig. 2 is a similar view showing the stopper in open or drain position.

Fig. 3 is a plan view of the stopper and crumb-cup basket removed from the drain outlet.

Fig. 4 is a perspective view of the trigger lever, per se.

Fig. 5 is a perspective view of the upper end of the hollow stem per se, minus the lift knob, and

Fig. 6 is a perspective view of the upper end of a lift stem showing a modified construction.

Referring now to the drawing, the complete sink strainer includes a conventional arrangement of a drain outlet member secured to the drainage opening of a sink, a combined crumb-cup strainer and stopper or valve removably contained within the drain outlet member. The drain outlet body is generally indicated by the numeral 10 and consists of a cylindrical shell 11 having a flange 12 surrounding its upper end. The shell 11 is fitted into a drain opening 13 of the sink base 14, and its flange 12 is drawn into tight engagement with the sink base 14 by the usual nut 15 and sealing washer 16, the nut having screw threaded engagement with the usual threaded exterior wall of said shell 11. The lower end of

shell 11 connects into a converging conical base wall 17 and the latter in turn to a cylindrical reduced extension 18 having an exterior threaded wall to which the usual coupling nut is threaded in making connections to a drain tubing or trap (not shown). The lower end of the extension 18 is formed with the usual cross bar or spider 19 to prevent large articles from passing into the drainage system when the crumb-cup and stopper unit is removed. A valve seat 20 is provided at the area where the conical base wall and cylindrical extension 18 is joined.

Removably mounted within the body shell 11 is a crumb-cup strainer or perforated container 21. This strainer has a flange 22 at its upper end that seats in an annular recess 23 provided at the area where the body shell 11 joins the flange 12. A tubular bushing sleeve 24 is secured centrally to the base 21' of the strainer 21 in any well known manner, such as riveting over the lower end thereof.

Associated with the crumb-cup strainer is a manually operated stopper member which consists of a stopper plug or valve 25 having a vertical stem 26 anchored thereto, the greater portion of which stem is of tubular form. The stem 26 is slidably engaged in the sleeve 24 and has a knob 27 screw threaded to its upper end so that the stopper member is maintained as a unit with the crumb-cup strainer 21.

The mechanism for holding the stopper member in elevated and drain-open position and also to release it so that it will drop to closed position by gravity is a single piece over-balanced trigger lever or latch member 28, which is best shown in the perspective view of Fig. 4. The trigger lever 28 consists of a cylindrical head 29 having a dependent shank 30 of semi-circular shape in cross section to provide a flat face 31. Projecting forwardly from the flat face of the shank 30 is an integral stop pin or projection 32. Extending latterly from the head is a short arm 33 terminating in an enlarged handle knob 34.

The greater portion of the trigger lever 28 is disposed within the hollow of the upper portion of the stem 26, as seen in the Figs. 1 and 2, and the arm 33 projects outwardly through a slot 35 provided in the wall of the hollow stem 26 and positions the handle knob 34 in close position to the stem knob 27. The slot 25 opens through the upper end of the stem, for the purpose of assembling the trigger lever into said hollow stem, and the open end of the slot 35 is closed off by the knob 27 and serves to hold the lever 28 in assembled position. The arm 33 of the trigger lever 28 is supported on the lower edge of the slot 35 as a fulcrum and the shank depends into the hollow stem to a position where the stop pin 32 projects through an opening 36 in the wall of said stem opposite from the slot 35.

In the operation of the device, when the plug 25 is in drain-open raised position, the trigger lever 28 will be disposed in relative biased position to the stem 26, as shown in Fig. 2. In this position the stop pin 32 projects outwardly through the stem opening 36 and rests against the upper edge of the bushing sleeve 24 to hold the stopper unit in elevated position.

When it is desired to close the drain, it is only necessary to reach underneath the handle knob 34 and lift upwardly, whereupon the stop pin 32 will be retracted into the stem 26 and the stopper unit will drop by gravity to position the stopper plug 25 against the valve seat 20. In this position the shank 30 of the trigger lever is disposed in a vertical position by reason of the fact that the outer end of the stop pin 32 bears against the inside wall of the bushing sleeve 24.

When it is desired to open the drain it is only necessary to grab the stem knob 27 and lift the stopper unit vertically to a position where the opening 36 in the stem 26

clears the upper edge of the sleeve **24**, whereupon the trigger lever **28**, by reason of the enlarged handle knob exterior of the stem, overbalancing the weight of that portion of the trigger lever disposed within said stem will automatically tilt said lever to the right, as shown in Fig. 2. This tilting action of the trigger lever will consequently cause the stop pin **32** to project outwardly of the stem through the opening **36** and come to rest against the edge of the sleeve **24** when the stopper unit is dropped by the operator.

It is to be noted that when the stopper unit is raised to drain-open position, the drainage fluid will pass downwardly relative to the trigger lever thus tending to further urge it to locked position, as seen in Fig. 2, which will be additional to the overbalancing weight of the handle knob. Also when the trigger lever is in drain-open latched position, the lower generally curved surface **31'** of the lower end of the shank flat face **31** adjacent the pin **32** will serve to close the stem opening **36** to prevent any waste material from entering into the hollow chamber of said stem.

In the form shown in Fig. 6, the trigger lever **42** is overbalanced similar to the first form of the invention, but instead of being placed in the hollow of a stem, it is pivoted to a flat wall that is milled in a cylindrical stem rod. Specifically this form has the usual bushing sleeve **24***a* through which a lift stem **26***a* passes and having an integral lift knob **27***a* at its upper end. The stem **26***a* is formed with a milled portion to substantially half its thickness and thus providing a flat wall **40** and terminal end walls **41**. The trigger lever **42** differs from the first form in that it is made more or less of flat stock and is pivoted to the flat wall **40** by a fulcrum pin **43**. The lever **42** is formed with an enlarged handle knob **44** of sufficient weight to overbalance the lever **42** so that its opposite nose end or stop projection **45** will normally project outwardly beyond the surface of the stem **26***a* in order to engage or abut against the upper edge of the sleeve **24***a* when the stopper unit is released. The rotary movement of the lever **42** in a clockwise direction is limited by reason of an abutment boss **46** adjacent its fulcrum point that is adapted to abut against the upper end wall **41** of the stem cut-out. In all respects it will be obvious that the modified form of trigger lever **42** will operate in a manner similar to the first described form.

It is to be understood that various modifications and changes in structural details of the two forms here disclosed may be made without departing from the spirit of the invention and within the scope of the appended claims.

I claim:

1. In a device of the class described, a waste drain fitting comprising in combination an outer shell adapted to be secured within the drain aperture of a sink, the lower walls of said shell converging to form a constricted valve seat, a crush-cup strainer adapted to be removably positioned within said outer shell, a bushing sleeve secured centrally to the base of said strainer, a stopper plug for closing off said valve seat, a tubular stem attached to said plug and extending axially through said sleeve, said stem having diametrically opposite upper and lower openings, a lift knob secured to the upper end of said stem and serving to connect said plug and stem to said strainer as a unit, and a movable latch member fulcruming within said hollow stem, said latch member having a projection

at one end normally alined with said stem lower opening and a handle member at its opposite end projecting through the upper opening of said stem, said handle member being of such weight as to overbalance said latch member and cause said projection to automatically project outwardly through said stem lower opening when said stem is elevated and rest against the top of said sleeve as a stop to hold said stopper plug in valve-open position.

2. A combination stopper and basket strainer for sink drains and the like comprising a strainer receiving portion having a valve seat, a strainer removably mounted in the said strainer receiving portion, a tubular sleeve secured to the base of said strainer, a stem slidably fitted in said sleeve, a stopper secured to the lower end of said stem, and a trigger lever pivotally associated with said stem, said trigger lever having a stop projection at one end normally confined within the walls of said sleeve when said stem is dropped to valve-closed position and a handle member at its opposite end projecting outwardly from said stem and of sufficient weight to overbalance said lever and to cause said projection to automatically project outwardly of the confines of said sleeve when said stem is elevated and rest against the upper edge of said sleeve to hold said stopper in valve-open position.

3. A combination stopper and basket strainer for sink drains and the like comprising a strainer receiving portion having a valve seat, a strainer basket, a tubular sleeve fixed to the base of said strainer, a stem slidably fitted in said sleeve, a stopper secured to the lower end of said stem, a trigger lever carried by said stem having a stop projection at its lower end normally confined within the walls of said sleeve when said stem is dropped to valve-closed position, and a handle member at its opposite end projecting from said stem and having sufficient weight to overbalance said lever and when said stem is elevated to cause the stop projection to automatically swing outwardly and rest upon the upper edge of said sleeve to hold said stopper in valve-open position and upon manually tilting said handle member upwardly causing said stop projection to move off the edge of said tubular sleeve and permit the stopper to automatically drop to drain-open position.

4. A combination stopper and basket strainer for sinks drains and the like as defined in claim 3 wherein said stem is provided with a hollow chamber and said trigger lever is tiltably mounted within said chamber with the handle member and stop projection extending outwardly through openings in said stem.

5. A combined stopper and strainer for sink drains and the like as defined in claim 3 wherein said stem is made of solid material with a lateral cut-out, and wherein said trigger lever is pivotally mounted to said stem in said cut-out area.

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