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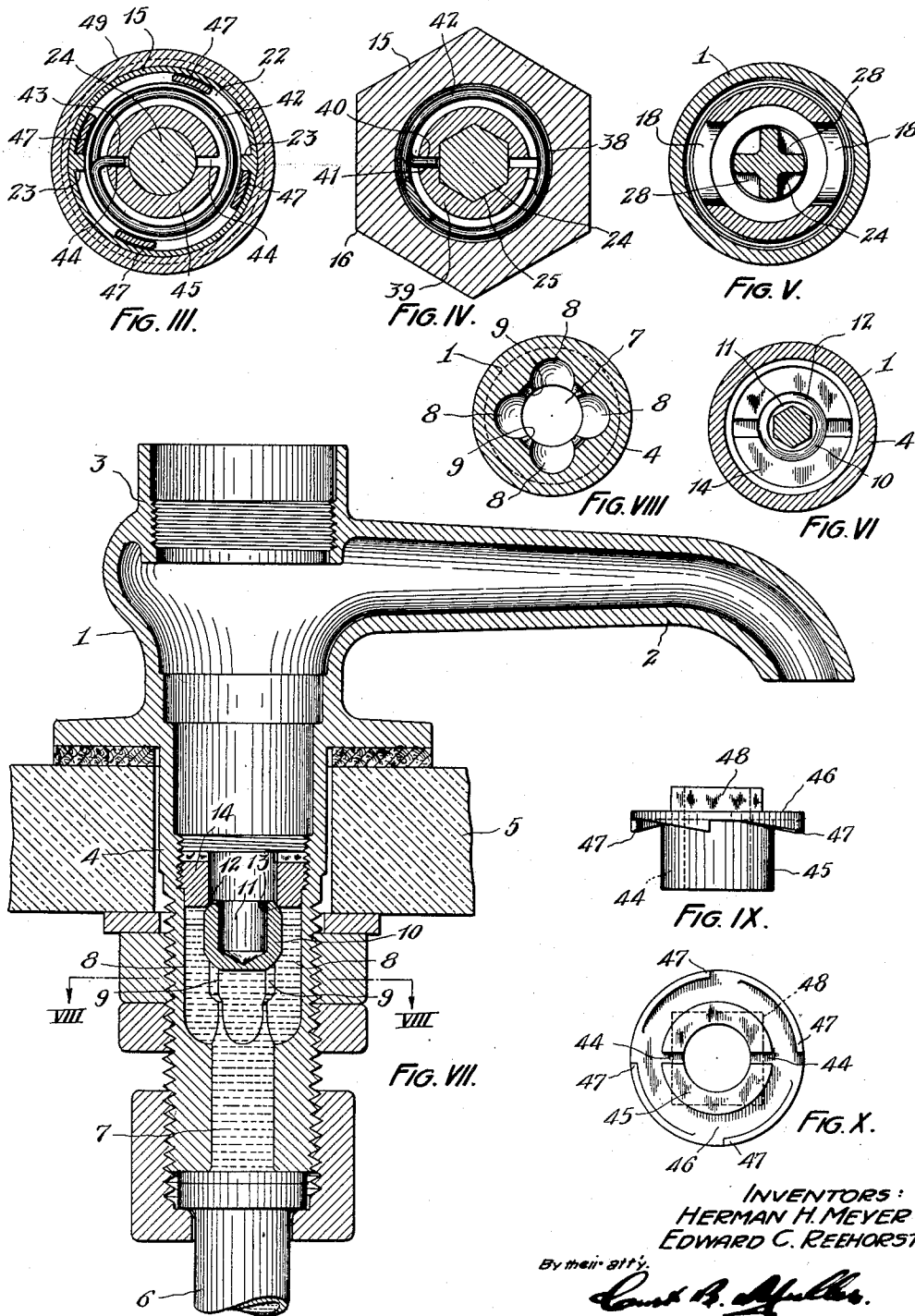
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1,614,079

FAUCET

Filed Jan. 13, 1923

3 Sheets-Sheet 2



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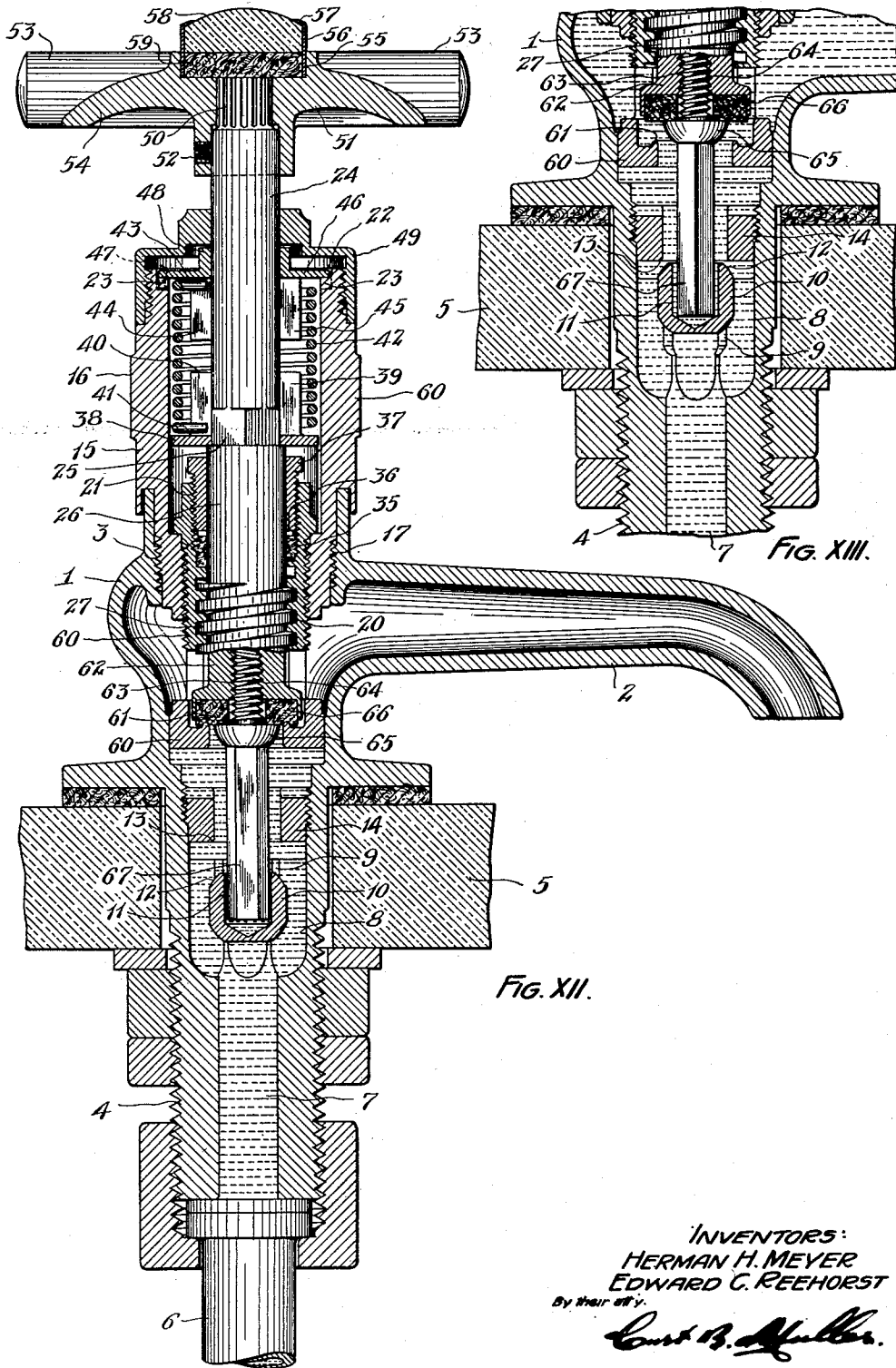
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FAUCET.

Application filed January 13, 1923. Serial No. 612,497.

Our invention pertains to a faucet and more particularly to several features of construction.

One object of our invention has been to design a durable faucet efficient in operation. A further object has been to provide a take-up for wear permitting a turning force to be progressively regulated and continually applied. Another object is the provision of a faucet construction wherein a faucet casing comprising a spout is separate from the valve mechanism, which, according to our invention, is detachably connected therewith so as to be quickly withdrawable in its entirety therefrom preparatory to replacement or repair. Still another object is the provision of an automatic pressure closing faucet casing valve adapted to close whenever the valve mechanism is detached as a unit. Other objects are to protect the take-up mechanism of the main valve mechanism against fluid immersion and therefore against corrosive action; the coil spring which the drawings exemplify and the tension of which may be adjusted with a step by step action being sealed against the water flow by suitable packing. Another object has been to avoid having the valve seat cut into the faucet casing thereby avoiding the necessity of a new faucet body whenever the seat is excessively worn or otherwise damaged. Our faucet body may be used for an indefinite period irrespective of the number of minor replacements in the valve mechanism.

Adverting to the drawings:

Figure I is a vertical axial section of a faucet embodying our invention.

Figure II is a top plan view of the handle.

Figure III is a section on line III—III of Figure I.

Figure IV is a section on line IV—IV of Figure I.

Figure V is a section on line V—V of Figure I.

Figure VI is a section on line VI—VI of Figure I.

Figure VII is a view similar to Figure I, but showing the valve casing removed and an auxiliary or emergency valve in its closed position.

Figure VIII is a section on line VIII—VIII of Figure VII.

Figure IX is a side elevation of one part of an adjusting device.

Figure X is a bottom plan view of Figure IX.

Figure XI is a fragmentary portion of Figure I showing the primary valve in its open position.

Figure XII is a view corresponding to Figure I showing a modified form in which the opening and closing actions of the valve are reversed, the valve being shown in its closed position.

Figure XIII is a fragmentary view of Figure XII showing the main valve in its open position.

A faucet casing 1 comprises a spout 2 and at its top is fashioned with an interiorly threaded flange 3 for the reception of the primary valve mechanism. The faucet casing includes a downward hollow extension 4 to be passed through a fixture 5 in the ordinary manner and adapted to be connected at its lower end in any suitable manner with a water pipe 6. Further description of such connection is deemed unnecessary because nothing is claimed in regard to it. The downward extension 4 is provided with a central duct 7 with which four circumferentially arranged passages 8 communicate as may be seen in Figure VIII. Above the upper or discharge ends of the passages 8 the walls of the casing are fashioned with radial guides 9 shown in Figures I and VII between and along which a hollow valve 10 is adapted to reciprocate. The valve 10 is provided with a bore 11 extending down from its top and the upper outer corner of the valve 10 is fashioned as a spherical surface 12 adapted to engage a seat 13 formed at the lower end of a hollow nut 14 in screw-threaded and therefore detachable connection with the extension 4. The upper surface of the nut 14 may be fashioned with a cross slot by means of which it may be turned upon insertion of a screw driver in a manner old and well known in many arts.

The casing 15 is an integral structure and according to my design, it is to be detachably connected with the faucet casing 1 and

will carry all of the primary valve parts so that all may be simultaneously removed by merely effecting a separation of the connection between the faucet casing 1 and the casing 15. Figure VII shows the faucet casing with the entire unitary valve unit removed preparatory to replacement or repair and showing the emergency valve 10 in its closing position which it will have automatically assumed upon the withdrawal of the casing 15 and parts carried thereby. The casing 15 is fashioned exteriorly with a hexagonal 16 to facilitate release of its threads 17 which are adapted to cooperate with the threads 3 in the faucet casing. Below the threads 17 the casing 15 is fashioned with diametrically opposite openings 18 which are adapted to be opposite the entrance to the spout 2 when the casing is connected with the faucet casing. The lower end of the casing 15 is fashioned exteriorly, according to the preferred form, with an annular valve seat 19. Interiorly, immediately above the openings 18 the casing 15 is fashioned with coarse thread grooves 20 and higher up with finer thread grooves 21 of larger diameter than the thread grooves 20 as will be observed in Figure I. The top of the casing 15 has its opening enlarged at 22 and is there fashioned with a pair of diametrically opposite lugs 23 the purpose of which will be hereinafter explained.

Adapted for assembly in the casing 15 is a mainly round valve operating stem 24 having near the middle a hexagonal section 25 and below the latter a slightly larger round section 26, and in turn below that threads 27 adapted to fit the thread grooves 20. Below the threads 27 the stem 24 is fashioned with four circumferential equi-spaced longitudinally recesses 28 purposed to enlarge the water passage to the openings 18 and the spout 2. Below the recesses 28 the stem 24 is threaded at 29, such threaded portion being of somewhat smaller diameter to form a shoulder 30, while the lower extremity 31 of the stem 24 is of a still smaller diameter and is adapted to project through the nut 14 and adapted further to project into the bore 11 of the valve 10. As will be readily understood, the projection of the extremity 31 into the bore 11 will act to limit the upward movement of the valve 10 to prevent its engagement with the seat 13 during the ordinary use of the faucet valve, which embodies the usual construction of a gasket 32 of some yielding composition and which surrounds the threaded portion 29 of the stem so as to abut the shoulder 30. A flanged nut 33 partially encloses the gasket 32 and together with a lock nut 34 serves to hold the gasket 32 against the shoulder 30 and to support it when it is drawn upwardly to its closing position against the seat 19. It is

to be noticed that the closing movement of the valve is in the same direction as the water flow.

Owing to the bore of the casing 15 being somewhat larger opposite its threads 21 than just below where the thread grooves 20 commence, space is provided between the casing 15 and the section 26 of the stem for the reception of packing 35 covered by a washer 36 and compressed by a nut 37. This packing furnishes a protection against moisture of the spring take-up mechanism to be next described. Fitted upon the hexagonal section 25 of the stem so as to be incapable of turning movement relatively to the stem is a disk 38 provided with an upwardly projecting annular flange 39 of less diameter than the lower rim of the disk. The flange 39 is provided at one place with a slot 40 for the accommodation of an inwardly bent lower extremity 41 of a coiled spring 42 which encloses the flange 39 and rests upon the disk 38. The upper extremity of the spring 42 is similarly bent inwardly at 43 to occupy either one of a pair of diametrically opposite slots 44 formed in the depending flange 45 of an adjusting collar shown in detail in Figures IX and X, where it will be seen to be additionally formed intermediately of its ends with an annular flange 46 fashioned on its under side as a circular ratchet having teeth 47. The upper end of the collar is formed as an exteriorly squared boss 48. As will be evident upon inspection of Figure I the depending flange 45 is enveloped by the upper end of the spring. The application of a suitable wrench to the boss 48 will permit effecting a turning movement acting to twist the spring 42, the teeth 47 of the ratchet in the mean time riding idly over the lugs 23 which serve the function of fixed pawls by successively slipping behind the shoulders in the teeth 47. A cap 49, through which the stem 24 likewise projects, is in screw-threaded engagement with the upper edge of the casing 15 and serves to prevent the upward movement of the adjusting collar and thereby hold the parts in adjusted position. By means of the mechanism just described, when the cap 49 is out of the way, the tension of the spring 42 may be increased with a step by step adjustment thereby maintaining or if desired increasing the torsional force constantly applied to the stem 24 in a direction tending to move it upwardly so as to maintain the gasket 32 against the seat 19.

The upper end of the stem 24 is formed with circumferentially arranged gashes 50 upon which a handle 51 is mounted and fastened by means of a set screw 52. Our handle is believed to present a new and ornamental design including a plurality, in this instance for, equi-spaced cylindrical extrem-

itics 53 connected by an umbrella shaped web 54 as is clearly illustrated in Figure I and II. The central top portion of the handle is provided with an annular recess 55 in which is snugly fitted a collar 56 with its upper end formed as an angular flange 57 against which the top surface of an index 58 will seat to be yieldingly held thereagainst by interposed packing 59. We consider this an improved manner of detachably carrying a handle index now often of porcelain and therefore occasionally broken.

In operation, a turning of the handle to the left from the position shown in Figure I will act to move the stem 24 downwardly to force the gasket 32 against the water pressure from its seat 19 or to its open position shown in Figure XI, thereby permitting the water to flow past the section 28 of the stem through the openings 18 and out through the spout 2. It is to be noticed also in Figure XI that when the stem 24 has been so moved downwardly its lower extremity by its engagement with the emergency valve 10 at the bottom of the bore 11 will hold the emergency valve in its open position out of contact with the seat 13. When, on the other hand, the entire valve casing structure is withdrawn from the faucet 1 as shown in Figure VII the valve 10 is immediately moved upwardly by the water pressure to its closing position which it is shown to occupy in Figure VII.

The modification shown in Figures XII and XIII pertaining to a structure differing only in that the opening and closing movements of the main valve are reversed, the closing movement being here against the water pressure. A casing 60 has an interior seat 61 and in threaded connection with it one part of a stem 62 provided at its lower end with a tapped opening 63 in which is removably fitted the threaded extremity 64 of a complementary stem part including a flange 65 for holding in place a gasket 66 adapted to be brought into engagement with the seat 61. The lower extremity 67 of the lower stem part is similarly adapted to enter the bore 11 of the emergency valve. The alternative position of this modified construction is shown in Figure XIII.

We claim:—

1. The combination of a casing provided with a valve seat, a valve stem in screw-threaded engagement with said casing and carrying a valve, a spring adapted to exert a torsional force on said stem and means located interiorly of said casing for winding said spring.

2. In a faucet, the combination of a casing with a valve seat, a rotatable valve stem connected with said casing and carrying a valve adapted to engage said seat, a spring for exerting a turning force on said stem and tending to close the valve, and mecha-

nism including a part connected with said spring and adjustably connected with said casing for adjusting the tension of the spring.

3. In a faucet, the combination of a casing fashioned near its top with a lug and also fashioned with a valve seat, a valve stem in screw-threaded connection with said casing and carrying a valve adapted to engage said seat, said stem being fashioned with an angular section, a disk fitted to said angular section, a collar loose about said stem and fashioned with ratchet teeth adapted to cooperate with said lug, a coiled spring having its ends connected with said disk and collar respectively and a cap attached to said casing for holding the parts in adjusted position.

4. In a faucet, the combination of a casing fashioned with a valve seat, a valve stem rotatably connected with said casing and carrying a valve adapted to engage said seat, said stem being fashioned with an angular section, a coiled spring surrounding said stem, and a pair of parts, one fitted to said angular section and the other loose upon said stem, said parts being connected with opposite ends of said spring, said casing and one of said parts being provided with engageable projections adapted to maintain a tension in said spring.

5. In a faucet, the combination of a casing, a valve stem rotatably connected with the casing and a spring connected with the stem and having a circularly adjustable connection with the casing.

6. In a faucet, the combination of a casing, a valve stem rotatably connected with said casing and mechanism including a coil spring, said mechanism encircling and connected with said stem and having a turnably adjustable connection with the casing.

7. In a faucet, the combination of a casing having lugs, a rotatable valve operating member, a collar loosely mounted on said member and having ratchet teeth adapted to cooperate with said lugs, means including a spring connecting the member and the collar and a cap for holding the parts in operative position.

8. In a faucet construction, the combination of a casing provided with a valve seat, a valve stem rotatably connected with said casing and carrying a valve adapted to cooperate with said seat, and a coil spring encircling and connected with said stem, said spring furthermore having a circularly adjustable connection with said casing.

9. In a faucet construction, the combination of a faucet casing, a valve casing adapted for insertion into and attachment to said faucet casing, said valve casing being provided with a valve seat, a valve stem rotatably connected with said casing and carrying a valve adapted to cooperate with said seat, a coil spring encircling and connected with

said stem and having a circularly adjustable casing and stem are detached from said connection with said casing, said faucet faucet casing.
casing being fashioned with a valve seat, and Signed by us, this 16th day of December, 1922.
a fluid pressure-operated valve arranged in
the normal operation of the valve to be held
off of said last mentioned seat by said stem
and to be seated thereagainst when the valve

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