(No Model.)

# L. H. PRENTICE, P. R. McLEOD, R. T. CRANE & L. PILKINGTON.

## VALVE MECHANISM FOR STEAM RADIATORS.

No. 480,512. Patented Aug. 9, 1892.

Fig 1

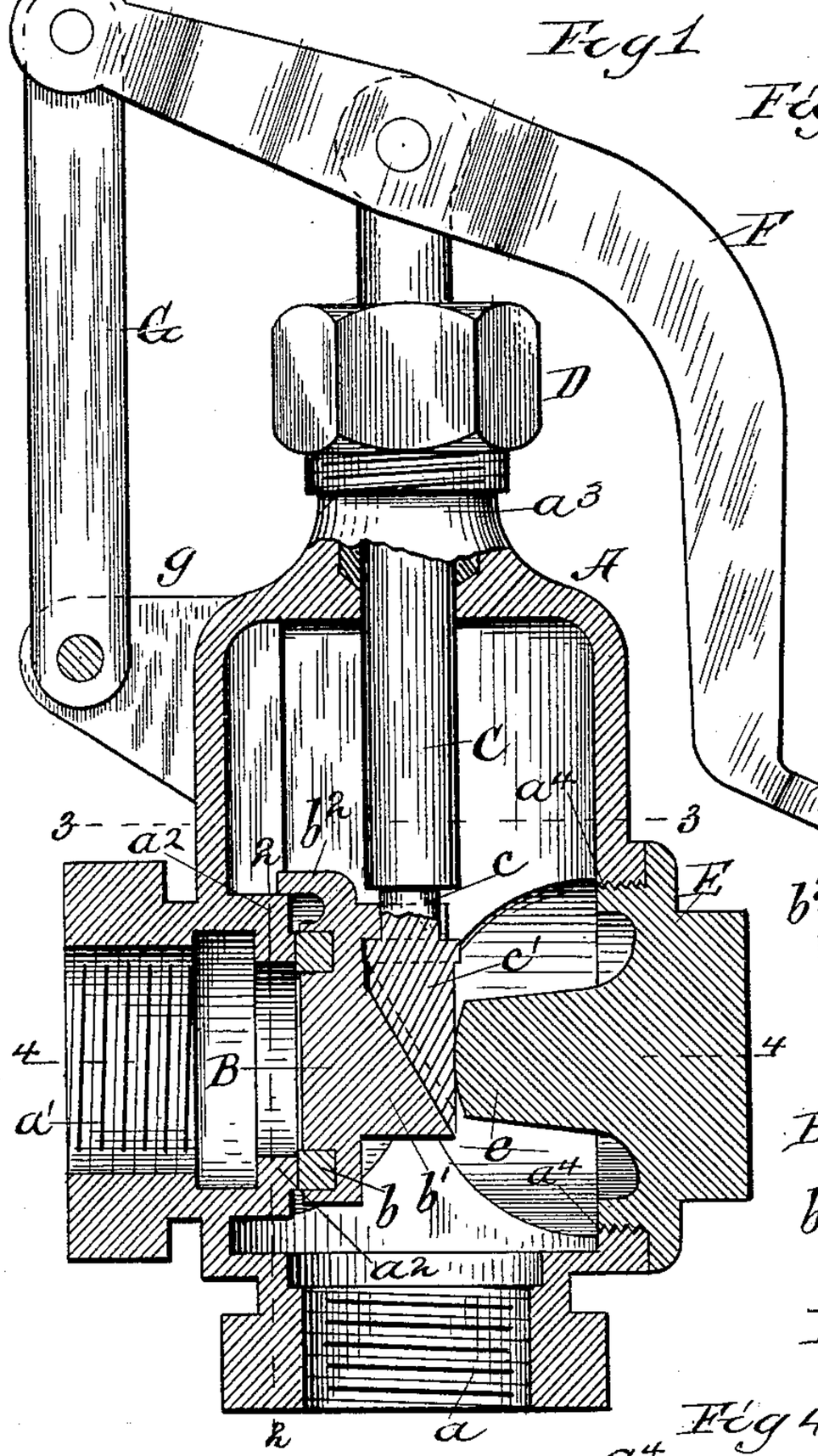



Fig 2

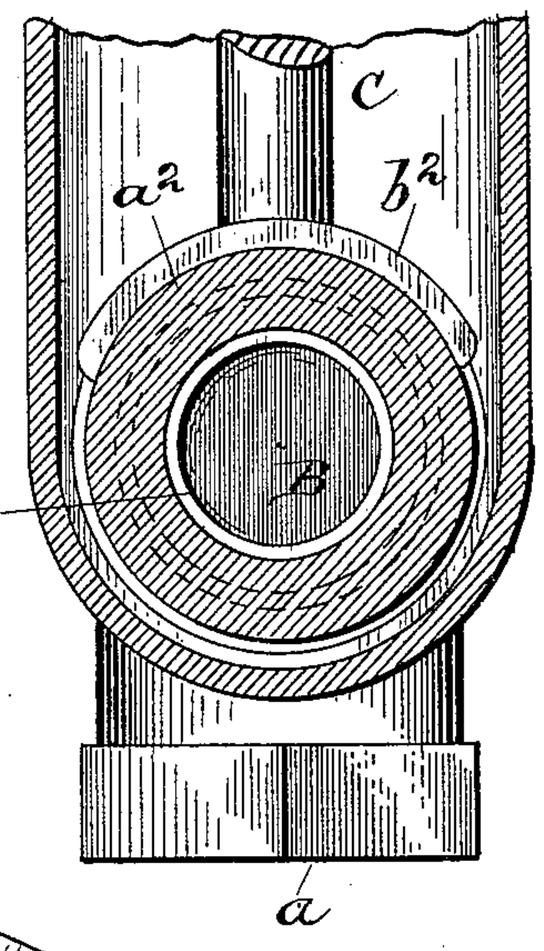



Fig 5

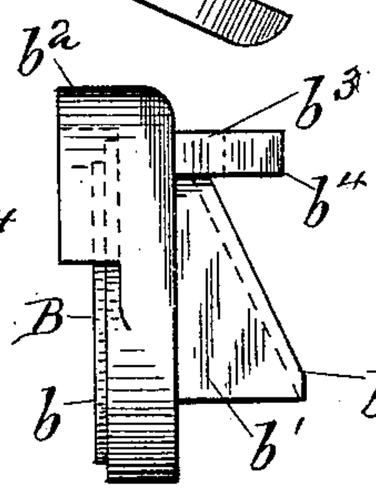



Fig 6

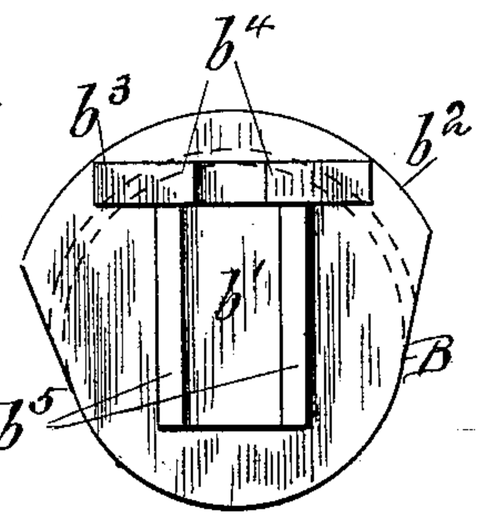



Fig 4

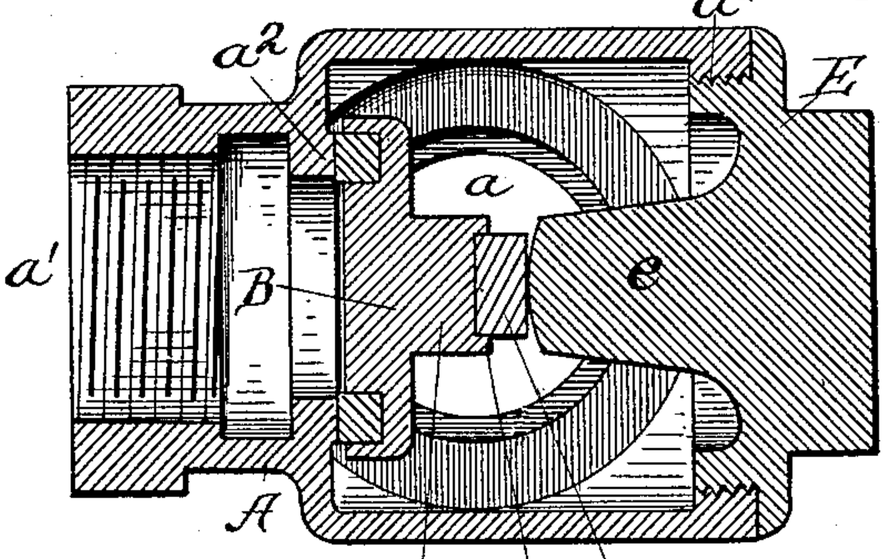
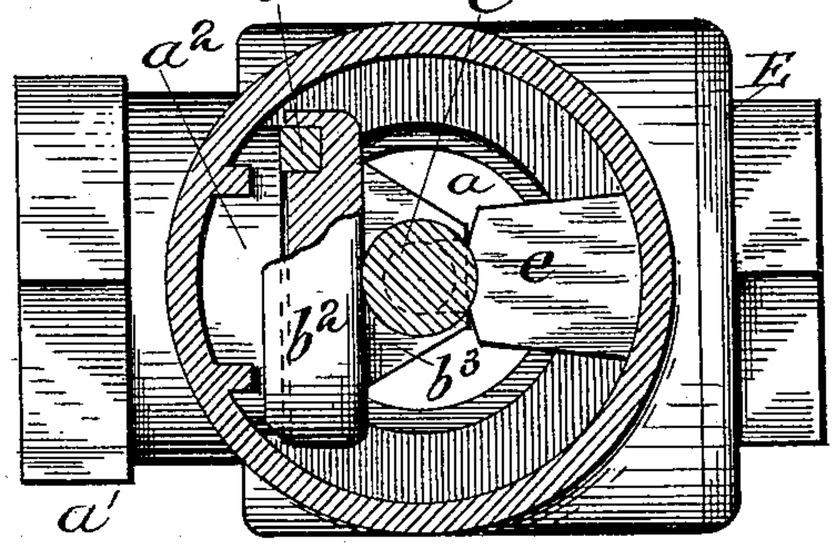



Fig 3




Witnesses
W. C. Corlies
A. M. Best

Inventors
Leon H. Prentice Peter R McLeod
Richard T. Crane
Lawrence Pilkington.
By Johnson Thacher
Atty's

# UNITED STATES PATENT OFFICE.

LEON H. PRENTICE, OF WAUKEGAN, AND PETER R. McLEOD, RICHARD T. CRANE, AND LAWRENCE PILKINGTON, OF CHICAGO, ASSIGNORS TO THE CRANE COMPANY, OF CHICAGO, ILLINOIS.

## VALVE MECHANISM FOR STEAM-RADIATORS.

SPECIFICATION forming part of Letters Patent No. 480,512, dated August 9, 1892.

Application filed June 14, 1890. Serial No. 355,466. (No model.)

*To all whom it may concern:*

Be it known that we, LEON H. PRENTICE, of Waukegan, county of Lake, and PETER R. McLEOD, RICHARD T. CRANE, and LAWRENCE PILKINGTON, of Chicago, county of Cook, State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Valve Mechanism for Steam-Radiators, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section of a valve mechanism embodying our improvement, the cap and treadle being left entire; Fig. 2, a detail vertical section taken on the line 2 2 of Fig. 1, looking outward; Fig. 3, a plan section taken on the line 3 3 of Fig. 1; Fig. 4, a similar section taken on the line 4 4 of Fig. 1; Fig. 5, a side elevation of the valve detached, and Fig. 6 a rear elevation of the same.

Our invention relates to valves designed especially for use with steam-radiators for the purpose of shutting off and letting on steam to the radiator.

The invention relates particularly to a valve belonging to the general class of slide-valves, but frequently called a "gate-valve;" and the object of our improvements is to provide for the seating of the valve with certainty when closed, the quick and ready opening and closing thereof by a full movement in either direction, and to enable the valve to be readily opened and closed by the foot.

We will proceed to describe in detail the construction and operation of a valve mechanism wherein we have embodied our invention in one practical form, and will then point out more definitely in claims the improvements which we believe to be new and wish to secure by Letters Patent.

In the drawings, A represents the valve-case or body, which is provided with an inlet-port $a$ at its lower end and an outlet-port $a'$ at one side thereof arranged at right angles to the former. The steam-supply pipe is connected to the port $a$, while the port $a'$ connects with the radiator, so that steam is admitted to the interior of the case and thence to the radiator in the usual manner. The outlet-port is surrounded by a slightly-raised rim $a^2$, which provides a seat for the valve B. This valve is arranged to slide vertically in front of this port $a'$, and is provided upon its face with a bearing-ring $b$ of soft metal set in the face of the valve and adapted to bear upon the seat $a^2$ when the valve is in its closed position, as seen in Fig. 1 of the drawings. At the back of the valve there is a projection $b'$, the face of which is inclined downward and inward and has narrow flanges $b^5$ at the side edges, as seen in said Fig. 1. The valve is also provided with a circular flange $b^2$, set up slightly from the top thereof and projecting outward somewhat beyond the face of the valve, as seen in Fig. 1. This flange serves as a cap, which fits down over the upper portion of the port $a'$, which projects inward somewhat from the side of the circular casing, so that when the valve is completely closed this flange will strike and rest upon the metal at this point, as seen in Fig. 1, and will extend over and downward upon each side thereof somewhat, as seen in Fig. 2, thereby properly centering the valve and preventing lateral movement. The rising for this flange commences a little back of the valve-face, so that there is a slight free space between the flange and the upper edge of the valve, as seen in Fig. 1. At the back and upper end of the valve there is also a projecting lug $b^3$, which extends backward about as far as the inclined or wedge-shaped projection $b'$, and is forked for the purpose of receiving the valve-stem C. This stem is an ordinary round rod with an annular groove $c$ cut around it near its lower end, and the arms of the fork $b^4$ embrace this diminished section of the stem. The width of the groove in the stem is somewhat greater than the thickness of the forked lug, and as the valve is connected to its stem by the latter it is evident that there may be a slight movement of one independent of the other. The lower extremity of the stem below the coupling-point is cut away at one side on an inclination corresponding to the inclination of the wedge-shaped projection $b'$ and fitting between its flanges $b^5$, so that at

the lower end of the valve-stem there is a short wedge-shaped section $c'$ with its inclination the reverse of the wedge at the back of the valve and which may have a slight vertical movement upon the latter by reason of the loose connection between the stem and the valve just described. The top of the case is contracted to form a small neck $a^3$, which is externally threaded at its upper end to accommodate a cap-nut D, which is suitably packed to serve as a kind of stuffing-box for the valve-stem, which passes up through this neck and cap. There is also an opening $a^4$ in the back of the case, which is sufficiently large to permit the valve to be passed through it into the case for attachment and adjustment. This opening is closed by a screw-plug E, and upon the back or inner face of this plug there is a lug or projection $e$, extending directly inward toward the port $a'$. This lug is of such length that when the valve is moved downward to close the port the back of the stem will come in contact therewith, as seen in Fig. 1, thereby setting the valve up firmly to its seat, and any looseness occasioned by wear will be completely taken up by the independent movement of the stem upon the valve by reason of the loose connection, already described, the inclined face of the stem acting upon the inclined projection at the back of the valve to set the valve firmly upon its seat and preventing lateral movement by the flanges on the inclined back, between which it is fitted. A short lever F is pivoted to the upper end of the valve-stem and its short arm is pivoted to the upper end of the link G, the lower end of which is pivoted to lugs $g$ on the side of the casing. The other or long arm of the lever is bent downward and outward and terminates in a flat step $f$. This lever therefore is shaped for a treadle-lever, so that the valve may be readily opened and closed by the foot. The movement is also quick, and as the range of the lever is not great there is almost certainty of throwing the valve to its complete limit at each movement, so that it will be either fully closed or completely opened, as the case may be, and when the valve is closed it will always be perfectly and accurately seated by means of the devices at the top and back thereof, already described.

In details of construction there may be changes without losing the main features of our invention, the construction and operation of which have been set forth, and such changes are contemplated by us in the manufacture and application of this valve.

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

1. The valve-case A, provided with the outlet-port $a'$, in combination with the sliding valve B, provided with a flange $b^2$ at its upper end adapted to fit upon and over the metal at the upper part of the port, substantially as shown and described.

2. The valve-stem C, provided with a wedge-shaped lower end $c'$ and an annular groove $c$ just above the latter, in combination with the valve B, provided with the inclined back $b'$ and forked lug $b^4$ of less thickness than the width of the said groove, and the block E, fitted to the opening in the back of the case and having a projecting lug $e$ extending within the case to the back of the valve, substantially as and for the purposes specified.

LEON H. PRENTICE.
PETER R. McLEOD.
RICHARD T. CRANE.
LAWRENCE PILKINGTON.

Witnesses:
A. M. BEST,
CARRIE FEIGEL.