

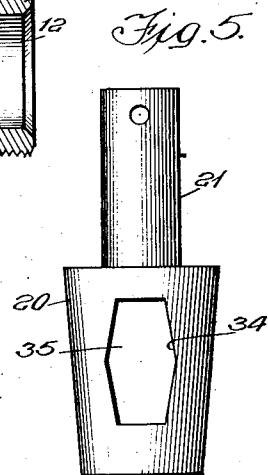
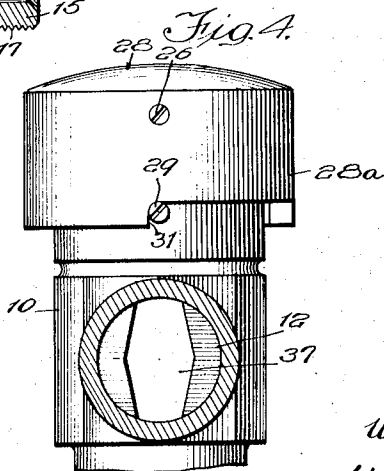
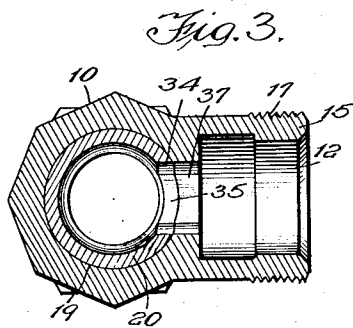
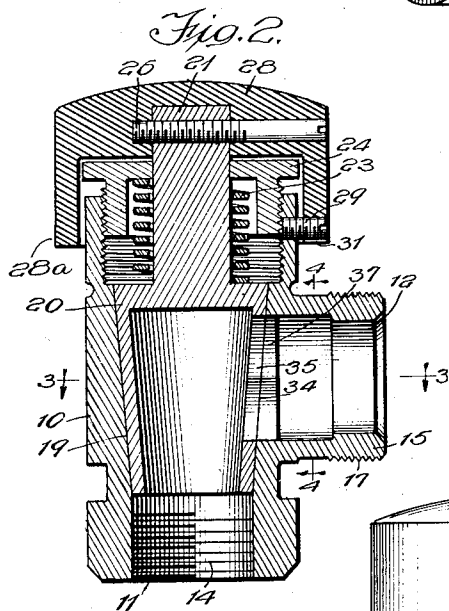
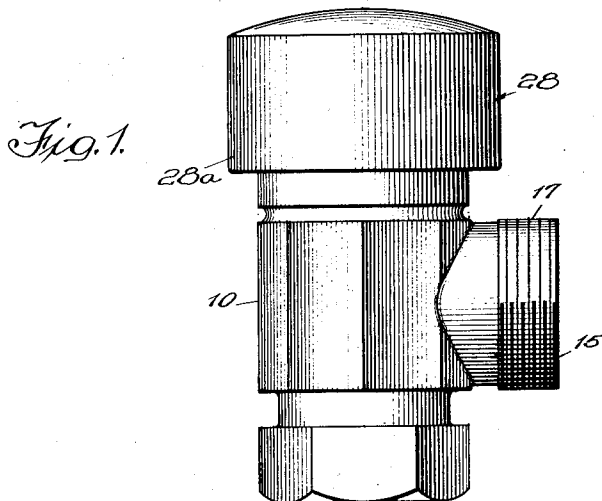
June 26, 1928.

1,674,743

W. J. RUDOLPH

VALVE

Filed Jan. 30, 1926



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UNITED STATES PATENT OFFICE.

WALTER J. RUDOLPH, OF CHICAGO, ILLINOIS, ASSIGNOR TO JAS. P. MARSH & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

VALVE.

Application filed January 30, 1926. Serial No. 84,889.

My invention relates to valves and has among its other objects the production of devices of the kind described, which are simple in construction, compact, convenient, durable, efficient and satisfactory for use wherever found applicable.

A particular object of the invention is to provide an improved valve for regulating the flow of fluids and vapors, the valve being especially adapted for use in heating systems.

One form of the invention is embodied in a valve particularly adapted to be employed in steam or hot water heating systems, the valve being employed to control the flow of steam or hot water into the radiators usually forming parts of such systems. The valve is preferably so constructed that a quarter turn thereof will move it from its fully closed position to its fully open position, and the amount of steam or hot water entering a radiator may be varied by bringing the valve into an intermediate position.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawing, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a side elevation of a valve device embodying the invention;

Fig. 2 is a central section taken through the improved valve device;

Fig. 3 is a section taken on line 3—3 of Fig. 2;

Fig. 4 is a section taken on line 4—4 of Fig. 2; and

Fig. 5 is an elevation of the movable valve part.

Referring to the drawing, wherein I have shown a preferred form of the invention embodied in a valve device adapted to be employed in steam or hot water heating systems, the reference character 10 designates generally the casing of the valve, the casing being preferably formed with openings 11 and 12, which may be termed the inlet opening and the discharge opening, respectively. The inlet opening 11 is preferably screw-

threaded, as at 14, so that it may be readily connected to a steam or hot water pipe, the discharge opening 12 being formed in an extension 15 which is screw-threaded, as at 17, to permit the casing to be coupled to a radiator or the like.

Formed within the casing 10 is a tapered seat 19 which accommodates a correspondingly tapered valve 20 having a valve stem. As best shown in Fig. 2, the valve 20 is hollow and at its lower and smaller end communicates with the inlet opening 11. The valve is rotatably journaled in the tapered seat 19 and is yieldably held in engagement with the seat by a compression spring 23 interposed between the valve and a closure member or cap 24 screw-threaded into the upper end of the casing. Obviously, the cap 24 may be manipulated to vary the tension of the spring 23. Secured to the upper end of the valve stem 21 by a set screw or pin 26 is a handle or knob 28, which is preferably substantially cylindrical in form, the knob preferably comprising a depending flange 28^a which conceals the cap 24. A set screw 29 screw-threaded into the casing 10 may be employed to lock the cap 24 in a plurality of adjusted positions relative to the casing so that the tension of the spring 23 will not vary after the valve has been adjusted. The set screw 29 projects into a slot 31 formed in the lower end of the knob 28, the slot 31 being of such length that the knob 28 may be angularly displaced through 90 degrees. The purpose of this construction will presently appear.

Referring for the present to Figs. 2, 3 and 5, the valve 20 is provided with a lateral opening 34 which is widened intermediate its upper and lower ends, as indicated at 35. The opening 34 is adapted to register with an identically shaped opening 37 formed in the casing 10, the construction being such that the valve 20 may be adjusted relative to the aperture 37 to have a very small amount of steam or hot water pass through the valve and through the apertures 34 and 37 to the discharge opening 12. The apertures 34 and 37 are so proportioned that the valve 20 may be brought to its closed position wherein the aperture 34 does not register with the aperture 37 by displacing it through an angle of 90 degrees. It is for this purpose that the slot 31 is formed in the knob 28, the slot being so arranged that one

of its ends will engage the set screw 29 when the valve 20 is in its closed position and that the other of its ends will engage the set screw when the valve 20 is in its open position.

From the foregoing disclosure, it is apparent that valves embodying my invention may be manipulated quickly and easily. It will be noted that the improved valve comprises a relatively small number of parts of simple construction. In practice, I have found valves embodying the invention to be particularly advantageous in that the movable valve portions do not tend to freeze to their seats. The springs 23 may be adjusted to have the knobs or handles 28 turn freely but, at the same time, to hold the valves 20 firmly in their seats. If desired, suitable markings may be provided upon the knobs or valve casings to indicate the extent the valve is opened.

While valves embodying my invention are preferably constructed so that a quarter turn of the knobs will bring them from their fully open positions to their fully closed positions, it is obvious that in some instances it may be preferable to so construct them that the knobs will be turned through greater angles. In the illustrated embodiment of the invention, the valve 20 is rotatably journaled in the tapered seat 19, but in other embodiments of the invention I may prefer to provide substantially cylindrical valves as it is unnecessary to provide tapered seats when the pressure is relatively low or when the liquid being handled is relatively viscous.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construc-

tion, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. A device of the kind described comprising a casing having a tapered seat therein, the casing having an inlet opening and having a discharge outlet formed with restricted end portions, a hollow valve rotatably journaled in the seat and having openings corresponding to said first-mentioned openings, a closure member for the casing adjustably mounted therein, a spring interposed between the closure member and the valve for holding the valve in the seat, a handle for rotating the valve, and a single means for locking the closure member in an adjusted position and for limiting angular displacement of the handle.

2. A device of the kind described comprising a casing having a tapered seat therein, said casing having an inlet opening and a discharge outlet, a hollow valve rotatably journaled in the seat and having openings corresponding to said first-mentioned openings, a closure member for the casing adjustably mounted therein, a spring interposed between the closure member and the valve for holding the valve in the seat, a knob arranged over the closure member having an annular flange extending about the closed end of the casing, said flange having a slot, and a set screw threaded through the casing and engaging the closure member to retain the same in an adjusted position, the outer end of the set screw arranged in said slot for limiting the rotative movement of said knob.

In testimony whereof, I have hereunto signed my name.

WALTER J. RUDOLPH.