No. 667,606. Patented Feb. 5, 1901.

# J. F. THOMPSON.

## RADIATOR.

(Application filed Apr. 23, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1,

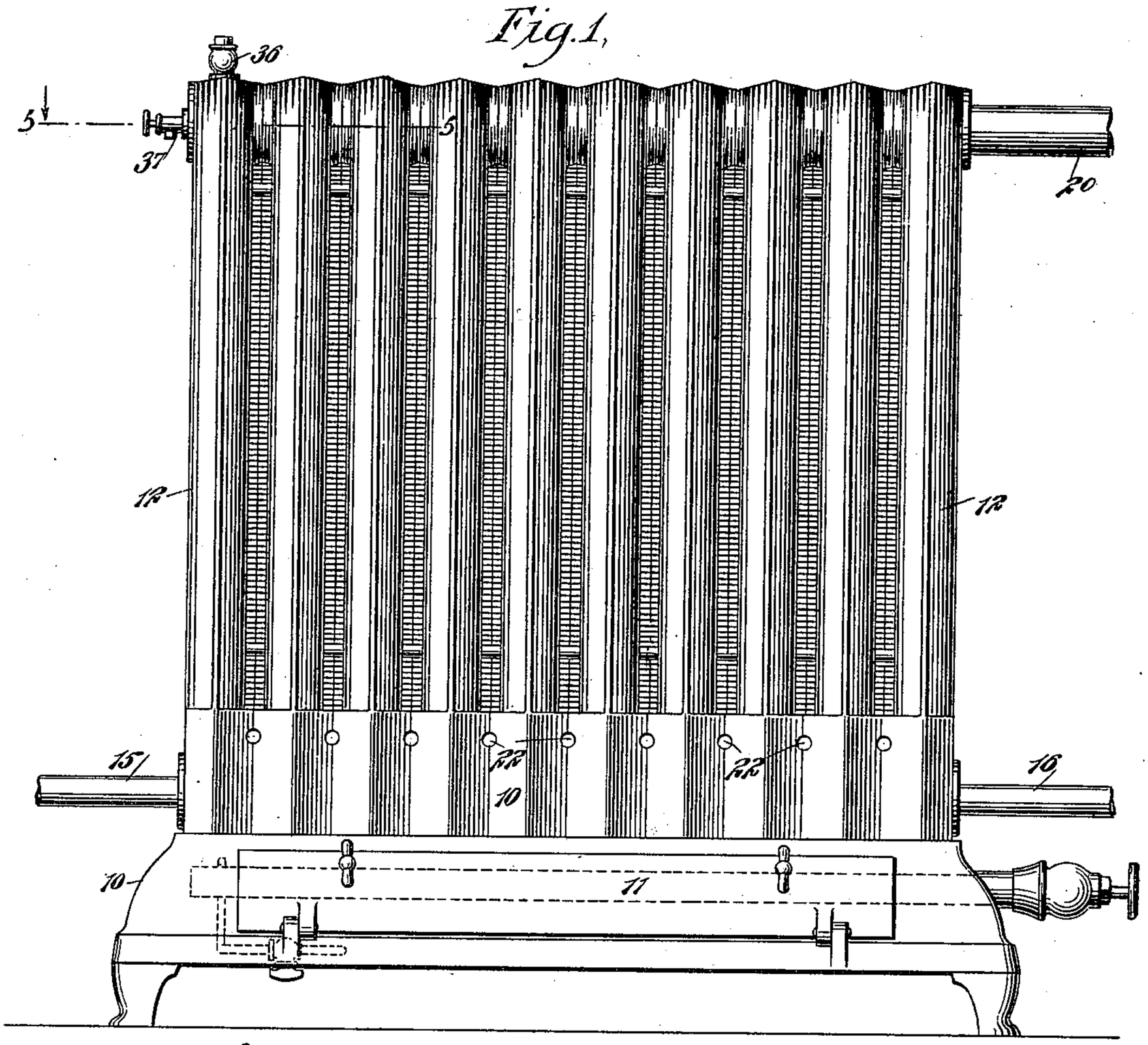
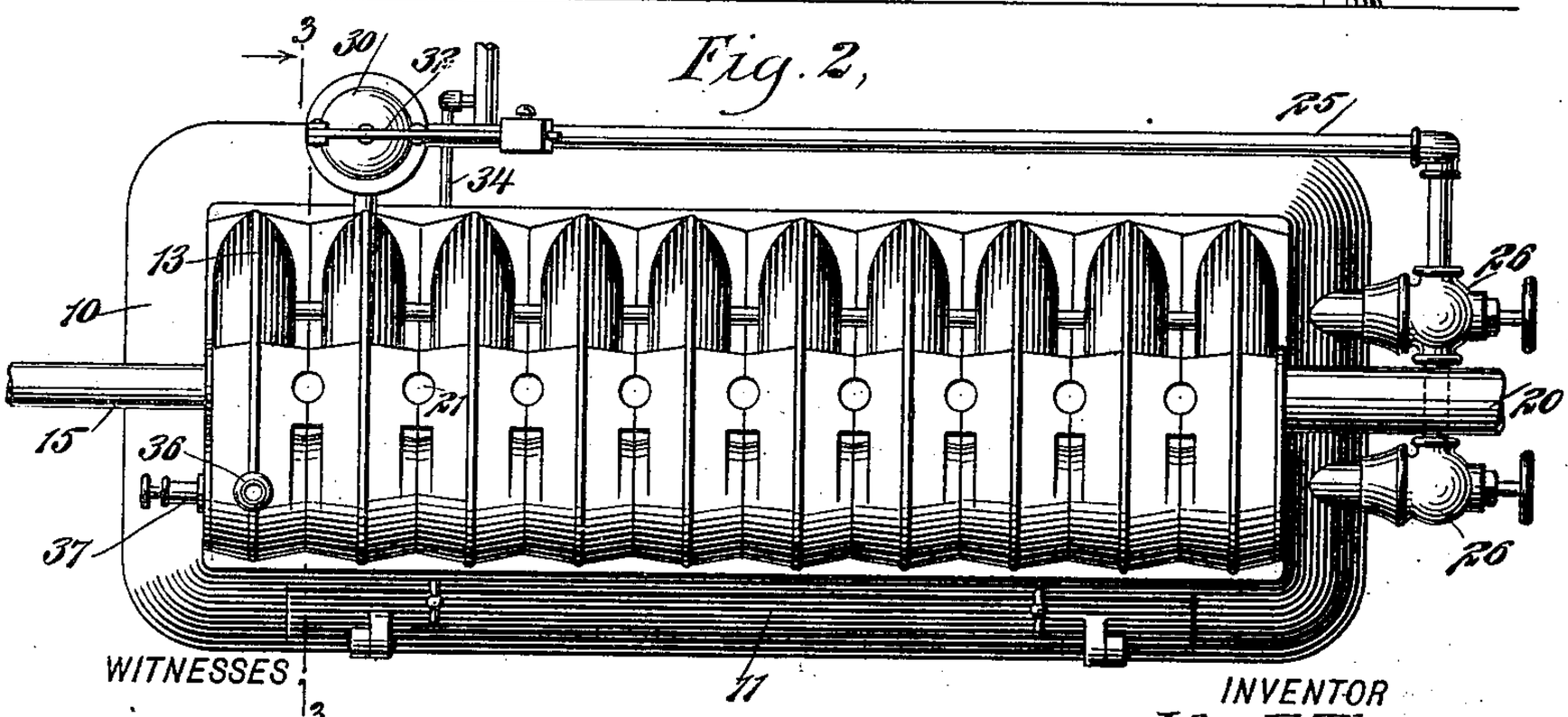



Fig. 2,




WITNESSES:

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Fig. 3.

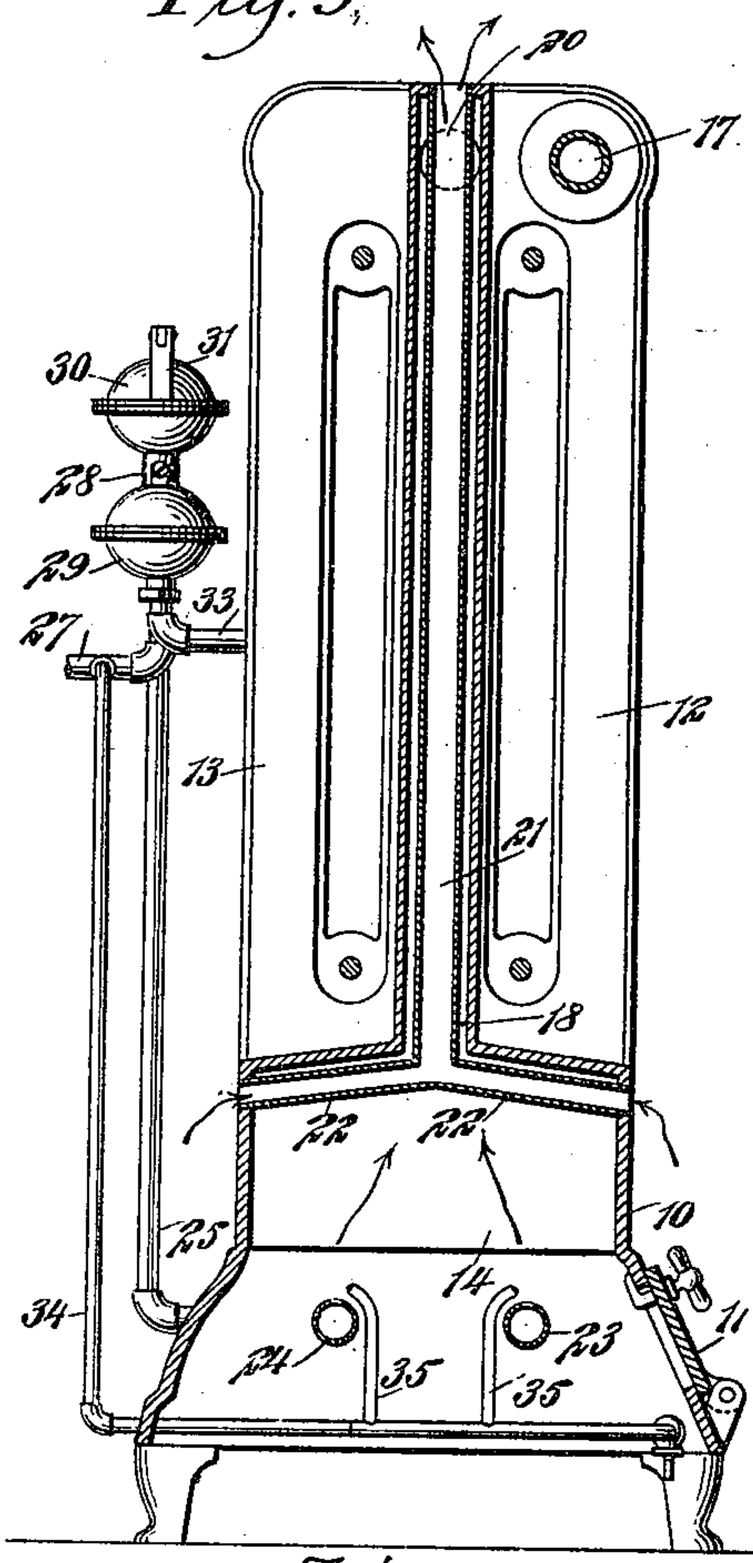



Fig. 4.

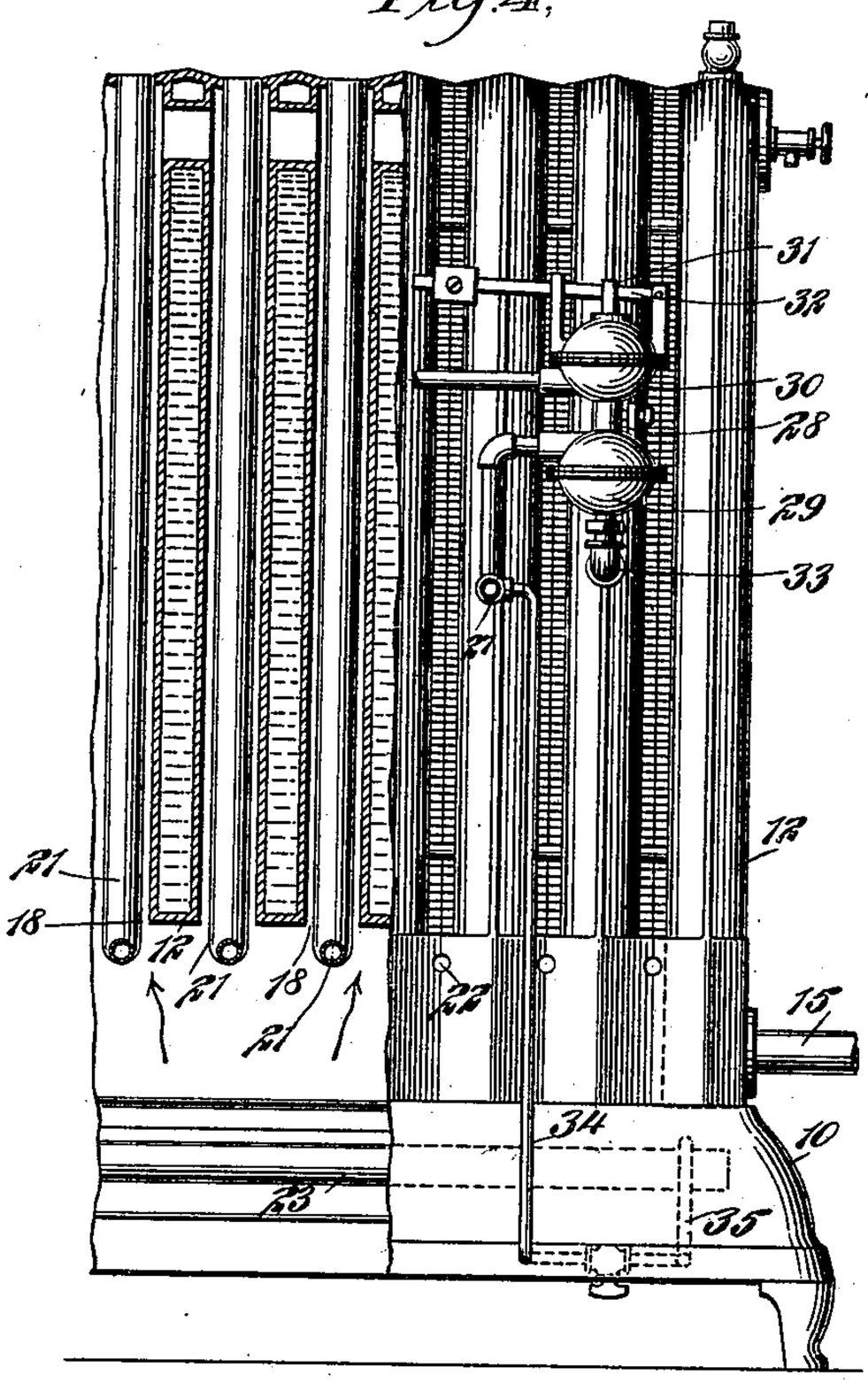



Fig. 6.

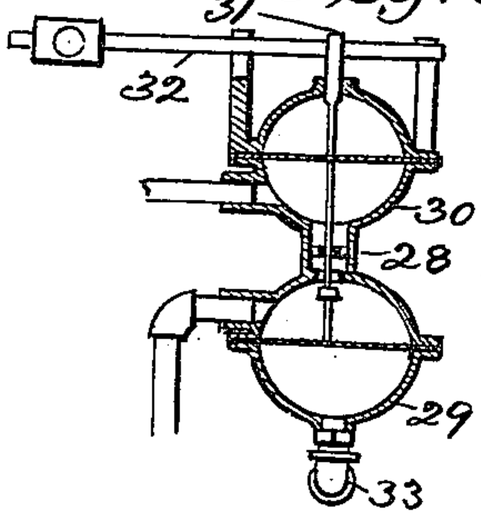
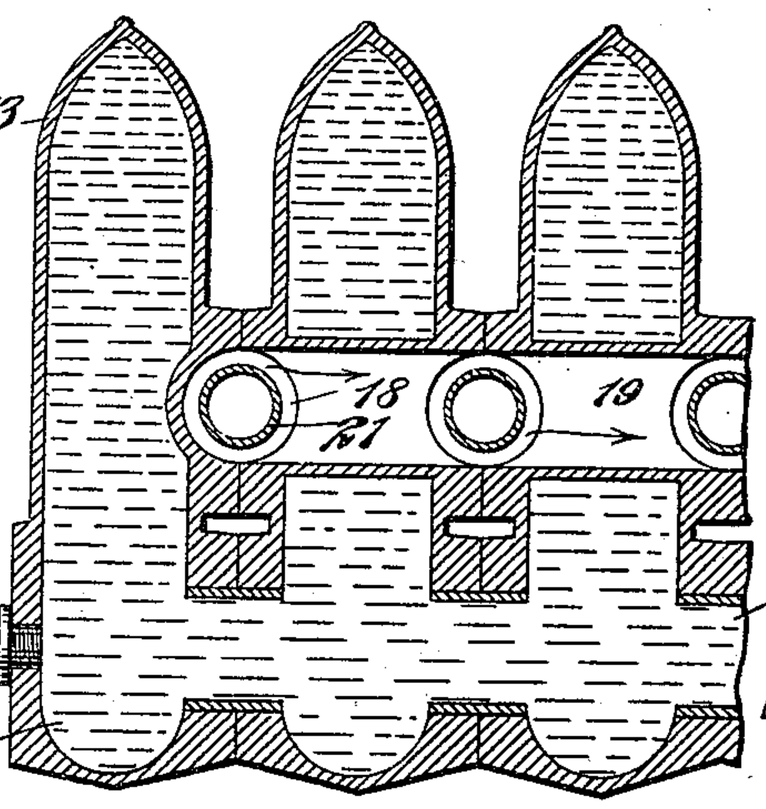



Fig. 5.

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# UNITED STATES PATENT OFFICE.

JOHN F. THOMPSON, OF NEW YORK, N. Y., ASSIGNOR TO G. A. PRATT & CO., OF SAME PLACE.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 667,606, dated February 5, 1901.

Application filed April 23, 1900. Serial No. 13,936. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. THOMPSON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Radiator, of which the following is a full, clear, and exact description.

This invention relates to improvements in hot-water radiators; and one object is to provide a radiator with an auxiliary water-heating device that may be used when comparatively little heat is required and while the radiator is cut off from the main steam or heating boiler, and a further object is to provide an automatic device for controlling the auxiliary heat-supply.

I will describe a radiator embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a radiator embodying my invention. Fig. 2 is a plan view. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a partial rear elevation and partial sectional elevation. Fig. 5 is a section on the line 5 5 of Fig. 1, and Fig. 6 is a sectional view of a gas-controlling valve employed.

The radiator comprises a base 10, open at the bottom and here shown as having a swinging door 11 at the front. Supported on and extended upward from the base are the radiator or water tubes consisting of the front legs 12 and the rear legs 13. The end water-tubes of the radiator are extended downward, as indicated at 14, and communicating therewith are pipes 15 and 16, designed for the entrance and exhaust of the heating steam or water from the boiler when such heating medium is desired. The several water-tubes communicate one with another through a channel 17, here shown as arranged along the front legs of the tubes at the top. Hot-air flues 18 pass upward between adjacent water-tubes, said flues opening at the bottom in the base 10 and being closed at the top. At the top they communicate with one another through a horizontal flue 19, which connects with a pipe 20, leading to a chimney or other outlet, so that the gas-fumes may be carried off.

Extended upward through each flue 18 and having its outer surface spaced from the inner surface of the flue is an air-circulating tube 21, which is open at the top and at the bottom communicates with laterally-extended air-inlet tubes 22, which pass through the side walls of the base. Extended through the base are gas-burner tubes 23 24, having perforations at the top through which the gas escapes. These burner-tubes are connected to a gas-supply pipe 25, and each one is provided with a controlling-valve 26.

Connecting with the supply-pipe 25 is a main supply-pipe 27, which leads into a valve-chamber 28, consisting of a tube in which a valve is arranged. Arranged below the valve-chamber is a globe 29, within which is a flexible diaphragm adapted to be operated to close the valve, as the lower portion of the valve-stem rests upon the upper side of said diaphragm. At the upper end of the valve-chamber is a globe 30, in which also is arranged a flexible diaphragm, with which the upper extension of the valve-stem engages, and from the upper side of the diaphragm and globe 30 a stem 31 extends upward and connects with a weighted lever 32, designed when pressure is relieved upon the lower diaphragm to open the valve. Thus an automatic gas-supply device is provided, as when the water in the water-tubes reaches a certain pressure, which may be governed by the weight on the lever 32, said pressure will be exerted through a tube 33, leading from one of the water-tubes into the globe 29 upon the under side of the diaphragm in said globe 29.

Extended from the main supply-pipe 27 is a gas-pipe 34, which extends into the base and terminates in burner-tubes 35, which extend slightly over the burner-tubes 23 and 24, as plainly indicated in Fig. 3.

In operation, when the gas-burners are not in use the water in the water-tubes 12 and 13 may be kept heated and in circulation by the usual methods, as before mentioned. In comparatively warm weather, however, when a great degree of heat is not required the

heat may be supplied by the burning gas. The pipe 34 and the tubes 35 are at all times open when the gas is used and the gas emitted from the tubes 35 is constantly burning, so as to ignite the gas issuing from the pipes 23 and 24 when the gas is turned on in said pipes. When the gas issuing from the pipes 23 and 24 is burning, the products of combustion will pass up through the flues 18, heating the water contained in the water-tubes, and will then pass out through the pipe 20. Atmospheric air at this time will be drawn up through the tubes 21 and discharged in a heated condition into a room, causing, in connection with the heat radiated from the water-tubes, sufficient heat for the room.

Water may be supplied to the water-tubes through a funnel 36, and a petcock 37 is provided at the upper end of one of the water-tubes to prevent the said tubes from being completely filled with water, or, in other words, to leave a space at the top for expansion of the water. Should the water in the tubes become too hot, the pressure thereof will close the valve in the valve casing or tube 28, thus cutting off the supply of gas to the tubes 23 and 24 and of course extinguishing the flame. When the pressure or heat decreases, the controlling-valve will be opened, permitting the gas again to escape through the pipes 23 and 24, and this gas will be ignited by the flame from the tube 35.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A radiator, comprising a series of water-circulating tubes connected one with the other, a gas-heater arranged in the base of the radiator, flues extended upward between the water-circulating pipes, the said flues opening into the base and being closed at the top, an escape or outlet for said flues, and an air-tube extended upward in each flue and open at the top, substantially as specified.

2. A radiator, comprising a base, water-tubes extended upward from the base and communicating one with another, flues for the passage of products of combustion extended upward between adjacent water-tubes, the said flues opening into the base and communicating at the top with an escape-pipe, an air-tube extended through each flue, and having lateral pipes leading through the front and rear walls of the base, and gas-burner tubes arranged in the base, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. THOMPSON.

Witnesses:
JNO. M. RITTER,
C. R. FERGUSON.