

W. E. LAWSON.
GAS HEATING APPARATUS.
APPLICATION FILED MAY 14, 1908.

943,617.

Patented Dec. 14, 1909

FIG. 1

FIG. 2

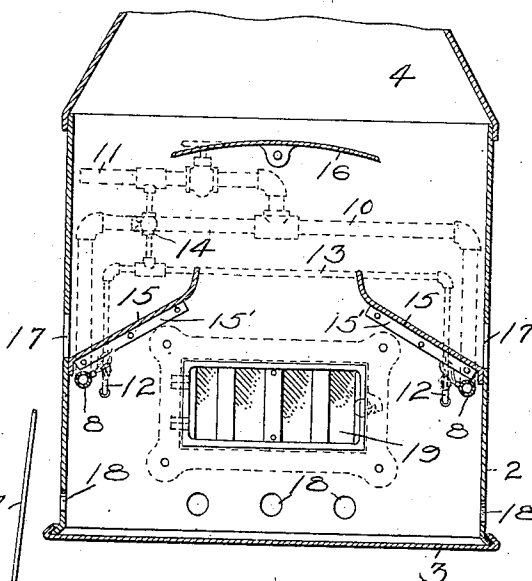
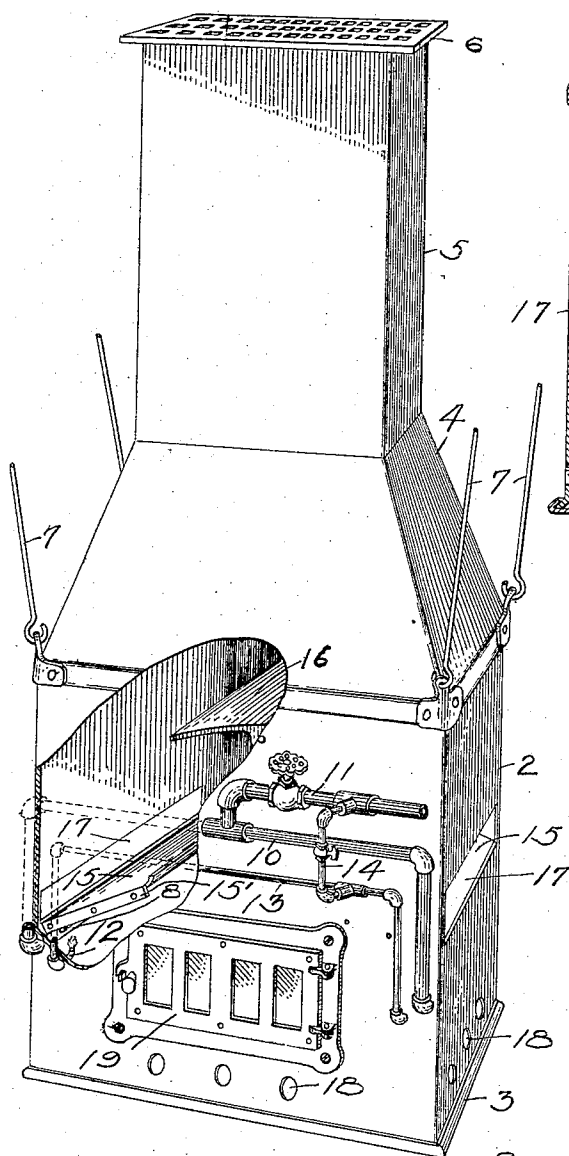
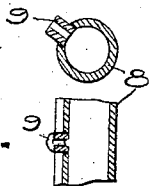


FIG. 3.

FIG. 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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GAS HEATING APPARATUS.

943,617.

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Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, WILLIAM E. LAWSON, a resident of Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gas Heating Apparatus, of which the following is a specification.

This invention has particular reference to that type of gas heating apparatus known as hall heaters—that is, miniature furnace which is supported beneath a floor register for supplying heat in relatively large volume thereto, and the primary object is to provide for the elimination of practically all the waste gases and products so that no flue or chimney connection is necessary. The apparatus is designed primarily for burning artificial or manufactured gas, although natural gas may be burned therein if desired.

A characteristic of the invention is the admission of air into the casing above and out of the direct range of the burners, the air thus admitted passing upwardly to the register or other outlet and serving to stimulate the upward flow of heat currents with which such air freely mingles, thus sustaining the upward flow in such manner that substantially perfect combustion results, and at the same time warmed or heated air in large volume is supplied to the register, and in addition to heating the apartment it provides a constant fresh-air inlet, thus materially aiding ventilation.

In the accompanying drawings Figure 1 is a view in perspective of the heating apparatus, a portion of the casing being broken away, and Fig. 2 is a vertical section of the same. Fig. 3 is a cross-section, of one of the burners. Fig. 4 is a longitudinal section of a portion of one of the burners.

Referring to the drawings, 2 designates a box-like casing closed at its lower end by bottom 3, and at its upper end contracted at 4 where it merges into the flue-like upward extension 5 which connects in suitable manner with floor register 6. This is the general construction of the casing portion of the apparatus when embodied in a floor or register heater. But it will be understood that the same may be variously embodied without departing from the spirit of the invention. In the present adaptation, 7 are the usual rods upon which the heater

is suspended from the floor girders, not shown.

Burner tubes 8 are arranged horizontally within opposite sides of casing 2, each provided with a series of burner tips or jets 9. Tubes 8 are connected on the exterior of the casing with pipe 10 to which leads the valved supply pipe 11. A pilot burner 12 may be provided for each of burners 8, the pilots being connected by pipes 13, having a valved connection 14 with supply pipe 11.

15 are deflectors secured to and inclined upwardly from opposite walls of casing 2, with burners 8 beneath and preferably arranged closely adjacent to the bases of the deflectors. While the opposite deflectors project inwardly toward each other, there is a relatively wide space between their upper ends, as shown. The deflectors may be secured in any suitable manner. As here shown, they are flanged at 15' and riveted to the walls of casing 2. Positioned centrally within the casing above deflectors 15 is the baffle-plate 16, of sufficient width to overlap the inner upper ends of deflectors 15.

Formed in each of the side walls of casing 2 immediately above the lower end of deflector 15 is an air inlet slot or opening 17. Air from the exterior of the heater is admitted through these openings and passes upward at opposite sides of baffle 16 and through flue portion 5 to the register. Sufficient air to sustain combustion is admitted to the base of casing 2 through openings 18.

In operation, the heat currents generated by the burners are directed upwardly and inwardly or toward the center of the casing by deflectors 15, and rising therebetween they encounter and are spread laterally by baffle-plate 16 and thoroughly mingle with the upwardly flowing fresh air entering through openings 17. The heat currents stimulate this flow of fresh air, and combining as they do with a relatively large volume of fresh air the waste gases and products are so absorbed or dissipated as to be practically eliminated, and a flue connection is unnecessary. It will be understood however, that the relative arrangement of burners, deflectors and air inlets is such as to produce practically perfect combustion, so that the element of waste gases or products is a comparatively small quantity. It is further characteristic of the invention

that while sufficient air is admitted at the base of the casing to sustain combustion, the accelerated draft caused by the upward flow of air through openings 17 has a stimulating effect upon the combustion which takes place 5 beneath deflectors 15.

Baffle-plate 16 causes the heat currents and fresh air currents to become thoroughly mixed while passing upwardly to the register, and this mixing is still further assisted 10 by the upward taper or contraction 4 which the currents encounter after passing the baffle-plate.

I claim:—

15 1. A gas furnace comprising a casing open at the top to deliver heated air to a register, imperforate deflectors extending inwardly from the walls of the casing and sloping upwardly whereby air can flow upward only 20 around the inner edges of the deflectors, gas burners beneath the deflectors, and means above the deflectors for laterally deflecting heat currents flowing upwardly around the

deflectors, the casing above the deflectors having lateral air inlets, substantially as 25 described.

2. Gas heating apparatus comprising a casing, deflectors inclined inwardly and upwardly from opposite walls of the casing with the ends and lower edges thereof meeting the walls of the casing whereby air from 30 beneath can pass upwardly only around the upper edges of the deflectors, the casing above the deflectors being open immediately above the lower edges of the deflectors for 35 the admission of external air, gas burners beneath and adjacent to the deflectors, and a baffle plate spaced upwardly from the deflectors.

In testimony whereof I affix my signature 40 in presence of two witnesses.

WILLIAM E. LAWSON.

Witnesses:

J. M. TOBIAS,

JOHN W. BAINBRIDGE.