G. DUCHSCHERER.

GAS HEATING RADIATOR.

APPLICATION FILED AUG. 17, 1914.

1,151,575. Patented Aug. 31, 1915.

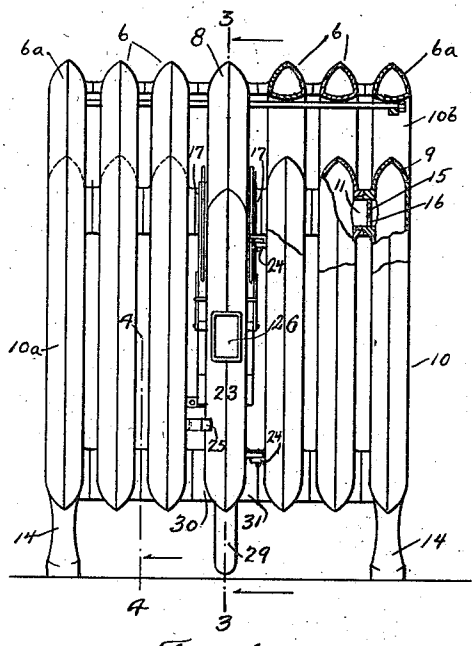


Fig. 1.

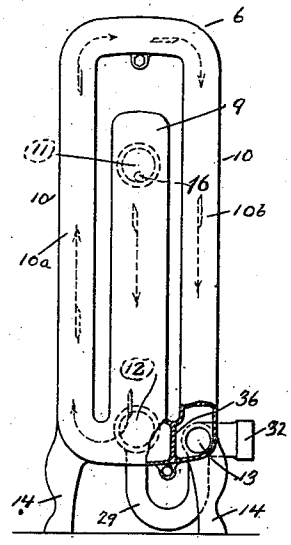


Fig. 2.

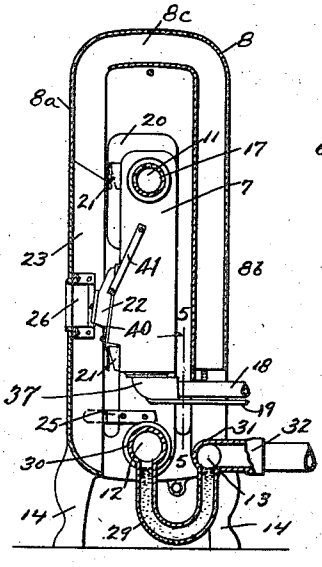


Fig. 3.

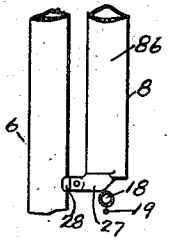


Fig. 5.

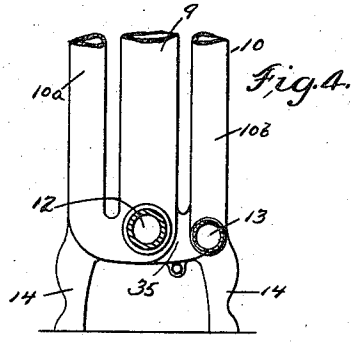


Fig. 4.

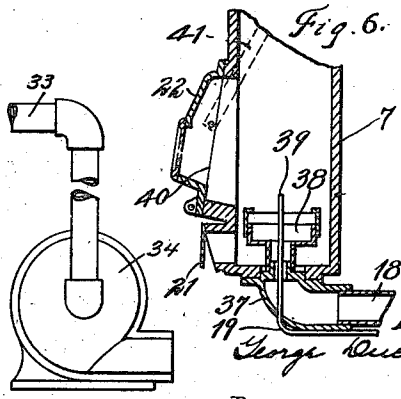


Fig. 6.

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GAS HEATING-RADIATOR.

1,151,575. Specification of Letters Patent. Patented Aug. 31, 1915.

Application filed August 17, 1914. Serial No. 857,009.

To all whom it may concern:

Be it known that I, GEORGE DUCHSCHERER, a citizen of the United States of America, and a resident of the city of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Gas Heating-Radiators, of which the following is a full, clear, and exact description.

My invention relates generally to gas heaters and more particularly to that type of heater wherein the heat generated is passed through a sectional radiator and an air circulation is maintained throughout the radiator by means of suction. One objection to existing heaters of this type is that the upper part of the radiator becomes so hot that persons or articles, easily affected by heat, coming in contact therewith are injured.

The general object of my invention has been to provide a heater in which the radiating surface shall be increased and so arranged that the temperature of all the exposed parts of the radiator will be restricted to a degree not exceeding the temperature of a steam radiator.

Another object has been to provide a radiator in which substantially all of the heat shall be radiated into or absorbed by the surrounding air, and to increase the generating capacity of the radiator without any of the heated air being exhausted into the atmosphere. Furthermore, I provide in my radiator means for draining the liquid condensation, which results from the burning of the gas, and means for maintaining a pressure within the radiator which is less than atmospheric pressure. I have accomplished the above objects and advantages by the device shown in the accompanying drawings, forming part of this specification.

In the drawings like characters of reference indicate like parts throughout the several views of which:

Figure 1 is a side elevation of my radiator. Fig. 2 is an end elevation of the same, partly in section. Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 1 showing the heater box in full, and shows diagrammatically, in addition thereto, a suitable means for producing suction within the radiator. Fig. 4 is a fragmentary sectional elevation taken on line 4—4 of Fig. 1. Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 3. Fig. 6 is an enlarged, fragmentary, sectional elevation of the heater box of my radiator.

My radiator comprises heating sections 6 and 6^a, which are secured together by any well known means. Preferably I form my radiator with an equal number of heating sections at each side of the center of the same, and at the center is provided the heater box 7 of the radiator and a dummy section 8, extending around the heater.

Each of the heating sections 6 comprises a central member 9 and an exterior member 10, which latter comprises a front part 10^a and a rear part 10^b. The chamber formed by the exterior member 10 of the section extends from the lower end of the central member 9, up the front part 10^a of the radiator, over the top and down the rear part 10^b thereof where the air is drawn off by means of a slight suction. The upper and lower ends of the central members 9 are connected together so that passage ways 11 and 12 are formed therebetween. The lower ends of the rear parts 10^b of the exterior member 10 are also connected together and passage ways 13 are formed therebetween. Each of the heating sections 6 is in the form of a double return bend, and the lower end of the rear part 10^b of the exterior member 10 is not attached to the central member 9, but is spaced apart therefrom so that an additional passage 35 for the atmosphere is provided. The end sections 6^a are each provided with suitable supporting legs 14, and the lower end of the rear part 10^b of the exterior member 10 is attached to the lower end of the central member 9, but the chamber therein is partitioned from the chamber in the central member 9 by means of a plate 36. The passage way 11 between each end section and the section adjacent thereto, is partly closed by a baffle plate 15. This plate is provided with a small opening 16 at the lower side thereof. The purpose of these plates is to reduce the quantity of heated gases which are conducted to the central members 9 of the end sections 6^a. By this arrangement the central members 9 of the end sections are kept at a temperature substantially as low as the restricted temperature of the exterior member 10.

The heater box 7 does not form part of my invention, and need be only briefly referred to. It is provided with a nipple 17 at each side thereof, which connects with the adjacent heating section 6, and the heated

gases pass through these nipples into the heating sections 6 and 6a.

18 is a gas mixture supply pipe, which fits into an elbow 37, secured to the bottom of the heater box.

38 is the burner of the heater box, which is carried preferably by the elbow 37 and is supplied with the gas mixture therefrom.

39 is the pilot light of the burner, which is supplied with gas from the pipe 19. The burner box is also provided with radiating ribs 20 and drop air intakes 21.

22 is the door of the heater, which rests on the inclined face 40 of the heater box and is thus held in place by gravity. This door is pivotally attached to the lower ends of links 41, one disposed at each side thereof, said links having their upper ends pivotally secured to the heater box. By this arrangement the door will always adjust itself to the inclined face 40 of the heater box, and thus seal the joint between the door and the heater box against the atmosphere.

The dummy section 8 is of the same general exterior shape as the exterior members 10 of the heating sections 6 and 6a, and is disposed about the burner box 7, thus preventing anything from coming in contact with the highly heated burner box. The front part 8a of this section is provided with a pivoted portion 23, which is secured to one of the adjacent sections 6 by means of the hinges 24. This section is thus arranged to be swung open so as to get at the burner box 7. A spring catch 25 is provided, having one end preferably secured to an adjacent heating section 6, whereby the pivoted portion 23 is retained in position. This pivoted portion 23 is also provided with a mica window 26, which is disposed directly in front of the door 22 of the burner box. This window permits inspection of the flame of the burner without having to swing the section open. The portion 23 is similar to the rear part 8b of the dummy section 8, except that the rear wall thereof is removed. The upper stationary portion of the front part 8a of the dummy section also has the rear wall removed up to the lower wall of its top 8c. The rear part 8b of the dummy section 8 is cut off short and is open at the lower end, thus permitting air to circulate freely through the interior surface and to come in contact with the exterior surface of this section. Thus the temperature of this section is kept substantially as low as that of the exterior members 10 of the other sections. A lug 27 is provided at the lower end of the rear side of the dummy section, and is arranged to be attached to a lug 28 carried by one of the heating sections 6, whereby the lower end of the dummy section may be securely held in place.

Beneath the heater box is disposed a trap 29, which is provided at its front end with a nipple 30, which connects the apertures 12 in the adjacent heater sections. This trap is also provided at its rear end with a nipple 31, which registers with and connects the openings 13 in the adjacent sections. A branch 32 is also provided at the rear end of the trap, to which is connected the exhaust pipe 33. The exhaust pipe 33 is connected by suitable piping to an exhaust blower 34 of any suitable type.

It will be seen that when the blower 34 is operated and the pressure within the heater box 7 is less than the atmospheric pressure, the drop air intakes 21 will be closed and a substantially air tight system provided. When the burner is lit the heat generated will pass out through the openings 11 in the nipples 17 and into the upper ends of each of the heating sections 6 and 6a. As the heat in the central members of the heating sections increases, it will descend until it reaches the lower end of the central members, where it will pass into the forward part 10a of the exterior member 10 and rise to the upper end thereof. As there is a slight suction at the openings 13, formed at the lower end of each rear part 10b of the exterior members 10, this heated air will be drawn down to the lower end of the said rear part, and thus be substantially equalized in pressure and heat. It will thus be seen that the heater box 7 and the central members 10 of the heating sections may be heated to a high degree, while at the same time the exterior members 10 are considerably cooled by radiation into the atmosphere, thus reducing to a minimum the liability of injuring persons or articles coming in contact therewith.

The liquid condensation, which is formed by the burning gas, will drain into the lower part of the central members 10, pass through the openings 12 therebetween and then flow into the trap 29. This trap 29 is filled with water before the radiator is started, and as the liquid condensation increases the contents of the trap will run over into the exhaust pipe 32 and may be thence conveyed to a sewer.

Obviously, if desired, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims, and I do not wish to be limited to the exact embodiment herein shown and described.

Having thus described my invention, what I claim is:

1. In a gas heating radiator, the combination with a centrally located gas heater box, of a plurality of heating sections arranged on each side of said heater box, each of said sections being provided with a central chambered member, and an exterior chambered member, and a dummy section

disposed about said heater box and having substantially the same exterior shape as the said heater sections.

2. In a gas heating radiator, the combination with a centrally located gas heater box, of a plurality of heating sections arranged on each side of said heater box, each of said sections being provided with a central chambered member, and an exterior chambered member, and a dummy section disposed about said heater box, said dummy section being provided with a pivoted portion secured to one of said adjacent heating sections and being of substantially the same exterior shape as the said heating sections.

3. In a gas heating radiator, the combination with a centrally located gas heater box, of a plurality of heating sections arranged on each side of said heater box, each of said sections being provided with a central chambered member, and an exterior chambered member, and a dummy section disposed about said heater box, said dummy section having the lower end of the rear part open to the atmosphere.

4. In a gas heating radiator, the combination with a gas heater box, of a plurality of heating sections, each of said sections being provided with a central chambered member, and an exterior chambered member, each of said sections being also provided with openings in the lower ends of its central member and openings in the lower end of the rear part of its exterior member, said openings being so disposed as to register with the corresponding openings in the adjacent sections, and a trap connecting the openings in the central member with the openings in the rear part of the exterior member of two adjacent heating sections.

5. In a gas heating radiator, the combination with a gas heater box, of a plurality of heating sections, each of said sections being provided with a central chambered member, and an exterior chambered member, each of said sections being also provided with openings in the lower ends of its central member and openings in the lower end of the rear part of its exterior member, said openings being so disposed as to register with the corresponding openings in the adjacent sections, a trap connecting the openings in the central member with the openings in the rear part of the exterior member of two adjacent heating sections, and means for producing suction through the chamber heating sections.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE DUCHSCHERER.

Witnesses:

WALTER H. KELLEY,

CLARA BOWERS.