

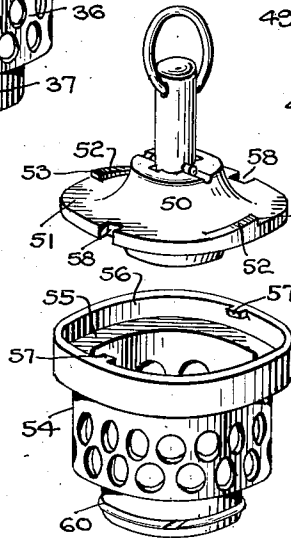
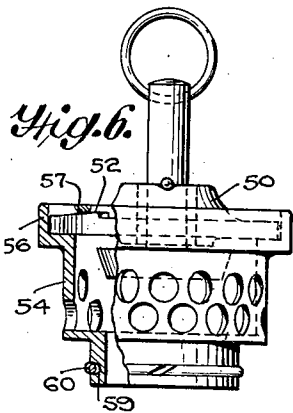
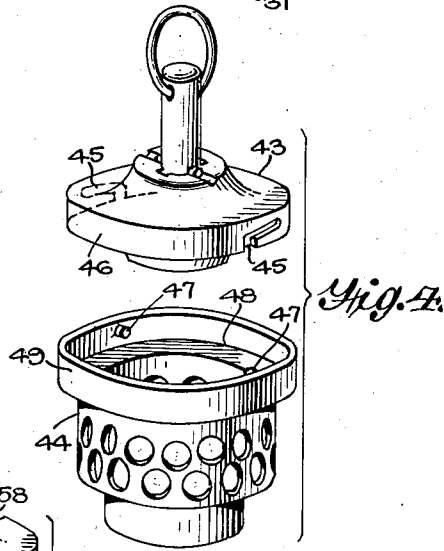
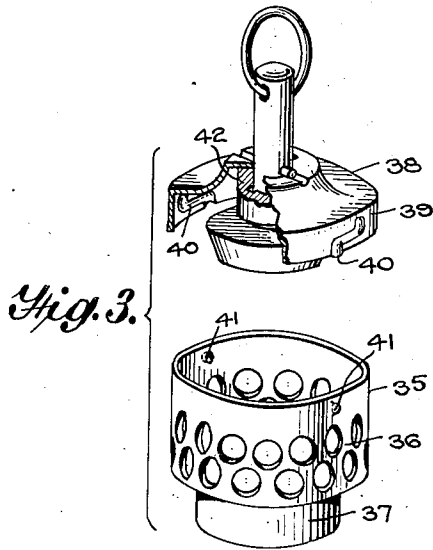
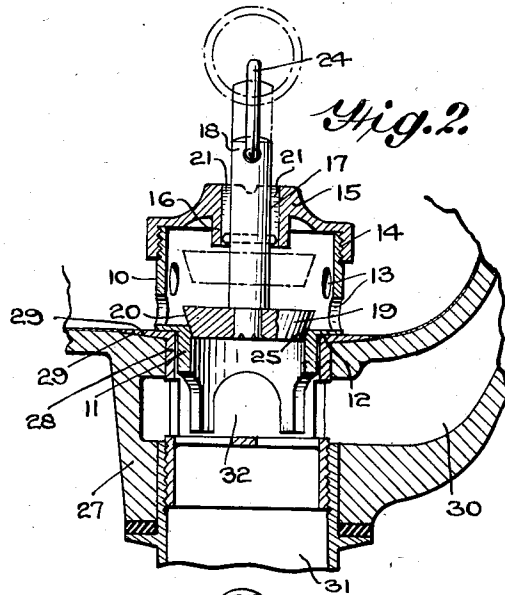
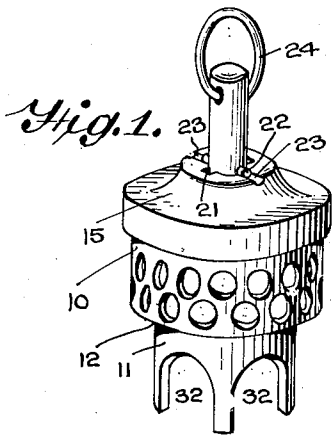
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2,075,443

COMBINED STRAINER AND VALVE

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2,075,443

COMBINED STRAINER AND VALVE

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3 Claims. (Cl. 4—287)

This invention relates generally to drains for water receptacles and the like and more particularly to the construction of an improved drain in which is included a valve structure for preventing the escape of the water through the drain pipe.

Among the principal objects of this invention is the provision of a combined drain and valve assembly which can be easily and quickly installed or set into desired position, which can be as readily removed for purposes of cleaning, repairing or inspecting the same, and which while simple and inexpensive to manufacture is exceedingly efficient and durable in use.

A further important object of the present invention is the provision of a strainer the main body of which is of substantially hollow form having a perforated annular wall through which the water from the receptacle may pass into the drain pipe, the strainer body being further characterized in that it serves as a support for a vertically movable valve which serves to close the upper end of the drain pipe against the passage of water downwardly therethrough.

Still another object of the invention is the provision of a combined strainer and valve assembly wherein the strainer body is of substantially hollow form and within which is housed a vertically movable valve, and said housing being designed for insertion within the drain opening ordinarily provided in the bottom of the water receptacle, the assembly being characterized by the fact that it is adapted to be removably maintained in proper position without the use of any special securing devices.

Still another object of the invention is the provision of a valve assembly for controlling the passage of water through the outlet ordinarily provided in the bottom of the water receptacle, this valve assembly being principally characterized in that the valve seat is formed as an integral part of a strainer body, the latter being provided with means for permitting the removal of the valve from the assembly whenever such removal is desired and being further provided with means for retaining the valve in its open position whereby to afford a free passage for the water through the strainer body and into the drain pipe leading downwardly from the water receptacle.

Other objects and advantages of the invention will be apparent more fully hereinafter.

The invention consists substantially in the combination, location, construction and relative arrangement of parts, all as will appear more fully hereinafter, as shown in the accompanying draw-

ing, and as finally pointed out in the appended claims.

In the said accompanying drawing:—

Figure 1 is a perspective of one form of the combined strainer and valve assembly as constructed in accordance with and embodying the principles of the present invention;

Figure 2 is a vertical sectional view showing the assembly of Figure 1 mounted in operative position in the bottom wall of a water receptacle, such as a sink, bath tub or the like;

Figure 3 is a perspective view showing the parts of a somewhat modified form of combined strainer and valve assembly in separated relation;

Figures 4 and 5 are views similar to Figure 3 but showing still further modified forms of the invention;

Figure 6 is a side elevational view, partly in section, showing the parts of Figure 5 in assembled relation.

Referring now to the drawing and more particularly to Figures 1 and 2 thereof, it will be observed that the combination strainer and valve unit of the present invention generally comprises a main body 10 of substantially hollow circular form, the lower section 11 of which is of reduced diameter, thus providing an annular seat or shoulder 12 intermediate the opposite extremities of the said main body 10. The upper or enlarged part of the body 10 is provided with a plurality of circumferentially spaced openings or perforations 13 in the annular wall thereof while the upper extremity of this perforated portion is exteriorly threaded, as at 14. Adapted to be threadedly secured to the upper extremity of the perforated body 10 is a top closure member 15, this closure member being provided with a centrally located axially extending boss 16. This boss 16 is provided with a vertically extending bore 17 through which is adapted to be axially projected an elongated valve stem 18 to the bottom of which is fixed a valve 19 the peripheral wall 20 of which is tapered, as appears most clearly in Figure 2.

Extending upwardly through the boss 16 in diametrically opposed relation are a pair of slots 21—21 which respectively cooperate with the opposite extremities of a transversely extending pin 22 extending through the valve stem 18 to guide the latter during its vertical movement within the bore 17 of the boss 16. Formed in the upper surface of the member 15 are a pair of diametrically opposed grooves 23—23, the common axis of these grooves being arranged in inter-

secting relation with respect to the common vertical plane of the slots 21—21. The upper end of the valve stem 18 is provided with a lifting ring 24 or other device for facilitating the lifting of the valve stem into its upper position, it being understood that when the valve stem 18 is lifted to a point such that the transversely extending pin 22 thereof clears the upper extremities of the slots 21—21, the valve stem may be rotated to respectively seat the opposite ends of the pin 22 into the seats 23—23 provided therefor, thus retaining the valve stem 18 and its associated valve 19 in the raised position shown by the dotted lines of Figure 2.

The upper edge of the reduced section 11 of the strainer body is internally bevelled, as at 25, to provide an annular seat for the valve 19, the arrangement being such that when the valve stem 18 is rotated from its position shown in Figure 1 into the position shown in Figure 2 so as to present the opposite extremities of the pin 22 respectively within the vertical slots 21—21, the valve stem and its associated valve 19 is permitted to drop downwardly sufficiently to cause the valve 19 to be seated upon its seat 25. The pin 22 is preferably so spaced above the valve 19 that when the latter is seated upon its valve seat the pin 22 is still in engagement with the opposed slots 21—21. Due to this constant registration of the opposed ends of the pins 22 with their respective opposed slots 21—21, the lifting of the valve from its seat is greatly facilitated.

The strainer and valve assembly as just described is adapted to be seated within the usual drain opening provided in the bottom of the water receptacle, designated generally by the reference numeral 27. This drain opening is ordinarily provided with the usual type of sink fitting 28 which is secured in position in any suitable manner, it being particularly observed that the reduced extremity 11 of the main body 10 is adapted to be projected downwardly within the said fitting 28 with the annular seat 12 thereof seated upon the radially extending flange 29 of the fitting 28. Preferably, the reduced section 11 is snugly fitted within the fitting 28. In a number of installations, the water receptacle is provided with an overflow port such as is designated by the reference numeral 30 in Figure 2. In order to permit the free passage of the water through this port 30 and thence downwardly through the drain pipe 31 of the installation, the reduced section 11 of the valve body is provided with a plurality of circumferentially spaced notches 32, thus providing openings in the wall of said reduced section 11, one or more of which is in registry with the outlet from the port 30.

In a unit of the character above described, it will be apparent that when the valve 19 is lifted into the dotted line position shown in Figure 2, the water contained within the receptacle is free to pass through the strainer openings 13 provided in the annular wall of the body 10 and thence downwardly through the drain pipe 13 of the installation. To prevent this passage of water downwardly through the drain pipe, it is merely necessary to rotate the valve stem 18 to present the opposite extremities of the pin 22 into registry with the slots 21 whereupon the valve stem and its associated valve will immediately drop into seating engagement with the valve seat 25. Should it be necessary for any purpose to remove the unit from the receptacle, it is merely necessary to lift the unit bodily vertically out the basin fitting 28. Also, should it be necessary to

inspect, repair or replace the valve 19, this may be readily effected by removing the top enclosure 15 from the main body 10, thus affording access not only to the valve 19 but also to the interior of the strainer body. The unit is quite compact, is simple and inexpensive to manufacture and to install and withal is efficient in operation.

Figures 3, 4, and 5 show modified forms of the combination strainer and valve unit of the present invention, it being noted that they differ from the above described unit principally in the means employed for detachably securing the cap member to the body of the perforated valve enclosure. Thus, in the unit of Figure 3, the body 35 is provided with a perforated annular section 36 having a downwardly projecting section 37 of reduced diameter, the latter section being adapted for insertion within the upper end of the basin fitting. The cap member 38, while of the same general shape as the member 15 of Figure 2, is provided in the flange 39 thereof with the opposed bayonet slots 40—40 which are adapted to coact respectively with the radially extending pins 41—41 provided upon the body 35 adjacent the upper edge thereof to quick-detachably lock the cap member 38 and the body 35 in assembled relation. If desired, the cap member 38 may be stamped instead of cast in which event the valve stem guiding member 42 may be secured to the cap member as a separate element instead of being formed as an integral part thereof, as in the case of the unit shown in Figures 1 and 2.

In Figure 4, the cap member 43 is again quick-detachably secured to the main body 44 by bayonet and slot means, the bayonet slots 45—45 being formed in the external surface of the cap flange 46 while the coacting pins 47—47 project interiorly of the body 44. To this end, the body 44 is preferably provided with an annular seat 48 within which the cap member 43 is adapted to be snugly accommodated, it being understood that the flange 49 of the perforated body 44 embraces the cap flange 46 in such manner as to conceal from view the bayonet and slot connections between the separable parts.

In the modification of Figures 5 and 6, the cap member 50 is dished to provide a substantially flat marginal edge section 51 upon which are provided a pair of diametrically opposed circumferentially extending cam elements 52—52 each of which gradually rises upwardly from the plane of the section 51 to an elevated point, as at 53. The main body 54 of the strainer unit of Figure 5 is quite similar to that of Figure 4 in that it also is provided with an annular seat 55 in the upper end thereof for accommodating the cap member 50. However, instead of bayonet pins, the flange 56 is provided with a pair of opposed inwardly directed lugs 57—57 which are respectively adapted to ride over and frictionally engage the cam elements 52—52 to lock the cap member 50 in position within the annular seat 55, this locking engagement being effected simply by rotating the cap member 50 within its annular seat. In order to permit the cap member 50 to be positioned within its seat, the marginal edge thereof is oppositely notched, as at 58, to provide ways through which the lugs 57—57 respectively pass as the cap member 50 and the main body 54 of the strainer unit are assembled.

While it is a characteristic of each of the units hereinbefore described that the reduced lower section thereof, as, for example, the section 11 of Figure 2, is designed to fit snugly within the upper end of the sink or basin fitting, thus ob-

viating the necessity of employing special fastening devices for more or less permanently securing the unit in position, it may be deemed advisable in certain instances to provide some means for insuring a tight fit between the removable unit and the basin fitting when the latter is of such internal diameter as not to snugly accommodate the unit. Accordingly, the depending section of reduced diameter may be provided with an annular groove 59 in the external surface thereof, as shown in Figures 5 and 6, within which is disposed a split ring 60 which is adapted to frictionally engage the internal wall of the drain fitting to insure the retention of the unit in place. This split ring may, of course, be incorporated in any one of the modified forms of unit hereinbefore described.

The invention is, of course, susceptible of various changes and modifications without departing from the real spirit or general principles thereof and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claims.

What is claimed as new and useful is:—

1. A combined strainer and valve unit comprising, in combination, a main hollow body adapted to be snugly fitted within a sink fitting or the like and having an integral section extending upwardly above the bottom surface of the sink, said upwardly extending section being provided with circumferentially spaced apertures to constitute the latter a strainer body, a cap member quick-detachably secured to the upper end of said strainer body, said cap member being provided with a centrally disposed axially extending bore of substantial depth, a valve seat provided in said body below the said apertures, a valve housed within the strainer body and adapted for seating engagement with said seat to prevent the escape of water from the sink, and a stem secured to the valve and projected through said axially extending bore in the cap member, and coacting means in said bore and stem for guiding the latter during its movement axially of the bore.

2. A combined strainer and valve unit comprising, in combination, a one-piece body member the upper portion of which is perforated and the lower portion of which is of reduced diameter for snug accommodation within a sink fitting or the like, a valve seat provided within said lower portion, a valve housed within the enlarged perforated portion of the body adapted to be seated upon said valve seat, a cap member for enclosing the upper end of said perforated portion of the body and having a centrally disposed axially extending bore therein, and a valve stem secured to the valve and projected upwardly through said bore, said bore being of substantial depth to insure coaxial relation between the valve and its seat, and said valve stem being provided with opposed projections which coact with opposed vertical slots in the wall of said bore to guide the valve stem as the valve is moved into and out of engagement with its valve seat.

3. A combined strainer and valve unit comprising, in combination, a perforated main body member, a cap member adapted for securement to the upper end of said perforated body member, said cap member being provided with a centrally disposed axially extending bore of substantial depth, the internal wall of the bore being longitudinally chased, a valve housed within the perforated body and having a valve stem projected upwardly through said bore, a valve seat in the body below the perforations thereof with which said valve is adapted to engage, a laterally extending pin on said valve stem for sliding accommodation within the chase of the bore, said pin being accommodated within said chase when the valve is in seated position, said pin being further adapted for accommodation within a groove provided in the upper surface of the cap member in angularly spaced relation to the chase for retaining the valve out of engagement with its valve seat.

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