

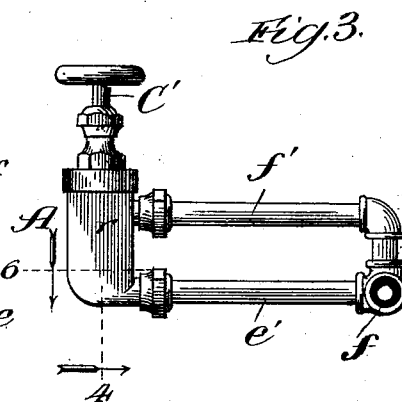
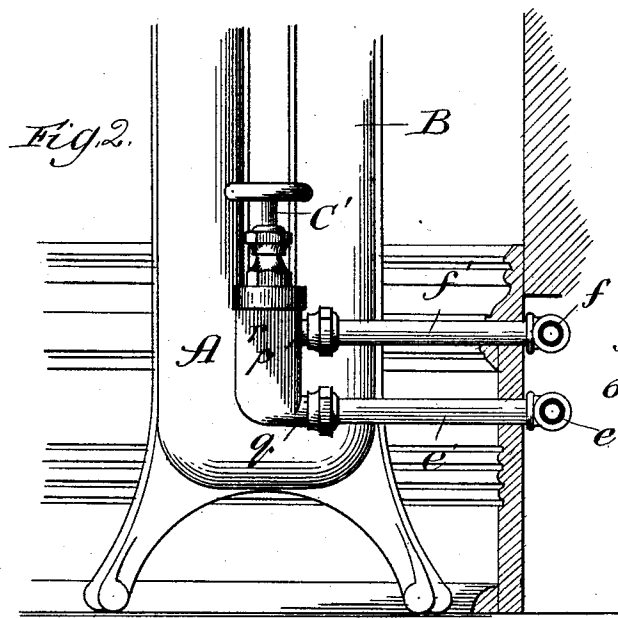
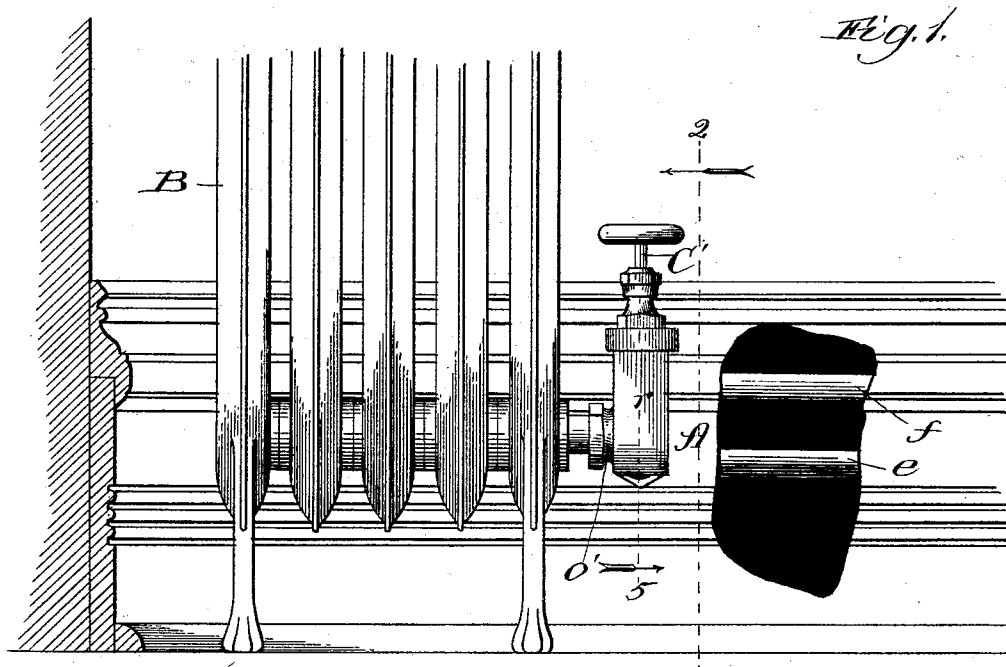
(No Model.)

2 Sheets—Sheet 1.

J. COLLIS.
RADIATOR VALVE DEVICE.

No. 479,400.

Patented July 26, 1892.



Witnesses:
 E. Gaylord,
 J. H. Dyreforth)

Inventor:
John Collis
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H. A. 18

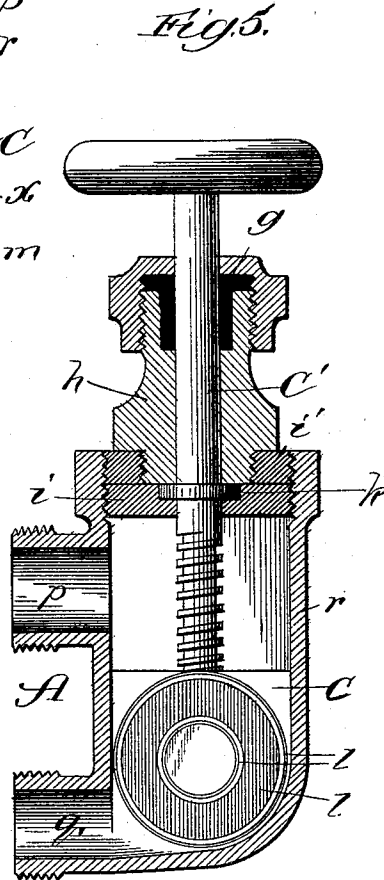
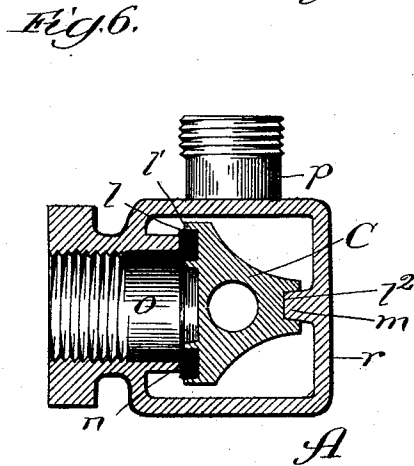
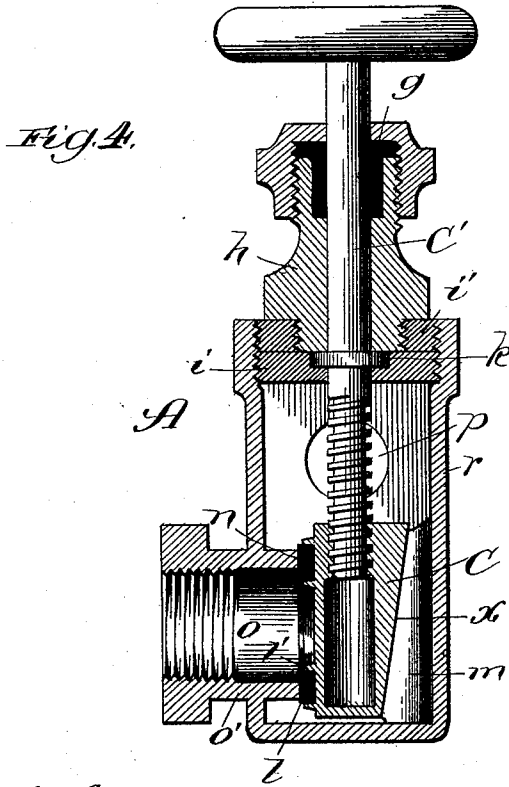
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UNITED STATES PATENT OFFICE.

JOHN COLLIS, OF DES MOINES, IOWA.

RADIATOR-VALVE DEVICE.

SPECIFICATION forming part of Letters Patent No. 479,400, dated July 26, 1892.

Application filed April 21, 1891. Serial No. 389,801. (No model.)

To all whom it may concern:

Be it known that I, JOHN COLLIS, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have
5 invented a new and useful Improvement in Radiator-Valve Devices, of which the following is a specification.

My invention relates to an improvement in the class of valve devices employed at the
10 radiators of steam-heating systems to enable cutting off the supply of steam at any radiator provided with the device without thereby obstructing the circulation in the steam-pipes. As the valve device in the class referred to has hitherto been constructed, while
15 provision is made that by turning the valve to shut off the steam-supply to the radiator there shall be a short circuit produced for the steam between its inlet and outlet pipes outside the radiator, the construction is such as
20 to close the short circuit when the valve is turned to open the radiator to the steam-supply. This construction has the disadvantage that it affords no means for enabling the condensed steam in the supply to separate therefrom, but requires it to be carried in the supply to the return-pipe through the radiator, wherein much of the condensation is liable to be lodged.

30 My object is to provide a construction of valve device in the aforesaid class whereby there shall always be an opening in the passage between the steam inlet and return pipes whether the valve shall be closed to shut off
35 the supply to the radiator or open to admit it thereto. Thus when the valve is open I am enabled to provide for separation from the steam-supply before it enters the radiator of the condensation, which is short-circuited into the return-pipe, and thereby the
40 radiator is supplied with the more-dry steam.

My improvement not only permits the circulation to continue unobstructedly through the pipe system in case of closing any number of the radiator-valves in the steam-circuit, but it particularly adapts the steam-pipes to be laid horizontally throughout the building behind the base-boards of the walls, and the valve-containing branch pipes therefrom to the radiators to be short, according to
50 the short distance of the radiators from the walls, by leading by the most direct course

into the radiators. The pipes may also be laid in front of the base-board and the connections made with elbows or swing-joints, 55 and all possible expansion of the supply and waste pipes may be looked after without raising the radiator-feet from the floor.

In the accompanying drawings, Figure 1 is a view in broken side elevation representing a
60 loop radiator in operative position with my improved valve device in place in the steam-circulating system of the kind involving supply and return pipes. Fig. 2 is a section taken on the line 2 of Fig. 1 and viewed in the direction of the arrows. Fig. 3 is a view showing my improved valve device in elevation as
65 connected in a circulating system having a single pipe for both the supply to and exhaust from the radiators. Fig. 4 is an enlarged vertical sectional view of the valve, taken on the line 4 of Fig. 3 and viewed in the direction of the arrow. Fig. 5 is a similar view of the same, taken on the line 5 of Fig. 1 and viewed in the direction of the arrow. Fig. 6 is a plan
70 sectional view of the same, taken on the line 6 of Fig. 3 and viewed in the direction of the arrow.

A is my improved valve device of the so-called "corner-valve" variety, and the construction of which renders it a three-way
80 gate-valve. It involves the following described details in its construction: The shell r , which should be of the general cylindrical form illustrated, is provided near its base with an opening q , the diameter of which is preferably about three-quarters of an inch, and over the opening q with a somewhat-larger opening p , both said openings having nipple
85 extensions, as shown, at which to connect the pipes, as hereinafter described. Near the base of the shell r at a right-angle to the opening q is an opening o , having cast in it a short tube o' , adapted to be connected at its outer end with the inlet-opening to a
90 radiator B, and projecting at its opposite end into the shell, where it affords a valve-seat n . Centrally behind the valve-seat n in the shell r is a vertical web m , inclining from its upper end toward the base of the opening o , and
95 affording a guide for the valve C. The preferred form of the valve C is that of a block having a straight flat face provided with a circular seat l' for a packing-ring l , and taper-

ing in a downward direction at its rear side, as shown at *x* in Fig. 4, to conform to the opposite taper of the rib *m*, which fits into a longitudinal recess *l*, Fig. 6, in the back of the valve. When the valve C is in its closed position, (illustrated,) the packing-ring *l* bears against the seat *n*. For raising and lowering the valve C, I provide a rotary threaded stem C', engaging a corresponding hole in the valve, and provided with a collar *k*, seated in a recess in a head *i*, screwed into the upper end of the shell, an internally and externally threaded ring *i'* being screwed into the shell upon the head and affording a bearing for the threaded end of the head *h*, which confines the stem C' at its collar *k* against longitudinal movement and through which the stem passes, being surrounded at the outer end of the head *h* with a suitable stuffing-box *g*.

With steam supply and return pipes *f* and *e*, arranged as shown in Figs. 1 and 2, my improved device A is applied by connecting it at its opening *o* with the radiator B, and by branch pipes *f'* and *e'*, respectively, with the pipes *f* and *e*. If, as indicated in Fig. 3, only a steam-pipe *f* be provided both for the supply to and exhaust from the radiator, both branch pipes *f'* and *e'* may be connected with it, as represented.

When the valve C is raised, and thus removed from its seat *n*, to open the passage *o*, the steam, which is always free to enter the valve device A at its opening *p*, may pass into the radiator by way of the opening *o*, and the condensation may pass out at the lowermost opening *q* into the pipe *e'*, if provided, or into the pipe *f* if only the latter be provided. Lowering the valve C to the position of covering the seat *n* effectually prevents steam entering the chamber of the device A at the inlet *p* from gaining access to the radiator, but does not interfere with the steam-circulation through the valve device from the inlet *p* to the outlet *q*, since the latter is always accessible along the sides of the valve C, which does not diametrically fill the shell *r*.

It will thus be quite apparent that shutting off the steam-supply to a radiator or to any number of radiators in a steam-heating system not only does not affect the steam-circulation but does not necessitate conducting the condensation into the radiator, because the

passage for the steam from the inlet to the outlet opening of each valve device A is not thereby closed.

The lower opening *q* may be provided in the base of the shell with advantage, particularly where a radiator is in the center of a room or around a column.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a radiator-valve device, a shell having an outlet-opening at which to connect the device with a radiator and a supply-opening and a discharge-opening in vertical line with each other to one side of the outlet-opening at which to connect the device with the circulating-pipe system, said supply and discharge openings having permanent open communication with each other in the shell past the said outlet-opening, in combination with a vertically-adjustable valve confined in the shell with relation to its outlet-opening and provided with means for operating it to open and close the said opening, substantially as described.

2. A three-way-valve device for use with a radiator and its circulating-pipe system, comprising a shell having an outlet-opening *o*, a tube cast therein adapted to be connected at its outer end with the inlet-opening of a radiator and projecting at its other end within the shell to form a valve-seat *n*, a supply-opening *p* and a discharge-opening *q*, respectively, above and below the plane of the outlet-opening to one side of the latter and having branches *f'* and *e'* connecting them with the circulating-pipe system, and a vertically-adjustable valve C, confined in the shell with relation to the said outlet-opening and provided with means for raising and lowering it to open and close the opening *o*, the openings *p* and *q* having permanent direct communication with each other, whereby when the valve is closed the circulation is continued between the said branches and whereby when the valve is open condensation in the steam-supply from the branch pipe *f'* discharges directly into the branch pipe *e'*, substantially as described.

JOHN COLLIS.

In presence of—

A. N. PORTER,
L. J. SILVARA.