

J. H. DAVIS.

RADIATOR.

APPLICATION FILED APR. 1, 1904.

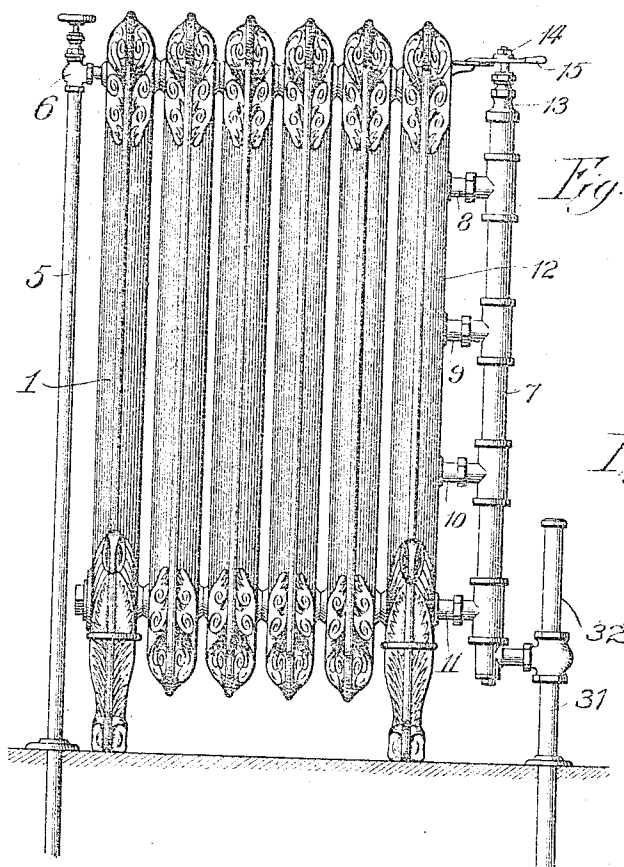


Fig. 1.

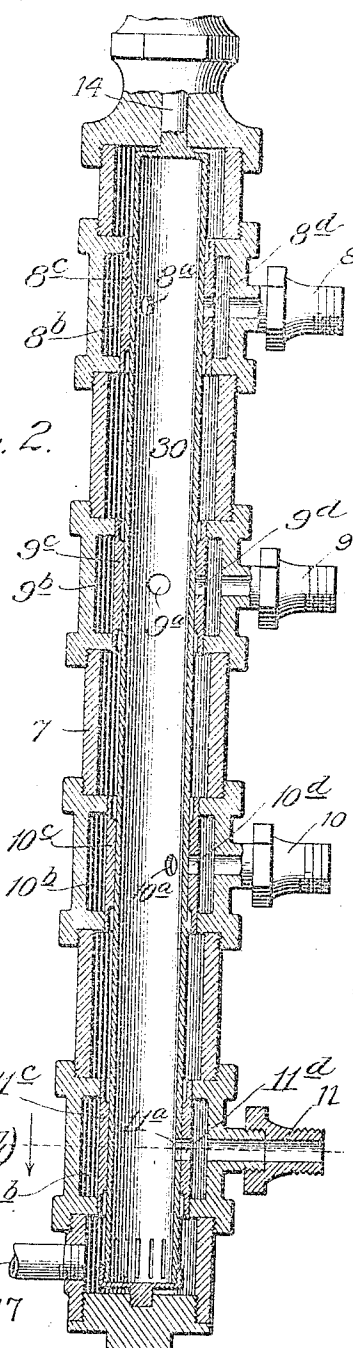


Fig. 2.

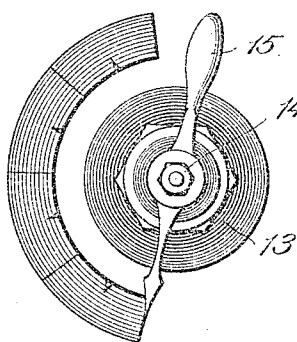


Fig. 3.

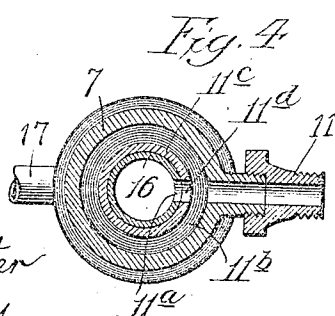


Fig. 4.

Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES H. DAVIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN  
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## RADIATOR.

No. 839,581.

Specification of Letters Patent.

Patented Dec. 25, 1906.

Application filed April 1, 1904. Serial No. 201,159.

*To all whom it may concern:*

Be it known that I, JAMES H. DAVIS, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

My invention has reference to steam radiators and has for its principal object the provision of means whereby any predetermined portion of such radiator or heating coil can be rendered inoperative by allowing water of condensation to accumulate to the point determined, or a portion of the chamber to be closed to steam, the remainder of the radiator or coil being permitted to become heated by the removal of the air and of any water of condensation which may accumulate above such predetermined point.

It is known that in the operation of steam heating apparatus it is difficult to so moderate and control the heat in a room where one radiator is employed as to get just the right temperature, the radiator which is fully heated being oftentimes too hot and if fully shut off leaving the room without sufficient heat. It has been heretofore proposed to meet this difficulty by dividing radiators into different sections or parts, say one quarter, one half or three quarters of the whole, and to provide means for governing the admission of steam to said parts, and my invention has for one of its objects the provision of an improved means for accomplishing such advantageous results and it is so devised as to secure the accomplishment of such result without any noise or troublesome consequences such as have followed some other prior attempts to hold water of condensation and steam both in the radiator at the same time, and to allow a portion of the loops thereof to become heated without heating the remainder.

The above, as well as such other objects as may hereinafter appear I attain by means of a construction which I have illustrated in preferred forms in the accompanying drawing, wherein—

Figure 1 is a side elevation showing a radiator with my improvement applied thereto;

Figure 2 is a sectional view of the preferred apparatus which I use for exercising control over the heat in the radiator in carrying out my improvement;

Figure 3 is a plan view showing the regulating handle and the quadrant or indicating disk therewith and;

Figure 4 is a sectional view taken on the line (4) of Figure 2.

Referring to Figures 1 and 2 it will be seen that I have in this construction of my invention taken a radiator of a known form composed of sections joined with connecting passages, both at top and bottom, and having an inlet or live steam pipe 5 provided with a hand valve 6 the outlet whereof opens into the upper end of the coil or section numbered 1, of the radiator. On the opposite side of the radiator I have arranged an upright valve casing 7 having branch inlets therein 8, 9, 10, and 11 leading from the radiator section adjacent which is numbered 12, said casing 7 having at its upper end a stuffing box 13 through which projects the controlling stem 14 arranged to be actuated by handle 15 and used for rotation of an inner tube or valve 30 (see Figure 2) which is provided with port openings 8<sup>a</sup>, 9<sup>a</sup>, 10<sup>a</sup> and 11<sup>a</sup> adapted to register with openings to the branch pipes, 8<sup>d</sup>, 9<sup>d</sup>, 10<sup>d</sup> and 11<sup>d</sup> respectively, but not any two of them at the same time.

As will be seen by examination of Figure 2 the branch pipes communicate on the interior of the casing 7 with individual chambers, marked respectively 8<sup>b</sup>, 9<sup>b</sup>, 10<sup>b</sup> and 11<sup>b</sup>, which chambers are separated from the other portions of the interior of the casing 7 by means of bushings, marked respectively 8<sup>c</sup>, 9<sup>c</sup>, 10<sup>c</sup> and 11<sup>c</sup>, the valve-tube 30 forming a seat within said bushings, and the bushings being provided with the openings which in proper position of the valve register with the openings 8<sup>a</sup>, 9<sup>a</sup>, etc., so as to control the flow of water produced by condensation through the several branch pipes 8, 9, 10, 11. In the position shown in Figure 2 the opening 11<sup>a</sup> is in register with the corresponding opening 11<sup>d</sup> in the bushing 11<sup>c</sup>, so that in such position the entire radiator will become heated by the steam and the water in condensation will flow out through the branch pipe 11 and escape through the outlet pipe 31 which if desired may be provided with some form of thermostatic valve such as indicated at 32.

If now it be desired to shut off the lower quarter of the radiator and use only three quarters of the same the valve handle 15 is turned so as to cause the port 10<sup>a</sup> to register

with the port 10<sup>d</sup> cutting off meanwhile the communication between the ports 11<sup>a</sup> and 11<sup>d</sup> when water of condensation will collect in the lower end of the radiator up to the opening of the branch pipe 10 after which any further water of condensation will escape through the branch pipe 10 and down through the center of the tube 30 and out of the pipe 31, as will be clear from examination of the drawing. In this manner the lower one quarter of the radiator will be filled with water of condensation and will not be affected by the action of the heat. In like manner the radiator may be caused to fill with water of condensation up to one half its height or three quarters thereof, so that if mild temperature is desired only the upper quarter of the radiator will be used. There being in this device no attempt to divide the radiator laterally, that is as between different loops in the same construction there is no chance for leakage of steam across from one portion to another of this said radiator and interference from the action of the water of condensation. Such water as condenses and collects in the radiator in the sections which are not in use is below the steam and will not interfere with the action of the same, nor cause any noisy effects as the drainage of the section in use is just as perfect as though there were no water below the branch pipe, which is in open position.

While I have described my invention as applied in conjunction with a system of heating wherein the steam enters at one end of the radiator and the water of condensation drains off at the other, it is obvious that my improvement is applicable also to a system of heating in which the live steam may arise and be admitted to the radiator through the vertical casing and sleeve described as comprising the controlling means governing the admission through the branches connecting to the radiator section, the condensation water passing out through the same pipe, as is common in single pipe systems in domestic heating apparatus. It is also obvious that what the particular system is to which my invention is applied is immaterial since the essence of the improvement resides in the radiator construction itself and the means whereby the several portions thereof are controlled as described above.

Having thus described my invention and illustrated its use, what I claim as new, and desire to secure by Letters Patent, is the following:

1. In combination, a main radiator section, an admission pipe at the top thereof, a vertical casing which constitutes a drain and comprises a plurality of T's and connecting pipe sections, a perforated bushing in the vertical portion of each of the T's, passages between the horizontal portions of the T's and the main radiator sections and having communication with the perforations in the bushings, and a pipe fitting the bushings and provided with perforations out of vertical alinement adapted to register with the perforations in the bushings, and means for rotating the pipe so that the various passages may successively be brought into communication with the interior of the pipe.

2. In combination, a radiator section, a drain therefor comprising a vertical casing, a plurality of cross passages to the radiator section at different heights, a plurality of perforated bushings in the casing communicating respectively with the cross passages, and a rotary pipe fitting the bushings and provided with perforations out of vertical alinement and adapted to register successively with the perforations in the bushings, and means for rotating the pipe so that the different cross passages may be brought into communication with the interior of the pipe.

3. In combination, a radiator section, a drain therefor comprising a vertical casing, a plurality of perforated bushings in the casing at different heights each having communication with the radiator section, and a rotatable pipe provided with perforations out of vertical alinement fitting the bushings and adapted at different successive positions of rotation to permit the registration of its perforations with the perforations in the bushings, whereby communication may be made between the radiator section and the interior of the drain at different heights.

I testify whereof I have hereunder signed my name in the presence of the two subscribed witnesses.

JAMES H. DAVIS.

Witnesses:

PAUL CAR ENTER,  
EDWARD C. BURNS