March 6, 1951 A. J. HIERTZ 2,544,498

REMOVABLE STRAINER-STOPPER ASSEMBLY FOR SINKS OR THE LIKE

Filed Oct. 1, 1948

Fig. 1.

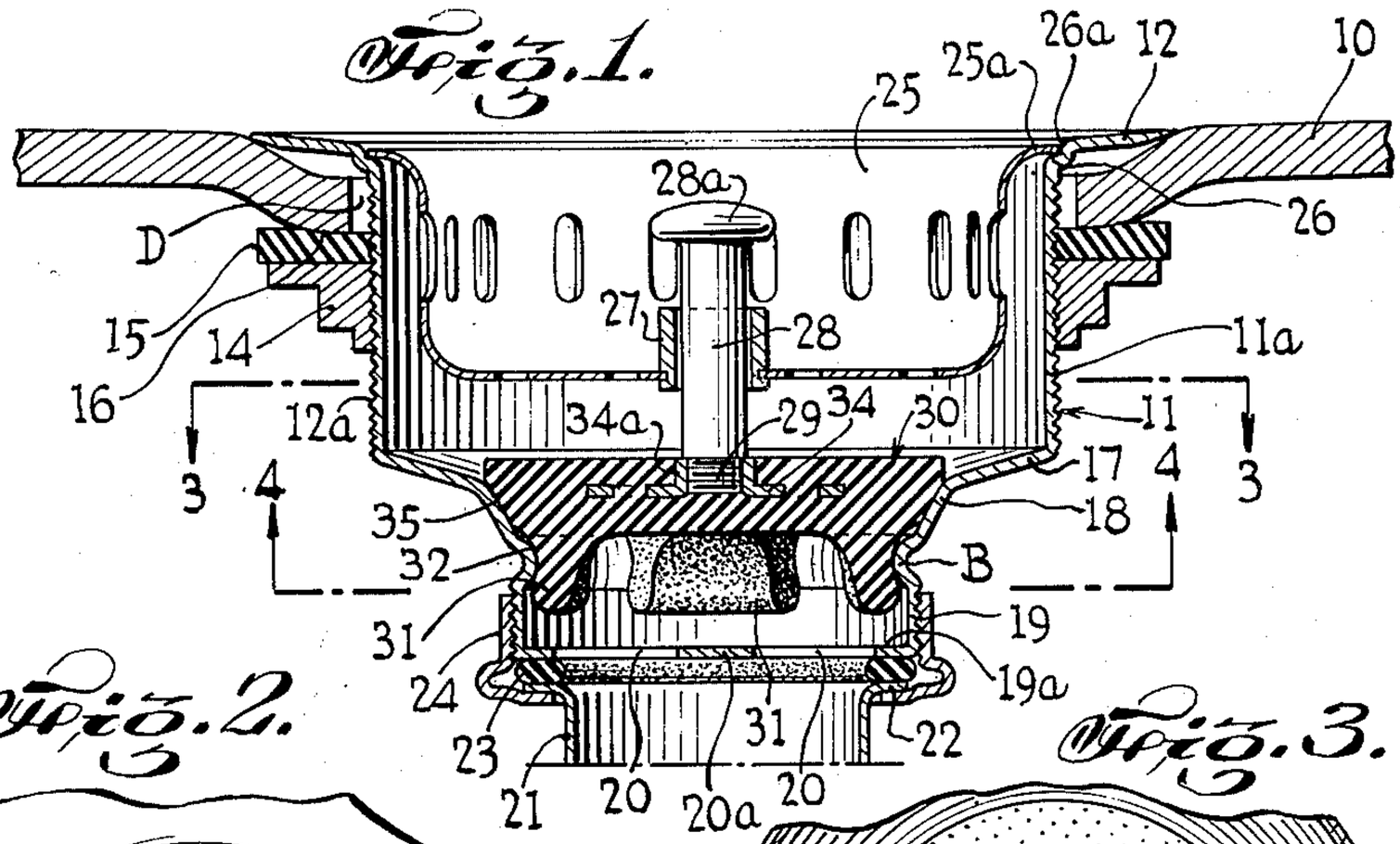


Fig. 2.

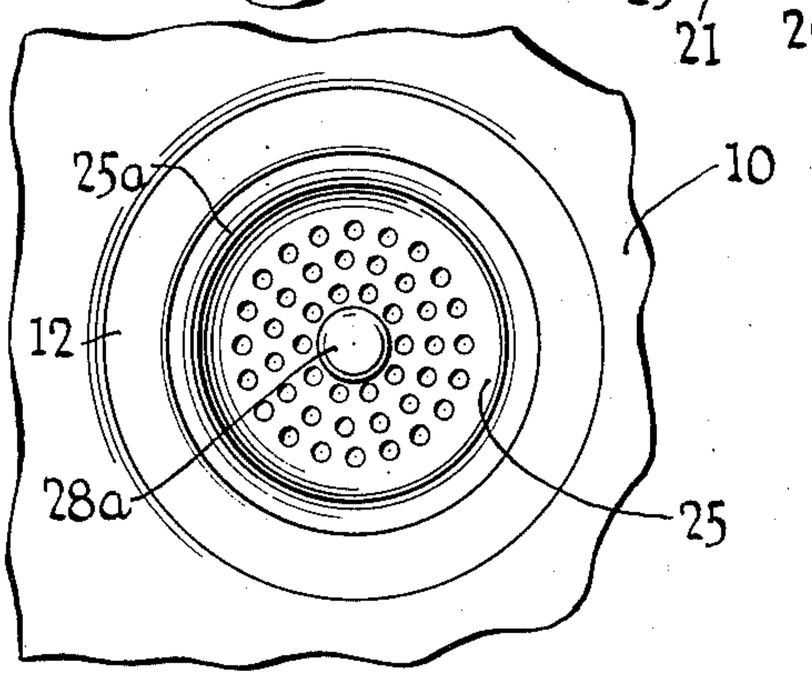


Fig. 3.

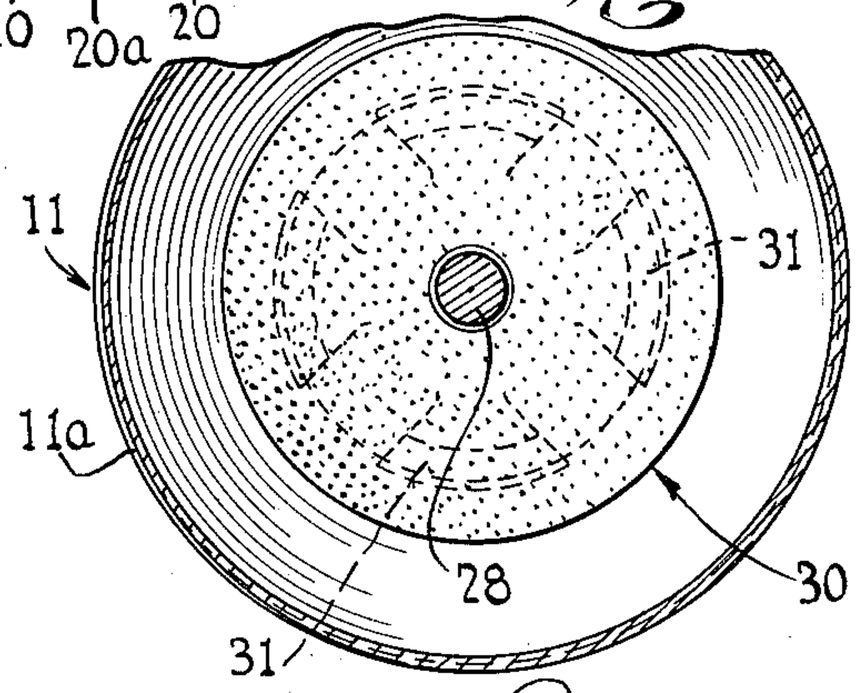


Fig. 4.

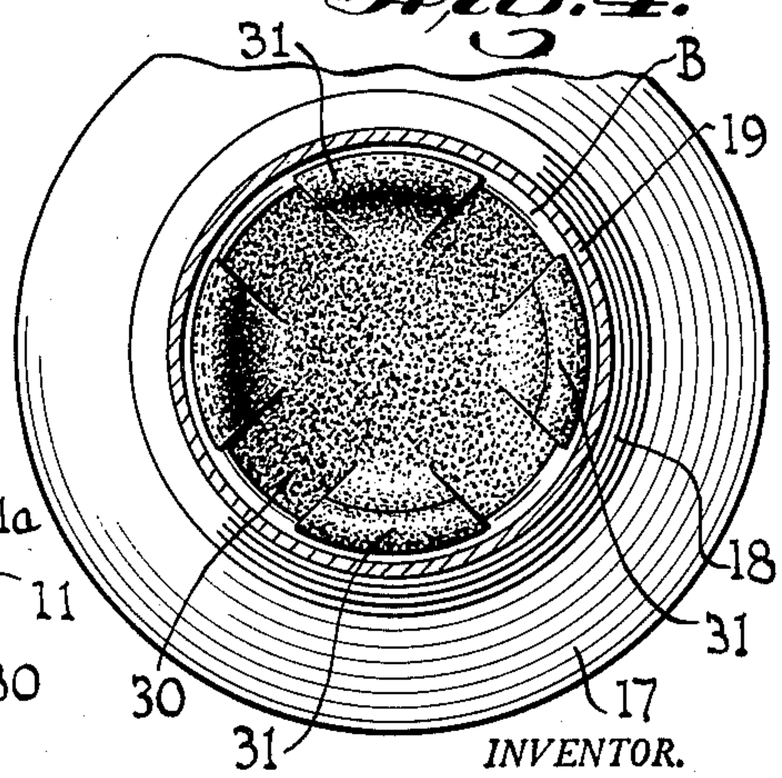
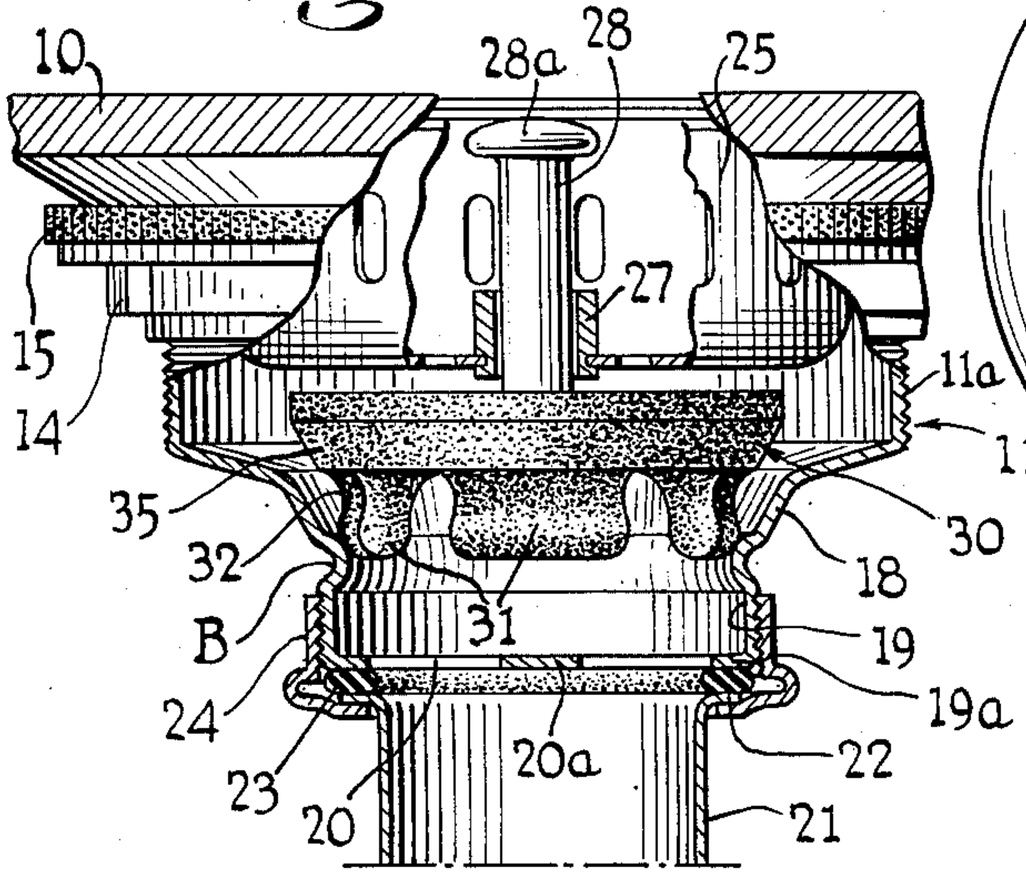


Fig. 5.



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Patented Mar. 6, 1951 2,544,498

UNITED STATES PATENT OFFICE

2,544,498

REMOVABLE STRAINER-STOPPER ASSEMBLY FOR SINKS OR THE LIKE

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Application October 1, 1948, Serial No. 52,194

5 Claims. (Cl. 4—287)

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This invention relates to a removable sink strainer or perforated container for catching crumbs, refuse, or the like in drain openings, combined with a means of preventing the liquid from draining when so desired.

In sink strainers now in use it is necessary to locate the perforated strainer-stopper assembly in the drain opening by the use of aligning slots, lugs, or projections, and time is wasted in trial and error to determine the correct positions of parts. Objects and features of this invention are to provide a strainer or perforated container-stopper assembly which is operative in any position in the drain opening and which does not require the usual finding and locating devices necessary with strainers now commonly in use. It is only necessary to place the perforated strainer and stopper assembly in a tubular body or member located in the drain opening. In this position the strainer is seated and the stopper is open or off the valve seat of the tubular body and permits drainage. By simply pressing on the stopper carrying stud or post of the assembly, feet on the stopper snap over a bead provided in the tubular body thereby closing the valve seat of the tubular body and preventing drainage. When drainage is desired, a simple pull upward on the center post or stud raises the stopper from the valve seat in the tubular body thereby draining the contents of the sink or the like. No angular orientation of the strainer relative to the axis of the tubular body is required.

Another object of the invention is to provide a simple effective device for the intended purposes.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawings, wherein:

Fig. 1 is a cross sectional view of the entire strainer-stopper assembly positioned in the tubular body and showing the stopper in the closed or non-draining position;

Fig. 2 is a plan view of the same on a reduced scale;

Fig. 3 is a section taken along line 3—3 of Fig. 1 and viewed in the direction of the arrows;

Fig. 4 is a section taken along line 4—4 of Fig. 1, also viewed in the direction of the arrows; and

Fig. 5 is a cross section similar to Fig. 1 showing the stopper in the open or drain position.

Referring now to the drawing, the reference character 10 designates a portion of a sink or the like provided with a drain opening D in which a device made according to the invention is mounted. The tubular member or body 11 positioned in opening D is provided with a flange 12 which rests on the top of the wall of the container or sink 10. The tubular member 11 has

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a strainer receiving portion 11*a* which is threaded externally at 12*a* to receive a threaded clamping nut 14. This nut acts to clamp the washer 15 against the underside 16 of the wall of the sink or container 10 to form a water-tight joint.

Adjacent to its lower end the tubular member 11 is provided with an inwardly directed angular portion 17 extending downwardly and inwardly from the outer tubular portion 11*a* with the tapered portion or reduced section formed to provide a valve seat 18. Just below the valve seat 18 is a portion of narrower diameter, for example an inwardly directed annular bead or shoulder B to provide for the operation of the device as will be described. The lower end of the tubular portion 19 of the member 11 is provided with openings 20 formed by cross straps 20*a* to form a supplemental strainer.

Connected to the lower end of the tubular portion 19 and forming an extension thereof is a tube 21 having a flange 22 which is held against the washer 23 abutting the underside of the inwardly directed flange 19*a* on the tubular portion 19 by the coupling or clamping member 24.

Removably mounted within the tubular strainer receiving portion 11*a* is a strainer or perforated container 25. This container 25 has a flange 25*a* that rests on a shoulder 26 defined by a recess 26*a* which is provided on the flange 12 of the tubular body 11.

A bushing or sleeve 27 is mounted preferably in the exact center of this perforated container 25. A center post or stud 28 which has a knob 28*a* on one end and a threaded section 29 on its lower end is slidably carried in the bushing 27 and is assembled with a stopper 30. The stopper 30, which can be made of resilient material, such as rubber or plastics or suitable metal, has a suitable number of projecting legs or feet 31 which are adapted either to engage the top of the bead B or else be deformed to move past the bead B under pressure on stud 28. When so moved concavities 32 in the feet 31 receive the bead B and act to retain the stopper in a closing position. The valve seat 35 on the stopper cooperates with the valve seat portion 18 of member 11 so as to close the outlet from the sink or the like when the strainer 25 is in the lowered position as shown in Figure 1. The reinforcing plate 34 (Fig. 1) in the stopper 30 is used when the stopper is constructed of rubber or plastics or the like as shown and has the threaded socket 34*a* to facilitate its being mounted on the threaded portion 29 of member rod or post 28. When constructed of metal this plate 34 is not necessary and a threaded socket can be provided on the stopper instead. In operation the strainer or perforated container 25 normally remains in a seated position on the shoulder 26 while the post and stopper assembly are raised and lowered to

open and close the drain outlet past the valve seat 18. This same post 28 serves as a handle when it is desired to remove the strainer-stopper assembly from the tubular member 11.

The operation of the device will be apparent from the foregoing description. When it is desired to keep liquid in the sink or container 10 the center post 28 is pushed down to the position shown in Figure 1 so that the feet, legs or extensions 31 on the stopper 30 snap over the bead or shoulder B of the tubular member 11 and the bead is received by the concavities 32. In this position the valve seat 35 is in the lowered position on valve seat 18 and prevents the drainage of the sink or container 10. When it is desired to permit the drainage of the sink or container the center post 28 is pulled up by its knob 28*a* to the position shown in Figure 5. During such movement the legs or extensions 31 on the stopper 30 compress slightly while passing over the high part of the bead B and then upon passing this bead B they expand or return to their normal positions and then rest on the upper side of the bead B as shown in Figure 5. In this position the seat 35 on the stopper 30 lies above the seat portion 18 of the tubular member 11 and the liquid may drain from the sink or container 10.

If the water in the sink or container 10 contains solid particles or other solid matter the strainer 25 retains them but permits the liquid to flow out through the various strainer openings. After the liquid is emptied from the sink or container 10, the strainer or perforated container 25 is removed entirely from the tubular member 11 simply by grasping the knob 28*a* of post 28, and lifting the entire strainer, post and stopper assembly, and the contents of the strainer 25 are then emptied. After this operation the strainer-post and stopper assembly is returned to the tubular member 11 so that its flange 25*a* rests on the shoulder 26. The feet 31 then lie above the bead B as shown in Figure 5, but can be placed in the position shown in Figure 1 simply by pushing down on knob 28*a*.

From the foregoing it will be apparent that it is not necessary in replacement of the assembly to orient the strainer 25 in any particular position in tubular member 11. The stopper post assembly may be operated in any position of the strainer 25; that is, the legs or extensions 31 on the stopper 30 may always cooperate with the bead or shoulder B formed on the tubular member 11 irrespective of the angular orientation of strainer 25 relative to the longitudinal axis of said tubular member.

While a specific embodiment of the invention has been disclosed, variations in structural detail within the scope of the claims is possible and is contemplated. There is no intention, therefore, of limitation to the exact details shown and described.

What is claimed is:

1. In a device of the character described, a tubular member having a strainer receiving portion at one end, a valve seat portion and a beaded portion of narrower diameter than said valve seat portion lying between the seat portion and the other end of said tubular member, a strainer removably supported in the strainer receiving portion of said tubular member, a rod member slidably carried by said strainer, a stopper member secured to said rod member, said stopper member

having a seat movable into closing position relative to said seat portion of said tubular member and feet extending from said stopper toward said beaded portion, said feet being dimensioned to engage said bead and to maintain said stopper seat elevated relative to said valve seat portion but being deformable to move past said bead upon application of pressure to said rod member and thereby permit seating of said stopper seat on said valve seat portion of said tubular member, said strainer and stopper being removable as a unit from said tubular member.

2. A device as per claim 1 in which said stopper is of resilient material.

3. A device as per claim 1 in which said stopper and said feet are integral and of resilient material.

4. A device as per claim 1 in which said feet have concavities to receive the beaded portion of said tubular member in the seating position of said stopper seat relative to said valve seat portion of said tubular member and thereby maintain such position of said stopper.

5. In a device of the character described, a tubular member having a strainer receiving portion at one end, a valve seat portion, and a beaded portion of narrower diameter than said valve seat portion, said strainer receiving portion having a recess defining a shoulder to receive a portion of said strainer for supporting it in said tubular member, a bushing carried by said strainer, a rod member slidably mounted in said bushing, a stopper of resiilent material carried by said rod member, said stopper having a seat, resiliently deformable feet integral with said stopper extending below said seat and movable upon deformation past said beaded portion of said tubular member, the beaded portion acting to maintain said stopper in elevated position relative to said seat portion when said feet rest on said beaded portion, and said feet having concavities shaped to receive and engage said beaded portion to retain said stopper in seated position on said valve seat portion of said tubular member whereby said stopper seat may be raised and lowered relative to said seat portion of said tubular member and maintained in its raised or lowered positions by the interaction of said feet and said beaded portion of said tubular member irrespective of the angular orientation of said strainer relative to the axis of said tubular member

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