June 20, 1939. H. D. DUFAULT 2,163,552

HEATING UNIT

Filed Aug. 5, 1938

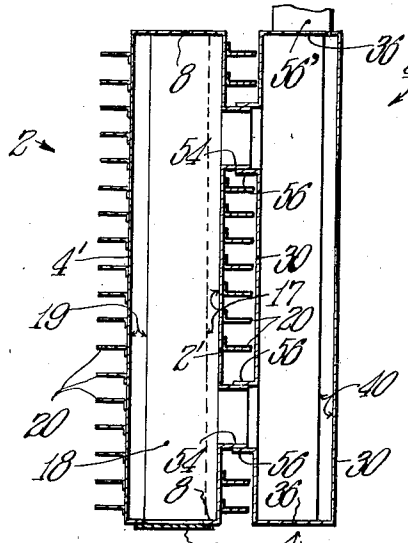


Fig. 3.

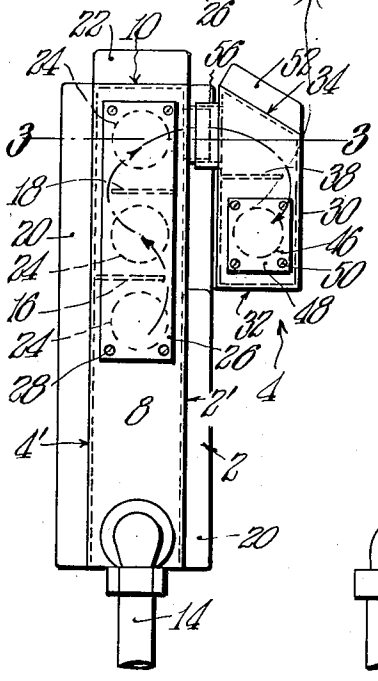


Fig. 1.

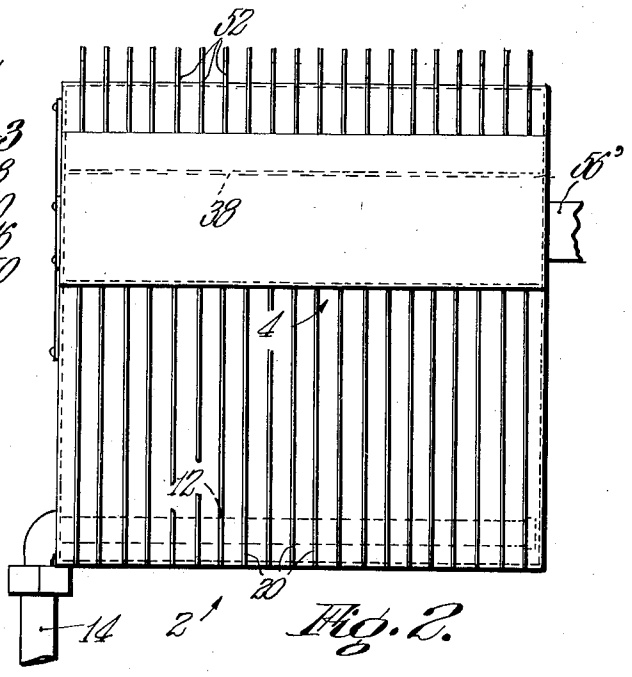


Fig. 2.

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HEATING UNIT

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Application August 5, 1938, Serial No. 223,279

3 Claims. (Cl. 126—90)

This invention relates to improvements in heating units and is directed more particularly to heating units which are adapted to be inserted in household ranges, boilers and the like.

The principal objects of the invention are directed to the provision of a heating unit which is simple in form so as to be economical to manufacture and which yet, by reason of its novel construction, is efficient in operation. The heating unit of the invention is particularly characterized by what I call primary and secondary separate compartments.

Various other novel features and advantages of the invention will be hereinafter more fully referred to in connection with the accompanying description of the preferred form of the invention, reference being had to the drawing wherein:

Fig. 1 is an end elevational view of a heating unit embodying the novel features of the invention;

Fig. 2 is a front elevational view of the heating unit shown in Fig. 1; and

Fig. 3 is a plan view on the line 3—3 of Fig. 1.

The heating unit of the invention includes in a broad way a primary compartment designated by 2 and a secondary compartment designated by 4. As will appear there are interconnecting passageways between the separate compartments.

The primary compartment 2 has side walls 2' and 4', end walls 8 and an upper wall 10. There may be a burner indicated by 12 in the lower part of compartment 2 and this is connected to a delivery pipe indicated by 14 which is connected to a fuel supply. The particular form of header or burner unit is not important and forms no part of this invention.

Baffles such as 16 and 18 are provided within the compartment 2 and these preferably extend longitudinally of the primary chamber, one extending inwardly from wall 2' and the other from wall 4'. Their other marginal edges terminate at a distance from the side wall opposite that from which they extend to form passageways 17 and 19, as shown.

Spaced fins 20 are associated with the outer side wall 4' of the primary compartment and similar plates 22 are associated with the upper wall 10 thereof. Clean-out openings 24 may be provided in an end wall 8 of the primary compartment to facilitate cleaning the same and a plate 26 is preferably disposed thereover and secured to the said end wall by screws or the like 28.

The secondary compartment has side walls 30, a lower wall 32, upper wall 34 and end walls 36. A baffle 38 may extend longitudinally thereof from one wall 30 with its outer marginal edge spaced from the other wall 30 to provide an elongated passageway 40.

A clean-out opening 46 may be provided in an end wall 36 of the secondary compartment and it may be closed by a plate 48 secured thereon by screws such as 50. Plates or fins 52 are associated with the upper wall 34 of the compartment 4.

Tubular members such as 54 extend from the side wall 2' of the primary compartment 2 and are joined to similar tubular members 56 extending from the adjacent side wall 30 of the compartment 4. The tubular members of one compartment are preferably arranged to receive those of the other compartment so that the two may be readily connected together.

In this way the primary compartment and the secondary compartment may be manufactured as separate units and readily assembled for use and just as readily disassembled for purposes of cleaning or the like.

A flue such as 56' may be provided at one end of the secondary compartment 4. Preferably the flue extends from the end of the device opposite that from which the pipe 14 extends but this is not absolutely necessary.

As stated, the heating unit is adapted for general use in ranges, heaters and the like and when installed in any such apparatus and connected to a fuel supply, the products of combustion will pass upwardly in the primary compartment through passageways 17 and 19 and out the tubular connections 56 above described into the secondary compartment. Then they will pass downwardly through the passageway 40 therein and outwardly through the flue 56'.

It will be noted that spaced baffles 16 and 18 in compartment 2 are disposed above inlet 14, and header 12, and that member 38 in compartment 4 is below the interconnecting passageways between the two compartments. Thus there is provided a circuitous passageway from inlet 14 upwardly in compartment 2, through tubes 56, downwardly in compartment 4, and out flue 56.

While I have described the invention in great detail and with respect to a preferred form thereof, it is not desired to be limited therto since many changes and modifications may be made therein without departing from the spirit and scope of the invention.

What it is desired to claim and secure by Letters Patent of the United States is:

1. A unitary heating device for association with a range or the like as a unit comprising in combination, a relatively narrow and elongated closed

primary casing having an inlet in its lower side, a burner within said primary casing extending longitudinally of the lower sides thereof and connected to said inlet, spaced baffles within said casing extending transversely thereof above said burner, said baffles being disposed one above the other so as to form a restricted passageway which leads upwardly from the burner to the upper side of said casing, a relatively narrow and elongated closed secondary casing spaced away from said primary casing so as to provide an air space therebetwen, a baffle within said secondary casing extending transversely thereof intermediate the upper and lower walls thereof so as to form a restricted passageway which leads downwardly from the upper side of said secondary casing to a lower chamber, a tubular connection extending between the upper sides of said casings above the baffles therein and serving as the sole means of communication between the casings, and a flue leading away from said lower chamber of the secondary casing, all adapted and arranged whereby a circuitous passageway is provided which leads from said burner upwardly through the primary casing and through said tubular connection and downardly through said secondary casing and out said flue.

2. A unitary heating device for association with a range or the like as a unit comprising in combination, a relatively narrow and elongated closed primary casing having an inlet in its lower side, a burner within said primary casing extending longitudinally of the lower side thereof and connected to said inlet, spaced baffles within said casing extending transversely thereof above said burner, said baffles being disposed one above the other so as to form a restricted passageway which leads upwardly from the burner to the upper side of said casing, a relatively narrow and elongated closed secondary casing spaced away from said primary casing so as to provide an air space therebetween, certain of the walls of said casings having spaced fins extending outwardly therefrom, a baffle within said secondary casing extending transversely thereof intermediate the upper and lower walls thereof so as to form a retricted passageway which leads downwardly from the upper side of said secondary casing to a lower chamber, a tubular connection extending between the upper sides of said casings above the baffles therein and serving as the sole means of communication betwen the casings, and a flue leading away from said lower chamber of the secondary casing, all adapted and arranged whereby a circuitous passageway is provided which leads from said burner upwardly through the primary casing and through said tubular connection and downwardly through said secondary casing and out said flue.

3. A unitary heating device for association with a range or the like as a unit comprising in combination, a relatively narrow and elongated closed primary casing having an inlet in its lower side, a burner within said primary casing extending longitudinally of the lower side thereof and connected to said inlet, spaced baffles within said casing extending transversely thereof above said burner, said baffles being disposed one above the other so as to form a restricted passageway which leads upwardly from the burner to the upper side of said casing, a relatively narrow and elongated closed secondary casing spaced away from said primary casing so as to provide an air space therebetween, the side and top walls of said primary casing and the top wall of said secondary casing having spaced fins extending outwardly therefrom, a baffle within said secondary casing extending transversely thereof intermediate the upper and lower walls thereof so as to form a restricted passageway which leads downwardly from the upper side of said secondary casing to a lower chamber, a tubular connection extending between the upper sides of said casings above the baffles therein and serving as the sole means of communication between the casings, and a flue leading away from said lower chamber of the secondary casing, all adapted and arranged whereby a circuitous passageway is provided which leads from said burner upwardly through the primary casing and through said tubular connection and downwardly through said secondary casing and out said flue.

HOMER D. DUFAULT.