J. L. FITTS.

REGULATING VALVE FOR STEAM HEATING SYSTEMS.

APPLICATION FILED APR. 8, 1908.

929,665.

Patented Aug. 3, 1909.

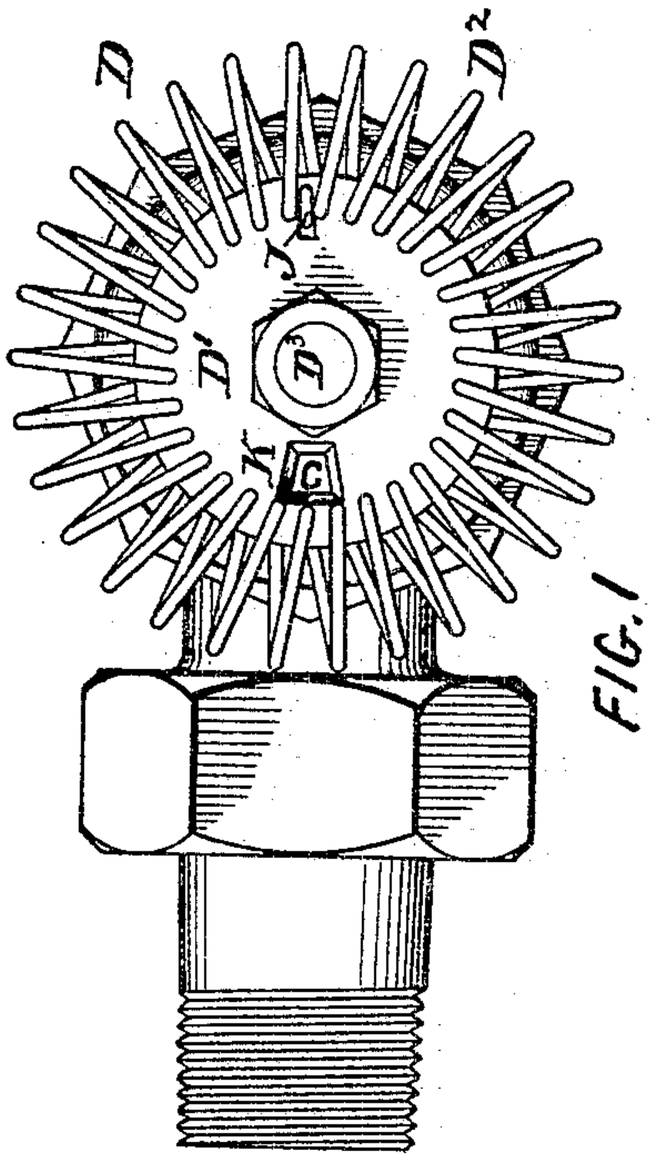

FIG. 1

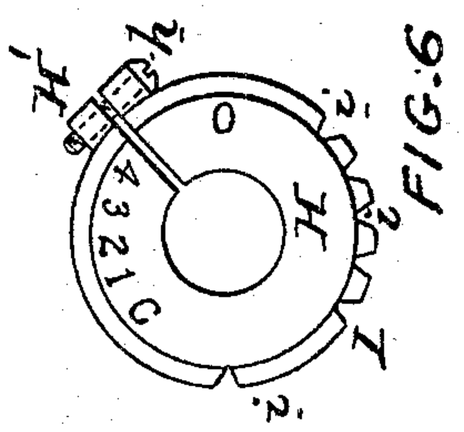

FIG. 6

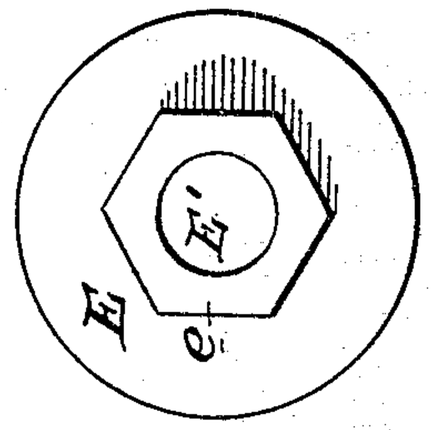

FIG. 4

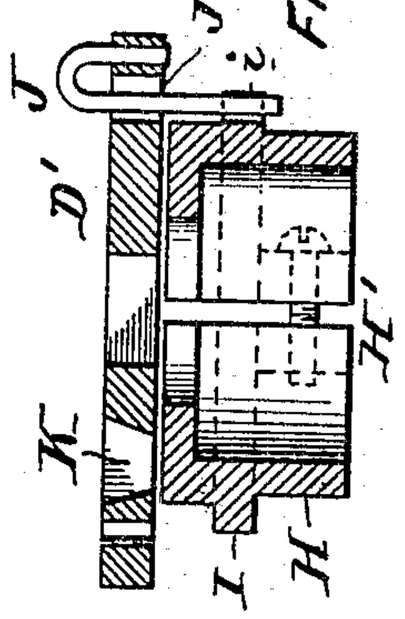

FIG. 5

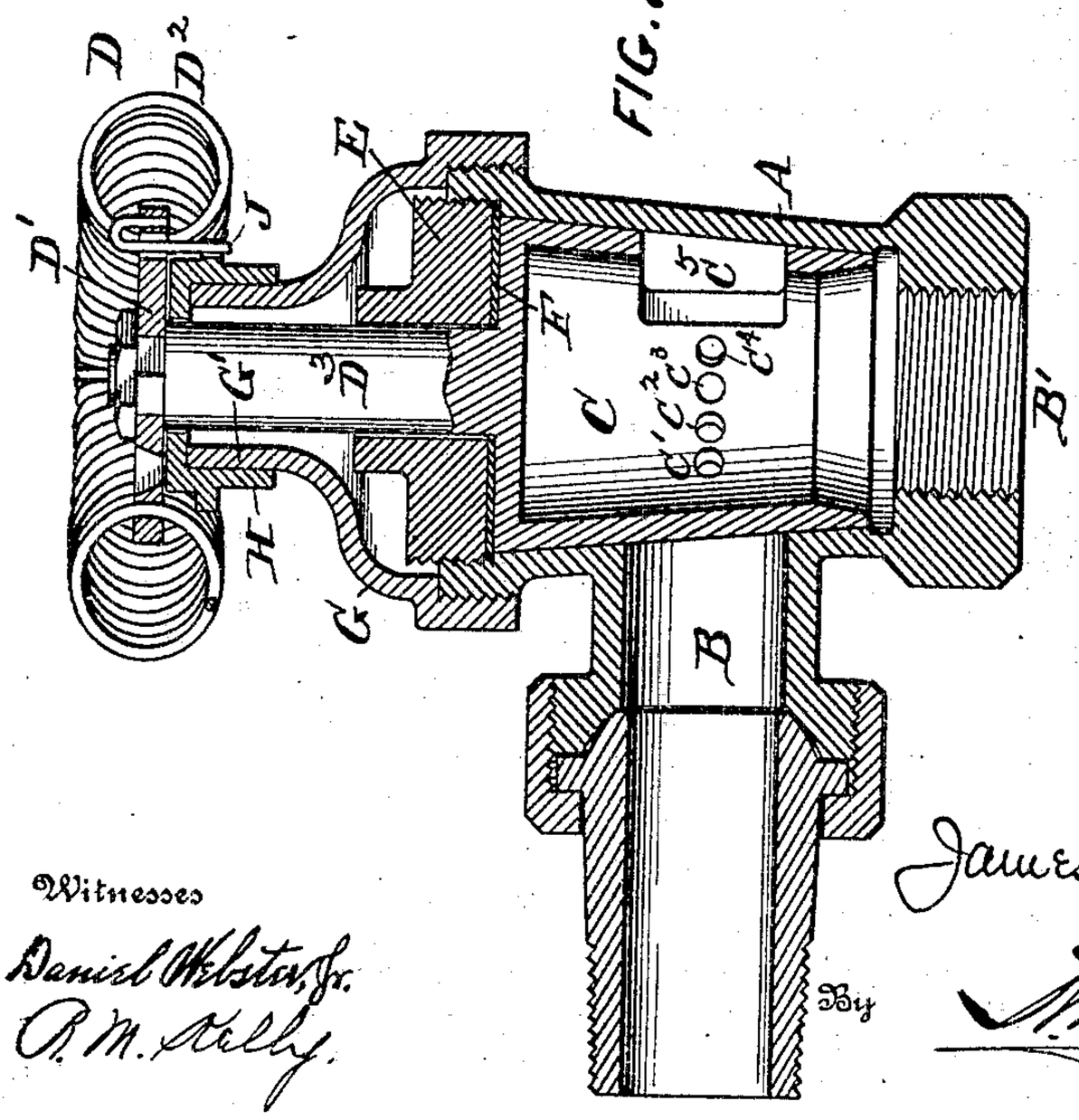

FIG. 2

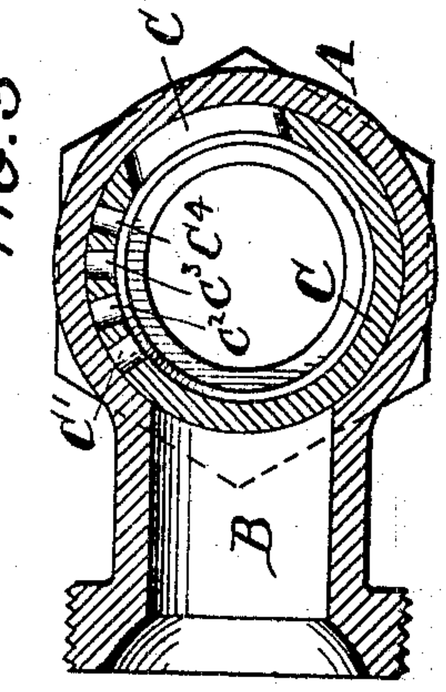

FIG. 3

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES LOGAN FITTS, OF PENSAUKEN TOWNSHIP, CAMDEN COUNTY, NEW JERSEY, ASSIGNOR TO WARREN WEBSTER & COMPANY, A CORPORATION OF NEW JERSEY.

REGULATING-VALVE FOR STEAM-HEATING SYSTEMS.

No. 929,665. Specification of Letters Patent. Patented Aug. 3, 1909.

Application filed April 8, 1908. Serial No. 425,807.

To all whom it may concern:

Be it known that I, JAMES LOGAN FITTS, a citizen of the United States, and a resident of Pensauken township, county of Camden, 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.

The object of my invention is to provide a construction of steam valve which may be adapted for the proper admission of steam in regulated quantities to the radiators or heating coils, whereby any desired degree of heat may be secured by the mere adjustment of the valve.

My invention consists in a valve body having inlet and outlet ports, combined with a hollow valve plug adapted to the body and having in its walls a series of small apertures and one large aperture, whereby one or more of the small apertures may be brought into position in line with the steam passage to permit more or less steam to flow into the radiator, and whereby, when it is desired to allow a free passage for the steam, the larger aperture may be brought into alinement with said steam passage of the body in place of the small apertures.

My invention also consists in the above structure, when combined with an adjustable bushing screwed in the top of the valve body for holding the plug in position, a bonnet carried by the body and extending upward around the stem of the valve plug, an adjustable indicator cap clamped upon the upper end of the bonnet, and a hand wheel for the valve stem having means to coöperate with the indicator to indicate the positions of the apertures in the valve plug.

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

Figure 1 is a plan view of my improved steam valve; Fig. 2 is a vertical sectional elevation of the same; Fig. 3 is a cross sectional view of the same in the plane of the apertures in the valve plug; Fig. 4 is a plan view of the bushing for holding the plug in place; Fig. 5 is an enlarged view of the hand wheel hub and indicator cap shown in Fig. 2; and Fig. 6 is a plan view of the indicator cap removed.

A is the body of the valve, and is provided with an outlet B for connection with the radiator, and an inlet B′ for connection with the steam main. The interior of the body is conical and is provided with a conical valve plug C, said plug being made hollow and open at the bottom into the supply port B′ and provided on the top with a valve stem D^3 connected with the hand wheel D by which to operate it.

The wall of the hollow valve plug C is provided with a series of small apertures C′, C^2, C^3 and C^4, and also a large aperture C^5, the construction and arrangement of these apertures being such that when the plug C is turned to the position shown in Figs. 2 and 3, the steam passage B is closed, but when the plug is rotated to the left, the small aperture C′ is first brought into operative position to permit steam to pass from the inside of the plug C through the plug into the passage B and thence to the radiator; if more steam is required, a further rotation of the plug will bring the aperture C^2 also into position to permit steam to pass from the interior of the plug into the passage B, and so on with respect to the apertures C^3 and C^4. When one of these apertures is in open position, a limited quantity of steam is permitted to flow, and this amount may be doubled, tripled or quadrupled by simply bringing two, three or four of those apertures into alinement with the steam passage B. If it is desired to permit a full flow of steam for cleansing purposes or otherwise, the valve plug C may be rotated still further to the left or until the large aperture C^5 comes in front of the steam passage B, in which case there will be a through passage from B′ to B without any material resistance.

The valve plug is conical and therefore makes a snug fit with the conical body A. The valve is kept down to its working position by means of an adjustable bushing E, which is screwed into the body A at the top and has a tubular center E′ through which the valve stem D^3 passes, and provided with a polygonal hub *e*, by which a wrench may be applied to adjust it. If desired, a washer F of lead, or other ductile metal or compound,

may be employed between the bushing E and the top of the valve C to prevent too great a binding pressure being applied upon the valve by the bushing.

Secured upon the top of the body A is a bonnet G which also incloses the bushing E and the valve stem D^3. The upper part of this bonnet is contracted in diameter and is cylindrical as at G′. Fitting over the cylindrical upper end of the bonnet, is the indicator cap H which is split as at *h*. The top of this indicator cap is provided with numbers 1, 2, 3 and 4, and letters C and O, as indicated in Fig. 6, and the hub D′ of the hand wheel D is provided with an aperture K through which the said figures and letters may be viewed when the hand wheel is adjusted so as to bring the aperture over any one of said figures or letters. When the indicator cap is properly adjusted, it is only necessary to bring the opening K of the hand wheel and hub D′ into position over the said numbers or letters to insure the corresponding apertures in the valve plug being brought into operative position. Thus, for example, when the aperture K is over the letter C, as indicated in Fig. 1, it will be known that the valve plug is in the position shown in Fig. 3, corresponding to the closed position. When the hand wheel is turned to the left until the aperture K is over the figure 1, then we know that the aperture C′ has been brought into position to permit steam to pass. A still further movement of the hand wheel will bring the aperture K over the figure 2, and we will then know that two of the apertures, namely, C′ and C^2, are both in position to permit the passage of steam, and so on with regard to the apertures C^3 and C^4. A further movement of the hand wheel until the aperture K comes over the letter O will indicate that the large aperture C^5 is in line with the steam passage B, and then the valve may be said to be fully open. As the indicator cap H is adjustable upon the top of the bonnet, it is evident that in assembling the valve either at the time of manufacture or for repairs, the cap may be properly adjusted after the bonnet has been applied, and consequently less difficulty is encountered in the making and adjusting of the valve.

As it is desirable to provide means to insure the exact adjustment of the hand wheel, I provide the following construction: A spring J made of bent wire is fastened into the hub D′ of the hand wheel and bent over and downward passing through a guiding slot J′ and having its free end engaging a rim I on the indicator cap H, the said rim being provided with notches *i* in diametrically opposite alinement with the numbers and letters aforesaid, so that when the slot K is over a number or a letter, the spring detent J will have snapped into a corresponding notch *i* in the rim I. The valve could be adjusted by feeling instead of by sight, if so desired.

The hand wheel may be made in any suitable manner, but in the preferred form, it consists of the flat stamped disk or hub D′ with the spiral rim threaded thereon, which is not liable to get out of order and at the same time radiates the heat so as to maintain itself comparatively cool in operation.

I have illustrated my improved valve in the form which I have found excellently adapted for commercial purposes; and while I prefer this construction, I do not limit myself to the details, as they may be modified in various ways, 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. In a steam valve, the combination of a valve body having side inlet and bottom outlet passages, a conical hollow valve plug within the valve body open on the bottom and having a plurality of small apertures adapted to be successively brought into alinement with the side inlet passage of the valve body whereby a steam passage may be provided by one or more of said small apertures at one time, a bonnet for the valve body, an indicator cap for the top of the bonnet, and a hand wheel for rotating the hollow valve plug having means coöperating with the indicator cap for indicating the position of the several apertures in the valve plug relatively to the aperture in the valve body.

2. In a steam valve, the combination of a valve body having side inlet and bottom outlet passages, a conical hollow valve plug within the valve body open on the bottom and having a plurality of small apertures adapted to be successively brought into alinement with the side inlet passage of the valve body whereby a steam passage may be provided by one or more of said small apertures at one time, an adjustable bushing screwed into the top of the valve body for holding the valve plug in operative position, a bonnet for the valve body independent of but inclosing the bushing, an indicator cap for the top of the bonnet, and a hand wheel for rotating the hollow valve plug having means coöperating with the indicator cap for indicating the position of the several apertures in the valve plug relatively to the aperture in the valve body.

3. In a steam valve, the combination of a valve body having one inlet and bottom outlet passages, a conical hollow valve plug within the valve body open on the bottom and having a flat top and a plurality of small apertures adapted to be successively brought into alinement with the side inlet passage of the valve body whereby a steam passage may be provided by one or more of said small apertures at one time, an adjust-

able bushing screwed into the top of the valve body having a flat under surface for holding the valve plug in operative position, a washer of ductile metal between the bushing and the flat top of the valve plug, a bonnet for the valve body independent of but inclosing the bushing, an indicator cap for the top of the bonnet, and a hand wheel for rotating the hollow valve plug having means coöperating with the indicator cap for indicating the position of the several apertures in the valve plug relatively to the aperture in the valve body.

4. In a steam valve, the combination of a valve body having side inlet and bottom outlet passages, a conical hollow valve plug within the valve body open on the bottom and having a plurality of small apertures and one large aperture adapted to be successively brought into alinement with the side inlet passage of the valve body whereby a steam passage may be provided by one or more of said small apertures or by the larger aperture at one time, a bonnet for the valve body, an indicator cap for the top of the bonnet having notches in its side, and a hand wheel for rotating the hollow valve plug having spring means coöperating with the notches of the indicator cap for indicating the position of the apertures in the valve plug relatively to the apertures in the valve body and holding the valve plug in adjusted position.

5. In a steam valve, a body part having inlet and outlet passages, a valve plug for providing a variable steam passage having a valve stem, a bonnet secured to the valve body and surrounding the valve stem, an indicator cap adjustably secured to the top of the bonnet, a hand wheel having means coöperating with the indicator cap for indicating the position of adjustment of the valve plug in the body, and locking means for holding the hand wheel and valve stem in its various adjusted positions.

6. In a steam valve, a body part having inlet and outlet passages, a valve plug for providing a variable steam passage having a valve stem, a bonnet secured to the valve body and surrounding the valve stem, an indicator cap adjustably secured to the top of the bonnet having a notched rim, a hand wheel having means coöperating with the indicator cap for indicating the position of adjustment of the valve plug in the body, and locking means for holding the hand wheel and valve stem in its various adjusted positions consisting of a bent spring J carried by the hand wheel and engaging notches in the rim of the indicator cap.

7. In a steam valve, a body part having inlet and outlet passages, a conical valve plug for providing a variable steam passage having a valve stem, a bonnet secured to the valve body and surrounding the valve stem, a hand wheel secured to the valve stem above the bonnet, and a bushing screwed into the top of the body and inclosed by the bonnet for holding the valve plug in position.

8. In a steam valve, a body part having inlet and outlet passages, a conical valve plug for providing a variable steam passage having a flat upper end with a central upwardly extending valve stem, a bonnet secured to the valve body and surrounding the valve stem, a hand wheel secured to the valve stem above the bonnet, a bushing screwed into the top of the body and inclosed by the bonnet and having a flat under surface for holding the valve plug in position, and a ductile metal washer between the bushing and top of the valve plug and of the whole upper area of the valve plug surrounding the stem.

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

JAMES LOGAN FITTS.

Witnesses:
F. Joseph Miller,
Philip Y. Quinn.