

W. W. RICHARDSON.
HEATING SYSTEM.
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1,177,897.

Patented Apr. 4, 1916.

FIG. 1.

FIG. 2.

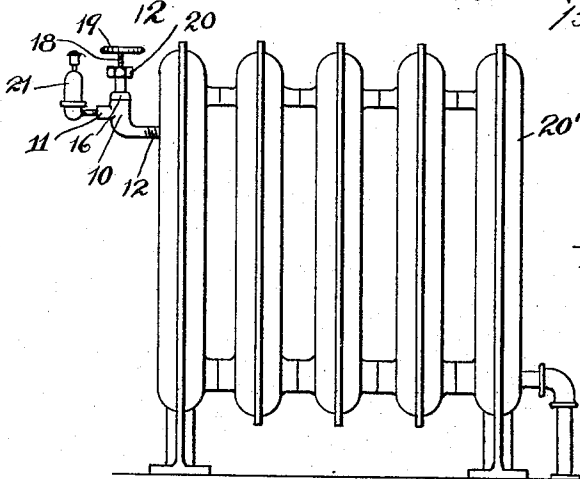
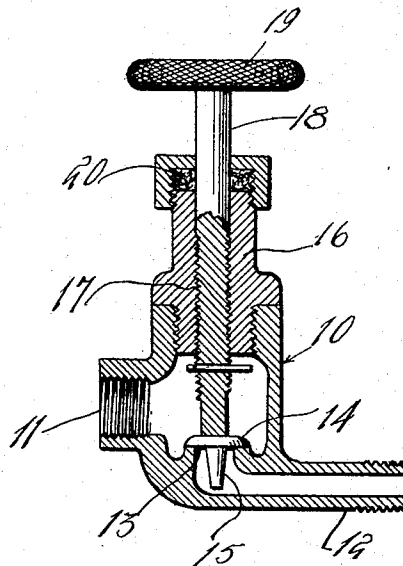
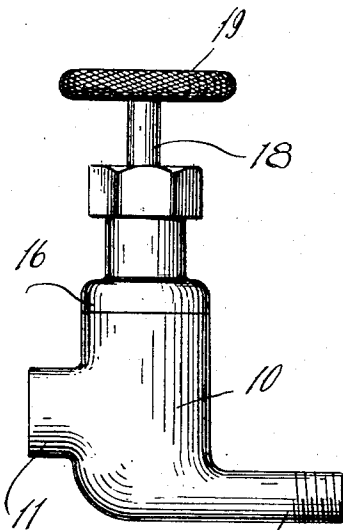


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

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HEATING SYSTEM.

1,177,897.

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To all whom it may concern:

Be it known that I, WILLIAM W. RICHARDSON, a citizen of the United States, residing at Winnemucca, in the county of Humboldt, State of Nevada, have invented certain new and useful Improvements in Heating Systems; and I do hereby 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.

This invention relates to improvements in heating systems and particularly to vacuum controlling valves therefor.

The principal object of the present invention is to provide a valve disposed between the ordinary air valve and the radiator by means of which the air in the radiator may be permitted to readily escape, but at the same time preventing outside air from entering the radiator.

Another object of the invention is to provide a valve which will obviate the necessity for the ordinary steam inlet valve, and the consequent filling of the radiator with water.

Another object of the invention is to provide a simple check valve for a radiator which includes means for regulating the distance the valve may open, and also for locking the valve in closed position.

Other objects and advantages will be apparent from the following description, when taken in connection with the accompanying drawings.

In the drawings: Figure 1 is an elevation of a valve made in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view therethrough. Fig. 3 is a diagrammatic view illustrating the position of my valve with respect to the radiator and ordinary air valve.

In the ordinary steam radiator, a valve is provided which controls the inlet of steam to the radiator. This valve very seldom fits tight enough, when closed, to entirely prevent the entrance of steam into the radiator. This entrance of steam in a small quantity rapidly condenses, and partially fills the radiator with water. In some buildings where steam heating plants are installed, and during the first period of cold weather, this water in the radiators freezes and necessitates the thawing of the inlet valve to open the same and permit steam to enter the radiator. In some cases enough water col-

lects in the radiator to burst the radiator when this water freezes causing considerable annoyance and expense. If the water does not freeze, a loud cracking noise is caused when the steam enters the radiator and comes in contact with the water therein. By means of my invention, I obviate the necessity for these inlet valves which permits the condensed steam to run back through the inlet pipe to the boiler during the period that the radiator is out of use.

With the ordinary air valve of a steam radiator, when the radiator is cold, this valve remains open, and permits air to readily enter the radiator. To eliminate this undesirable feature is another particular object of my valve.

Referring particularly to the accompanying drawings, 10 represents the body of the valve which has a threaded connection 11 extending to one side and communicating directly with the interior of the body while a threaded nipple 12 extends from the opposite side and communicates with the interior of the valve at the bottom. In the bottom of the interior of the body 10 is a seat 13 on which rests a valve disk 14, a stem 15 being carried by the lower side of the disk and depending into the portion of the nipple where said nipple communicates with the valve. Threaded into the upper end of the body or casing 10 is a bonnet 16, said bonnet having formed longitudinally therethrough a threaded bore 17 which receives the threaded stem 18 forming the locking device for the valve. The lower end of the stem is disposed within the casing directly over the center of the disk 14, and is arranged to be engaged with the disk to force it to its seat, when screwed down by means of the milled hand wheel 19 on the upper end. A suitable packing gland 20 is engaged on the upper end of the bonnet, and receives the stem 18 therethrough.

The nipple 12 is arranged to be engaged in the threaded opening of the radiator 20', as shown, while the connection 11 receives the threaded connection of the ordinary air valve 21.

By means of the stem 18, the distance that the valve disk 14 will rise can be quickly and easily regulated, and by screwing down the stem tightly, the stem will force the disk against the seat and hold the same in its closed position. By this means the radiator

may be controlled entirely by this valve, and obviate the use of the usual globe valve in the steam inlet pipe.

From the foregoing it will thus be seen that by the elimination of the ordinary steam inlet valve air will be prevented from entering the radiator, and the water in the radiator permitted to run back through the steam inlet pipe.

10 Attention is also called to the fact that the ordinary air valve does not have to be adjusted as ordinarily but the auxiliary valve is opened and closed to control the radiator. To remove the air valve from the radiator
15 for repairs it is only necessary to close the auxiliary valve, thus preventing escape of steam and the consequent burning of the hands. It will also be seen that when the air valve is removed, no air can enter the radiator.

What is claimed is:—

The combination with a steam radiator and air valve thereof, of an auxiliary controlling valve disposed between the radiator

and air valve and establishing communication therebetween, said valve including a casing having a nipple communicating with the bottom of the casing and with the interior of the radiator, a threaded extension communicating with the opposite side of the casing and with the threaded stem of the ordinary air valve, a bonnet detachably engaged in the upper end of the casing and provided with a longitudinal threaded bore, a valve seat formed in the casing at the point of communication with the said nipple, a valve disk seated thereon, and a threaded stem engaged in the bore of the bonnet and arranged for movement toward and away from the valve disk to limit and prevent the opening movement of the disk. 25 30 35 40

In testimony whereof, I affix my signature, in the presence of two witnesses.

WILLIAM W. RICHARDSON.

Witnesses:

JOSEPH A. LANGWITH,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."