

J. L. FITTS.  
 REGULATING VALVE FOR STEAM HEATING SYSTEMS.  
 APPLICATION FILED DEC. 14, 1907.

917,035.

Patented Apr. 6, 1909.

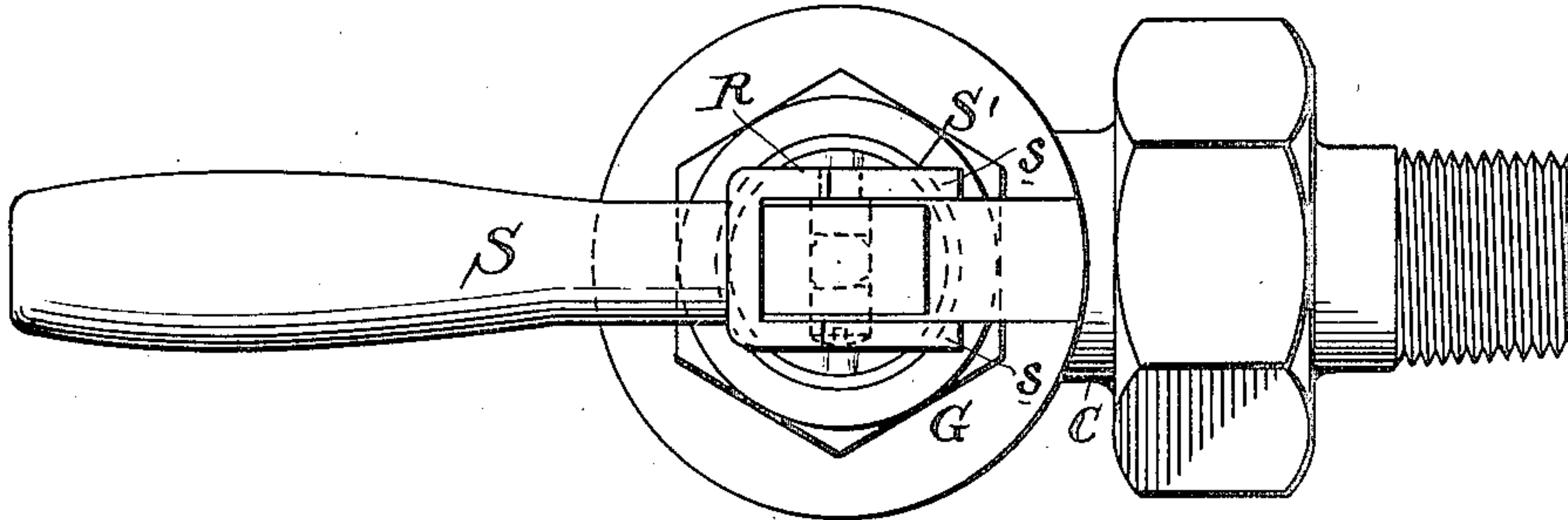


FIG. 1

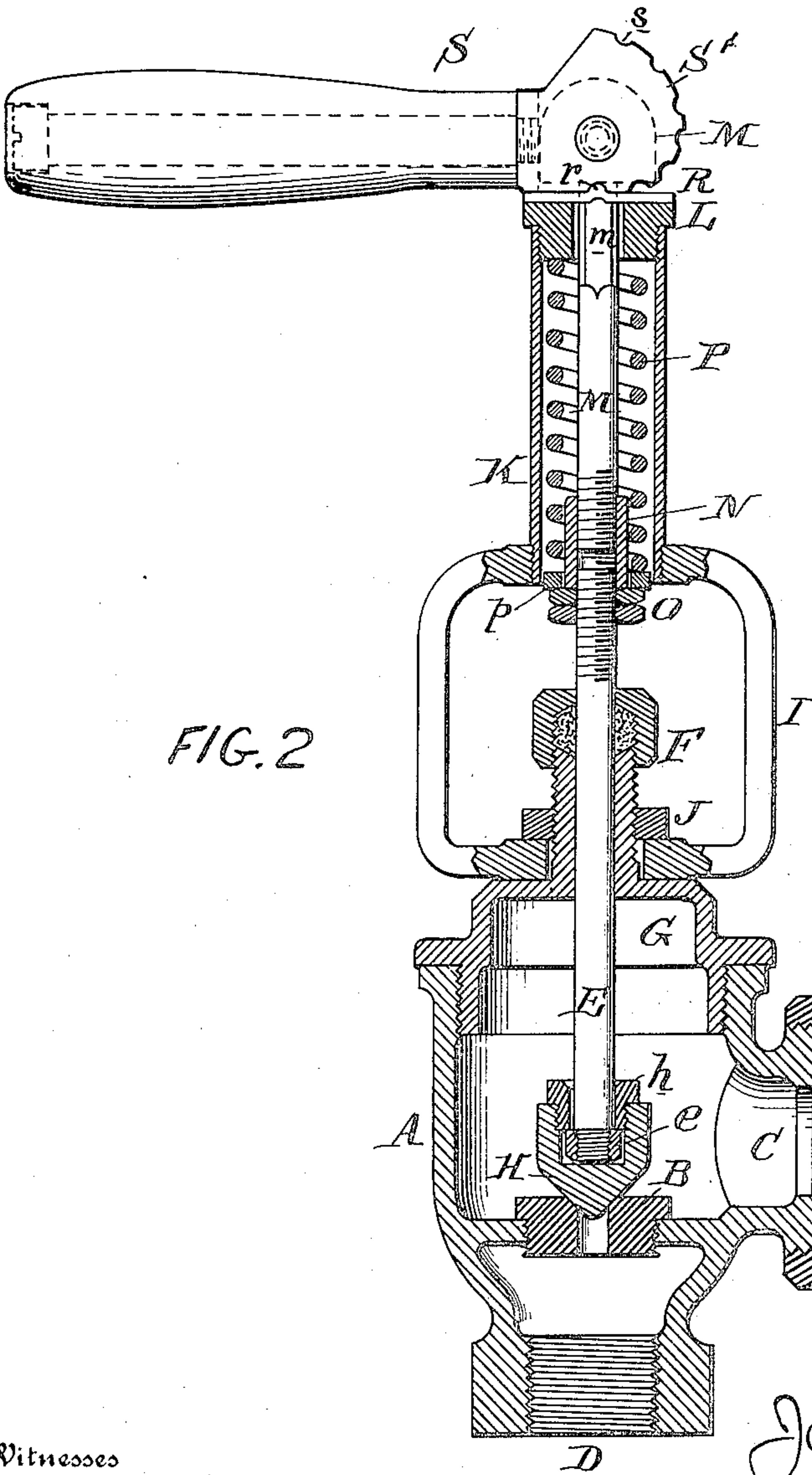


FIG. 2

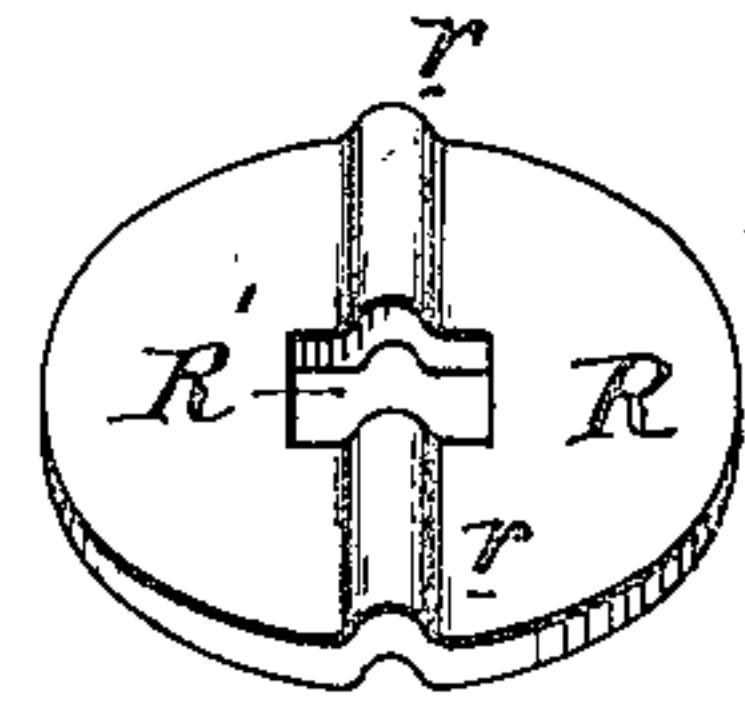


FIG. 3

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By

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# UNITED STATES PATENT OFFICE.

JAMES LOGAN FITTS, OF MERCHANTVILLE, NEW JERSEY, ASSIGNOR TO WARREN WEBSTER & COMPANY, A CORPORATION OF NEW JERSEY.

## REGULATING-VALVE FOR STEAM-HEATING SYSTEMS.

No. 917,035.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed December 14, 1907. Serial No. 406,414.

*To all whom it may concern:*

Be it known that I, JAMES LOGAN FITTS, resident of the city of Merchantville, county of Camden, and State of New Jersey, have invented an Improvement in Regulating-Valves for Steam-Heating Systems, of which the following is a specification.

My invention has reference to regulating valves for steam heating systems and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

In steam heating systems an ordinary globe valve is usually employed to control the steam entering the radiator, but experience has shown that such valves are very unsatisfactory because of the difficulty of regulating the admission of steam to suit the conditions required in the room, the result being that the temperature is either too hot or too cold and the occupant is required to be constantly manipulating the valve to secure anything approximating constant temperature in the room.

My invention has for its object the construction of a hand-controlled valve adapted for steam heated radiators or coils which have capacity for accurate adjustment of the valve with respect to its seat and which will indicate from the outside at a glance the degree or condition of adjustment whereby the occupant of the room may easily and accurately adjust the valve to suit his or her requirements as to temperature conditions.

My invention consists of the valve body and seat combined with the valve piece, a stem for moving the valve piece extending outside of the body, a spring arranged outside of the valve body to close the valve piece upon the valve seat, and a pivoted handle for lifting the stem and valve piece commensurately with the arc through which the handle is moved.

My invention also comprehends many details of construction which, together with the features above described, will be better understood by reference to the drawings, in which:—

Figure 1 is a plan view of a valve embodying my invention; Fig. 2 is a sectional eleva-

tion of the same; and Fig. 3 is a perspective view of the locking washer.

A is the valve body; B is the valve seat; C is the outlet above the valve seat; and D is the inlet below the valve seat. As shown, the valve seat is shown as of a removable bushing screwed into the transverse diaphragm of the body so that it may be replaced when worn or defective from any cause, but more especially for making changes in adjusting the valve to suit the large variation in the heating surfaces to which the same valve body and connections may be attached.

H is the valve piece and is shown as formed with a conical seating surface.

E is the valve stem and has at its bottom a head *e* which fits down into a socket in the valve piece and is locked therein by a bushing *h* which is screwed into the valve piece. In this way, the valve piece is removably held to the stem so as to be replaced when necessary and may have sufficient looseness to automatically adjust itself to its seat to compensate for any slight defect in the alinement of the parts. The stem E extends upward through the stuffing box F of the bonnet G which is screwed tightly upon the top of the body A.

I is a yoke clamped upon the bonnet G by nut J and supporting at its top a tubular guide K having cap L.

The stem E is in alinement with an upper stem M and to which it is adjustably secured by a screw coupling sleeve N. This sleeve is screwed fast to the stem M and adjustably receives the stem E which is locked in adjusted position by the lock nuts O. A washer *p* rests upon the nuts O and surrounds the sleeve and also is guided within the tubular guide K. A coil spring P is arranged within the tubular guide K and surrounds the stem M. This spring seats against the under-side of the cap L and presses down on the washer *p* to force the valve piece down upon its seat when the stem is released.

The top of the stem M is provided with a head M' and is made square as at *m* immediately below the head. Hinged to the head M' is the bifurcated end S' of the adjusting handle S. The bifurcated end S' is made



cam or eccentric shaped upon its peripheral edges, and these are provided with notches *s* arranged at intervals apart. A locking washer *R* is interposed between the cap *L* and the bifurcated end *S'* of the handle and is provided with a square hole *R'* through which the square end *m* of the stem *M* passes. This washer also has the locking lugs *r r* which engage the notches *s* in the end *S'* of the handle as shown in Fig. 2. By this mechanism, the valve piece is movable to and from its seat but is also limited in its movement in the direction of the seat, and where different sized orifices in the valve seat are required to suit the duty of the radiator then the valve seat may be replaced by another of proper thickness and size of orifice.

The operation will now be understood. The valve being in the condition shown in Fig. 2, the steam is shut off by the action of the spring *P*. If now the handle *S* is slightly raised, the end *S'* will be rocked until the next set of notches *s* are locked upon the lugs *r* of the washer and in this position the valve piece will be slightly raised. By further adjustment of the handle, a greater opening of the valve is secured. By this construction, accurate adjustment of the valve may be had and the extent of the adjustment will be indicated by the position of the handle *S* in respect to the arc which it is adapted to traverse between the closed and full open positions of the valve piece.

By means of this valve, the volume of heating medium passing into the radiator is regulated and the temperature of the radiator may be modulated to suit the requirements and the most ordinary intelligence is alone necessary to secure proper adjustment of the valve to obtain such results.

The yoke *I* is open so as to expose the stuffing box *F* whereby it may be repacked should it leak. The spring *P* is arranged at a distance from the heat and outside of the valve body, whereby it maintains its temper or elasticity and also permits of a spring of greater length than could be employed within the body.

The washer is preferably made of stamped sheet metal as is also the bifurcated end of the handle. The square hole *R'* keeps the lugs *r* of the washer in proper position under the notched edges of the bifurcated end of the handle at all times during its adjustment. The handle *S*, stem and washer may be adjusted axially to any position to suit the location of the radiator or valve, and will have the same capacity for adjustment in all positions.

I have shown my invention in the form I have found most excellently adapted for the commercial use thereof, and while I prefer the same, the details thereof may be modified

without departing from the spirit of the invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A valve for steam control, consisting of the valve body and its valve seat, combined with a valve piece, an operating stem for the valve piece, a constantly acting spring outside of the valve body to continually tend to move the stem and valve piece toward the seat, and a pivoted handle having a cam shaped part for imparting a reciprocating adjustment of the stem and lifting it against the pressure of the spring for opening the valve and lowering it, assisted by the spring for closing the valve.

2. A valve for steam control, consisting of the valve body and its valve seat, combined with a valve piece, an operating stem for the valve piece, a yoke carried by the valve body and provided with a tubular case, a spring outside of the valve body to move the stem and valve piece arranged within the tubular case, and a pivoted handle having a cam shaped part arranged above the tubular case for imparting a reciprocating adjustment of the stem and coöperating with the spring for opening or closing the valve.

3. A valve for steam control, consisting of the valve body and its valve seat, combined with a valve piece, an operating stem for the valve piece, a yoke carried by the valve body and provided with a tubular case, a spring outside of the valve body to move the stem and valve piece arranged within the tubular case, a locking washer having lugs arranged upon the top of the tubular case, and a pivoted handle having a cam shaped part arranged above the tubular case and provided with notches coacting with the lugs on the locking washer for imparting a reciprocating adjustment of the stem and coöperating with the spring for opening or closing the valve.

4. A valve for steam control, consisting of the valve body and its valve seat, combined with a valve piece, an operating rigid stem for the valve piece fixedly adjustable as to its total length, a spring outside of the valve body to move the stem and valve piece, and a handle having a cam shaped part hinged to the outer end of the operating stem and co-operating with the valve body for imparting a reciprocating adjustment of the stem and retaining the valve piece in any of a plurality of open positions against the action of the spring.

5. A valve for steam control which consists of a valve body having a valve seat, combined with a valve piece, a valve stem extending upward through the bonnet of the valve body, a stuffing box for the valve stem, an open frame secured to the bonnet of the valve body and provided with a cap at its



top, an upper stem adjustably secured to the valve stem to form a compound stem rigid as to its length, a spring surrounding the upper stem and pressing against the cap and constantly acting to depress the valve stem, and means above the cap to adjust the upper stem longitudinally and locking it in different extreme and intermediate positions of adjustment.

10 6. A valve for steam control which consists of a valve body having a valve seat combined with a valve piece, a valve stem extending upward through the bonnet of the valve body, a stuffing box for the valve stem,  
15 an open yoke secured to the bonnet of the valve and provided with a cap at its top, a handle hinged to the valve stem above the cap and having a cam action upon the cap for shifting said stem longitudinally, and a  
20 constantly acting spring for yieldingly opposing the lifting of the valve stem by the said handle upon the valve stem whereby the valve piece may be adjusted to and retained at different extreme and intermediate positions  
25 relatively to the valve seat.

7. A valve for steam control which consists of a body having a valve seat, combined with a valve piece, a valve stem to reciprocate the valve piece, a seat R outside of and

above the valve body and having projections 30 r, and a handle for operating the valve stem pivoted to the top of the stem on a transverse axis and having a cam part provided with notches s resting upon the seat and engaging its projections for lifting or lowering the 35 valve stem when the handle is rotated, and locking it in different intermediate positions of adjustment.

8. A valve for steam control which consists of a body having a valve seat, combined 40 with a valve piece, a valve stem to reciprocate the valve piece, a constantly acting spring outside of the valve body to close the valve, a seat outside and above the valve body, a handle for operating the valve stem 45 pivoted to the top of the stem on a transverse axis and having a cam part resting upon the seat and gradually increasing in radius through approximately 180 degrees for lifting or lowering the valve stem when the handle 50 is rotated, and means for locking the handle in extreme and intermediate positions.

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

JAMES LOGAN FITTS.

Witnesses:

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CLARENCE B. ALLEN.