Aug. 19, 1947. B. P. SMITH 2,425,964

VACUUM DRAIN STOPPER

Filed March 9, 1945

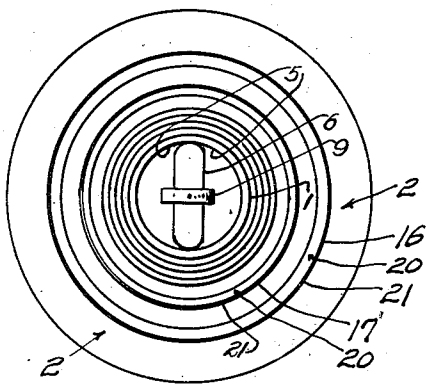


Fig. 1.

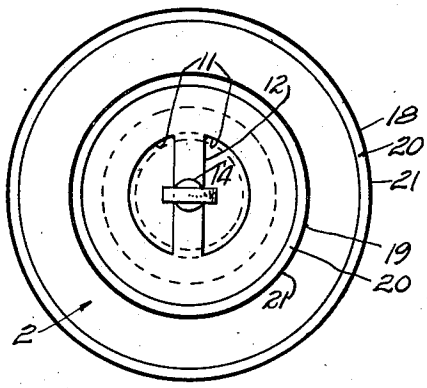


Fig. 2.

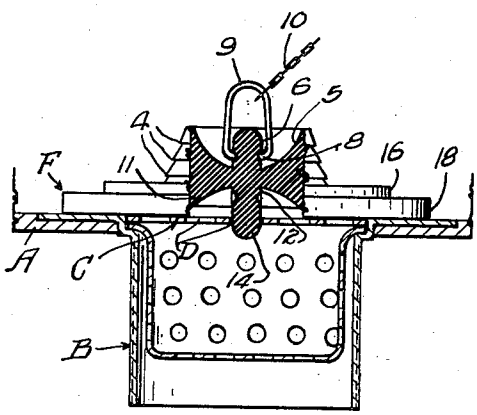


Fig. 3.

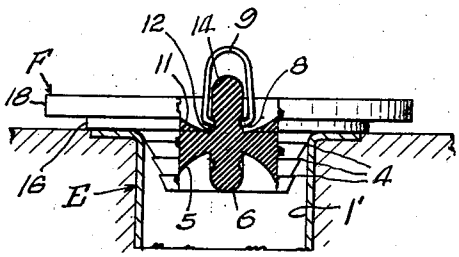


Fig. 4.

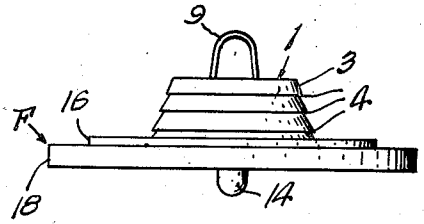


Fig. 5.

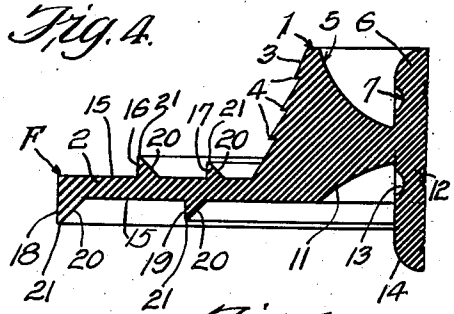


Fig. 6.

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VACUUM DRAIN STOPPER

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2 Claims. (Cl. 4—293)

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This invention relates to vacuum drain stoppers for kitchen sinks, wash bowls, laundry tubs, bathtubs, or other types of sinks, tubs, or drains that require stoppers to close the drain openings thereof.

The object of my present invention is to provide a vacuum drain stopper of the character which will be simple in construction, comparatively low in cost of manufacture, highly efficient for the purpose intended, and which can be used either as a stopper for spanning a drain opening having a removable strainer plate to close the same, or used as a plug insertable into the drain opening when the plate is removed.

A further object of my present invention is to improve the drain stopper issued to me February 21, 1928, bearing U. S. Patent #1,659,839, to overcome certain practical objections thereto and defects therein.

With the above and other objects in view, the invention consists in the novel features of construction, arrangement and combination of the elements thereof, as hereinafter more fully described, and finally pointed out in the claims hereto appended.

Referring to the accompanying drawing forming a part of this specification, and wherein like characters of reference denote similar parts throughout the several views:

Fig. 1 is a top plan view of a vacuum stopper embodying the features of my invention.

Fig. 2 is a bottom plan view of the stopper.

Fig. 3 is a view partly in side elevation and partly in vertical section of the stopper showing it as used to close the mouth of a drain of a kitchen sink, or the like, provided with a perforated strainer plate.

Fig. 4 is a view partly in side elevation and partly in vertical section of the stopper showing it used as a drain plug when the mouth of the drain is not provided with a strainer plate.

Fig. 5 is a side elevation of the stopper.

Fig. 6 is an enlarged detail, in sectional elevation, of one-half of the stopper.

Referring to Fig. 3 of the drawing, the reference character A designates a portion of the floor of a kitchen sink, or the like, provided with a drain pipe fitting B, which, in turn, is provided with strainer plate C having drain openings D.

Referring to Fig. 4 of the drawing, the reference character E designates a drain fitting which is not provided with a strainer plate C, thus necessitating the use of a drain plug.

In carrying out my present invention, I employ a vacuum stopper designated, generally, as F,

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and, which is designed to be used either as a stopper to span and close a drain opening having a strainer plate, as shown in Fig. 3, or as a plug to enter the drain opening of a sink or other plumbing fixture having a drain opening without a drain plate, as shown in Fig. 4.

The stopper F is made from rubber material and consists of a plug member 1, preferably truncated in shape, terminating at the base thereof in a flat rather thin circular rim section 2.

The truncated conical plug member 1 has the face of the tapered wall 3 thereof provided with a plurality of half V-shaped beads 4 arranged in suitable spaced relation circumferentially thereof to form notches. The upper or small diameter end face of the plug member 1 is provided with a pair of opposed recesses 5 providing therebetween a cross-rib 6. The side walls of the cross-rib 6 are provided with opposed recesses 7 adapted to receive free inwardly projecting ends 8 of an inverted U-shaped chain connecting member 9 to which member 9 a suitable chain 10 can be attached, as shown in Figs. 4 and 5.

The lower or larger diameter of the plug member 1 is provided with a pair of opposed recesses 11 providing therebetween a cross-rib 12, the side walls of which are provided with opposed recesses 13 adapted to receive the inwardly projecting end 8 of the chain connecting member 9 when removed from the cross-rib 6 and transferred to the cross-rib 12 as when the stopper is used as a drain plug with the plug member 1 inserted into a drain opening 1', as shown in Fig. 4. The plug member 1 is slightly flexibly resilient.

The flat circular rim section 2 of the stopper surrounds the base of the plug member 1 and is of a diameter to more than cover the mouth of the drain pipe fitting B, thus fully spanning the strainer plate C, as clearly shown in Fig. 3. A suitable, preferably cylindrical pilot member 14 projects from the cross-rib 12 and centrally of the plug member 1, and the pilot member 14 is adapted to be received by and project through the central drain opening D in the strainer plate C, as clearly shown in Fig. 3, to prevent displacement of the stopper when used to span and cover a sink drain opening when covered with a strainer plate C.

The face 15 of the rim section 2 adjacent the base of the plug member 1 is provided with a pair of spaced outer and inner half V-shaped beads 16 and 17, respectively. The beads are concentric with each other and concentric with the plug member 1. The outer bead 16 is spaced inwardly a suitable distance from the marginal edge of the

rim section 2 and the inner bead 17 is spaced from the plug member 1.

The opposite face 15' of the rimlike section 2 of the stopper is provided with spaced outer and inner half V-shaped beads 18 and 19, respectively. The beads 18 and 19 are concentric with each other and concentric with the pilot member 14. The outer bead 18 is located at the marginal edge of the rim section 2 and the inner bead 19 is suitably spaced from the bead 18 and suitably spaced from the pilot member 14, as clearly shown in Fig. 6, so as to rest upon the fitting E adjacent the edge of the mouth thereof when the stopper is used as a drain plug.

The inner beads 17 and 19 are of slightly less height than the beads 16 and 18, respectively. The beads 16, 17, 18 and 19 each have the outer walls thereof at a right angle to their respective faces of the rim section 2 and the inner wall 20 of each of said beads is inclined, or tapered to provide a feather edge 21 for each bead. The flat rim section 2 being relatively thin renders the rim 2 flexibly resilient, thus the feather edges of the inner beads 17 and 19, which beads are of less height than the outer beads 16 and 18, are vacuum pulled into contact with the surface surrounding the drain opening, whether the device is used as a drain stopper, or as a drain plug.

From the foregoing description, it will be apparent that the device of my invention is economic in construction, unitary in structure, effective in results, and that I provide a drain stopper that will serve both as a vacuum stopper for sink drains and the like, and, as a plug for other drains that are not provided with perforated drain plates.

The many advantages of the herein described drain stopper will, it is believed, readily suggest themselves to those skilled in the art to which it appertains.

While I have illustrated and described the preferred embodiment of my invention, I do not, however, wish to be limited thereto, but to have it understood that, within the scope of the appended claims, the invention may be practical otherwise than as specifically illustrated and described, as variations not requiring the specie of invention may be resorted to without departing from the spirit and scope of the invention.

What I claim is:

1. In combination with a sink fitting having a drain plate, of a vacuum stopper consisting of a flexibly resilient disclike member, an integral truncated plug projecting from one face of the disclike member centrally thereof, a pair of spaced concentric beads integral with the disclike member which are also concentric with the plug, a pilot integral with and projecting from the opposite face of the stopper centrally thereof and adapted to pass through a central opening in the drain plate to locate the stopper relative to the drain fitting, a pair of spaced concentric beads integral with the disclike member which are also concentric with the pilot and arranged in staggered relation with first mentioned beads in sectional elevation, a rib formed on the plug by recessing the end face of the plug, a rib formed at the base of the plug by recessing the said opposite face of the disclike member, opposed recesses formed in both ribs, and a chain connection having ends engageable in said recesses which can be detached from one rib and attached to the other rib and vice-versa.

2. In combination with a drain fitting provided with a removable strainer plate, of a two sided vacuum stopper comprising a central portion forming a truncated conically shaped plug having a plurality of spaced half V-shaped beads to form notches circumferentially on the plug, the free end face of the plug having spaced recesses forming therebetween a rib having its side faces provided with opposed facial recesses adapted to receive a chain connecting member, the base face of the plug having spaced recesses forming therebetween a rib having its side faces provided with opposed facial recesses adapted to receive the chain connecting member when not connected with the first mentioned rib, a pilot projecting from the second mentioned rib and centrally of the plug, the base of the plug projecting radially to form a relatively thin flexibly resilient flange, a flexibly resilient half V-shaped circular bead at the marginal edge of the flange on the face thereof adjacent the pilot, a second flexibly resilient half V-shaped circular bead within the bounds of the marginal bead, spaced therefrom, concentric therewith and of less height than the marginal bead, a flexibly resilient half V-shaped circular bead on the opposite face of the flange and disposed in intermediate relation with the first two mentioned circular beads, and a second flexibly resilient half V-shaped circular bead within the bounds of the third mentioned circular bead, spaced therefrom, concentric therewith, of less height than the third mentioned circular bead and spaced from the base of the plug.

BERNARD P. SMITH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
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975,527	Howell	Nov. 15, 1910
1,659,839	Smith	Feb. 21, 1928
1,912,312	Schacht	May 30, 1933