

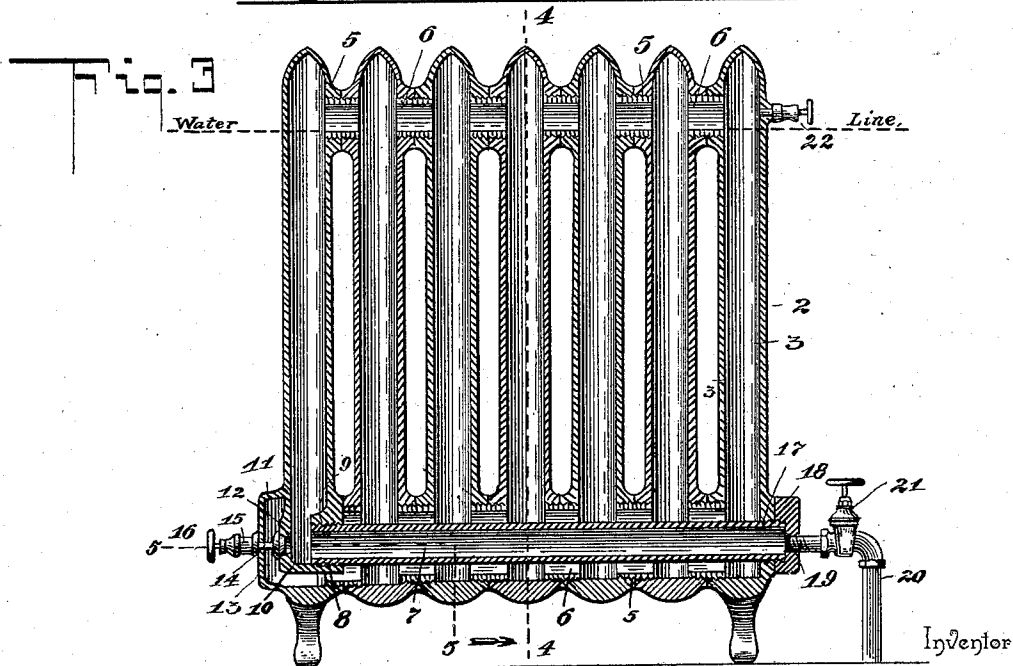
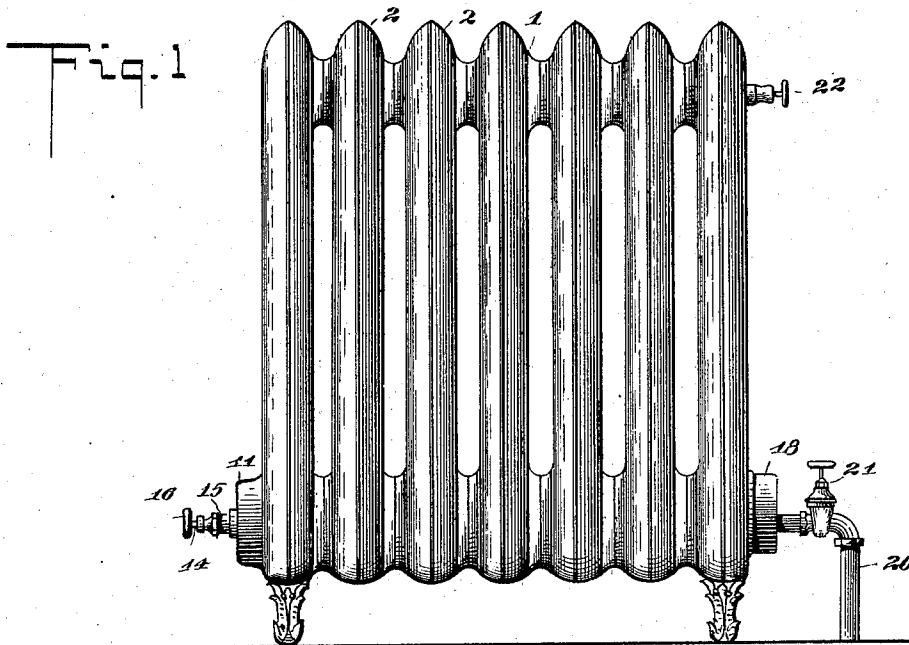
(No Model.)

2 Sheets—Sheet 1.

W. A. SEEVERS.
STEAM OR HOT WATER RADIATOR.

No. 580,904.

Patented Apr. 20, 1897.



Witnesses

Edmund A. Shanks
L. O. Hollaus (Att.)

By his Attorneys,

William A. Seevers

C. A. Snow & Co.

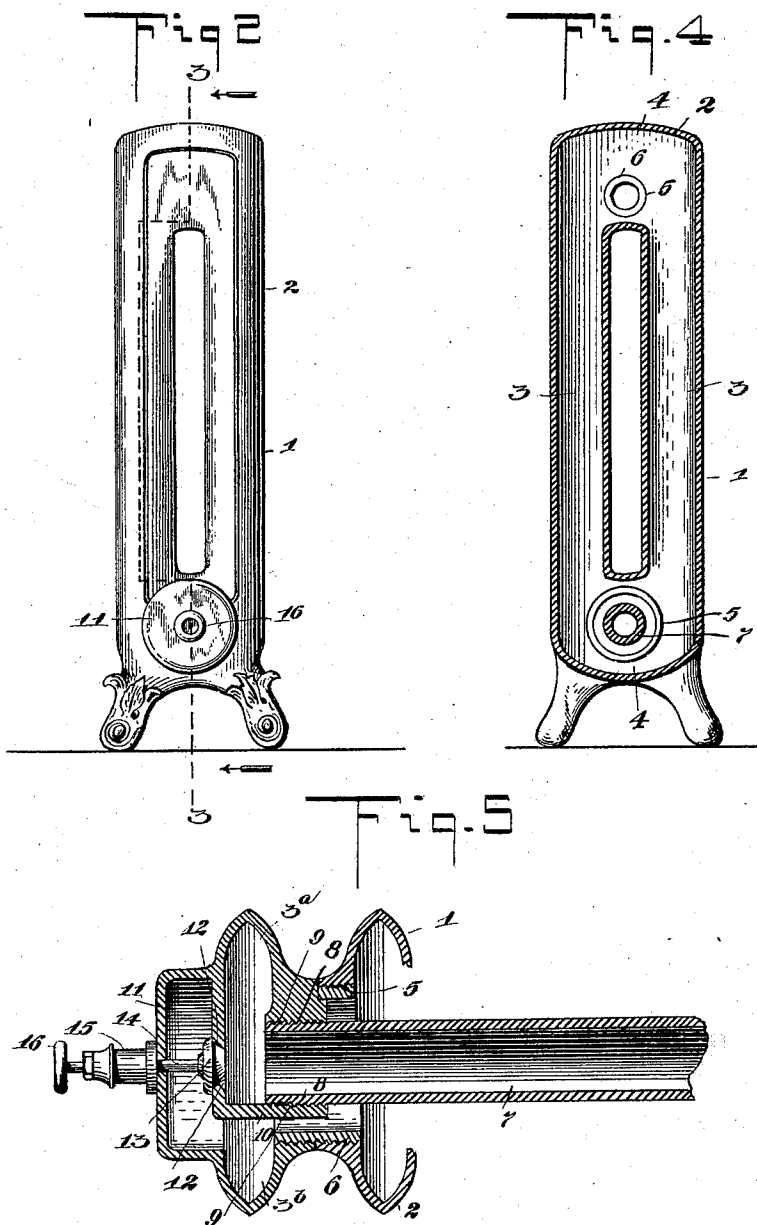
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Inventor

William A. Seevers

Witnesses

Edmund A. Krause
S. R. McLaughlin

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UNITED STATES PATENT OFFICE.

WILLIAM A. SEEVERS, OF OSKALOOSA, IOWA.

STEAM OR HOT-WATER RADIATOR.

SPECIFICATION forming part of Letters Patent No. 580,904, dated April 20, 1897.

Application filed July 25, 1896. Serial No. 600,529. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. SEEVERS, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented a new and useful Steam or Hot-Water Radiator, of which the following is a specification.

This invention relates to steam and hot-water radiators; and it has for its object to provide an improved radiator of this character adapted for use in connection with a one-pipe-radiator system and so constructed as to require less attention, while at the same time providing for quick and uniform heating and a ready adaptation to either hot-water or steam heating without changing any pipe connections.

With these and many other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of a steam and hot-water radiator embodying the present invention. Fig. 2 is an end view thereof. Fig. 3 is a vertical longitudinal sectional view on the line 3 3 of Fig. 2. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 3. Fig. 5 is an enlarged detail horizontal sectional view on the line 5 5 of Fig. 3.

Referring to the accompanying drawings, 1 designates a radiator essentially comprising a series of upright hollow radiator-sections 2, arranged side by side in the usual manner in which radiator-sections are set up for use, and each of these adjacent radiator-sections consists of an upright looped casting having opposite tubular columns or legs 3, communicating with each other through the interior hollow spaces 4 at the top and bottom of the section, this construction being substantially similar to the construction of ordinary hollow radiator-sections. The series of upright radiator-sections 2 comprising the radiator are provided in their adjacent communicating sides and near their upper and lower ends with the alined circulating-passages 5, which receive therein the usual coupling-nipples 6 for connecting the sections of the radiator together, while at the

same time providing communication between all of the sections at the top and bottom.

In the present invention the alined circulating-passages 5 at the bottom of the radiator are of a sufficiently large diameter to receive therein a continuous horizontal steam-pipe 7, which extends within the bottom of the radiator from one end section to the other. The pipe 7 is sufficiently smaller than the alined passages 5, through which it extends, to allow a perfectly free circulation of water within the radiator around the pipe 7, and one of the threaded ends 8 of said horizontal continuous steam-pipe 7 is threaded in the pipe-opening 9, formed in one side of the partition-boxing 10, cast integrally within the lower end of one of the end sections 2 of the radiator. The said end section 2 of the radiator having the partition-boxing 10 is provided at one side, near its lower end, with an enlarged drain-chamber 11, offset from the side of the boxing 10 opposite the side in which the pipe 7 is fitted, and this opposite side of the partition-boxing 10 is provided with a drain-opening 12, that is adapted to be covered and uncovered by a drain-valve 13, working within the chamber 11 and fitted on the inner end of a valve-stem 14, working through the stuffing-box 15, fitted on the outer side of the chamber 11, and carrying at its outer end a hand-knob 16, which is manipulated with the hand to open and close the valve 13.

The partition-boxing 10, within one of the end sections 2 of the radiator, separates the opposite tubular columns or legs of this section of the radiator at their lower ends, and these opposite tubular columns or legs of said end section of the radiator are designated, respectively, 3^a and 3^b, the tubular column or leg 3^a communicating at its lower end with the interior of the boxing 10 and the pipe 7 and the lower end of the column or leg 3^b communicating with the drain-chamber 11 and the space exterior to the boxing 10, as clearly illustrated in Fig. 5 of the drawings.

The threaded end 8 of the pipe 7, opposite the end section having the boxing 10, is extended through a pipe-opening 17 in one lower side of the opposite end section and has detachably threaded thereon a bushing-cap 18. The bushing-cap 18 is provided with an ec-

centrically-disposed opening 19, in which is fitted one end of the steam-supply pipe 20, having a suitable cut-off valve 21. The end section 2, of the radiator opposite the section having the separated columns or legs 3^a and 3^b, is provided at one side and near its upper end, preferably, with a suitably-constructed self-closing vent-valve 22, which when pressed will vent the radiator of air very quickly, but which will close itself when released, so as to prevent any leak in case of the water filling the radiator should it be forgotten to close the vent when filling the boiler.

In the operation of the radiator by closing the drain-valve 13 and opening the air-vent valve 22 the steam passes directly through the steam-pipe 7 into the tubular column or leg 3^a of the end section 2 opposite the steam-supply pipe 20, and passing upward through the column or leg 3^a spreads itself throughout all the sections 2, so as to entirely fill the radiator with steam. The steam continues to condense and fill all of the communicating sections of the radiator with water of condensation up to the water-line of the radiator, which is at the lower side of the aligned circulating-passages 5 within the top of the radiator. When the water of condensation reaches the water-line near the top of the radiator, the same finds escape into the column or leg 3^a of the end section receiving the steam and returns downward through said column or leg 3^a into the pipe 7, and thence through the supply-pipe 20 back to the boiler from which such pipe leads. The continued condensation of the steam maintains the radiator nearly full of hot water and always at the same level, as the overflow-water passes back into the boiler through the course described, and at this point it is to be observed that all of the radiator-sections communicate with each other at the bottom, so as to keep the pipe 7 entirely surrounded by hot water, whereby the steam in said pipe is radiated to the water and keeps the same at about boiling temperature. By reason of this operation the radiator is very efficient for hot-water heating, but by opening the drain-valve 13 the standing water in the radiator drains through the opening 12 into the pipe 7 and returns to the boiler through the pipe 20, communicating with one end of the pipe 7. By thus draining the radiator of water the same can be used as an ordinary steam-radiator in the same manner as radiators used in connection with one-pipe steam-heating systems. The eccentricity of the pipe-opening 19 of the bushing-cap disposes the end of the pipe 20 therein sufficiently near the lower side of the pipe 7 to receive all the water drained back into the boiler through said pipe, as will be readily understood by those skilled in the art.

The construction of radiator herein described provides for a thorough heating of

the hot water within the radiator, especially for the reason that the steam passes through the water within the base or bottom of the radiator and exhausts at the top of the water, thereby heating the water both at the top and the bottom, and the arrangement also provides for reducing the steam-heating surface to a minimum and radiating the heat principally from the water, and the drain-valve is not only important in converting the radiator from hot-water to steam heating, but also allows the water to be drained out to prevent freezing.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A radiator comprising a series of upright hollow sections formed with opposite tubular columns or legs communicating with each other at the top and bottom, one of the end sections of the radiator being provided within its lower end with a partition separating the opposite tubular columns or legs of the section at their lower ends, and a horizontal steam-pipe extending continuously through all sections of the radiator at the bottom and fitted at one end in said partition so as to communicate with one of the tubular columns or legs of said end section, substantially as set forth.

2. A radiator comprising a series of upright hollow sections formed with opposite tubular columns or legs communicating with each other at the top and bottom, one of the end sections being provided within its lower end with a partition-boxing separating the opposite tubular columns, and at one side of said boxing with an offset drain-chamber, said boxing being provided in one side with a pipe-opening and in the directly opposite side with a drain-opening, a suitably-operated drain-valve working within said drain-chamber and adapted to cover and uncover said drain-opening, a steam-pipe extending continuously through the interior lower portion of the radiator and fitted at one end in said pipe-opening of the partition-boxing, a valved supply-pipe connection with the other end of said steam-pipe, and an air-vent valve fitted to one of the end sections of the radiator near the top, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM A. SEEVERS.

Witnesses:

GEO. OSWANDEL,
ED McELROY.