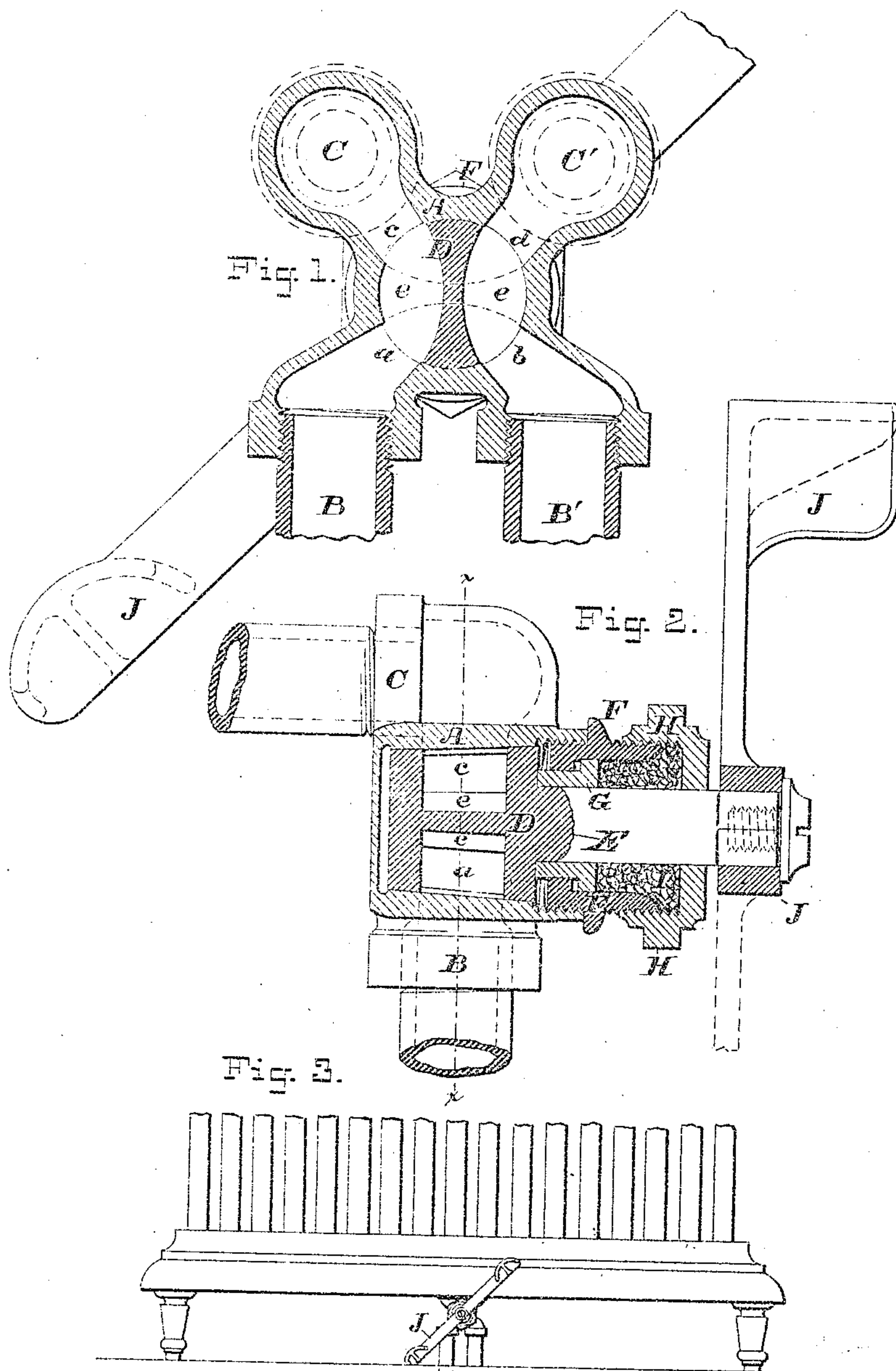


W. H. MEREDITH.
Valve for Radiators.

No. 207 540.

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ATTEST:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN VALVES FOR RADIATORS.

Specification forming part of Letters Patent No. 207,510, dated August 27, 1878; application filed July 3, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. MEREDITH, of the city, county, and State of New York, have invented certain Improvements in Valves for Radiators, of which the following is a specification:

This invention relates to valves adapted most particularly to steam-radiators, but which are also adapted to those in which hot water or air is used.

The principal object of the invention is to provide a valve that will open or close the inlet and return pipes simultaneously and by one operation, so as to insure a proper circulation in the radiator or its total isolation from the generator.

The invention consists, essentially, in the application to a radiator, connecting through inlet and return pipes with a generator, of a valve arranged to open or close simultaneously and at one operation both the inlet and return pipe, and to provide, when the radiator is isolated, continuous circulation through the generator, pipes, and valve.

It also consists in various combinations of parts, all of which will be more fully hereinafter set forth.

In the drawings, Figure 1 is a vertical cross-section of the valve and its casing, taken in the plane of the line *x x*, Fig. 2. Fig. 2 is a mid-sectional view of same, taken at right angles to Fig. 1. Fig. 3 is a general view, on a smaller scale, showing the application of my improved valve to a radiator.

A represents a valve casing or chamber, the bore of which is slightly tapered, as usual. This casing has four ports, *a b c d*, opening respectively into pipes B B' C C'. The two former connect the generator, which may be an ordinary steam-boiler, with the valve-casing, and the two latter connect the valve-casing with the radiator. The pipe B leads from the steam-space in the generator to the valve, and is called the "supply-pipe." The pipe B' leads from the valve to a point below the water-line in the boiler, and is called the "return-pipe." The pipe C leads from the valve to the radiator, and is called the "inlet-pipe," and the pipe C' leads from the radiator to the valve, and is called the "outlet-pipe." If a coil is used

in the radiator, the same should be interposed between the pipes C C'.

No generator is shown in the drawings, as a common steam-boiler may be used for the purpose. Nor do I deem it necessary to show a complete radiator, as any form of radiator may be provided with my valve or cut-off.

The reference-letters B B' C C' serve to designate, respectively, the inlet and return pipes complete, although only fragments of such pipes are shown in the drawings.

D is a conical plug-valve, ground to fit the bore of the casing, and provided with a stem, E. This valve is cut away at *e e*, on opposite sides, to connect the ports in the casing, the communication between any two ports being dependent upon the position of the valves. When turned so that the bridge stands as represented in full lines in Fig. 1, the steam from the generator passes through the pipe B, ports *a c*, and pipe C to the radiator, while return communication is established, through the pipe C', ports *d b*, and pipe B', between the other end of the radiator-coil and the water in the generator. Thus a complete equilibrium and perfect circulation is set up throughout the radiator and generator simultaneously.

When the valve D is given a turn in either direction, the partition or bridge assumes the position indicated by dotted lines in Fig. 1, and the radiator is completely isolated from the generator and the heat is cut off.

At the same time that the above isolation is effected communication is established, through the valve, between the pipes B B'. This is a very important feature, as it insures circulation and a perfect equilibrium, precisely the same as when the radiator is connected. This prevents condensation and freezing in the pipes B B', which is liable to occur when they are cut off from the radiator and from each other. It also adapts them to serve as moderators of the temperature when it is not cold enough to turn the steam onto the radiator.

It will be observed that, as an incidental of the operation, communication is established between the pipes C C' when the radiator is cut off by turning the valve.

F is a stuffing-box, preferably made of a separate piece from the casing A, but not neces-

sarily so. G is a tubular piece, which fits into the box F and rests upon the valve D. H is a screw-cap or gland, and I is the packing interposed between the gland and the piece G. It will be seen that when the cap H is screwed down the valve D is pressed firmly to its seat and held there elastically, or by elastic pressure from the superincumbent packing. When the valve becomes worn it is kept up to its seat by screwing down the cap or gland.

The valve might be operated by an ordinary lever or handle; but I prefer the arrangement shown, which I will now describe.

J is a cross-treadle, secured to the stem E in some suitable manner, and arranged to be operated by the foot. When one end is depressed the valve is opened; when the other is depressed the valve is closed. This treadle may be provided with roughened pads at the ends to receive the foot, and it should have stops to prevent too much movement. Fig. 3 shows a cross-treadle so arranged as to strike the floor when pressed far enough to actuate the valve. In lieu of this, the upper end might be arranged to catch under the lower edge of the radiator base, or under a stop on the same. This treadle enables the valve to be operated without stooping down or burning the fingers, as where the ordinary valves are used.

I claim—

1. The combination, with a radiator having a supply or inlet pipe and a return-pipe, of a valve or cock arranged to cut off at once all communication between the radiator and the source of heat, and to open, simultaneously with the isolation of the radiator, communication through the generator, pipes, and valve, substantially as set forth.

2. The combination of the pipes B B' C C', the casing A, provided with ports a b c d, the valve D, cut away at e e, and a radiator adapted to connect with the valve through the pipes C C', when all are arranged substantially as and for the purposes set forth.

3. The combination of the coned or plug valve D, arranged to be oscillated, with a cross-treadle, J, fixed to said valve, arranged to operate the valve by being depressed at the ends, and arranged also with reference to the floor or the base of the radiator so that its stroke will be properly limited, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM H. MEREDITH.

Witnesses:

ARTHUR C. FRASER,
HENRY CONNETT.