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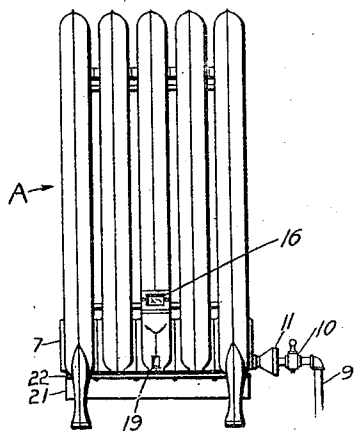
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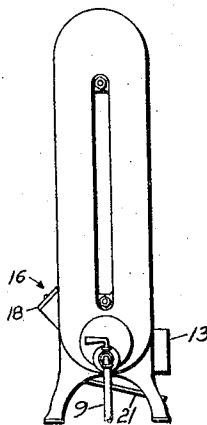
GAS HEATER

Filed June 2, 1924

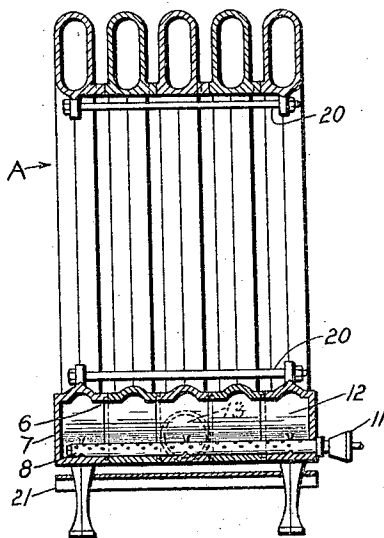
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*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

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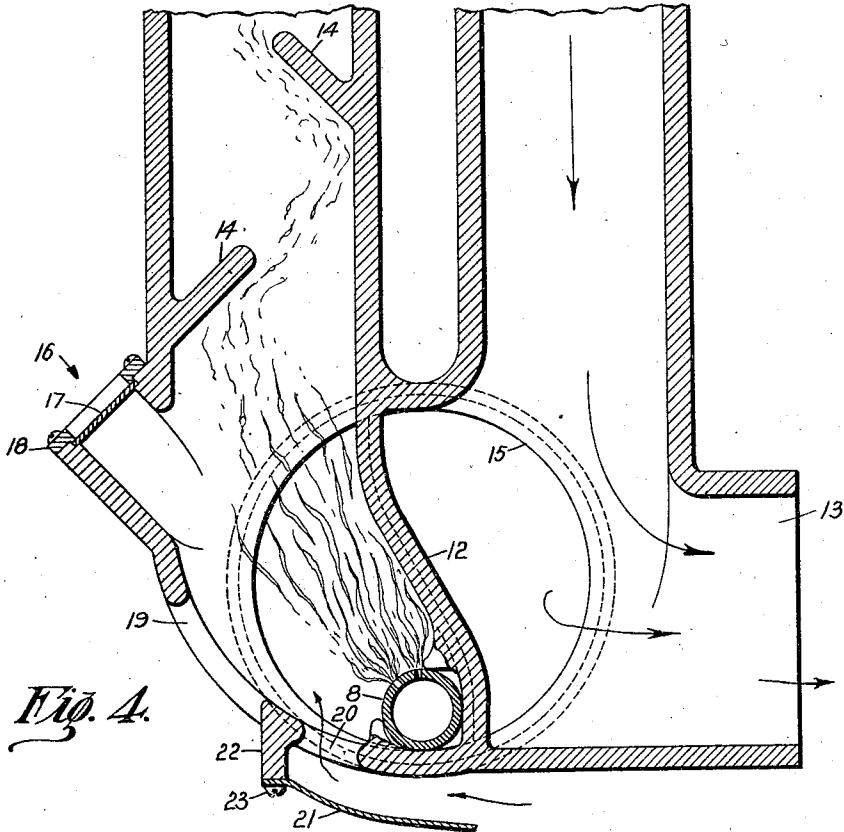
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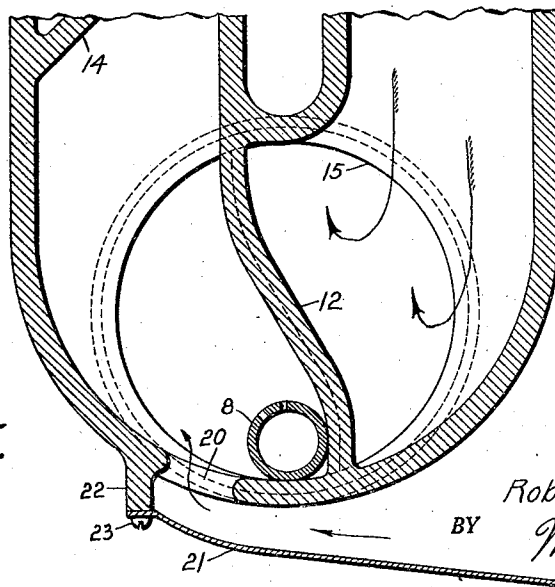
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*Fig. 4.*



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

ROBERT C. HOYT, OF OAKLAND, CALIFORNIA.

## GAS HEATER.

Application filed June 2, 1924. Serial No. 717,278.

*To all whom it may concern:*

Be it known that I, ROBERT C. HOYT, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Gas Heaters, of which the following is a specification.

My invention relates in general to gas heaters of the radiator type, and has for its primary object to provide a heater of this character embodying several distinctive features with resultant improvements in effectiveness, such as, greater simplicity in construction, economy of fuel, ease in lighting, prewarming the entering air to the radiator, radiating the heat chiefly from the front columns of the radiator by retarding the heat units therethrough, and providing for a comparatively cool floor surface directly under the radiator.

The preferred form of the heater is illustrated in the accompanying two sheets of drawings and in which:

Figure 1 is a view in front elevation of the heater and Fig. 2 an end elevation of it. Fig. 3 is a vertical sectional view through the heater showing clearly the partition wall behind the burner. Fig. 4 is an enlarged detail view in vertical section of the lower part of the middle section of the radiator, and Fig. 5 is a similar view of the intermediate sections.

Referring now to the drawings in detail: The letter A represents the radiator sections which may be made of cast iron, pressed steel or any other material suitable for the purpose. These sections are arranged as a series of units properly spaced for heat radiating purposes. Each unit in the series is practically separate, except where its cylinder-like bases are joined end to end, preferably with male and female joints 6, Fig. 3, to provide an elongated manifold housing 7 for the ordinary gas-pipe burner 8.

The burner is connected to a gas pipe 9 through one end of the housing 7 and the pipe 9, includes a control valve 10 and the customary air-mixing valve 11.

The housing is divided longitudinally by vertical partitions 12 formed as a part of each radiator section, and the partitions abut end to end, similar to the sections, to make a continuous longitudinal partition wall for the entire length of the housing, dividing the latter into two zones, the burner zone and the exhaust zone.

The burner 8 is disposed in front of the partition wall 12 and the products of combustion circulate up the front column of the sections and down the back column into the exhaust zone in back of the partition 12. The middle section is slightly modified in construction in that it includes an outlet 13, from which the products of combustion from all of the sections exhaust.

The inside of the front columns of the sections is preferably made with baffles 14, spaced in staggered relation to one another to make a tortuous passage for the products of combustion and retard them to a degree so as to realize the best possible heating effect. The shoulders 15 between the sections impart a whirling motion so to speak, to the products of combustion as they circulate through the sections to the middle section. In the case of the middle section however, the circulation continues to and through the outlet 13 without interruption.

Again referring to the middle section, I have provided a peep-hole 16 with a mica or other transparent medium 17 held in place by a ring 18. An opening 19 is also provided for the insertion of a match to light the burner.

The partition 12 in the burner housing 7 is slightly curved as best shown in Figs. 4 and 5; so as to overhang the burner and direct the products of combustion up the front column of the sections and against the first baffle therein.

The direct contact of the flame of the burner with the partition wall 12 practically makes the back part of the housing a superheater, and when the products of combustion impinge against the said wall after they have traversed the two columns of the section, they will be again heated prior to reaching the outlet 13, thus the outgoing spent gases are free of moisture which insures an effective chimney draft.

Having the burner at the base of the radiator and the superheater adjacent thereto, induces conditions favorable for a constant chimney draft whether the radiator is in use in a dwelling situated in a valley or on a hill-top. In this type of radiator, for efficient results, it is necessary that the burner be positioned low in order that the heat units may have a chance to rise vertically before being drawn downwardly, otherwise the chimney draft is sluggish and especially so in low lands.

One of the important features of the heater resides in the construction of the air intake from the floor region below the burner. I have found in practice that by making an opening 20 in the bottom of each section, and covering the same with a pre-warming plate 21 that I can get much better results. This plate may be secured to a downwardly projecting flange 22, extending the entire width of the radiator, by screws 23 or the like. The plate should extend under the heater and be spaced from its bottom to permit sufficient air volume to reach the air intake openings 20. The plate should also be slanted downwards as best shown in Fig. 5.

The plate 18 will be heated by the burner because of its proximity thereto, and in this way the auxiliary air taken in to support the burner flame will be heated prior to its mixing with the gas and by the interchange of heat just recited, the floor surface below the radiator will be comparatively cool, a feature much desired.

The sections may be secured together in any convenient manner as by rods 20 top and bottom, shown to advantage in Fig. 3.

Having thus illustrated and described my invention in the best form as yet devised by me, what I claim as new and desire to secure by Letters Patent is the following:

1. A heater of the class described, comprising a series of one-piece radiator sections of loop formation with a burner housing at the base of said sections, a burner therein, a longitudinal partition wall in said housing, said burner being positioned to one side of the partition, one column of each radiator section communicating with the housing on the burner side and the other column communicating with the housing on the opposite side of the partition, and an outlet in said last-named side, the flame from said burner adapted to impinge on the said partition wall thereby forming a superheater on the other side of said wall.

2. A heater of the class described, comprising a series of one-piece radiator sections of loop formation with a burner housing at the base of said sections, a burner therein, a longitudinal partition wall in said housing, said burner being positioned to one side of the partition, one column of each radiator section communicating with the housing on the burner side and the other column communicating with the housing on the opposite side of the partition, and an outlet in said last-named side, and an air intake in the housing in front of the burner,

the flame from said burner adapted to impinge on the said partition wall thereby forming a superheater on the other side of said wall.

3. A heater of the class described, comprising a series of one-piece radiator sections of loop formation with a burner housing at the base of said sections, a burner therein, a longitudinal partition wall in said housing, said burner being positioned to one side of the partition, one column of each radiator section communicating with the housing on the burner side and the other column communicating with the housing on the opposite side of the partition, and an outlet in said last-named side, and an air intake in the housing in front of the burner, and a prewarming plate disposed below said intake and extending transversely across both columns of the radiator sections, the flame from said burner adapted to impinge on the said partition wall thereby forming a superheater on the other side of said wall.

4. A heater of the class described, comprising a series of one-piece radiator sections of loop formation with a burner housing at the base of said sections, a burner therein a longitudinal partition wall in said housing said burner being positioned to one side of the partition, one column of each radiator section communicating with the housing on the burner side and the other column communicating with the housing on the opposite side of the partition, and an outlet in said last-named side, the said partition wall being disposed to overhang the burner and the burner positioned against the same, an air intake in the bottom of the housing in front of the burner, and a prewarming plate disposed below said intake and extending transversely across both columns of the radiator sections, the flame from said burner adapted to impinge on the said partition wall thereby forming a superheater on the other side of said wall.

5. In a heater of the class described, a series of radiator sections, a cylindrical housing at the base of said sections, a partition dividing said housing midway longitudinally into a fire chamber and a superheater chamber, a burner in said fire chamber adjacent said partition, and an outlet in the housing on the opposite side of the said partition adapting the products of combustion from the burner to pass through the sections and said superheater chamber before exhausting through said outlet.

In testimony whereof I affix my signature.

ROBERT C. HOYT.