F. J. PIOCH.

GAS HEATED RADIATOR.

APPLICATION FILED JAN. 31, 1916.

1,198,149. Patented Sept. 12, 1916.

Fig. 1.

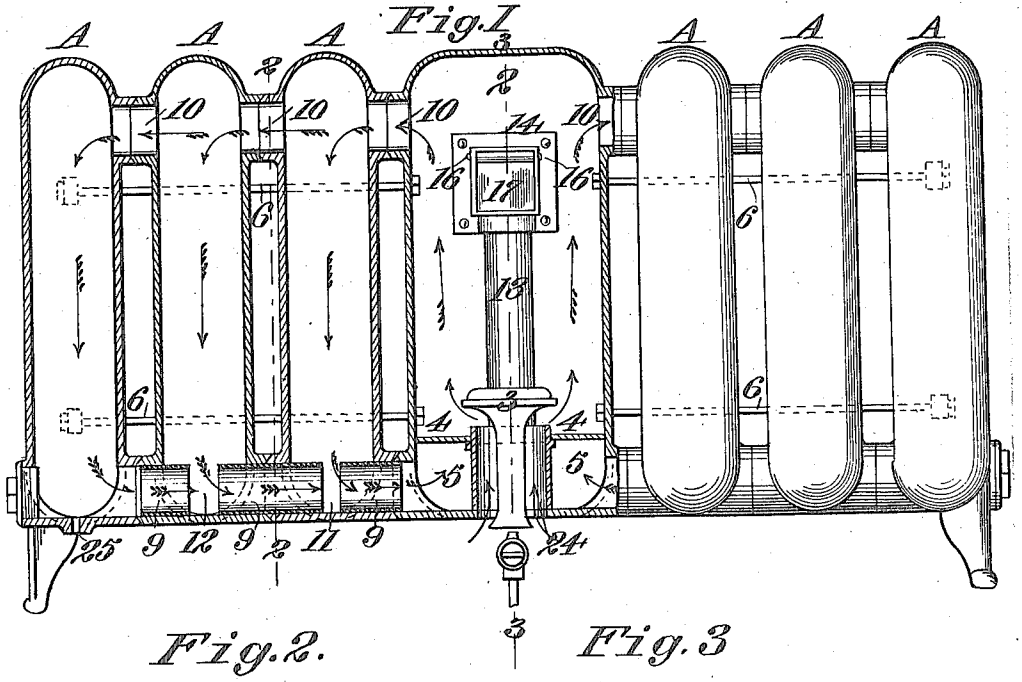


Fig. 2.

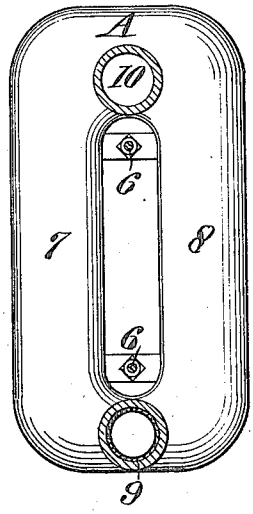
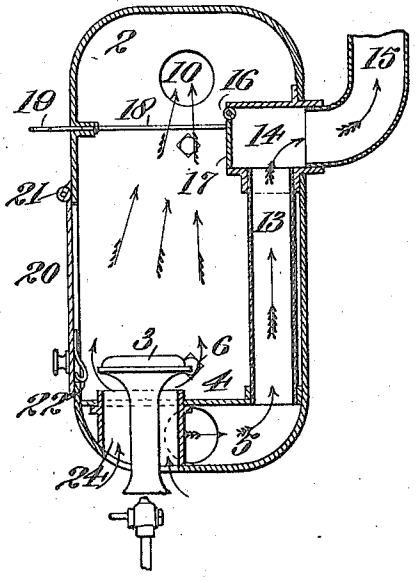


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

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GAS-HEATED RADIATOR.

1,198,149. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed January 31, 1916. Serial No. 75,292.

To all whom it may concern:

Be it known that I, FRANK J. PIOCH, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Gas-Heated Radiators, of which the following is a specification.

This invention relates to a gas heated radiator.

One of the objects of the present invention is to provide a simple, efficient, easily operated radiator adapted to be heated by a gas burner; and particularly to provide a novel damper control whereby the heat from the burner when first lighted may be directed to the discharge flue for the purpose of heating the flue to create an induced draft therethrough.

Another object is to provide means for reheating the products of combustion, after passing through the radiator; and also to provide means for evenly distributing the products of combustion throughout the radiator.

Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section. Fig. 2 is a cross section on line 2—2 of Fig. 1. Fig. 3 is a cross section on line 3—3 of Fig. 1.

Referring to the drawings in detail, A indicates a plurality of radiating flues, mounted on each side of a combustion chamber 2, in which is mounted any suitable form of heater, but preferably a standard form of blue-flame gas burner, such as shown at 3. The combustion chamber in which the burner is mounted is provided with a false bottom 4 which divides it into two separate chambers, such as the upper chamber 2 and a lower chamber 5. The radiating tubes A are connected at their upper ends with the upper end of chamber 2 while the lower ends are connected with the lower chamber 5 and are secured together in any suitable manner or by the tie-bolts 6. Each radiating tube is divided into two sections 7 and 8 to permit the heat to be distributed over as large an area as possible when passing therethrough; and means have been provided for the purpose of equally distributing the heat passing through the radiating tubes by providing a plurality of adjustable tube sections 9 at the lower ends of the radiating tubes.

The heat generated by the burner 3 rising in the upper combustion chamber 2 enters the upper ends of the radiating tubes through the connecting passages 10. Heat, like most other moving bodies, naturally has a tendency to follow the path of least resistance and would, therefore, pass through the first set of radiating tubes unless means are provided for otherwise restricting the flow. The adjustable tube sections 9, mounted in the lower connecting passages formed between the radiating tubes, may be so positioned that the heat passing through the upper connecting passages 10 will be equally distributed. This is accomplished by placing the first set of tube sections 9 comparatively close together, as at 11, and the second set a little further apart, as at 12. If more than three sets of radiating tubes are provided a third and fourth set of adjusting tubes might be provided. The heat entering the upper connecting passages 10 and passing down through the sections 7 and 8 of the radiating tubes will finally return through the lower connecting passages and the adjustable tubes 9 into the lower chamber 5. They are here permitted to enter what will hereinafter be termed a reheating tube 13 which connects with a damper box 14 and the main discharge flue 15.

Pivotally mounted, as at 16, in the forward end of the damper box is a loosely hung damper 17, which is adapted to be opened by means of a push-rod 18 extending through the front end of the combustion chamber and provided with a handle 19. The provision of the reheating tube 13 and the damper 16 is the most important feature of the present invention.

Heaters of the character here shown are generally provided with comparatively small discharge flues of short length. The natural draft created by comparatively high discharge flues or stacks is, therefore,

practically absent, and unless an induced draft is started therein considerable trouble is experienced in maintaining a fire within the combustion chamber. An induced draft is created in the present instance by the provision of a damper 17 and the operation will be as follows: A door 20, pivotally mounted, as at 21, on the forward side of the combustion chamber and secured by means of a spring latch 22 is first opened and the burner 3 ignited. The door is then closed and the rod 18 forced in an inward direction to open the damper 17. The products of combustion from the burner are thus permitted to enter directly through the damper box into the discharge flue 15, causing this to become heated and an induced draft to be created. The reheating tube 13 is at the same time heated, causing an induced draft to be established at this point which creates a suction through the lower connecting passages of the radiating tubes A. The moment the reheating tube 13 and the discharge flue 15 have been sufficiently heated, which takes place in two or three minutes, it is only necessary to close the damper 17 by pulling the rod in an outward direction. The heat from the burner will then pass through the upper connecting passages 10, down through the radiating tubes A, then through the lower connecting passages and adjusting tubes 9 into the lower chamber 5 where they are finally permitted to escape through the reheating tube 13 and the damper box 14 into the discharge flue 15. The products of combustion generated by the burner 3, when passing through the radiating tubes A, naturally cool down before reaching the chamber 5, as the heat is absorbed and radiated by the radiating tubes A. The draft would, therefore, become more or less sluggish unless reheated by passing through the tube 13 which is mounted directly in the combustion chamber 2. A new impetus is thus given the escaping products of combustion and a comparatively high velocity draft is maintained as long as the burner is in use. Fresh air to support combustion is admitted through a tube 24 extending through chamber 5 and opening through the bottom of the radiator. The burner 3 is mounted directly in this tube and is thus supplied with a continuous supply of fresh air at all times which rises with the products of combustion and passes through the several radiating tubes to finally escape through the chamber 5, the reheating tube 13 and the discharge flue 15.

The damper 17, mounted as here shown, not only provides a means whereby the products of combustion may be diverted directly to the discharge flue when the burner is first ignited but also forms what may be termed a safety valve against explosion, as any explosion which might take place in the upper chamber 2 would merely force the valve 17 open and permit the force of the explosion to pass directly out through the discharge flue. The spring latch 22 on the door is also provided for this purpose to permit this to automatically open in case of an explosion. One or more drain openings 25 may be formed on the lower side of the radiator to permit removal of any moisture which might collect in the radiating tubes from time to time and any ornamental finish and shape may be given the radiating tubes without materially changing the construction here shown. The materials and finish of the several parts of the device may be such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims and that I do not wish to limit myself to the specific design and construction here shown.

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

1. In a gas heated radiator, a combustion chamber and a return chamber, a plurality of connected radiating tubes connected at their upper ends with the combustion chamber and at their lower ends with the return chamber, said tubes being spaced from the chambers at successively increased distances, a reheating tube connected with the return chamber, and adjustable means in the tubes for effecting an equal distribution of the products of combustion in the tubes.

2. In a heat radiator, a combustion chamber, a draft tube passing upwardly through the chamber, a plurality of alined heat-radiating tubes connected to one another at their top and bottom and communicating at their top with the combustion chamber and at their bottom with the draft tube, and means for equalizing the distribution of the products of combustion in the heat-radiating tubes.

3. In a heat radiator, a combustion chamber, a series of heat-radiating tubes communicating with the chamber and connected by intake passages and return passages, and alined tubular sections disposed in one set of said passages and adjustably related to vary the spaces intervening the tubular sections.

4. In a gas heated radiator, a combustion chamber, an underlying return chamber partitioned therefrom, each chamber being provided with opposing openings in the side walls, the openings in the combustion chamber being arranged adjacent the top thereof, a burner extending above the partition and in the front portion of the combustion chamber, a draft tube passing from the return

chamber into the combustion chamber in the rear portion of the latter, a damper box mounted on the draft tube between the burner and the openings of said combustion chamber, a damper in the damper box, and heat radiating tubes on each side of the chambers and communicating with the respective openings of said chambers.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK J. PIOCH.

Witnesses:
V. DOBBS,
LEONARD D. JONES.