F. J. FAIRCHILD.

COMBINED PLUG AND STOPPER.

APPLICATION FILED MAY 23, 1918.

1,300,593.

Patented Apr. 15, 1919.

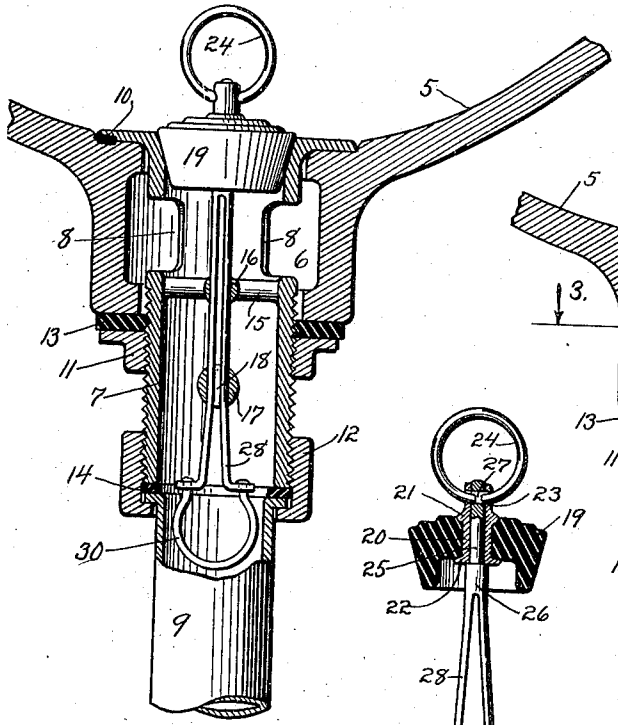


Fig. 1.

Fig. 4.

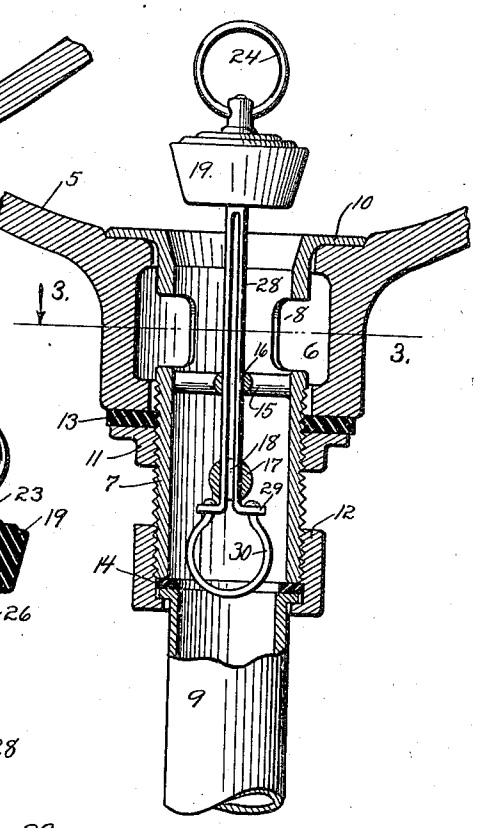


Fig. 2.

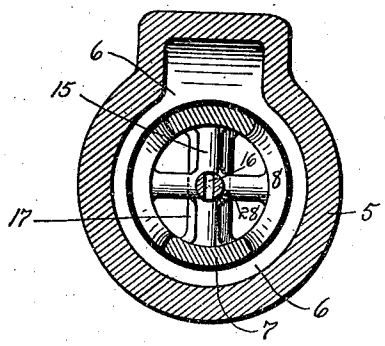


Fig. 3.

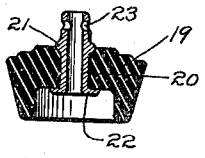


Fig. 5.

Witnesses
John B. Wade.

Inventor
Fred J. Fairchild.
by Wilkinson & Gunsta
his Attorneys

NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRED J. FAIRCHILD, OF DENVER, COLORADO.

COMBINED PLUG AND STOPPER.

1,300,593. Specification of Letters Patent. Patented Apr. 15, 1919.

Application filed May 23, 1918. Serial No. 236,135.

To all whom it may concern:

Be it known that I, FRED J. FAIRCHILD, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements for Combined Plugs and Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention embodies an improved combined plug and stopper, and while for simplicity of illustration it will simply be shown and described with reference to the type of overflow plug commonly used in bath and basin fittings, still it will be understood that the invention itself is not necessarily limited to that specific use.

There are many recognized objections to the means now generally employed, especially in hotels and other more or less public places, for stoppering such fixtures.

Where the usual chain attachment is dispensed with, or where the stopper has become detached therefrom, the latter becomes misplaced or lost, and where such a chain is attached, serious unsanitary conditions constantly arise, endangering the health and frequently the eyesight of subsequent users, by a prior improper use of the fixture, resulting in at least filthy accumulations in the chain links or on the stopper itself, if not an actually diseased contamination thereof.

Also the time and labor involved in installing such equipment create a substantial item of expense, necessitating the drilling of holes for attaching bolts, and outside of the additional costs incurred, this feature alone makes it more difficult to finish off the fixture with a smoothly coated enameled surface, as is well understood in manufacturing.

The broader aim of the present invention, therefore, is to provide a fitting of this character, for overcoming the objections noted, as well as others, and which is not only of simple construction, effective in action, and comparatively inexpensive to manufacture and install, but which will also be maintained clean at all times by the flushing action of all incoming fresh water.

With this prefacing statement, the full objects and advantages of the invention will be apparent as incidental to the following disclosure, but for a thorough understanding of the improvements reference will now be had to the accompanying drawings, illustrating a preferred embodiment of the several details of construction and assembled combination of elements, in which drawings like reference characters designate the same parts in the several views, of which—

Figure 1, is a view in longitudinal section through an overflow plug, as associated with a wash basin, the improved features being shown in elevation and in closed position; Fig. 2, is a substantially similar view, with the valve stopper shown in opened position; Fig. 3, is a cross-sectional view, taken along the plane of the line 3—3 of Fig. 2, looking downwardly in the direction of the arrow; Fig. 4, is a detail elevational view of the actuating stem, with the stopper proper, and its embedded thimble sleeve, shown in central vertical section, to illustrate the manner of fixedly securing the actuating stem in rotatable relation therewith; and Fig. 5, is an analogous detached detail view of the stopper and its thimble sleeve bearing.

5 designates the bottom of a wash basin and 6 its overflow channel and chamber, with which is associated the hollow overflow plug 7, having the inlet openings 8, the plug being mounted and secured, relatively to the fixture and its drain trap pipe 9, through means of its circular top flange 10, coupling unions 11 and 12, and interposed gasket washers 13 and 14.

15 designates the usual cruciform member, below the inlet openings 8, to prevent any substantial foreign matter from entering the drain trap pipe 9, all of these features and mountings being as heretofore generally employed, with the exception that the cruciform member herein is centrally bored, as with an aperture 16, to permit of the passage therethrough of the actuating stem, hereinafter referred to, and also functioning as a bearing support therefor.

This bored cruciform member might by itself prove to be a sufficiently satisfactory guiding support for said actuating stem, but to make the support more practical, I prefer to mount a secondary cross bar bearing 17, within said hollow plug, below said cruciform element, and which is also centrally bored, as at 18, in vertical alinement with said aperture 16. These apertures 16 and 18 might be of squared contour, but it is believed to be more desirable to provide them with circular bores, not only because

they may be drilled out while mounted in assembled relation within the hollow plug, but also accommodating them for a slight rotation of the actuating stem, as the stopper is raised or lowered, thus insuring a more facile reciprocating movement of the stem, and preventing undue wear or binding of the parts.

19 designates the stopper proper, which as usual may be a beveled valve of rubber or its equivalent, but in my construction it is vertically apertured to receive, in embedded relation, a fixed bored or drilled attaching member in the form of a short thimble sleeve 20, having an upper and a lower circular flange or shoulder 21 and 22, to hold it securely in place, and an upwardly projecting tip extension, transversely apertured, as at 23, to receive the ends of an operating handle ring 24 or the like, and this feature of the embedded drilled thimble itself and the manner of its connection with the actuating stem, as will presently appear, are themselves considered to be novel departures.

Within this thimble 20, in the specific construction illustrated, there is fitted the reduced upper end 25 of the shank portion 26 of the actuating stem before referred to, and this reduced end passes clear through the thimble, being transversely apertured, as at 27, to register with the aperture 23 of the latter, so that when the ends of the ring 24 are sprung into place the several parts are fixedly held against independent displacement, the shoulder, formed by the shank portion 26 and reduced end 25, providing a lower abutment seating up against the lower flange 22 of the thimble.

In order to hold the stopper 19 in its elevated position, when raised for opening, suitable friction means must be provided between the actuating stem and its centering and guiding support, and this frictional means should have just a sufficient amount of resiliency to suffice for the purpose, while still permitting of the vertical reciprocation of the actuating stem with a reasonably free sliding resistance.

I find that this may satisfactorily be accomplished by forming the elongated actuating stem so as to provide two outwardly spreading or downwardly divergent arms 28, preferably of semi-circular contour in cross section, which in themselves, when the metal is of a highly resilient character, will doubtless furnish a sufficient wedging springiness. As shown in the drawings, this may be attained by bifurcating or longitudinally slitting the elongated lower portion of the actuating stem.

However, in some instances, it may be desirable to form the lower ends of the arms 28 with transversely disposed terminal ears, as at 29, to which may be secured the ends of a divergently tensioned positive springy section 30, although apparently this terminal connection 30 may be attached to or associated with the arms 28 otherwise than through the specific agency of the transverse ears 29.

Thus as the stopper is being raised, the arms 28 are forced toward each other, in passing upwardly through the apertured guiding support 17, against the slight divergent tension of the springy part 30, functioning, as will be apparent, to provide for the frictional resiliency required for supporting the stopper when so elevated, as shown in Fig. 2. The reverse movement and spreading of the arms, in moving the stopper down into closed position, will be equally apparent, as in Figs. 1 and 4.

With the foregoing complete disclosure, it is thought that any further description of the operation would only be superfluous and prolix, and while it will be understood that I do not make any claims to the broad idea of a mechanically elevated and supported stopper, still at the same time I do not limit myself to the exact details as set forth, excepting as come within the purview of the ensuing claims, when viewed in the light of the specification and contemplating a fair range of equivalents.

What I do claim, as new and patentable, is:—

1. The combination of a hollow plug; a vertically apertured guide support therein; an elongated actuating element, providing longitudinally spaced arms extending through said apertured guide support, said arms being maintained under resilient tension to spring outwardly into sliding frictional engagement with the encompassing body portion of said guide support; and a stopper carried at the upper end of said actuating element, substantially as described.

2. The combination of a hollow plug; a vertically apertured guide support therein; an elongated actuating element providing downwardly diverging arms, extending through said apertured guide support and intermediately joined at their lower ends by a continuing springy terminal bow part, divergently tensioned for maintaining said arms in resilient sliding frictional engagement with the encompassing body portion of said guide support; and a stopper carried at the upper end of said actuating element, substantially as described.

3. The combination of a hollow plug; a vertically apertured guide support therein; an elongated actuating element, providing downwardly diverging arms extending through said apertured guide support; a springy bow element intermediately connecting the lower ends of said arms and divergently tensioned for maintaining said arms in resilient sliding engagement with

the encompassing body portion of said guide support; and a stopper carried at the upper end of said actuating element, substantially as described.

4. The combination of a hollow plug; a stopper therefor having a vertically drilled thimble sleeve embedded therein and provided with a transversely apertured tip extension projecting slightly thereabove; an apertured guiding support in said hollow plug; an elongated actuating element extending through said apertured guiding support in sliding resilient frictional association therewith, its upper end projecting through said thimble sleeve and having a transverse aperture adapted to register with the aforesaid transverse aperture of said thimble sleeve; and a ring or equivalent handle element passing through said registering apertures for securing said thimble sleeve to said actuating element, substantially as described.

In testimony whereof, I affix my signature.

FRED J. FAIRCHILD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."