May 7, 1940. A. F. ROOK 2,199,964

STOPPER

Filed Jan. 20, 1938

Fig. 1,

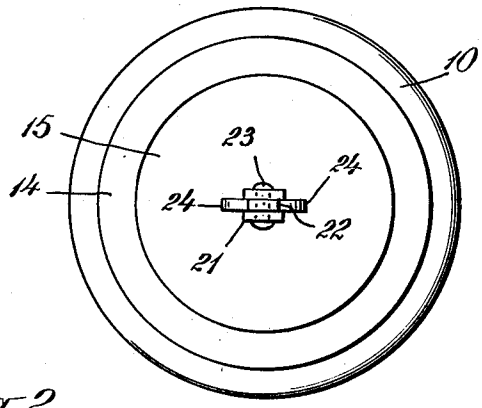


Fig. 2,

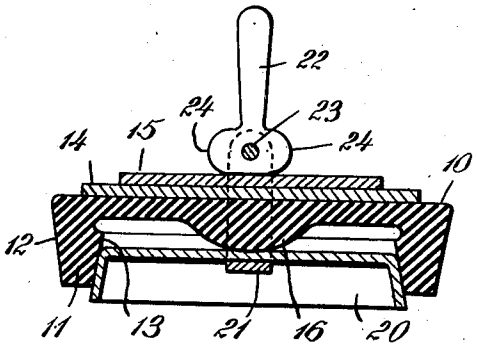


Fig. 4,

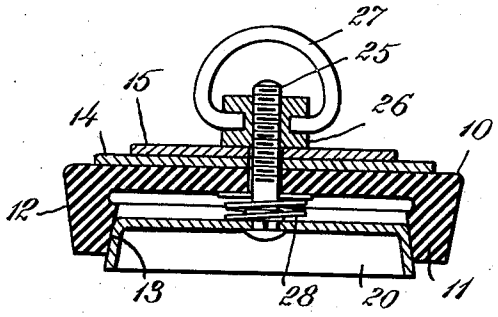


Fig. 3,

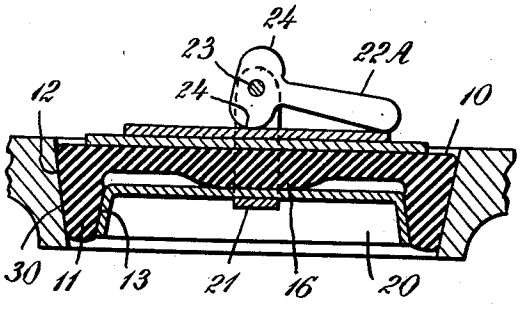
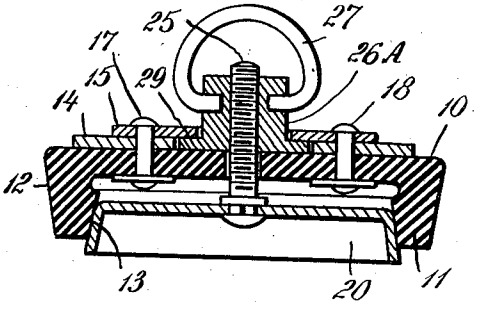


Fig. 5.



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Patented May 7, 1940 2,199,964

UNITED STATES PATENT OFFICE

2,199,964

STOPPER

Albert F. Rook, Springfield, N. Y.

Application January 20, 1938, Serial No. 185,819

1 Claim. (Cl. 4—295)

This invention relates to improvements in stoppers.

Its object is to provide a simple and inexpensive device for tightly closing drain openings and the like, which device has advantages over such stoppers as have been available heretofore.

It has been common practice to construct the drain openings for wash basins, bath tubs and the like with inclined walls, that is, of frustro-conical shape. Such walls have to be carefully finished and are often ground to the desired shape. Plugs of similar shape are provided for insertion into these openings. These are sometimes of metal, ground to fit the openings. Sometimes they are of resilient material, such as rubber, or are of metal faced with rubber. In any case, any distortion of the abutting surfaces or injuries thereto develops leaks. The same is true whenever any foreign matter becomes lodged between these surfaces. To overcome this difficulty the plugs are forced tightly into the openings which results in their becoming stuck and their removal difficult.

Another difficulty with former devices is that they become loosened and displaced by contact with material in the basin or tub and allow the liquid to run off. This trouble is of frequent occurrence in laundry tubs.

According to my invention, a packing body member is constructed of compressible resilient material with an outer face of a shape and size to fit the drain opening to which it is to be applied, and with means within this outer face for forcing it into tight engagement with the surface of the drain opening to which it is fitted and for releasing such pressure when it is desired to withdraw the stopper.

I will describe a preferred embodiment of my invention in the following specification and will point out its novel features in appended claim.

Referring to the drawing,

Fig. 1 is a top plan view of a stopper which is made according to and embodies this invention;

Fig. 2 is a sectional side elevation of the stopper which is shown in Fig. 1;

Fig. 3 is a view similar to that of Fig. 2 with the stopper inserted in a drain opening and pressed laterally into tight engagement therewith;

Fig. 4 is a sectional side elevation showing a modification of construction; and

Fig. 5 is a sectional side elevation showing another modification.

The device, as shown in the drawing, comprises a packing body member of compressible resilient material, such as rubber, in the form of a disk 10 with a depending annular flange 11. The outer surface 12 of the disk and the flange is of frustro-conical shape, of the size and shape to fit a drain opening 30 (Fig. 3). The inner surface 13 of the flange is also frustro-conical, but of opposite inclination.

20 is a metallic cup-shaped expander within the flange 11, the periphery of which is of substantially the same inclination as that of the surface 13. 21 is a U-shaped strap projecting upwardly through slots in the top of the expander, through the disk 10 and through one or more washers 14 and 15 on top of the disk. This strap embraces a protuberance 16 which extends downwardly from the disk into contact with the expander. 22 is a lever, pivoted at 23 to strap 21 and having cam surfaces 24, 24.

In use the stopper is inserted in the drain opening 30. The lever 22 is then rotated slightly more than 90° into the position shown at 22A in Fig. 3. Whichever of the cam surfaces 24 comes in contact with washer 15 will raise the strap and the expander and cause the latter to compress the flange 11 between the periphery of the expander and the surface of the drain opening. Thus, a liquid-tight closure is effected and the stopper clamped in place so that it cannot be dislodged accidentally. In effecting the operation, the protuberance 16 is compressed by the lower end of strap 21. It is also to be noted that the cam 24 has been moved past center so that the lever 22 is locked.

To remove the stopper, lever 22 is raised. The resilience of the protuberance 16 will cause the latch to force the expander down to its original position, thus releasing the pressure on flange 11.

In the embodiments shown in Figs. 4 and 5, 25 is a threaded post axially disposed in relation to the expander and affixed thereto. It extends through the disk 10 and washers 14 and 15. On it is a nut 26 to which a finger piece 27 is pivotally connected. 28 is a spring interposed between disk 10 and expander 20.

It is obvious that the expander can be raised by rotating the nut 26 in one direction. Rotation of the nut in the other direction permits the spring 28 to lower the expander to release its pressure on flange 11.

In the modification shown in Fig. 5 the washers 14 and 15 are riveted to the disk 10, as at 17, 18, and the nut 26A is provided with a flange 29 which underlies the washer 15. This arrange-

ment insures the desired downward movement of the expander.

Several embodiments of the invention have been illustrated and described to show that it is not limited to any specific construction and I intend no limitations other than those imposed by the appended claim.

What I claim is:

A movable stopper comprising a disk-like packing member of compressible resilient material having a flat body portion and a depending flange, a flat rigid washer over the top of said body portion, a tapered expander arranged to engage the inside of said flange, an externally threaded shaft affixed to the center of said expander and extending through the packing member and washer, an internally threaded nut on said shaft whereby the expander may be moved axially within the flange upon rotation of the nut in one direction, a spring interposed between the packing member and the expander for moving the expander in the opposite direction upon rotation of the nut in the opposite direction, and a finger piece pivotally but non-rotatively connected with the nut, whereby the stopper may be moved bodily and rotation imparted to the nut.

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