

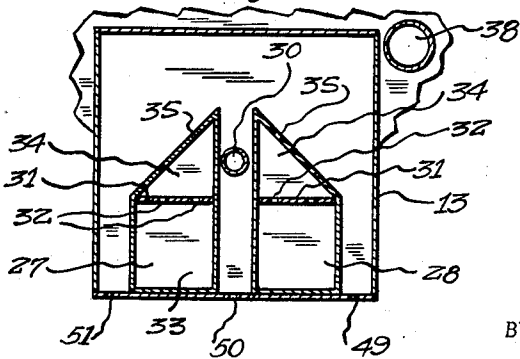
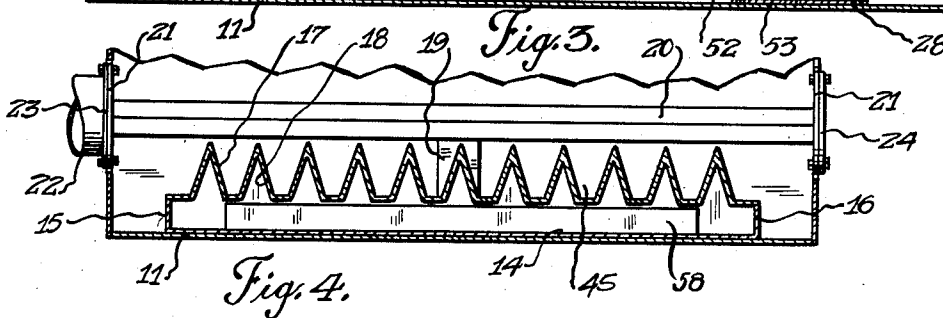
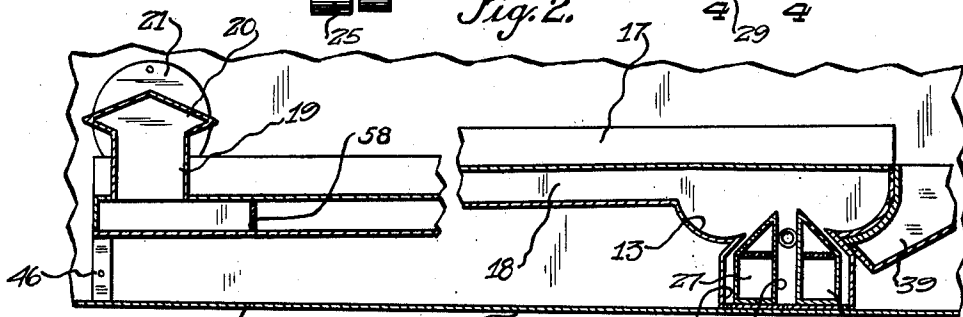
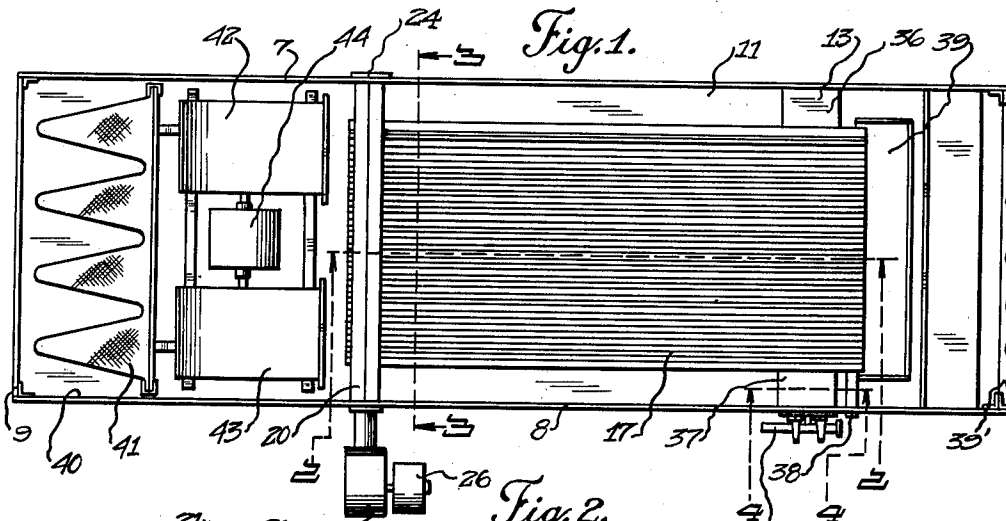
Oct. 14, 1941.

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2,259,187

HEATING UNIT

Filed Nov. 2, 1938



UNITED STATES PATENT OFFICE

2,259,187

HEATING UNIT

John T. Turnbull, Detroit, Mich.

Application November 2, 1938, Serial No. 238,465

4 Claims. (Cl. 126—110)

My invention relates to a new and useful improvement in a heating unit adapted for use with combustible fuel of fluid nature such as gas or oil. The heating unit is utilized for the purposes of heating a current of air and is especially adapted for use in heating houses, apartments, and the like where warm air heating is resorted to.

It is an object of the present invention to provide a heating unit having a combustion chamber communicating with a plurality of passage-ways through which the combusted gases pass, said construction being enclosed in a housing through which air may be directed for the purpose of heating the same.

It is another object of the present invention to provide a heating unit of this class having a combustion chamber separated by a flue construction embodying a plurality of passages through which combusted gases may pass from a transversely extended outlet header.

Another object of the invention is the provision in a warm air heating unit of this class of a combustion apparatus enclosed in a housing so arranged and constructed that the combusted gases in passing to the outlet flue travel toward the air which is being heated.

Another object of the invention is the provision in a heating unit of this class of a combustion chamber communicating with an outlet apparatus having a plurality of passages formed therein inclined to the interior and communicating adjacent their ends with a transversely extending outlet flue, said outlet flue being projectible through opposite sides of an enclosing housing.

Another object of the invention is the provision in a heating unit of this class of a combustion chamber extended transversely of a plurality of conduits through which the combusted gases may pass into a transversely extended outlet flue.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawing which forms a part of this specification, and in which, Fig. 1 is a top plan view of the invention with the upper wall or cover removed.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, slightly enlarged and with parts broken away.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1, slightly enlarged.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1, slightly enlarged.

As shown in the drawing, I provided an enclosing housing of which I have shown the side walls 7 and 8, the end wall 9, the bottom 11, the top having been removed in Fig. 1 and the housing having been broken away below the top in the other views. Mounted in the enclosing housing is a combustion chamber 13 which extends transversely thereof, adjacent one end. One of the side walls of the combustion chamber is angularly turned to form the bottom 14 of a conductor for conducting the combusted gases to the outlet. This conductor is provided with the side walls 15 and 16 and a top wall 17 which is formed sinuous to provide the channel forming members 17 having passage-ways or channels 18 interiorly thereof so that the combusted gases travel through the conductor and also through the conducting channels or passage-ways thus provided. The conductor is in communication adjacent one end, by means of the pipe 19, with a cross head or manifold 20, which, as shown in Fig. 2, is substantially diamond-shaped in cross section. Mounted on opposite ends of this manifold or cross-head 20 is a flange 21 and the burnt gases may be conducted from the cross-head or manifold from either end by mounting thereon a conduit 22 having a flange 23 which may be bolted or otherwise secured to the flange 21. At the opposite end of the manifold is a disk or cover 24 mounted on the flange 21. Exterior of the enclosing housing I provide a blower 25 operated by a motor 26 whereby an induced draft is set up in the conductor, the manifold and the flue 22, for facilitating the travel of the burnt gases therethrough. It is believed obvious that the communication to the manifold or cross-head may be made at any desirable point and that any suitable means may be used for inducing a draft through the conductor, or a natural draft resorted to.

Positioned in the combustion chamber and extending longitudinally thereof I provide a pair of spaced burners 27 and 28 into each of which a gas delivery pipe 29 may discharge the fuel. Each burner is provided with a partition 31 having openings 32 formed therein, so that the fuel will pass from the chamber 33 into the chamber 34 from which it may pass through the openings 35 where it is burned, the fuel being lighted by the pilot pipe 30 which extends between these burners. As shown in Fig. 1, the burner enclosing housing is extended as at 36 and 37 on opposite sides of the conductor. In the event it

is desired to dispense with the pilot light and use a thermostatic tube for controlling electrical ignition, the control tube may be mounted in the retaining housing 38. Mounted on the end of the conductor, is a reservoir 39 in which may be positioned water for humidifying air passing over the same. An air conduit 39' is attached to one end of the enclosing housing and at the opposite end of the housing air may enter the conduit 40 and pass through the filter members 41. The travel of this air is effected by the blowers 42 and 43 which are operated by the electric motor 44 so that the air travels across the conductor of burned gases. It will be noted that the burned gases travel from the right to the left, shown in Fig. 1, and that the air to be heated, travels from the left to the right, passing over and around the conductor and flowing into the channels 45. In order that the cross-head or manifold 20 may form the least possible interferences with the travel of the air, the conductor inclines from the burner toward the air inlet and is supported by suitable brackets 46. Thus, I have provided a counter-flow system in which the air first enters the outlet and then travels over the hot gas conductor toward the combustion chamber. Experience has shown that this is a very efficient form of installation. Also by having the burners extended transversely of the enclosing housing which may be termed an air chamber, a compact and economical structure is provided.

The air for assisting combustion of fuel or gas led into the burners may enter along-side of the pipes which deliver the fuel, but I have also provided openings 49, 50, and 51 through which air may enter into the combustion chamber 13 through the space 52 extended on the outside of the burners and into the space 53 between the burners.

Extending transversely of the conductor and adjacent the rear end is a partition 58 which terminates inwardly from the side walls 15 and 16, as clearly shown in Fig. 3, so that as the combusted gases are drawn toward the outlet flue 19, they are deflected by the partition 58 which serves as a baffle.

While I have illustrated and described the preferred form of construction, I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as may come within the scope of the appended claims.

What I claim as new is:

1. In a heating unit of the class described: an air chamber through which air may be delivered, said chamber having oppositely disposed side walls; a combustion chamber positioned within and extended transversely of said air chamber adjacent one end, there being formed in each of said side walls, between said combustion chamber and the opposite end of said air chamber, an opening; a conductor in said air chamber for conducting exhaust gases from said combustion chamber; a hollow manifold communicating with said conductor and extended transversely of said air chamber; and means for mounting said manifold in registration at its opposite ends with said openings.

2. In a heating unit of the class described: an air chamber through which air may be delivered, said chamber having oppositely disposed side walls; a combustion chamber positioned within and extended transversely of said air chamber adjacent one end, there being formed in each of said side walls, between said combustion chamber and the opposite end of said air chamber, an opening; a conductor in said air chamber for conducting exhaust gases from said combustion chamber; a hollow manifold communicating with said conductor and extended transversely of said air chamber; means for mounting said manifold in registration at its opposite ends with said openings; a closure for one of said openings; and a conduit communicating through the other of said openings with said manifold for conducting combusted gases therefrom.

3. In a heating unit of the class described: an air chamber through which air may be delivered for being heated, said air chamber having oppositely disposed side walls; a combustion chamber positioned within said air chamber adjacent one end; a conductor in said air chamber communicating with said combustion chamber for conducting combusted gases therefrom, there being an opening formed in each of said side walls between said combustion chamber and the opposite end of said air chamber, said openings being in registration with each other; a hollow manifold positioned within said air chamber and extended transversely thereof; means for mounting said manifold on said side walls in registration at its opposite ends with said openings; a closure for one of said openings; a conduit communicating through the other of said openings with said manifold for conducting combusted gases exterior of said air chamber; and draft-inducing means communicating with said conduit exterior of said air chamber for effecting a travel of combusted gases through said conduit.

4. In a heating unit of the class described, an air chamber through which air may be delivered to be heated, said air chamber having oppositely disposed side walls; a combustion chamber positioned within said air chamber adjacent to one end; an elongated conductor in said chamber communicating with said combustion chamber for conducting combusting gases therefrom, and having a corrugated top providing a plurality of longitudinally-extending spaced conducting passages, there being an opening forming in each of said side walls between said combustion chamber and the opposite end of said air chamber, said openings being in registration with each other; a hollow manifold positioned within said air chamber and extending transversely thereof and overlying one end of said conductor in elevated relation thereto; means for mounting said manifold in registration at its opposite ends with said openings; means for closing one of said openings; a conduit communication through the other of said openings with said manifold for conducting combusted gases therefrom; and a pipe connecting said manifold, intermediate its ends, in communication with said conductor.

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