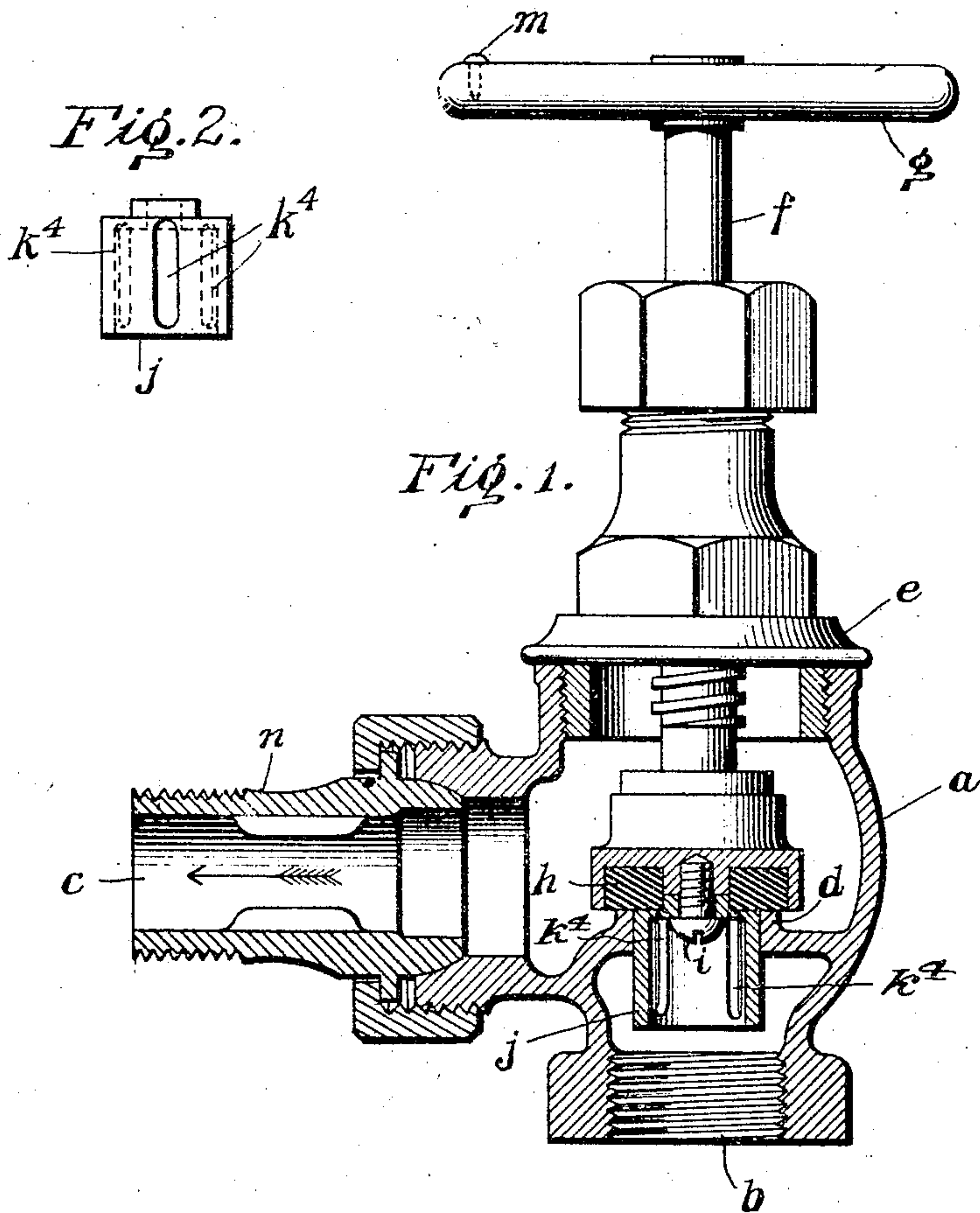


J. A. SERRELL.  
 RADIATOR VALVE AND ATTACHMENT THEREFOR.  
 APPLICATION FILED AUG. 2, 1906.

991,550.

Patented May 9, 1911.



WITNESSES:

Dan'l Webster, Jr.  
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BY

Must [Signature] Attorney



# UNITED STATES PATENT OFFICE.

JOHN A. SERRELL, OF NORTH PLAINFIELD, NEW JERSEY, ASSIGNOR TO WARREN WEBSTER & COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

RADIATOR-VALVE AND ATTACHMENT THEREFOR.

991,550.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed August 2, 1906. Serial No. 328,889.

*To all whom it may concern:*

Be it known that I, JOHN A. SERRELL, of North Plainfield, Union county, State of New Jersey, have invented an Improvement in Radiator-Valves and Attachments Therefor, of which the following is a specification.

With the ordinary hand controlled radiator valves, it is very difficult for the average person to make the proper adjustment to admit only the volume of steam or heating medium required to produce the desired temperature. In a properly operated heating system, only so much steam or heating medium should be admitted to the radiator as is necessary to give off the amount of heat required to maintain the desired temperature in the apartment. The amount of steam required varies with changes in the weather conditions, and it should be possible not only to provide a very minute opening when desired but also to obtain very small variations in the size of the opening, and the valve should also have capacity for being tightly closed to completely shut off the supply and to be fully opened when a full supply is required.

With the ordinary hand-valves having a valve piece which controls the size of the thoroughfare by its movements to and from a seat, it is very difficult to obtain nice adjustments, since the area of the opening is the annular space between the valve-piece and its seat, and small movements of the valve-stem will produce substantial movements in the valve-piece and corresponding variations in the area of the opening.

It is the object of my invention to enable an ordinary hand controlled stop or seat valve to be regulated with ease by the average person not only to tightly close or fully open the valve, but also to produce the desired small variations in the area of the opening to properly control the volume of steam or heating medium admitted and the resulting temperature.

It is also an object of my invention to enable an ordinary hand valve, such as is now commonly employed, to be transformed into a valve having the capacity for producing this minute adjustment, by the attachment of an auxiliary part or piece, and without

otherwise altering or changing the structure or parts of the valve.

To apply my improvements to an existing heating system, it is only necessary to detach the valve caps with their stems and valve pieces and attach the auxiliary pieces to the existing valve pieces.

In the drawings; Figure 1 is a vertical section of a valve embodying the invention with the cap and stem in elevation; and Fig. 2 is a side elevation of the detached auxiliary valve-piece.

*a* is the valve-body, which may be of any convenient form, and has the inlet *b*, outlet *c* and the thoroughfare or passage *d*.

*e* is the usual cap or bonnet screwed into the open top of the valve-body and having internal threads engaged by the threaded stem *f*, which is operated by the hand-wheel *g*.

*h* is the usual valve-piece carried by the stem *f* which controls the thoroughfare *d*.

So far as described the valve is of the usual construction, such as is employed in radiator supply valves, in which the area of the thoroughfare and the supply of steam are controlled by the adjustment of the valve-piece *h* by the stem *f* and its wheel *g*. In such valves, however, it is difficult to obtain a minute opening of the thoroughfare or to regulate its area with precision. When the valve piece moves from its seat, the opening afforded is the annular space between the seat and valve-piece, and a very small movement of the stem, particularly with the ordinary stems having threads of a coarse pitch, will produce a very substantial variation in the area of the opening. To obviate this and to enable the area of the thoroughfare to be adjusted with great precision, I employ the piece *j*. As shown this is in the form of a small inverted cup or hollow piston, secured at its bottom to the valve piece, as by the screw *i*, and fitting in the opening or thoroughfare *d*. This piece has elongated perforations *k* extending at the top to the level of the contact surface of the main valve-piece *h*. It follows that the instant the main valve-piece is raised or "cracked" to the least extent, the upper ends of the slots or perforations *k*



will be exposed, and a small opening will be provided for the passage of steam. By this means a very delicate adjustment is provided, which would not be possible if the main valve must be raised to more or less extent before an opening is afforded. As the main-valve is raised higher more of the length of the slots  $k^4$  will be opened, and a greater passage will be obtained. The size of the steam passage may thus be regulated by the adjustment of the main valve, while the closing of the valve is effected in the usual manner by the seating of the main valve-piece on its seat. While the valve thus has the advantages of the delicate adjustment afforded by the piece  $j$ , it also preserves the functions of the ordinary main valve-piece  $h$  in fully closing the valve and in opening it to a very small extent as soon as it is "cracked," this result being due to the extension of the slots  $k^4$  at the top to the level of the contact face of the main valve-piece.

Suitable means may be employed to indicate the extent of movement and the amount of opening. A simple device for this purpose is the screw or indicating pin  $m$  on the hand wheel  $g$ , which is so placed that when the valve is closed it will be above the union  $n$ , and the circular angular position of this pin with reference to the union  $n$  will indicate the extent of movement of the stem and the adjustment of the valve.

The piece  $j$  may be separate and detachable, and may be easily applied to any ordinary hand valve by simply attaching it to the ordinary valve-piece; it may however be made integral with the valve-piece, if desired.

While I have shown and particularly described the invention as applied to a supply valve for controlling the supply of steam or heating medium to the radiator, it may

also be applied to a return valve for controlling the discharge of the heating medium. 45

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

1. A valve consisting of a body having an inlet and outlet, a thoroughfare and a seat about said thoroughfare, the main valve-piece adapted to fit upon the seat and close the thoroughfare, the stem for operating said valve-piece, and the auxiliary valve-piece consisting of a hollow piston having elongated openings in its side walls extending at the top to the contact surface of the main valve-piece, said piston being secured to the bottom of the main valve piece and extending through the thoroughfare and adapted to afford a small variable passage-way between the inlet and outlet when the main valve piece is raised. 50 55 60

2. A valve consisting of a body having an inlet and outlet, a thoroughfare and a seat about said thoroughfare, the main valve-piece adapted to fit upon the seat and close the thoroughfare, the stem for operating said valve piece, the auxiliary valve-piece consisting of a hollow piston having elongated openings in its side walls extending at the top to the contact surface of the main valve-piece, said piston being secured to the bottom of the main valve-piece and extending through the thoroughfare and adapted to afford a small variable passageway between the inlet and outlet when the main valve-piece is raised, and means for detachably securing said auxiliary valve-piece to the main valve-piece. 65 70 75

In testimony of which invention, I have hereunto set my hand. 80

JOHN A. SERRELL.

Witnesses:

ERNEST HOWARD HUNTER,  
R. M. KELLY.