April 16, 1940. M. F. SCHAIBLE 2,197,083

SINK STRAINER

Filed July 11, 1938

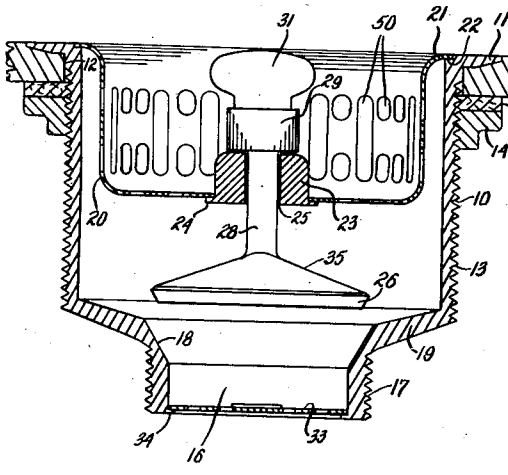


Fig 1

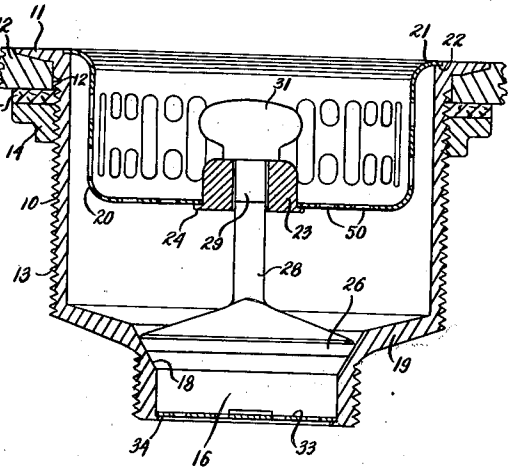


Fig 2

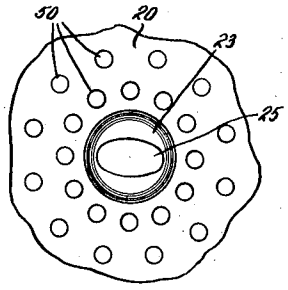


Fig 6

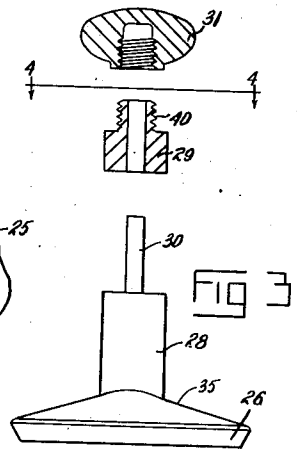


Fig 3

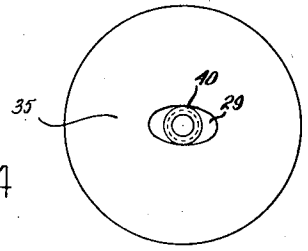


Fig 4

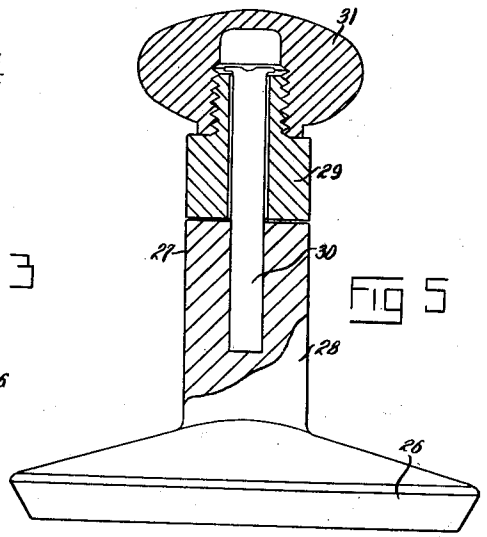


Fig 5

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SINK STRAINER

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6 Claims. (Cl. 4—287)

This invention relates to improvements in the construction of strainers and waste valves for use in sinks or the like.

An object of the invention is to provide a combination sink strainer and waste valve, the valve having two positive normal positions, one fully open and the other fully closed.

A further object of the invention is to provide a combination sink strainer and waste valve which may be easily and inexpensively manufactured and assembled and which may be easily disassembled for the purpose of cleaning.

Still a further object is to provide a combination sink strainer and waste valve in which the valve may be operated independently of the strainer so that the strainer may remain stationary when said valve is operated.

These and other objects are attained by the means described herein, and disclosed in the accompanying drawing, in which:

Fig. 1 is a sectional view of the strainer and valve comprising the invention, the valve being in an "open" position.

Fig. 2 is similar to Fig. 1, showing the valve in a "closed" position.

Fig. 3 is an assembly view of the valve and valve stem structure comprising the invention.

Fig. 4 is a view taken on line 4—4 of Fig. 3.

Fig. 5 is an assembled view of the valve and valve stem comprising the invention, partly in cross-section for clarity of detail.

Fig. 6 is a fragmental view showing a detail of the invention.

The drain comprises an outer shell 10 having an annular flange 11 disposed to engage the edges of a suitable aperture 12, provided through the bottom 112 of a sink, not shown. The outer edge of shell 10 is provided with a threaded portion 13 for cooperating with a suitable clamping nut 14 for securing shell 10 to the sink. Any suitable packing gland or washer as 15 may be used to form a fluid tight connection between shell 10 and sink 12.

The lower edge of shell 10 converges to form a constricted outlet passageway 16, the outer wall of which is threaded as at 17 for suitable connections to a waste pipe or trap, not shown.

An annular valve seat 18 is provided internally of constricted passageway 16, said seat tapering inward from a point of maximum width where it intersects the convergent bottom 19 of shell 10.

A strainer basket 20 is removably positioned within shell 10 and maintained in spaced relationship therewith by means of the out turned annular flange 21 which cooperates with an annular seat 22 provided in shell 10. Said strainer is provided with suitable drain holes 50. An upward extending abutment 23 is provided centrally of strainer basket 20 being secured in place by any suitable means such as by welding lip 24 to the under side of said basket. A vertical aperture, passageway or guideway 25 is provided through said abutment, a transverse cross section through said aperture or guideway being of a lesser width than length whereby a non-circular opening is provided as clearly shown in Fig. 6.

An annular valve 26 is adapted to cooperate with valve seat 18 whereby a fluid tight seal is provided when the valve is seated as shown in Fig. 2.

Valve 26 is carried by a composite valve stem 27 which comprises a lower section 28 and an upper section 29 which is pivotally connected to said lower section. Lower section 28 may be made integral with valve 26 as shown in Figs. 3 and 5. A transverse cross-sectional plane through said valve stem is complementary in shape to aperture 25 which extends through abutment 23, whereby to permit said valve stem to be moved vertically through aperture 25 but precluded from being rotated within said aperture. A pin 30 is fixed relative to bottom valve stem section 28 and extends outward therefrom, as shown in Figs. 3 and 5. Pin 30 may be formed integrally with section 28 or it may comprise a separate pin secured to section 28 by means of a weld or a force fit.

Upper valve stem section 29 is secured in a swivel relationship with lower section 28 by means of pin 30, the free upper end of which is peened over the upper end of section 29, as clearly shown in Fig. 5.

A suitable handle or knob 31 may be fastened to the upper end of section 29 by any suitable means such as threads 40. The peened end of pin 30 may be housed within the knob 31 as shown.

The device is assembled by pivotally securing upper valve stem section 29 to the lower section 28 by peening, as above described. Composite valve stem 27 is then inserted upwardly through aperture 25 of abutment 23 of strainer 20. Knob 31 is then secured to upper section 29 whereby knob 31 and upper valve stem section 29 are relatively fixed, both being rotatable relative to the lower section 28.

Valve 26 may be moved only vertically towards or away from its seat 18, being prevented from being rotated relative thereto by reason of the non-circular shape of valve stem 27 and aperture 25 within which it moves. The strainer acts,

so far as any interrelationship between the valve stem and said basket is concerned, as a support for abutment member 23.

Valve 26 may be unseated by grasping knob 31 and withdrawing composite valve stem 27 upward and outward of strainer basket 20. This lifts valve 26 from its seat 18. Valve 26 may be retained in an unseated or open position by withdrawing the swivel section 29 of composite valve stem 27 completely out of aperture 25 and then turning said section so as to be in non-alignment with said aperture. In this manner said swivel section 29 is supported on abutment 23 as clearly shown in Fig. 1. This is the full open position.

Valve 26 is caused to seat by turning knob 31 a sufficient amount to align the upper section 29 with aperture 25 thereby permitting section 29 to drop into said aperture of the abutment 23, as clearly shown in Fig. 2. This is the fully closed position of said valve. It should be here noted that valve 26 has but two normal positions, viz., either fully open or fully closed. In this way, troublesome intermediate settings have been eliminated and a positive acting waste valve is simply provided.

If desired, an auxiliary strainer 33 may be placed in the lower end of outlet passageway 16, said auxiliary strainer being supported by suitable means such as annular flange 34.

The entire valve assemblage and strainer basket may be removed by lifting up on knob 31 so that the upper face 35 of valve 26 contacts the bottom of said basket whereby the entire assemblage may be removed from shell 10 thereby permitting access to auxiliary strainer 33 and to valve seat 18 for cleaning purposes and the like.

From the foregoing it is obvious that I have provided a simple, yet positive acting sink strainer and waste valve assembly which may be easily manufactured and assembled, and which, once assembled, is trouble free since there are no pins, slots or notches which may become damaged.

Further, it should be noted that I have provided a drain valve which is not given a rotary motion relative to its seat when it is seated or unseated, since valve 26 is constrained to move vertically toward or away from its seat 18 whereby undue wear between said valve and its seat is eliminated. Further, I have effectively eliminated any relative motion between strainer basket 20 and the valve and/or valve stem when said valve is being opened or closed.

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

What is claimed is:

1. In a device of the class described a waste drain valve comprising in combination an outer shell adapted to be secured within the drain aperture of a sink, the lower walls of said outer shell converging to form a constricted valve seat, a strainer basket adapted to be removably positioned within said outer shell, said strainer basket having an upwardly extending abutment centrally disposed thereof, an aperture extending vertically through said abutment, said aperture being of greater length than breadth, a valve adapted to cooperate with said valve seat carried on a composite valve stem, a transverse cross sectional plane of which is complementary to the aperture through said abutment through which it extends, the upper end of said valve stem being pivotally connected to the lower portion thereof whereby an abutment engaging face is provided to engage said abutment when said valve stem has been withdrawn from said abutment a distance sufficient to unseat said valve.

2. The combination in a sink having a drain outlet of a combined drain and strainer comprising an outer shell member secured within said drain outlet, the lower walls of said shell converging to form a constricted outlet, a strainer basket removably positioned in spaced relationship within said shell, an abutment centrally disposed of said strainer, a valve for opening and closing said constricted outlet, a non-circular composite valve actuating stem slidably extending upwardly through said basket and associated abutment, the upper section of said composite valve stem being adapted to be swiveled relative to the lower section about a common vertical axis for disaligning the upper section relative to the lower section to provide an overhanging face, said overhanging face adapted to engage said abutment for maintaining said valve in an open position, said strainer basket remaining fixed relative to said outer shell while said valve is being actuated to open and close said constricted outlet.

3. In a device of the class described, the combination of shell having an apertured bottom, a strainer for detachable positioning in said shell and having a non-circular opening therein, adapted for alignment with the aperture in the shell bottom when the strainer is positioned in the shell, and a valve for closing the aperture in the shell bottom and comprising a stem conforming in cross-section with the shape of the opening in the strainer and slidable longitudinally of itself in said opening, said stem comprising portions movable relative to one another, and being so related that by turning the one portion thereof same provides abutment means for cooperating with the strainer for suspending the valve above the aperture in the shell.

4. In combination with a sink having a drain outlet, of a hollow shell secured within said outlet, the lower walls of said shell converging inward to form a constricted outlet, a strainer removably positioned within said shell, a valve for opening and closing said restricted outlet, a non-circular two-piece valve stem comprising an upper and a lower portion, means interconnecting the upper and lower portions for permitting said portions to be swiveled relative to one another, said lower portion being fixed relative to said valve, said upper portion adapted to be turned relative to said lower portion for providing an abutment ledge engageable with said strainer for maintaining said valve in spaced relationship with said constricted outlet.

5. In a device of the class described a waste drain assembly comprising in combination an outer shell the walls of which converge to form a valve seat, means for securing said shell to a sink, a strainer basket adapted to be removably positioned within said shell, abutment means carried by said basket, a valve adapted to engage said valve seat, said valve having but two normal positions relative to said seat, one seated therewith, the other unseated, a guideway extending longitudinally through said abutment means and strainer, a non-circular two-piece valve actuating stem slidably extending through said basket and said abutment means, a pin,

said valve stem comprising an upper section and a lower section, said pin being non-revolvably fixed relative to one section and revolvably secured to the other section for providing an axis about which said sections may be relatively rotated, the lower section being fixed relative to the valve, the upper section being freely rotatable relative to the lower section for providing an abutment ledge to engage the upper face of said abutment means for maintaining said valve in an open, unseated position, said valve stem and guideway being complements and non-circular in transverse cross section for permitting only longitudinal relative motion between the lower section of said valve stem, said abutment means and said valve seat.

6. In a device of the class described, a waste drain assembly comprising in combination an upper shell the walls of which converge to form a valve seat, means for securing said shell to a sink, a strainer basket removably positioned within said shell, abutment means carried by said basket, a non-circular aperture extending vertically through said abutment means, a valve adapted to engage said valve seat, said valve having but two normal positions relative to said seat, one seated therewith, the other unseated, a valve stem conforming in cross section with the shape of the aperture through said abutment means, said stem comprising an upper and a lower section, means interconnecting said sections and comprising a longitudinal axis about which said sections may be rotated relative to one another for disposing the non-circular cross sectional areas of each of said sections in vertical alignment or disalignment, both sections being vertically shiftable through said abutment aperture when in vertical alignment, the upper section adapted to engage the upper surface of said abutment when said sections are disaligned, for positioning the valve in an unseated condition.

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