

J. L. FITTS & R. M. HUNTER.
VALVE.

APPLICATION FILED JAN. 28, 1908.

1,024,884.

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Fig. 1

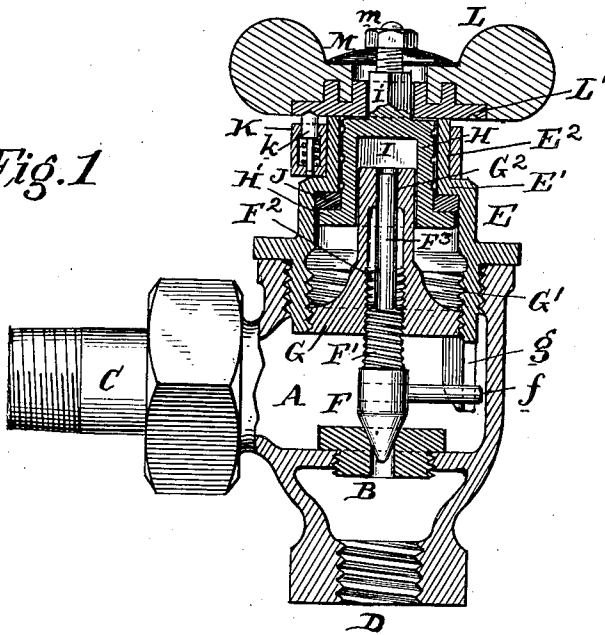


Fig. 3

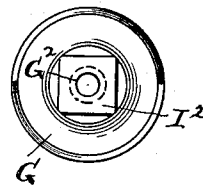


Fig. 2

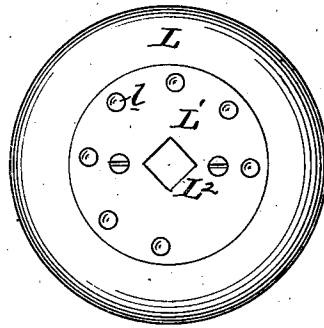
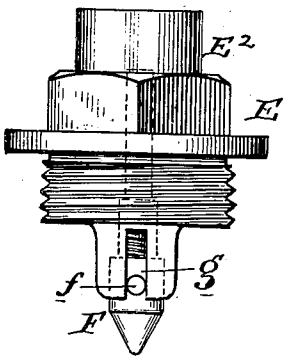


Fig. 4

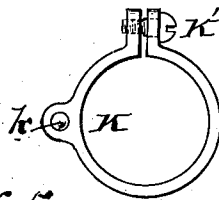


Fig. 5

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UNITED STATES PATENT OFFICE.

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VALVE.

1,024,884.

Specification of Letters Patent.

Patented Apr. 30, 1912.

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To all whom it may concern:

Be it known that we, JAMES L. FITTS and
RUDOLPH M. HUNTER, citizens of the United
States, and residents of Pensauken town-
ship, county of Camden, State of New Jer-
sey, and of the city and county of Philadel-
phia, State of Pennsylvania, respectively,
have invented an Improvement in Valves, of
which the following is a specification.

Our invention has reference to valves, 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 our invention is to provide
a form of quick acting valve especially
adapted as a modulation valve for control-
ling the steam to radiators of a steam heat-
ing system, whereby an accurate adjustment
of the steam supply may be had to the radi-
ator and for the purpose of securing the ex-
act amount of heat which may be required
in the room and to permit the said regula-
tion of the temperature of the room in an
intelligent manner.

More specifically, our object is to provide
a valve which, by a partial revolution of a
hand-wheel, will fully open or close the
valve, so that the operator may at all times
know to what extent the valve is open by
the extent to which the hand-wheel has been
rotated.

Our invention consists, among other
things, in a valve-body having a valve-seat,
combined with a rotatable part having a
longitudinal screw adjustment to or from
the seat, and a valve-piece having a screw
connection with the rotatable part and held
against rotation, whereby the rotation of the
rotatable part simultaneously causes the
travel of both itself and the valve-piece
toward or from the valve-seat.

Our invention also consists of the devices
above specified, when combined with a hand
rotatable part having a packed joint with
the valve-body or bonnet thereof and a con-
nection with the rotatable part to rotate it
while permitting longitudinal adjustment
thereof.

Our invention also consists of details of
construction, which, together with the fea-
tures above specified, will be better under-
stood by reference to the drawings, in
which:—

Figure 1 is a sectional elevation of a steam
valve embodying our improvements; Fig. 2
is an elevation of the bonnet and valve-
piece removed; Fig. 3 is a plan view of the
rotatable part which carries the valve-piece;
Fig. 4 is an inverted plan view of the hand-
wheel; and Fig. 5 is a plan view of the de-
tent device for holding the hand-wheel in
adjusted positions.

A is the valve-body and is provided with
an inlet port C and an outlet port D.

B is the valve-seat and is screwed into a
diaphragm in the valve-body in the ordi-
nary way.

E is the bonnet and is screwed into the
top of the valve-body. The interior of the
lower part of the bonnet is screw-threaded
as at G' and with which screw-threads upon
the periphery of the rotatable part G en-
gage, so that by rotating the said part G, it
is made to advance toward or recede from
the valve-seat B. The rotatable part G is
tubular, and has the lower portion of its
tubular portion provided with a screw-
thread F² in the reverse direction to the
screw-thread G' and with which the screw-
threaded part F' of the valve-piece F en-
gages. The valve-piece F, above the screw-
threaded part F', is provided with a guide
stem F³ which works through a guide G² in
the upper part of the rotatable part G and
jointly with the threaded portion F' acts
to hold the valve-piece F in a position to
properly coöperate with the valve-seat. The
lower part of the valve-piece F is made
conical, and said valve-piece is provided
with a lateral pin or arm f which is guided
in a vertical slot g in a downwardly extend-
ing portion of the bonnet on the inside of
the valve-body.

From the foregoing described construc-
tion, it will be understood that if the rota-
table part G is rotated in a leftward direction,
it will rise in the threaded portion G' of the
bonnet, and move away from the valve-seat.
Moreover, the rotation of the part G upon
the screw-threaded part F' of the valve-
piece causes said valve-piece to also ascend
or move away from the valve-seat, the speed
of movement of the valve-piece away from
the valve-seat being equal to the sum of
the pitches of the screw-threaded portions
F' and the screw-threaded portion G' for
each revolution of the rotatable part G.

By employing the intermediate rotatable part G between the hand-wheel L and the valve-piece F, the latter need not rotate, and moreover, a double screw action may be secured so as to obtain a large movement to the valve-piece with a limited movement of the hand-wheel L.

In practice, it is desirable that the hand-wheel shall not make a full revolution to open the valve full wide. In the construction shown, three quarters of the revolution is all that is required to accomplish the full opening of the valve. In an ordinary globe valve, a number of revolutions would be required, and the operator would never know how far the valve was open unless he took the greatest of care in testing the same before using it. By means of our improved valve, a novice can manipulate the valve and know at once to what extent it is open, because of the limited movement of the hand-wheel and the provision to indicate the positions of adjustment, to be described hereinafter.

It is evident that the rotatable part G may be operated by a hand-wheel in any suitable manner, such for example as by the stem of an ordinary globe valve. We have, however, shown a convenient, inexpensive and compact arrangement for operating the rotatable part G from the hand-wheel L. The upper part of the bonnet E is formed with a cylindrical bearing E² and a shouldered portion E' immediately below it. Resting against the shouldered portion E', is an annular packing ring J.

Journalled within the bearing portion E² is a socket piece H having a flange H' at the bottom, which rests against the packing ring J. This socket piece H is provided with a square socket I in which fits the square end I² (Fig. 3) of the rotatable part G, so that when the socket piece is rotated, it also turns or rotates the rotatable part G while permitting it to adjust itself longitudinally with respect to the socket piece. The upper end of the socket piece is provided with a square shank I' which fits a square hole L² in the plate L' on the bottom of the hand-wheel L. Above the shank I' is provided a screw-threaded part having a nut m which presses upon a cup spring M resting upon the top of the hand-wheel. In this manner, the plate L' of the hand-wheel rests upon the top of the bonnet and the flanged part H' of the socket piece may be drawn upward and caused to press upon the packing J with a spring action to insure a steam tight joint. The fit of the socket piece H in the bearing portion E² of the bonnet may be as tight as desired, provided it may rotate freely therein.

By the means above described, for operating the rotatable part G, it is evident that there is a steam tight joint provided by the means which move the said part G and

valve-piece, without causing the hand-wheel to rise and fall during its rotation. To hold the hand-wheel in its points of adjustment and to indicate also the extent of its adjustment, a spring actuated detent k may be caused to engage with recesses l on the under side of the plate L' of the hand-wheel L. Seven such points of adjustment are shown (Fig. 4), so that seven positions of the hand-wheel may be had for corresponding adjustments of the valve-piece F, including the fully closed and fully open positions. The spring actuated detent k is carried by an adjustable ring K which fits around the outside of the tubular bearing E² of the bonnet and is clamped in adjusted position by means of the screw K'. After the valve-piece has been screwed down to its seat, as indicated in Fig. 1, the collar K is adjusted in position to bring the detent k into engagement with the first notch or recess l on the hand-wheel, and the collar is then clamped fixedly upon the bonnet. The turning of the hand-wheel will then indicate the adjustment of the valve both by the extent of its rotation and by the number of times the detent engages the recesses. The rotation of the hand-wheel to the right closes the valve, and vice versa. It will be observed that the pitch of the screw-thread F' and the screw-thread G' are reversed, so that the rotation of the rotatable piece G will cause an axial movement of the valve-piece in the same direction as it moves itself.

While we have shown our invention in the form which is found most excellently adapted for commercial use, we do not limit ourselves to the details thereof, as these may be modified in various ways, without departing from the spirit of the invention.

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

1. In a valve, a bonnet and a body having a valve-seat, combined with a rotatable part screwed into the bonnet and adjustable to or from the valve-seat, a valve-piece screwed into and guided by the rotatable part, means on the bonnet independent of the body to hold the valve-piece against rotation, means for rotating the rotatable part consisting of a packed part extending into the bonnet and having a hand-wheel on the outside, and a detent device supported by the bonnet for engaging the hand-wheel in different positions of adjustment.

2. In a valve, a body having a valve-seat, combined with a rotatable part screwed into the body and adjustable to or from the valve-seat, a valve-piece screwed into and guided by the rotatable part, means to hold the valve-piece against rotation, means for rotating the rotatable part consisting of a packed part extending into the body and having a hand-wheel on the outside, a ring

adjustably secured to the valve-body, and a detent device carried by the ring for engaging the hand-wheel in different positions of adjustment.

5 3. In a valve, a body, a bonnet screwed onto the body and having an internal screw-threaded part, a rotatable part within the bonnet and engaging the internal screw-thread thereof, a valve-piece having a
10 smooth stem guided in the rotatable part and also having a screw connection therewith, means for holding the valve-piece from rotating, and means for rotating the rotatable part.

15 4. In a valve, a body, a bonnet screwed onto the body and having an internal right handed screw-threaded part, a rotatable part within the bonnet and engaging the internal screw-thread thereof, a valve-piece
20 having a smooth stem guided in the rotatable part and also having a left handed screw connection therewith, means on the bonnet for holding the valve-piece from rotating, and means for rotating the rotatable part
25 consisting of a handle and a packed extension through the bonnet.

5 5. In a valve, a bonnet and a body structure having a valve-seat, combined with a valve-part movable to or from the valve-seat and held against rotation by a sliding
30 connection with the bonnet, a hand operated rotatable part adjustably screwed upon the bonnet and also upon the valve-part whereby

both the rotatable part and valve-part simultaneously move to or from the valve-seat but
35 in which the valve-part moves with greatest speed, and means for indicating the position of the valve-part, said means acting upon the hand operated portions of the rotatable part.

40 6. In a valve, a body structure having a valve-seat, combined with a valve-part movable to or from the valve-seat and held against rotation, a hand operated rotatable part adjustably screwed upon the body structure
45 and also upon the valve-part whereby both the rotatable part and valve-part simultaneously move to or from the valve-seat but in which the valve-part moves with greatest speed, a hand-wheel to rotate the
50 hand operated rotatable part, and a detent device adjustably carried by the valve-body structure and engaging recesses on the under side of the hand-wheel for indicating the
55 adjustment of the valve-part and holding it in adjusted position, said detent device being adjustable circumferentially about the body structure.

In testimony of which invention, we have hereunto set our hands.

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Witnesses:

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