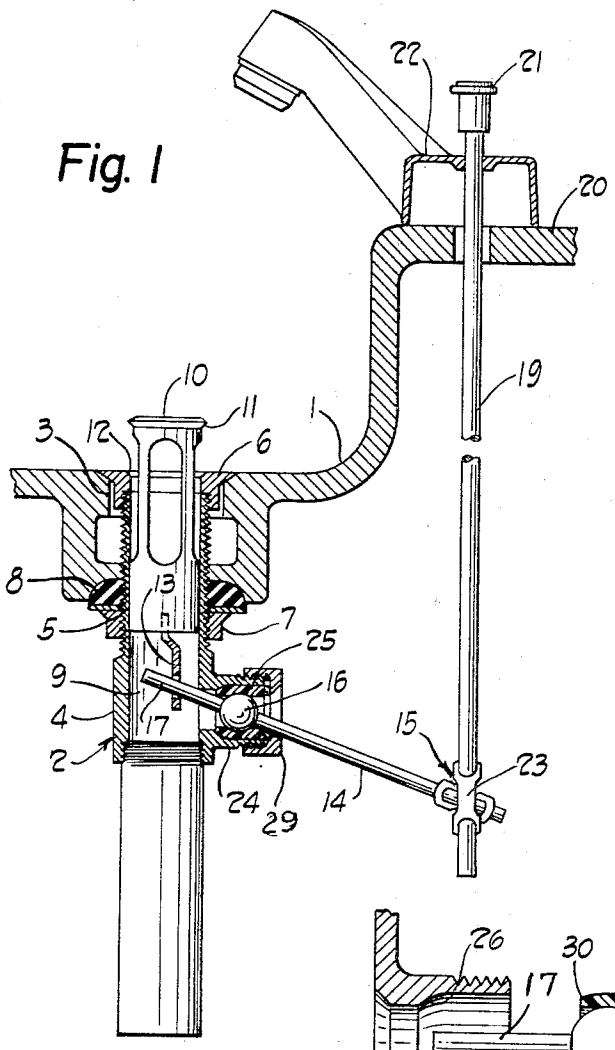
Nov. 21, 1967 G. E. CHRISTIANSEN 3,353,192

POP-UP BALL ROD MOUNTING

Filed Nov. 20, 1964

Fig. 1



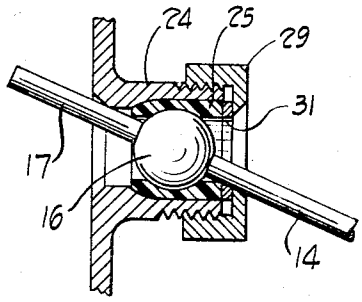


Fig. 2

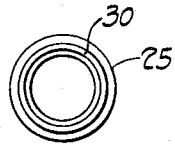


Fig. 4

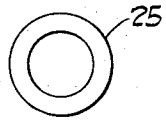


Fig. 5

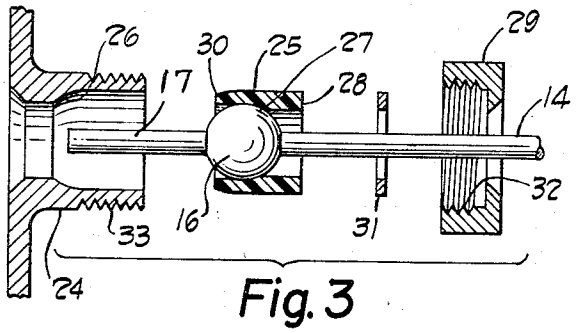


Fig. 3

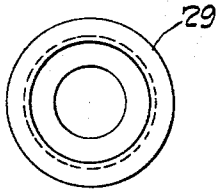


Fig. 6

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POP-UP BALL ROD MOUNTING

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2 Claims. (Cl. 4—203)

This invention relates to drain fittings and more particularly to the type known as pop-up fittings. Even more particularly, the invention is an improvement in the construction of pop-up fittings which reduces cost, simplifies construction, improves operation and eliminates leakage.

Even more particularly, the invention avails of a relatively new material having characteristics which assist in accomplishing the previously enumerated improvements.

The particular object of the invention is to provide a pop-up fitting which is easily substituted for any known form of fitting and as such requires only limited changes in the basic components, elimination of certain parts heretofore availed of to obtain the desired result, which parts were troublesome to assemble and often required replacement, leakage frequently occurring where initial installation was effected.

The specific object of the invention is to improve the operation of the pop-up fitting, while at the same time accomplishing the results previously set forth, with assembly of the unit being easily effected on the job and not required in manufacturing previously thereto.

With the foregoing and other objects in mind, the invention is described in the attached specification and disclosed in the drawing wherein:

FIGURE 1 is a fragmentary sectional view illustrating the invention and its relation to certain operating means therefor.

FIGURE 2 is a fragmentary sectional view somewhat enlarged as compared with FIGURE 1, to more particularly illustrate a specifically novel portion of the invention.

FIGURE 3 is an exploded view, illustrating the various parts availed of to accomplish the improved results sought.

FIGURES 4, 5 and 6 are end views of certain of the components availed of in the improvement comprising the invention.

Referring now to FIGURE 1 particularly, a lavatory fixture generally denoted **1** is shown as having the pop-up generally designated **2** seated in the drain outlet **3** of the fixture **1**, said pop-up **2** comprising a body **4** of generally cylindrical nature having the threaded exterior upper end **5** thereon.

The threaded portion **5** is inserted in the drain opening **3** as suggested, with the seat collar **6** threadedly engaged therewith, and in conjunction with threaded nut **7** adapted to maintain the body **4** in place in the said drain opening, a suitable gasket **8** being used for sealing the connection.

Adapted to move upwardly and downwardly in the drain passage **9** of the body **4** is a shut-off member **10** of somewhat conventional form having a seat member **11** on its upper end adapted to coact with a suitable seat **12** formed in the collar **6** previously referred to.

The lower end of the shut-off member **10** is provided with a suitable extension **13** thereon which is engaged with a part **14**, comprising a portion of the operating means generally designated **15**.

The part **14** is a rod member, and includes an enlarged portion **16** of spherical configuration through which the part **14** passes, the inner end **17** of the part **14** engaging the extension **13** of the member **10**.

The member **10** is intended to be raised and lowered in the usual manner, by means of a lift rod **19**, which extends upwardly through the rim **20** of the lavatory fixture **1**, and is provided with a knob **21** at its extremity.

The usual lavatory faucet **22** is provided, connections thereto not being illustrated since they are well known and readily supplied by those skilled in the art.

The lift rod **19** is engaged with the part **14**, by means of any suitable connection such as **23** not shown in detail but likewise readily supplied by those familiar with this type of equipment.

The specific elements previously generally described are rather well known, and that portion of the device now to be described consists of certain of the novel and improved components, which are described in detail, and involving the use of a section **24** usually formed integrally with the body **4**, and of cylindrical nature extending outwardly at about right angles to the body.

Seated within this section **24**, is a bushing **25** which is shown in greater detail in FIGURE 3, and consisting of a sort of tubular member formed in this instance of a material having the trade name Teflon, this Teflon actually being a fluorcarbon known as polytetrafluoroethylene, which has advantageous characteristics for the use herein set forth.

This material is, interestingly enough, formed in a manner more nearly related to the method of handling sintered metal than the usual thermo plastics, this not being a thermo plastic, but when it is formed in the shape shown, it has a waxy, greasy characteristic in addition to the advantageous characteristic of not absorbing water and thus maintining its shape in the presence of water.

In this instance, the bushing **25** is inserted in the section **24**, section **24** including a converging portion **26**, into contact with which, the bushing **25** is caused to move by the person making the installation.

It should be pointed out further that the bushing **25** at its outer etxremity so to speak includes a rounded shoulder **27** adapted to generally conform to the spherical portion **16** and extending somewhat beyond, terminating in a shoulder **28**.

When the bushing **25** is inserted and pushed against the converging portion **26**, by means of a suitable adjustable means **29**, the lip **30** on the bushing conforms with the converging portion **26** and literally extends around the spherical portion **16**. In order to effect this in the most advantageous manner, a suitable gasket **31** is resorted to so that turning motion of the means **29** is easy to effect, the member **29** including threaded portion **32** therein adapted to coact with the threaded portion **33** on the section **24** previously referred to.

By suitable manipulation of the means **29**, the bushing **25** may be caused to grippingly engage with the spherical portion **16** at the same time sealing around the spherical portion and the section **24** so that the member **14** is maintained in place and can be moved upwardly and downwardly as suggested by FIGURE 1 to thereby open and close the shut-off member **10** as indicated.

FIGURE 2 illustrates the assembled position and relationship of the bushing **25**, and adjustable means **29** with the lip **30** on the bushing surrounding the spherical portion **16**. By rotative adjustment of the means **29**, more or less tension may be placed upon the bushing **25** and thereby the position of the member **14** as it is raised and lowered may be regulated through a gripping action as may be found desirable for most suitable operation of the lift rod **19** by the knob **21**.

It is pointed out, of course, that the spherical portion **16** could assume some other shape such as a section of a cylinder, where simple, vertical motion of the lift rod **19** and part **14** takes place, but the spherical configuration is probably as easy as any to manufacture and satisfactory certainly in operation if varying locations of the lift rod **19** are encountered.

It is, of course, understood that other material than the polytetrafluoroethylene may be used, which material might have the same characteristics as that set forth but it is certainly true that the material of his type known as Teflon has been found most satisfactory for this purpose.

I claim:

1. In an actuator handle mounting for a pop-up valve construction including a substantially tubular valve body, a valve member movable between open and closed positions within said body, and actuator means extending through the wall of said cylindrical valve body interconnected with said valve member to operate the same between open and closed positions, the combination comprising: an externally threaded tubular section integral with and extending outwardly from the wall of said valve body, said section including a first bore adjacent the point of interconnection between said section and said valve body wall, a counterbore of a diameter greater than said first bore extending inwardly toward said first bore from the outer extremity of said section, a converging portion interconnecting said first bore and said counterbore, a substantially nonmetallic deformable tubular bushing including a first bore portion and a counterbore portion of greater diameter than said first bore portion, an actuating rod including a shank portion and an enlarged pivot

portion, said counterbore portion in said bushing being of a diameter sufficient to supportingly receive in complementary encircling contact said pivot portion of said actuating rod and said counterbore in said bushing of such depth as to receive said pivot wholly within said bushing when said pivot and said bushing are disposed within said counterbore of said section, and means engageable with a portion of said bushing to secure said bushing within said section and to cause the innermost extremity of said bushing to conform to said converging portion of said section.

2. The combination as claimed in claim 1, wherein the bushing is comprised of polytetrafluoroethylene.

References Cited

UNITED STATES PATENTS

2,827,639	3/1958	Schmidt	4—203
2,951,721	9/1960	Asp	277—205 X

FOREIGN PATENTS

889,267	4/1896	Germany.
545,880	3/1932	Germany.

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