

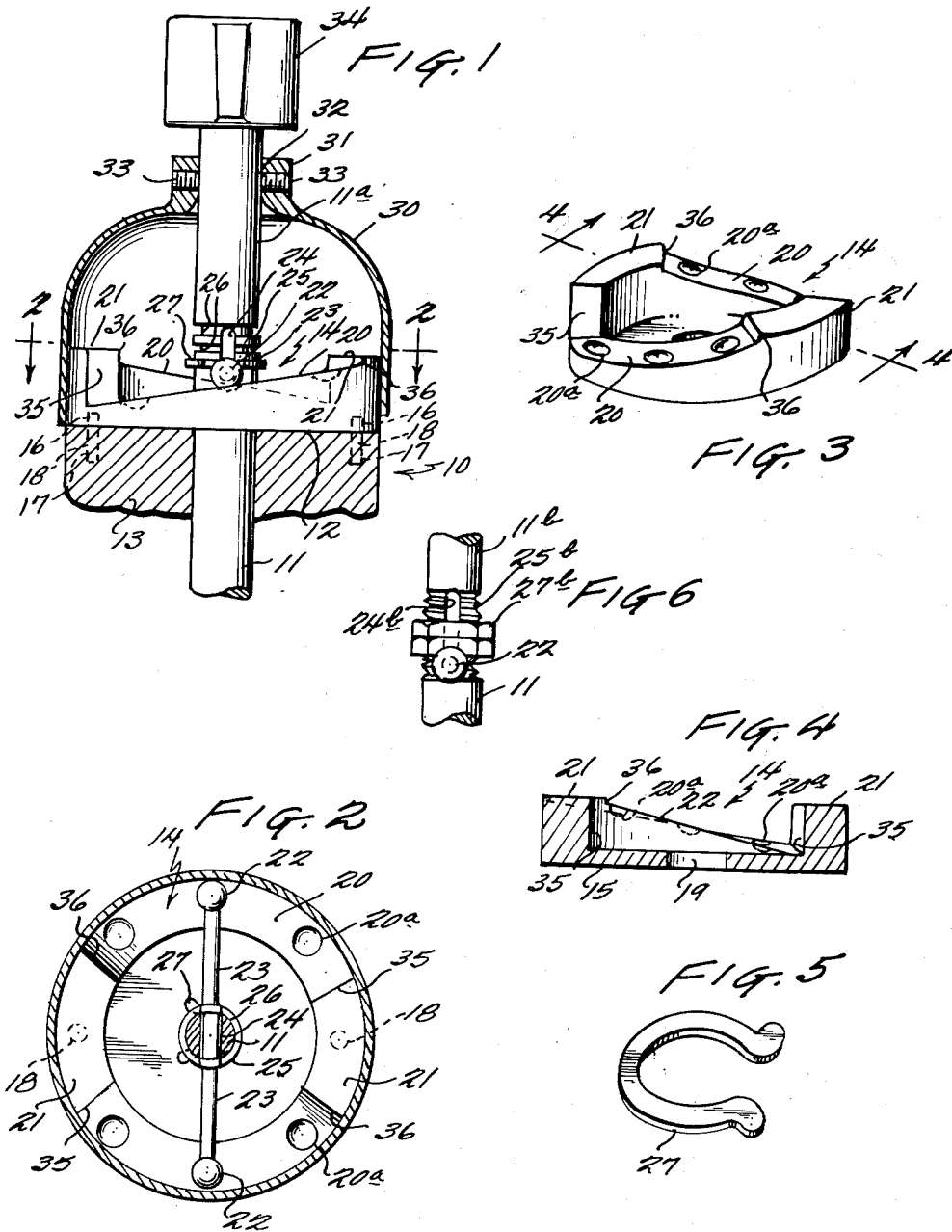
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DETENT FOR A SELF-CLOSING WATER FAUCET

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DETENT FOR A SELF-CLOSING WATER FAUCET

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This invention relates to a self-closing water faucet, and has as its primary object the provision of an improved self-closing faucet of this character provided with means for temporarily retaining the faucet in partially closed or open position.

An additional very important object of the invention is the provision of a faucet of this character provided with means for compensating for wear on the conventional washer employed with such a faucet so that the faucet will automatically come to completely closed position regardless of the comparative thickness of the closure washer.

A further object of the invention is the provision of a faucet of this nature wherein the handle of the faucet always stays in the same position when in off position, regardless of washer wear.

A further object of this invention is the provision of a device of this character which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture and assemble.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and shown in the accompanying drawings wherein:

FIGURE 1 is a vertical sectional view partially broken away and partially in elevation showing one embodiment of this inventive concept;

FIGURE 2 is a sectional view taken substantially along the line 2-2 of FIG. 1 as viewed in the direction indicated by the arrows;

FIGURE 3 is a perspective view of a constructional detail;

FIGURE 4 is a sectional view taken substantially along the line 4-4 of FIG. 3;

FIGURE 5 is a perspective view of a further constructional detail; and

FIGURE 6 is a fragmentary detail view of a modified form of construction.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Having reference now to the drawings in detail, there is generally indicated at 10 a fragment of a conventional self-closing faucet which includes a valve stem 11, to the lower end of which is attached a conventional valve which seats in a conventional valve seat, the assembly being provided with a spring which normally urges valve stem 11 and its associated valve downwardly into valve closing or engaging position.

Mounted on the upper surface 12 of valve housing 13 is a cam disk generally indicated at 14, which includes a flat lower surface 15 having openings 16 therein which are aligned with openings 17 in the top 12 of valve housing 13 and accommodate dowel pins 18, which preclude rotation of the disk 14. Disk 14 is provided with a central opening 19 through which the stem 11 extends, and has a pair of oppositely inclined cam surfaces 20, which terminate in high dwell portions 21. The cam surfaces 20 are provided at spaced intervals with recesses or detents 20a positioned closely adjacent the outer rim of disk 14. The detents 20a are adapted to be selectively engaged by a pair of oppositely disposed spherical members 22 which are carried on oppositely extending arms 23 of a transverse member which extends through a slot 24 in valve stem 11. The members 23 are thus vertically

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movable, but are normally biased to the uppermost portion of the slot by means of the valve spring previously mentioned.

Valve stem 11 is reduced adjacent the slot 24, and is provided with a plurality of spaced annular rings 25 which define grooves 26. A U-shaped spring clip 27 is adapted to be selectively seated in one of the grooves 26 to define the uppermost limit of travel of the cross arms 23 in the slot 24, the arrangement being such that with a new valve washer the spring clip 27 is positioned in the lowermost groove, and that as wear occurs on the washer the clip may be selectively moved to the next upper groove to compensate for such wear.

A shroud 30 including a neck portion 31 having a bore 32 therethrough is positioned about the upper portion 11a of stem 11 and is normally rotatable therewith being held in position by Allen head set screws 33 extended through oppositely disposed bores in the neck 31 which intersect the bore 32. A conventional operating handle 34 is fixedly secured to the top of upper portion 11a of stem 11.

In the modified form of construction shown in FIG. 6 the upper portion of shaft 11 is reduced as at 11b and threaded as at 25b adjacent slot 24b to accommodate lock nuts 27b which serve the same purpose and function in the same manner as spring clip 27.

In the use and operation of the device the handle is turned, the balls 22 ride to the highest portion of inclined surfaces 20 and engage in the uppermost detents 20a, retaining the water on for a brief period. As the conventional spring exerts pressure on the valve at the end of valve stem 11, the balls 22 ride downwardly along the inclined surfaces 20 and engage selectively the central and lowermost detents 20a. The limit of travel of the balls 22 and their associated arms 33 is effected by the abutment 35 dividing the lowermost portions of inclines 20 from the high dwells 21, while sharp shoulders 36 limit travel in the opposite direction.

From the foregoing it will now be seen that there is herein provided an improved self-closing water faucet provided with means for automatically compensating for washer wear, and which is automatically retained briefly in selected positions of adjustment, which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

1. In a self-closing water faucet, a housing, a spring biased valve stem extending vertically through said housing, a cam member seated on the top of said housing having an inclined surface provided with spaced detents, portions of said valve stem defining a vertically disposed slot therethrough, an arm extending transversely from said stem passing through said slot and being vertically slidable therein, ball members on said arm ridingly engaged with said inclined surface and engaged selectively in said detents, a handle operatively connected to said valve stem for rotating said valve stem, means defining a plurality of annular grooves on said valve stem surrounding said slot, and a spring clip selectively engaged in one of said grooves and extending across a portion of said slot above said arm to limit movement of said arm in said slot.

2. In a self-closing water faucet, a housing, a spring biased valve stem extending vertically through said housing, a cam member seated on the top of said housing hav-

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ing an inclined surface provided with spaced detents, portions of said valve stem defining a vertically disposed slot therethrough, an arm extending transversely from said stem passing through said slot and being vertically slidable therein, ball members on said arm ridingly engaged with said inclined surface and engaged selectively in said detents, a handle operatively connected to said valve stem for rotating said valve stem, a plurality of vertically spaced annular grooves on said valve stem surrounding said slot, a spring clip selectively engaged in one of said grooves and extending across a portion of said slot above said arm to limit movement of said arm in said slot, and a skirt fixedly secured to said valve stem and surrounding said cam member.

3. In a self-closing water faucet, a housing, a spring biased valve stem extending vertically through said housing, a cam member seated on the top of said housing having an inclined surface provided with spaced detents, portions of said valve stem defining a vertically disposed slot therethrough, an arm extending transversely from said stem passing through said slot and being vertically slidable therein, ball members on said arm ridingly engaged with said inclined surface and engaged selectively in said detents, a handle operatively connected to said valve stem for rotating said valve stem, a plurality of vertically spaced annular grooves on said valve stem surrounding said slot, a spring clip selectively engaged in one of said grooves and extending across a portion of said slot above

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said arm to limit movement of said arm in said slot, a skirt fixedly secured to said valve stem and surrounding said cam member, and means securing said cam member on the top of said housing against rotation.

4. In a self-closing water faucet, a housing, a spring biased valve stem extending vertically through said housing, a cam member seated on the top of said housing having an inclined surface provided with spaced detents, portions of said valve stem defining a vertically disposed slot therethrough, an arm extending transversely from said stem passing through said slot and being vertically slidable therein, ball members on said arm ridingly engaged with said inclined surface and engaged selectively in said detents, a handle operatively connected to said valve stem for rotating said valve stem, means defining threads on said stem surrounding said slot and lock nuts selectively rotated on said threads and extending across a portion of said slot above said arm to limit movement of said arm in said slot.

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