Dec. 27, 1966 L. R. NESTOR 3,293,938

HANDLE

Filed Aug. 24, 1964

FIG. 1

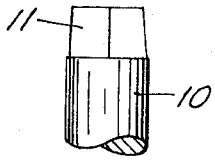


FIG. 2

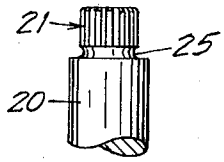


FIG. 3

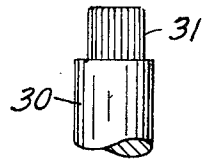


FIG. 1a

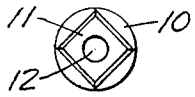


FIG. 2a

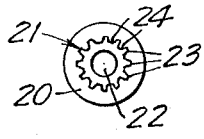


FIG. 3a

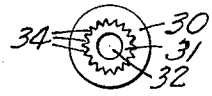


FIG. 4

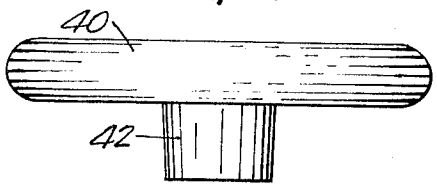


FIG. 5

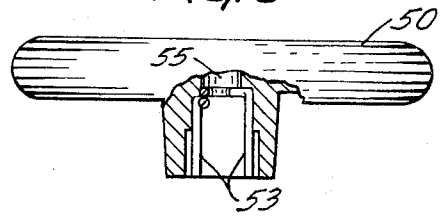


FIG. 4a

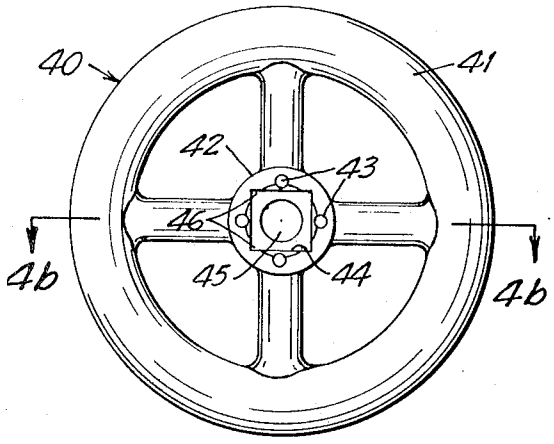


FIG. 5a

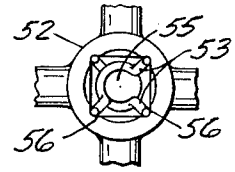


FIG. 5b

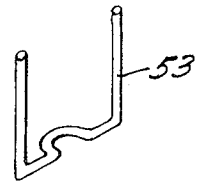
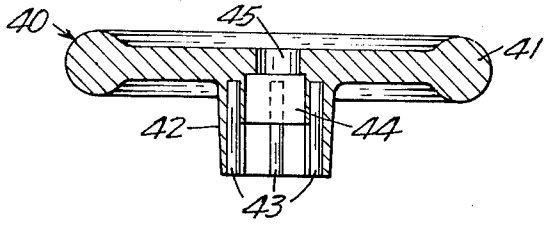


FIG. 4b



INVENTOR.
LEONARD R. NESTOR
BY
Gilbert B. Gehrenbeck
AGENT

United States Patent Office

3,293,938

Patented Dec. 27, 1966

3,293,938

HANDLE

Leonard R. Nestor, 2139 E. Magnolia Ave., St. Paul, Minn. 55119

Filed Aug. 24, 1964, Ser. No. 391,717

6 Claims. (Cl. 74—552)

This invention relates to handles, and in particular to detachable handles for faucets.

The stems of brass faucets, bibcocks, taps and other valve structures may terminate in any of a number of configurations designed to accommodate a particular form of handle member. The handle is normally held in place with a screw, and hence may be removed when desired. Once removed, these handles are frequently misplaced or lost. It then becomes necessary to obtain another handle having the same shape of socket before the valve may again be operated.

As an example, stems for domestic bibcocks or sillcocks may have square-sectioned or variously fluted tips designed to fit into handle sockets of corresponding shapes. Unfortunately the square shaft will not fit the fluted socket, nor will the fluted shaft fit the square socket. Hence it is necessary for the homeowner to exercise particular care in the selection of a replacement handle, and for the shopkeeper to stock a variety of handles.

The present invention assists in overcoming these disadvantages by providing a universal handle capable of fitting securely on both squared and variously fluted valve stems, as will further appear herein.

In the drawing, FIGURES 1, 2 and 3 represent three typical valve stem terminals as employed in ordinary brass faucet construction, as shown in elevation; FIGURES 1*a*, 2*a* and 3*a* representing the corresponding plan views. FIGURE 4 is a side elevation and FIGURE 4*a* a bottom plan view of a preferred handle made in accordance with the invention, and FIGURE 4*b* is a cross-section taken along line 4*b*–4*b* of FIGURE 4*a*. FIGURE 5 is a representation, partly in section, of an alternative handle structure, and FIGURE 5*a* a partial bottom plan view of the socket portion of the handle of FIGURE 5 further modified. FIGURE 5*b* illustrates in perspective a component of the handle of FIGURES 5 and 5*a*.

The stem illustrated in FIGURES 1 and 1*a* will be seen to comprise a rod-like shaft **10** terminating in a square cross-section tip **11**, the tip being axially drilled and threaded at aperture **12** to receive a handle-retaining screw. The sides of the square tip slope inwardly slightly toward the end, and the end corners are slightly rounded, for convenience both in manufacture and in positioning of a handle.

The tip **21** of tthe shaft **20** of FIGURES 2 and 2*a* is deeply toothed or fluted to produce twelve equally spaced ridges **23** and grooves **24**, and which are separated from the adjacent shaft **20** by a circumferential groove **25**. The tip is bored and threaded at opening **22** to receive a handle-retaining screw.

Another stem structure, illustrated in FIGURES 3 and 3*a*, comprises a shaft **30** of somewhat smaller diameter. In the tip **31** is formed a series of eighteen equally spaced longitudinal grooves **34**. Again, the tip is axially bored and threaded at **32**.

It will be apparent, and is found true in practice, that a socket having a square opening and shaped to fit the tip **11** of FIGURE 1 will not accept the tips of either of FIGURE 2 or 3. Likewise, a socket having a ridged interior designed to fit the tip of either FIGURE 2 or 3 will not accept either of the other tips.

It has now been found possible to provide a single replacement handle member having a socket capable of accepting, and of transmitting adequate torque to, each of

the styles of faucet stem tips here illustrated and representing all commonly used stem tip structures.

One such universal replacement handle member is shown in FIGURES 4, 4*a* and 4*b*. The handle **40** comprises a handpiece **41** here illustrated in the form of a spoked wheel but which may be of any desired shape or configuration, formed integrally with an open cup-shaped socket member **42** forming the hub of the wheel. The internal cross-section of the socket is generally square-cornered, with each of the four sides gently rounded on a common radius. At the center of each rounded side appears an oppositely sharply rounded projection **43** arranged parallel to the axis and to the corners **44**. The socket is centrally perforated at **45**.

A convenient structure is illustrated in FIGURE 4*b*. The projections **43** are in the form of rod-like pins extending into the metal of which the handle is molded. They are completely concealed in the thicker walls beneath the socket opening, extending for approximately half their diameters from the centers of the rounded thinner portions of the socket walls as more clearly apparent in FIGURE 4*a*.

The square corners **46** accept, and transmit torque to, a shaft shaped as in FIGURE 1. The diameter of the opening defined by the rounded wall portions is sufficient to receive the tips of FIGURES 2 and 3. The projections **43** fit within corresponding grooves of either of the latter tips and transmit torque thereto. The handle is universal in application.

A less unitary but fully effective structure is illustrated in FIGURES 5 and 5*a* as comprising an open cup-shaped socket **52** wherein the opening has a similarly square-cornered circular cross-section. In this structure, provision for transmitting torque to a fluted-tip stem is made by insertion of at least one or preferably two U-shaped wire key members **53**, two being shown in FIGURE 5*a*. The legs of the key members fit within and protrude from the square corners **56**; the semicircularly deformed base of the U holds the legs in position while remaining out of alignment with the axial opening **55**. The fluted tips of FIGURES 2 and 3 are keyed to the handle by the wire legs of the inserts **53**. For use with a shaft of the configuration shown in FIGURE 1, the U-shaped inserts **53** are simply removed and discarded, the tip **11** then fitting snugly within the four square corner spaces **56**.

What is claimed is as follows:

1. A universal handle comprising a handpiece and a generally cup-shaped socket, the interior walls of said socket defining a generally square-cornered cross-section area, the four walls being gently rounded on a common radius centered on the axis of said socket, and at least two diametrically opposing paraxially extending sharply rounded protrusions within said socket area at the center of said rounded portions.

2. A universal unitary faucet handle comprising a handpiece and a generally cup-shaped socket, the interior walls of said socket defining a generally square cross-section area having well-defined square corners, the walls intermediate said corners being curved on a common radius centered on the axis of said socket, each wall at its center having a paraxial narrow elongate projection extending toward said axis and short of the plane of the adjacent corners.

3. A faucet handle comprising a handwheel having a cup-shaped hub forming a socket member for fitting over the tip of the stem of said faucet, the inner walls of said socket defining generally a square cross-section having well-defined square corners and gently rounded sides between said corners, the rounded sides defining a circle; and along the center of each rounded side and parallel to the axis, a sharply rounded projection extending radially

into the socket opening a distance short of the plane of the adjacent two corners.

4. A metal unitary faucet handel comprising a handwheel having as its hub an open cup-shaped socket having an open tubular stem-receiving end section and a closed opposite end section centrally perforated to receive a fastening screw; said socket having a generally tubular shape consisting of four identical wall segments interconnected to define a square-cornered open interior of generally square cross-section; each said wall having a depressed intermediate portion at the interior of said wall defining an arc of a circle; and, centrally embedded therein, a small-diameter pin parallel to the axis of said socket, said pin extending along the center of the arcuate portion of said wall and being embedded in said arcuate portion for approximately one-half its diameter and protruding from said wall a distance short of the plan of said edges.

5. A metal unitary faucet handle comprising a handwheel having as its hub an open cup-shaped socket member, the socket opening being generally square in cross-section, the four walls being rounded to define a generally circular cross-section; superimposed on said square section and at least one generally U-shaped removable wire insert, the base of the U lying across the closed end of the

cup-shaped socket opening and the two legs of the U lying within opposite square corners of the socket opening.

6. A metal unitary faucet handle comprising a handwheel having as its hub an open cup-shaped socket member, the closed end of the cup being centrally perforated for insertion of a retaining screw, the open end of the cup having an interior cross-sectional shape having the form of a circle superimposed on a square, and two removable generally U-shaped wire inserts, the legs of the U fitting closely within opposite corners of the square interior, the base of the U lying across the closed end of the cup-shaped socket interior and being offset from the central perforation.

References Cited by the Examiner

UNITED STATES PATENTS

1,139,676	5/1915	Harrison et al.	74—552
1,475,654	11/1923	Shea	74—543

FRED C. MATTERN, JR., *Primary Examiner.*

MILTON KAUFMAN, *Examiner.*

J. D. PUFFER, *Assistant Examiner.*