Sept. 22, 1942. F. C. KUHNLE 2,296,527

COMBINED STRAINER AND DRAIN VALVE STRUCTURE

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Fig. 1.

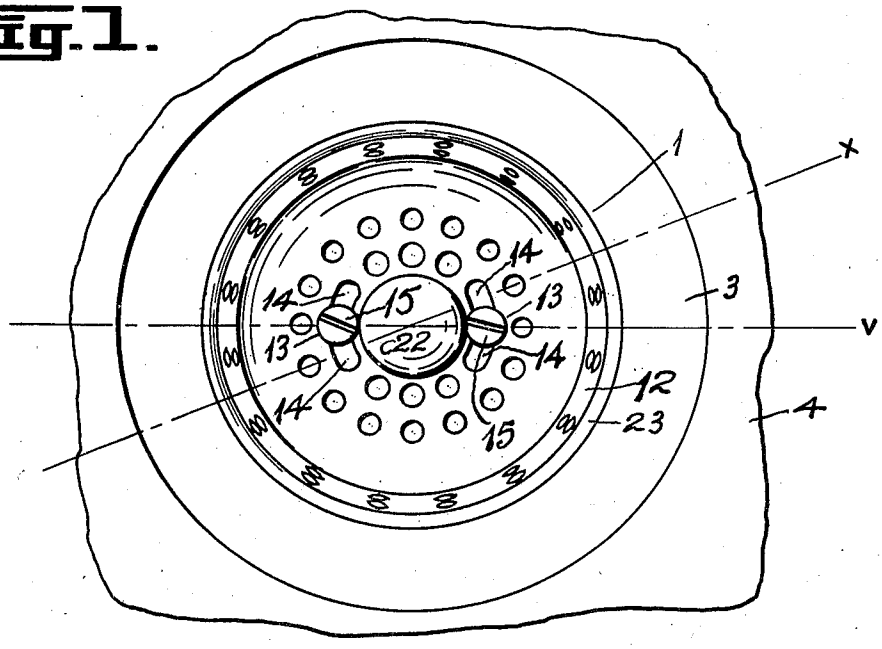
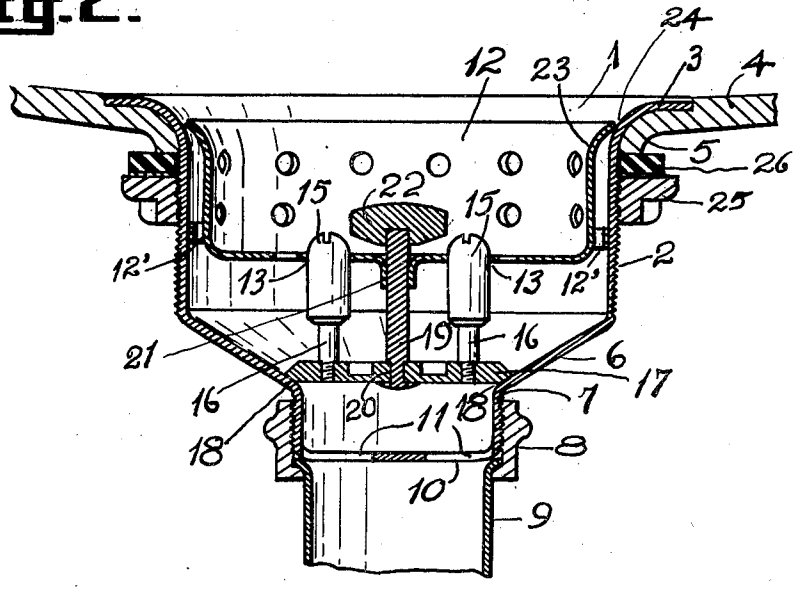


Fig. 2.



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Fig. 3.

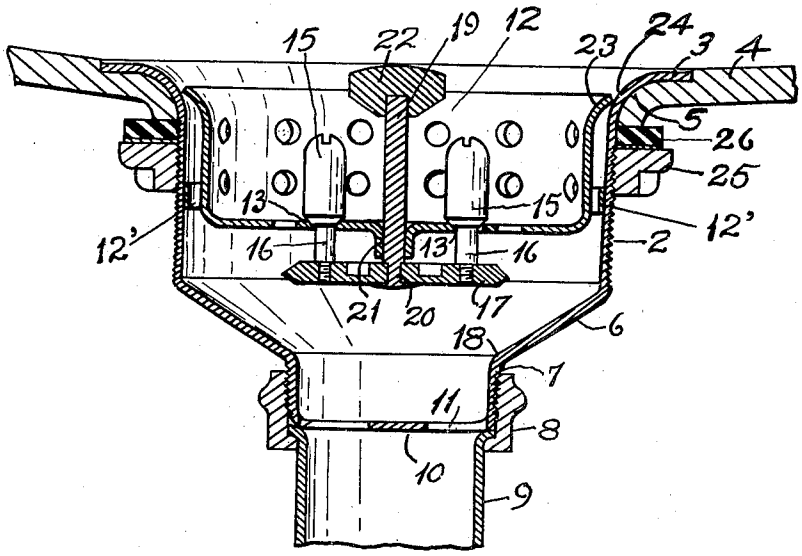
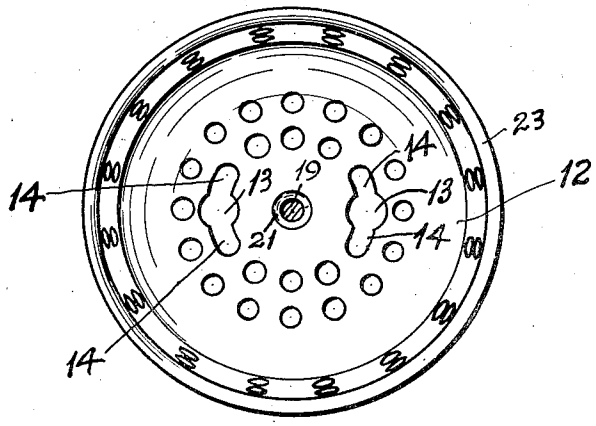


Fig. 4



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COMBINED STRAINER AND DRAIN VALVE STRUCTURE

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4 Claims. (Cl. 4—287)

My present invention relates to improvements in strainer and drain valves, and particularly to a combined strainer and drain valve structure for kitchen sinks and such like receptacles; and the objects of improvement are, first, to provide a combined strainer and drain valve that will be simple in structure and therefore positive in operation; second, to provide a combined strainer and drain valve whereof the crumb catching basket together with the drain valve and operating parts thereof can be easily removed for cleaning; third, to provide a combined strainer structure that can be cheaply manufactured; fourth, to provide a combined strainer and drain valve structure whereof the parts will be interchangeable for replacement; and fifth, to provide a combined strainer and drain valve structure for the above named purposes that can be easily dismantled for flushing the drain pipe and trap below the sink or like receptacle to which the combined strainer and drain valve structure is attached.

I attain these named objects and such other objects as appear from a perusal of the following description when the said description is taken in connection with the accompanying drawings in which is shown my combined strainer and drain valve structure, and in which:

Figure 1 is a plan view of my combined strainer and drain valve structure, with the valve raising knob and lift retaining pins in their respective positions when the valve is in its closed position.

Figure 2 is a cross-sectional view of my combined strainer and drain valve structure taken on a plane extending downward from line V of Figure 1, with the drain valve in its closed position.

Figure 3 is a cross-sectional view of my combined strainer and drain valve structure taken on a plane extending downward from line X of Figure 1, with the drain valve in its open position as when raised from its seat by the valve stem and retained in such position by the lift retaining pins extending from the valve through the bottom of the crumb catching basket.

Figure 4 is a plan view of the crumb basket removed from the inclosure housing for the purpose of better showing the perforations in its bottom and the valve lift retaining holes of double key-hole form.

Throughout the drawings, similar parts comprising my combined strainer and drain valve structure are referred to by similar numerals, and referring thereto—

Numeral 1 designates inclose housing comprising a cylindrical externally screw-threaded portion 2 having at its top, upwardly and outwardly extending annular flange 3, whereby the inclosure housing is secured to the bottom 4 of the sink or such like receptacle having a downward extending annular flange 5 surrounding an opening in the bottom of the sink. The inclosure housing having annular flange 3 at its top, has extending inward at its lower extremity, a conical portion 6 terminating at its lower extremity in cylindrical externally screw threaded cylindrical extension 7, onto which is screwed union nut 8 securing the drain pipe 9 to the housing 1 and has extending across its lower end, an X like member 10 whereby lumps of solids are prevented entering the drain pipe when the crumb catching basket is removed from the housing 1, and which might clog the trap located below the housing, the member 10, by its X like form has openings 11 for the passage of fluids from the sink. The inclosure housing 1 incloses and supports the removable and operable parts of my strainer and drain valve structure, such as the crumb catching basket 12 having a plurality of drain holes extending through its bottom and sides, and in addition thereto, two or more double key-hole like holes or slots comprising the larger portion 13 and the narrow extended slot portions 14, whereby the enlarged portion 15 of the pins 16 may extend through the larger portion 13 and be retained in valve lift position by the enlarged portion 15 engaging the top of the bottom of the basket 12 at the sides of the extended slots 14. The valve 17 which closes the cylindrical extension 7 against the flow of fluid from the sink, is of a disc type held in open elevated position from its seat 18 by the said enlarged portion 15 of the pins 16 which are screw threaded into the valve, support the enlarged portion thereof and guide the said enlarged portion through the larger portion hole 13. The valve 17 is raised from its seat by knob 22 through the valve stem 19 secured to the valve at 20 and extends upward through the flanged hole 21 at the axis of the valve and crumb catching basket. The knob 22 and valve stem 19 provide means whereby the crumb catching basket 12 may be removed from the housing 1 for cleaning the interior of the housing and for flushing out the drain pipe and trap below the housing. The crumb catching basket has at its top, upwardly and outwardly extending annular flange 23 engaging the inner periphery of the housing at its upward and outward curved portion 24 with sufficient force to prevent the basket being raised

when the valve 17 is raised from its seat and to support the cage by resting on the said curved portion of the housing at numeral 24 of the drawings. In order to increase the resistance against removing the crumb catching basket from the housing, spring members 12' engaging the inner periphery of the cylindrical portion 2 of the housing are provided and preferably secured to the crumb catching basket as by riveting or brazing, the said spring members bearing reference numeral 12'.

The inclosure housing 1 is drawn against the top of the bottom panel of the sink or like receptacle, by annular ring nut 25 engaging the rubber like packing ring 26 and forcing, or compressing the packing against the downwardly turned flange 5 extending downward from the sink bottom panel 4.

In the operation of my improved strainer and drain valve structure, when installed as shown by the accompanying drawings, in connection with a kitchen sink, the knob 22 should be raised, and through the stem 19 the valve will be raised from its seat 18, and in which position any fluid within the sink will drain past the valve into the drain pipe 9, but when it is desired to accumulate fluid in the sink, the knob 22 is pressed down and thereby closing the valve 17 and the fluid in the sink will be trapped therein, and thereafter, should it be desired to drain the fluid from the sink, the knob 22 and stem 19 is raised and with them the valve thus opening the valve, and should it be desired to retain the valve in its open position, the knob 22 is turned either to the right or left, this turning of the knob turns the stem 19 and the valve and thereby moving the pins into the extended slots 14, in which position the enlarged portion of the pins will engage the top of the bottom of the crumb catching basket at the sides of the slots 14, and the valve will be retained thereby in its open position, then should it be desired to again close the valve, the knob 22, stem 19 and valve is turned until the enlarged portion 15 of the pins register with the larger portion 13 of the key-hole like hole, when the valve can be closed by pressing down on the knob 22. Should it be desired to remove the crumb catching basket from the housing, it is only necessary to pull the knob 22 upward beyond the distance required to open the valve, the valve then engaging the bottom of the basket carries the basket upward as the knob is pulled farther upward.

Having described my present invention, the rights to which, I desire to secure are set forth in the claims hereafter enumerated:

I claim:

1. In a combined strainer and drain valve structure comprising a cylindrical housing having an outwardly extending curved flange at its upper end portion and an inward and downward extending conical flange at its lower end portion, the said conical flange having a valve seat therein and a downward extending externally screw threaded thimble, a crumb catching basket having an outwardly curved flange engaging the inner side of the outwardly extending flange of the housing whereby the basket is supported within the aforesaid housing; the said crumb catching basket comprising a perforated receptacle having a plurality of spring members secured to its sides and engaging the inner side of the housing and a plurality of elongated double key hole like holes extending through its bottom, the said elongated holes having an intermediate portion and extended portions of less width than the intermediate portion, a valve for engaging the aforesaid valve seat, the said valve having pins extending upward through the said elongated holes of the crumb catching basket, and having enlarged end portions of less cross-section dimension than the intermediate portion of the said elongated holes and larger than their extended portions, a valve stem secured to the said valve and extending upward through the bottom of the basket for raising and turning the valve for engaging the enlarged portions of the said pins with the sides of the extended portions of the elongated holes of the crumb catchng basket, substantially as described.

2. In a combined strainer and drain valve having a hollow cylindrical housing with a flange engaging the bottom panel of a sink and a valve engaging a valve seat within the housing for controlling the flow of fluid from the sink; a crumb catching basket having a plurality of individual springs secured to the outer periphery of the basket and engaging the inner side of the housing for increasing the resistance to remove the basket from the housing.

3. The combination, in a combined strainer and drain valve structure having a drain valve, of a crumb catching basket having a plurality of double key like slots extending through its bottom and headed studs secured to the drain valve and extending upward through said slots whereby the said valve can be lifted from its seat and retained in open position by said heads engaging the sides of the narrow portion of said slots, substantially as described.

4. The combination, in a combined strainer and drain valve structure having a drain valve, of a crumb catching basket having a pair of double key like holes through its bottom, a valve having a pair of studs extending upward through said holes and having a head for engaging the sides of the holes at their narrow portion and a stem for raising the valve and engaging the heads of the studs with the sides of the said holes when the drain valve is raised.

FREDERICK C. KUHNLE.