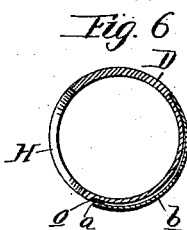
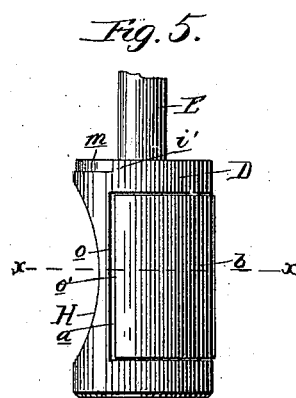
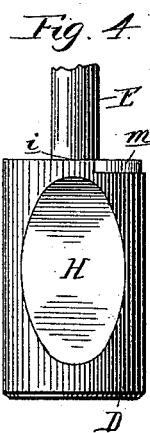
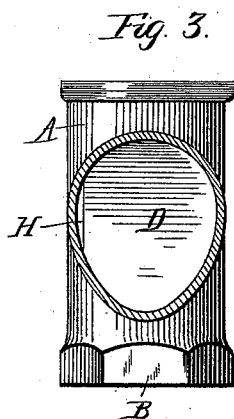
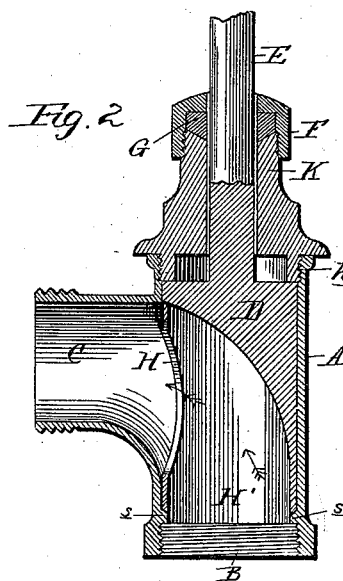
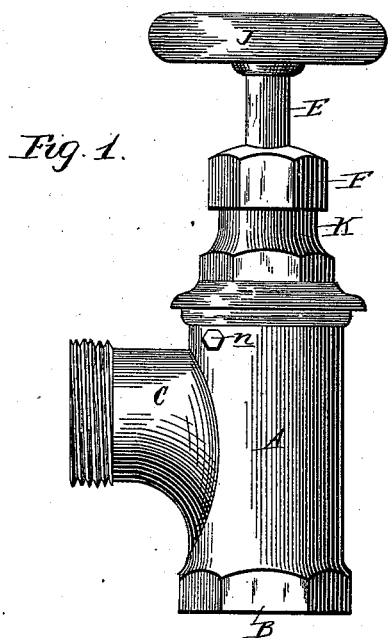


(No Model.)

M. CARROLL & C. C. SOSTHEIM.
RADIATOR VALVE.

No. 417,702.

Patented Dec. 24, 1889.



WITNESSES
John T. Robertson
E. H. Bond.

INVENTORS
Michael Carroll
and Charles C. Sostheim
by Rosa H. Read
Attorney

UNITED STATES PATENT OFFICE.

MICHAEL CARROLL, OF OSHKOSH, WISCONSIN, AND CHARLES C. SOSTHEIM,
OF CHICAGO, ILLINOIS.

RADIATOR-VALVE.

SPECIFICATION forming part of Letters Patent No. 417,702, dated December 24, 1889.

Application filed May 10, 1889. Serial No. 310,290. (No model.)

To all whom it may concern:

Be it known that we, MICHAEL CARROLL, of Oshkosh, in the county of Winnebago and State of Wisconsin, and CHARLES C. SOSTHEIM, of Chicago, in the county of Cook and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Radiator-Valves; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to improvements in radiator-valves, and is designed principally for use where hot water is the source of heat, though it is also adapted, with certain slight specified modifications, to be used in steam-radiators.

The objects of the invention are, first, to simplify the construction; second, to prevent freezing; third, to reduce the wear of the packing to a minimum; fourth, to provide free circulation without obstruction when the valve is open, and, fifth, to facilitate the operation of the valve. These objects are attained by the construction and mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the valve. Fig. 2 is a side sectional view through the center. Fig. 3 is a front view of the body with the outlet portion thereof removed to show the position of the plug when closed. Fig. 4 is a front view of the plug, and Fig. 5 is a side view of the disk as adapted to steam. Fig. 6 is a section on line *x x* of Fig. 5, and shows a leaf-spring adapted to rest in a recess in the plug when forced inwardly by the sides of the valve-box.

Similar letters refer to similar parts throughout the several views.

A is the body, B the inlet, and C the outlet, of the same.

D is a cylindrical revolving plug fitting into and corresponding with the size of the body, and resting and turning upon the shoulder *s s*, Fig. 2. The plug is held down by the

stuffing-box K, which screws into the body at *k* and surrounds the stem E. The stem is attached to or integral with the plug, and turns in the stuffing-box and also in the nut F, which compresses the packing G.

J represents the handle attached to the stem.

The plug is made to fit into the body as closely as possible and freely revolve when expanded by the hot water, and is provided with an opening into the lower end H' and extending through to the side H, Fig. 2. When the valve is open, the plug is in the position shown in Fig. 2, with the opening H in front of the outlet C. The water then passes up through the plug, as indicated by the arrows, there being no obstruction except by reason of the elbow in the plug, as the diameter of the inside of the plug is the same as the diameter of the inside of the outlet and the opening in the plug H somewhat larger than the outlet at C, Fig. 2.

To close the valve, the handle should be turned one-quarter around, thereby turning the plug D to the position shown in Fig. 3, so that the opening H is nearly closed against the inside surface of the body, leaving just enough opening to allow a very slow circulation of water through the radiator to prevent freezing. We regulate the turning by means of the set-screw *n*, which passes through the body and slides in the recess *m*, and as the plug is turned strikes against the shoulders or stops at each end *i i'*, Figs. 4 and 5.

Radiator-valves have heretofore been constructed which screw up and down by means of threads in the stem and stuffing-box in order to open and shut the valve, it requiring several revolutions of the stem upon an incline against the packing to operate the valve. As by our invention only a quarter-turn is required in the same plane, we reduce the wear of the packing around the stem and also greatly facilitate the operation of the valve.

In radiator-valves it is desirable to have a small opening when the valve is closed to allow slow circulation of water to prevent freezing. We provide this to the extent desired by the means above described.

The stem in our invention may be constructed integral with the plug, and as we have no screw-threads in the stuffing-box or stem we thereby greatly simplify the construction. We also provide unobstructed circulation when the valve is open.

To adapt our invention to steam-heaters, it is necessary that the side of the body close more tightly over the opening H when the valve is closed. We therefore provide the spring *b*, Fig. 5, fitting into a corresponding groove or depression *a*, extending around the back of the plug, so that the outer surface of the spring when not depressed extends just beyond the surface of the plug, there being enough space between the edge of the spring *o'* and the edge of the groove *o* on each side to admit of the depression of the spring as it is fitted into the body. When the valve is shut, the spring *b* presses the sides or edges of the opening H against the inside of the body A and forms a tight joint around the opening; also in this adaptation of the valve we lengthen the recess *m*, so as to allow the

plug to revolve farther and close the entire opening H against the inside of the body when the valve is closed.

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

A radiator-valve comprising valve-box A, provided with supply and discharge openings, as described, cylindrical plug D, provided with a stem for rotating the same and having a duct opening into its cylindrical face, and leaf-spring *b*, carried by the plug and resting in a recess in its cylindrical face when the valve is open, said spring having one edge fixed and the other free to expand against the edge of the box-opening when the valve is shut, as and for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

MICHAEL CARROLL.

CHARLES C. SOSTHEIM.

Witnesses:

CHARLES J. SCHMITT,
GEORGE FRAKER.