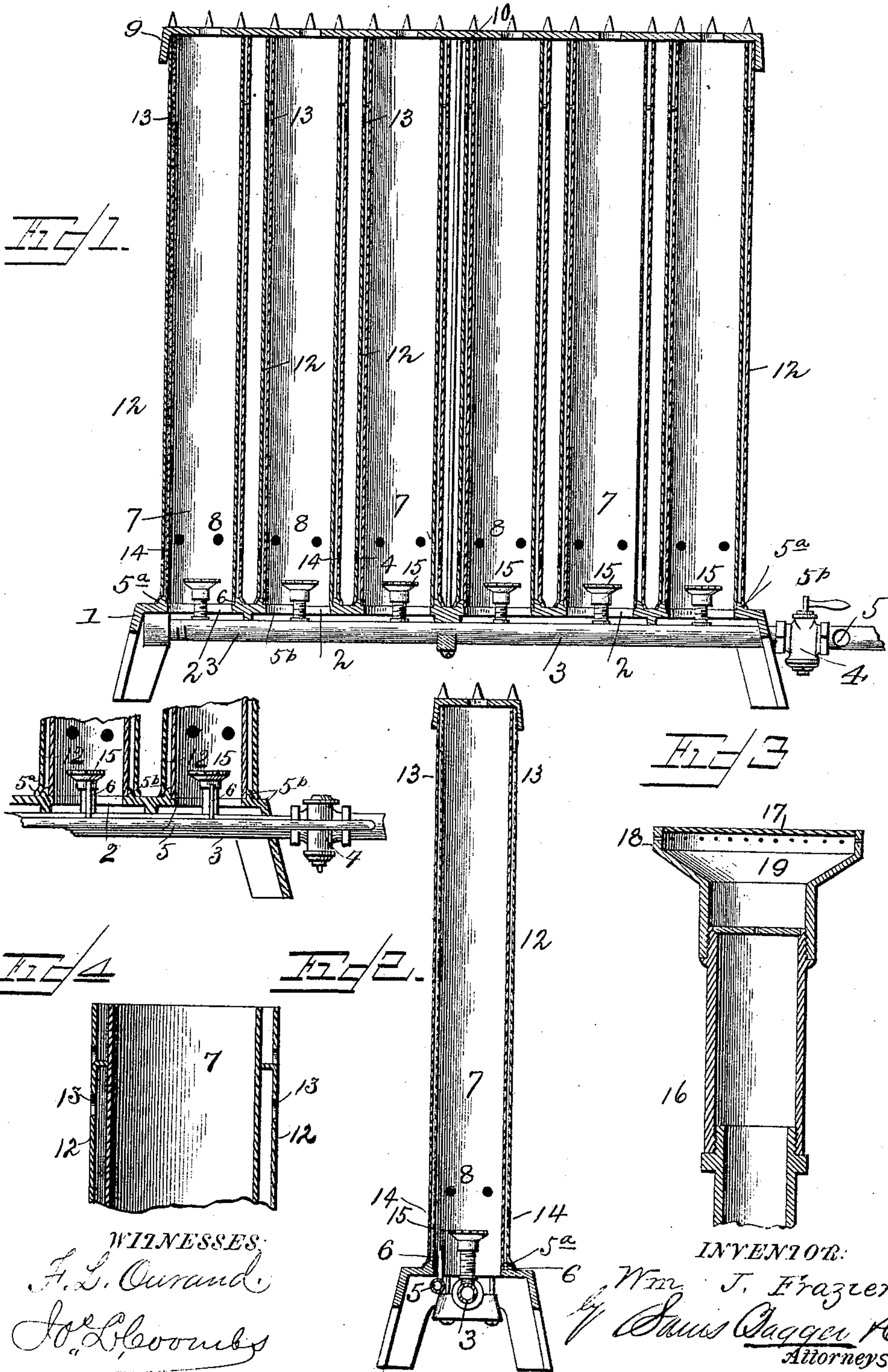


(No Model.)

W. J. FRAZIER.  
GAS RADIATOR.

No. 479,977.

Patented Aug. 2, 1892.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

WILLIAM J. FRAZIER, OF NEW YORK, N. Y.

## GAS-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 479,977, dated August 2, 1892.

Application filed February 23, 1892. Serial No. 422,493. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. FRAZIER, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Gas-Radiators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in gas-radiators for heating purposes, the object being to provide an improved construction of the same whereby I secure important advantages with respect to utility and efficiency.

The invention consists in the novel construction and combination of parts, hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section of a radiator constructed in accordance with my invention. Fig. 2 is a cross-section on the line  $xx$  of Fig. 1. Fig. 3 is a sectional view of the burner on an enlarged scale. Fig. 4 is a detail view, on an enlarged scale, of the upper part of the tube and casing. Fig. 5 is a detail sectional view showing the jet tube or pipe and jet-burners.

In the said drawings the reference-numeral 1 designates the base of the radiator, made of cast metal and provided with a series of apertures 2. Connected with this base is a gas-pipe 3, leading to a suitable source of supply and provided with a stop-cock 4. Parallel and communicating with this pipe is a similar but smaller pipe 5, provided with a number of jet-tubes 6, extending up through the apertures in the base. This pipe is also provided with a stop-cock. (Not shown.) These jet-burners are intended to be kept continually burning during cool or cold weather. They are constructed to burn but an inappreciable quantity of gas and are so located with respect to the burners 10, hereinafter described, as to ignite the gas issuing therefrom. Around each of the apertures in the base is a raised annular boss 5<sup>a</sup>, provided with an annular groove 5<sup>b</sup>, forming a shoulder, upon

which rests the lower end of a cylindrical pipe or tube 7, provided with a series of apertures 8 near its lower end. Upon the upper ends of these pipes rests a cap-plate 9, having openings therein, so that there will be free communication between the upper ends of the pipes and the atmosphere. The cap-plate and base are connected by a screw-rod 10. Surrounding each of the pipes 7 is a cylindrical casing 12, the lower end of which rests upon the annular boss 5, while the upper end abuts against the under side of the cap-plate. This casing is somewhat larger in diameter than the pipe, so that a space shall be left therebetween, and near the top and bottom is provided with a series of apertures 13 and 14. This casing near its upper end is also provided with a series of inwardly-projecting tongues or lugs, formed by slitting the material of the casing on a semicircular line and then bending the metal thereof inwardly. The object of these tongues is to hold the upper end of the pipe 7 in place and keep it in line with the casing.

The reference-numeral 15 denotes the burners secured to the pipe 3 and located in the lower part of the pipe 7. This burner consists of a short length of pipe 16, having an enlarged head connected therewith or secured thereto, consisting of an annular disk 17, a rim 18, provided with perforations, and a flaring bottom 19. The object of this construction is to cause the flame to be projected radially from the burner toward the wall of the pipe 7, so that all the air entering through the apertures in the base will be caused to come in contact with said flame, being aided by the flaring bottom of the burner, which will deflect the air outwardly.

In practice when the gas is lighted at the burners the air will be caused to enter the pipe 7 through the apertures in the base and will ascend to the top and escape into the room, being thoroughly heated by the flame of the burners, a constant circulation being constantly kept up. Air will also enter through the apertures in the lower part of tube 7, thereby relieving the current at the burner and prevent blowing. At the same time air will enter through the apertures in the lower part of the casing and becoming heated will



escape through the apertures near the top of said casing, whereby a thorough circulation is insured.

It will be noted that the apertures in the tube 7 are above the burner and the apertures in the casing are in the lower and upper ends of the said casing.

Having thus described my invention, what I claim is—

1. In a gas-radiator, the combination of the base having a series of apertures, the gas-pipe connected with said base and located below the apertures, the vertical tubes aligned with said apertures and their lower ends resting on said base, the casings surrounding said tubes or pipes, having apertures near their upper and lower ends, the cap-plate having a series of openings resting upon the upper ends of said tubes and casings and connected with the base, and the burners connected with the gas-pipe and projecting up through the apertures in the base, substantially as described.

2. In a gas-radiator, the combination of the base having a series of apertures, the gas-pipe located below said base, the open-ended vertical pipes resting on said base, having apertures near their lower ends, the casings surrounding said pipes resting upon said base and provided with apertures near their upper and lower ends, the cap-plate resting upon said pipes and casings, provided with a series of openings and connected with the base, and the burners connected with the gas-pipe and projecting up through the apertures in the base, substantially as described.

3. In a gas-radiator, the combination of the base having apertures therein, the open-ended vertical pipes resting on said base, the casings surrounding said pipes also resting on said base and provided with apertures near their upper and lower ends and inwardly-projecting integral tongues near their upper ends, the cap-plate resting on said pipes and casings, provided with a series of apertures and connected with the base, and the gas-pipe located below the base and provided

with a series of burners projecting up through the apertures in the base, substantially as described.

4. In a gas-radiator, the combination, with the base having a series of apertures therein and surrounding annular grooves and bosses, of the open-ended vertical pipes having their lower ends resting in said grooves, the casings surrounding said pipes, with their lower ends resting upon said bosses, the cap-plate having openings resting upon said pipes and casings and connected with the base, the gas-pipe located below said base, and the burners connected with said pipe, projecting up through the apertures in the base, substantially as described.

5. In a gas-radiator, the combination, with the base having a series of openings or apertures therein, the vertical pipes and casings having apertures seated upon said base, and the cap-plate seated upon said pipes and casings and connected with the base, of the gas-pipe located underneath the base, provided with a stop-cock and having a series of burners projecting up through the base, the jet-pipe parallel with said gas-pipe, and the jet-burners connected with the jet-pipe, substantially as described.

6. In a gas-radiator, the combination, with the base having apertures therein, the connected cap-plate, and the open-ended vertical tubes interposed between the cap-plate and base, of the gas-burners located in the lower ends of said pipes and connected with a gas-supply pipe, said burners consisting of the disk, the rim provided with peripheral perforations, the flaring bottom, and the pipe connecting it with the gas-pipe, substantially as described.

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

WILLIAM J. FRAZIER.

Witnesses:

ANDREW ORTH,  
RALPH PLANT.