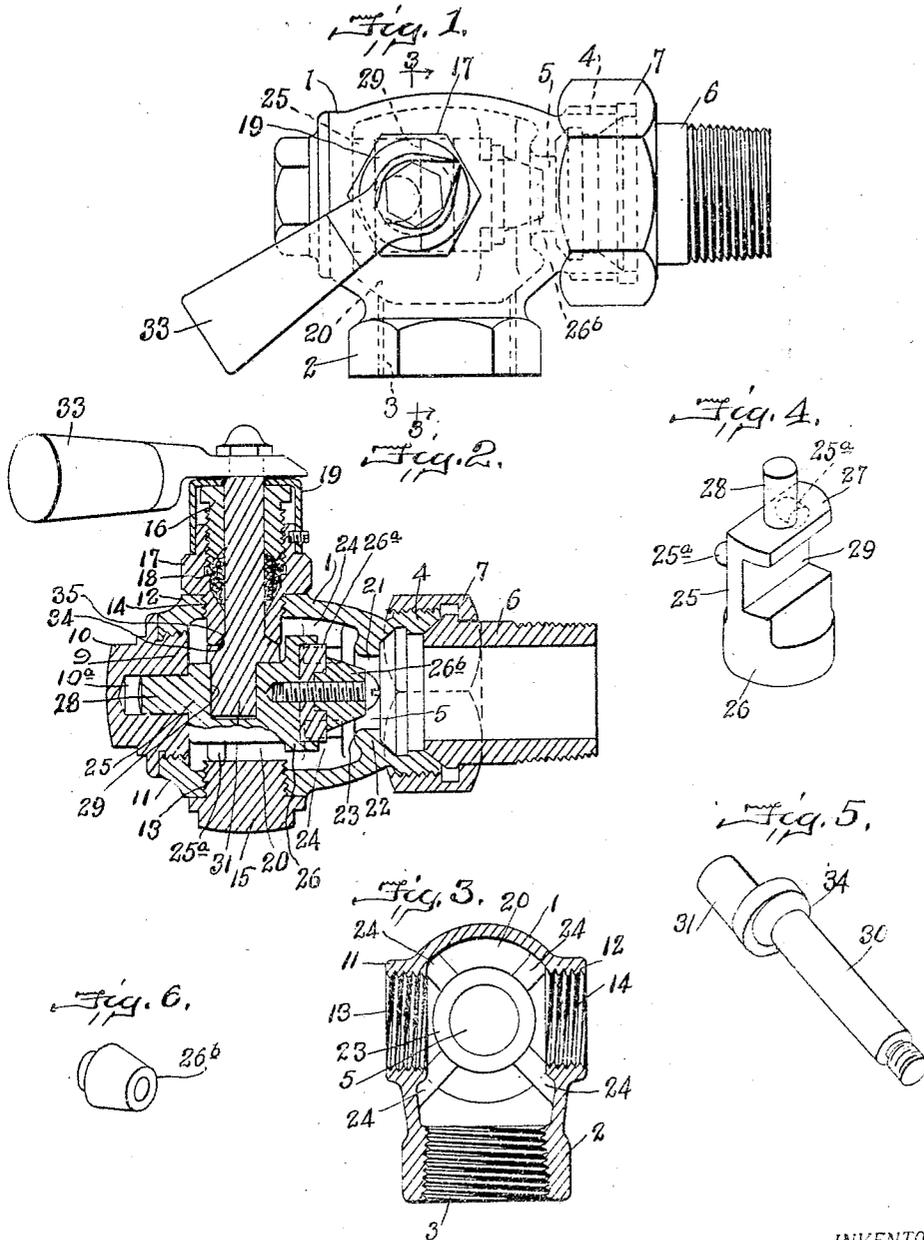


W. HAAS AND C. W. RINGELSPAUGH
RADIATOR VALVE.

APPLICATION FILED SEPT. 18, 1919.

1,382,080.

Patented June 21, 1921.



INVENTORS
William Haas,
Charles W. Ringelspaugh,
BY
Toulmin & Toulmin

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM HAAS AND CHARLES W. RINGELSPAUGH, OF DAYTON, OHIO, ASSIGNORS TO
THE WILLIAM HAAS COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

RADIATOR-VALVE.

1,382,080.

Specification of Letters Patent. Patented June 21, 1921.

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To all whom it may concern:

Be it known that we, WILLIAM HAAS and CHARLES W. RINGELSPAUGH, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Radiator-Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in radiator valves of the general type shown in Patent No. 1,322,012, issued November 18, 1919, and has for its particular object to simplify and cheapen the manufacture of such valves, as well as to improve their effectiveness of operation.

Our improved valves in the forms shown in this and said patent above referred to are adapted for right and left hand vertical or horizontal connections, being in effect interchangeable or universal in character and, therefore, adaptable to any standard form of radiator connections.

Our improved valve is also adaptable to the two general types of steam radiators, viz., single pipe system and double pipe system. As applied to the double pipe system the inlet port of the valve may be regulated by means of a handle having a pointer cooperating with a graduated scale. Thus the volume of steam passing to the radiator may be controlled, increased or diminished as may be desired. As used with a single pipe system the valve may be opened to full capacity and closed instantly merely by moving the valve controlling handle to the limits of its movement, respectively, which as here shown is substantially 120 degrees.

Various incidental improvements have been carefully worked out in the development of our invention which in their collective effect tend to make the valve distinctly meritorious, especially as applied to radiators of the single pipe type. These features consist generally of ground-in joint construction which acts to prevent the escape of steam around the valve stem either as the valve is closed or open; the stuffing box is so designed that it may be packed under pressure; the valve seat is disposed in a vertical plane and otherwise shaped to prevent the accumulation of foreign matter thereon and thereby preventing the proper functioning of the valve; the operable parts are essen-

tially of simple, durable construction and of a character which will not be affected by the corrosion of the parts or the action of the heat thereon, thus insuring the normal operation of the valve under all conditions.

The valve is in the important particulars stated, an improvement of the type of steam radiator valve which provides for the introduction of steam and the simultaneous return of the condensation through the same port, the steam entering the valve through the upper portions of the port, and the condensed moisture being heavier than the steam, passing from the valve through the lower portion of the port.

In the accompanying drawings,

Figure 1 is a side elevation of the valve taken with the operating parts arranged on a horizontal plane and showing in dotted lines portions of the interior arrangement of the mechanism;

Fig. 2 is a longitudinal cross sectional view of the valve with the operable parts disposed in a vertical plane;

Fig. 3 is a cross sectional view of the valve casing taken on the line 3-3 of Fig. 1;

Figs. 4, 5 and 6 are detail views, respectively, of the valve head or piston, the stem for controlling the same, and the conical valve projection.

The valve casing consists of an integral housing 1, best shown in section in Fig. 3, provided with an extension 2 and intake aperture 3, threaded internally in the usual manner to be connected to the steam supply pipe; the valve casing being connected to the radiator by means of an externally threaded extension 4 and an aperture 5, the connection being made in any suitable manner as by a union consisting of a short section of pipe 6 and the adjustable nut 7. The valve casing is further provided with an extension 8 threaded internally and having an aperture 9 normally closed by a plug 10. Oppositely disposed projections 11 and 12 provided, respectively, with threaded apertures 13 and 14, are also provided in the valve casing, either one of the apertures being normally closed by a plug 15 and the other provided with a threaded gland 16 and a threaded plug 17 which are provided with apertures constituting a bearing for one end of the stem for regulating the valve piston. The plug 17 is threaded at one end to receive the gland 16, and at the opposite end

to be secured to the casing 1, the central portion of the bore of the plug 17 being enlarged, as at 18, to provide a suitable stuffing box for the valve actuating stem. A cap 19 is provided to add finish to the connection formed between the gland 16 and plug 17.

The valve casing is provided with an internal chamber 20 merging at one end thereof of adjacent the outlet aperture 5 into a chamber 21. At the juncture of the outlet 5 with the chamber 21 and integral with the casing 1 an annular wall 22 is transversely disposed between the walls of the casing and is provided on the inner side thereof with a valve seat 23. Also extending inwardly from the casing 1 and integral therewith are ribbed portions 24, the inner edges of which act as guides for the valve piston to retain the same in proper relation to the valve seat 23.

The valve piston consists of a main body portion 25 terminating at one end thereof in a piston head 26 which fits snugly between the guiding surfaces of the ribbed portions 24, the flat end face of the piston head being adapted to be seated upon the surface 23 of the annular ring portion 22, the seat portion of the piston consisting preferably of a composition disk 26^a which acts to more effectually close the valve to prevent leakage thereof. At its opposite end the valve piston is provided with a stem 28, the stem being adapted to enter and cooperate with an aperture 10^a provided in the threaded plug 10 which acts to guide one end of the valve piston. The valve piston is further provided through the body portion thereof with an oblong transverse slot 29 forming the shoulder 27 at one side thereof whereby the piston may be raised and lowered relative to the valve seat, and with guide lugs 25^a which have sliding contact with the end surface of the plug 10 and serve to prevent rotation of the valve piston relative to the valve seat.

When the valve is used in connection with a two pipe radiator system the piston head may be provided on the flat face thereof with a conical projection 26^b detachably secured to the piston, as here shown, or made integral therewith; the tapered end thus formed acting through the valve controller handle to gradually increase or decrease the capacity of the port opening leading to the radiator. In single pipe radiator systems the valve piston head is preferably made flat to provide for quick opening and closing of the valve.

The valve piston is regulated by means of the actuating stem or shaft 30 which is provided with the crank or eccentric portion 31 adapted to cooperate with the slot 29 of the valve piston to regulate the same relative to the valve seat. The valve stem pro-

jects through the gland 16 and plug 17 and has secured to its outer end in any suitable manner a controller handle 33 by means of which the valve may be regulated. At its central portion, adjacent one end of the crank portion 31, the valve actuating stem is provided with a tapered or cone-shaped portion 34, adapted to cooperate with a correspondingly shaped depression 35 formed in the inner end of the nut 17, thus constituting a conical bearing and acting to more effectually prevent escaping of steam about the valve stem 30.

From the foregoing description it will be clear that our improved valve is essentially a quick-acting valve, having a wide range of adaptability being practically universal with respect to standard radiator connections, either of single or double pipe radiator systems. The construction of the valve is such that corrosion of the parts will not effect the free and easy operation thereof under all conditions. Opening and closing of the valve to full extent being accomplished by a slight movement of the controller handle, it is obvious that an important advantage is realized over types of valves requiring a number of turns of the valve stem to adjust the valve to full open and closed positions. In general construction our valve has been provided with improvements and refinements which together with the marked features of novelty result in a valve of superior merit, of simple, durable construction, of universal character with respect to its interchangeability and adaptability to various types of radiator construction.

In addition to its other important advantages, the improved valve is further especially adaptable to radiators inclosed by a grill or otherwise incased in such a manner that an ordinary valve would not be readily accessible and therefore could not be conveniently regulated. With the present valve this difficulty is readily met by merely lengthening the valve actuating stem to project through the casing of the inclosure, this being made possible by the universal feature of the valve which makes it adaptable under a wide range of variable conditions.

In the present invention the improved construction of the valve stem and piston renders unnecessary the exact alinement of the valve stem with its opposite bearings as required in my earlier valve construction, also the construction is cheaper to manufacture, the parts are more readily accessible, and the general effectiveness of operation of the parts is materially improved. Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a radiator valve, a casing compris-

ing a port and oppositely disposed bearing apertures arranged substantially at right angles to said port and a bearing arranged intermediate said bearing apertures substantially at right angles thereto, a piston operable to open and close said port supported in said bearing and having guide lugs to prevent rotative movement of said piston, a valve stem rotatably supported in one of said opposite bearing apertures eccentrically connected with said piston and adapted to actuate the valve piston to full open or closed position by partial rotation of said stem, and a plug in the other of said opposite bearing apertures having a contact surface cooperating with said guide lugs.

2. In a radiator valve, a casing having a port and oppositely disposed bearing apertures arranged substantially at right angles to said port, and a bearing aperture arranged in alinement with said port, a piston to open and close said port and supported in said last named aperture, said piston having guide lugs and a cam slot, a valve stem bearing member engaging in one of said opposite bearing apertures, a valve stem supported in said bearing member and having

an eccentric portion engageable in said cam slot for reciprocating the piston, and a plug in the other of said opposite bearing apertures and engaging the guide lugs to prevent rotation of the piston, the oppositely disposed apertures being adapted to permit the interchanging of said bearing member and valve stem and the plug.

3. In a radiator valve, a casing having a port and oppositely disposed bearing apertures arranged substantially at right angles to said port and a bearing aperture arranged in alinement with said port, a piston to open and close said port and supported in said last named aperture, a hollow plug engaging in one of said oppositely disposed apertures, a valve stem supported in said hollow plug and cooperating with said piston to reciprocate it, and a plug in the other of said opposite bearing apertures and cooperating with said piston to prevent the rotation thereof.

In testimony whereof we affix our signatures.

WILLIAM HAAS.
CHARLES W. RINGELSPAUGH.