Feb. 6, 1934. L. E. BRACKETT 1,945,966

CIRCULATOR CASING FOR HEATERS

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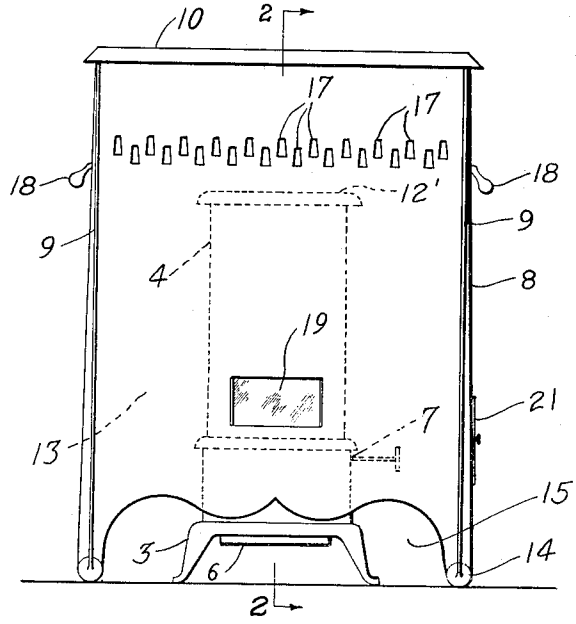

Fig. 1

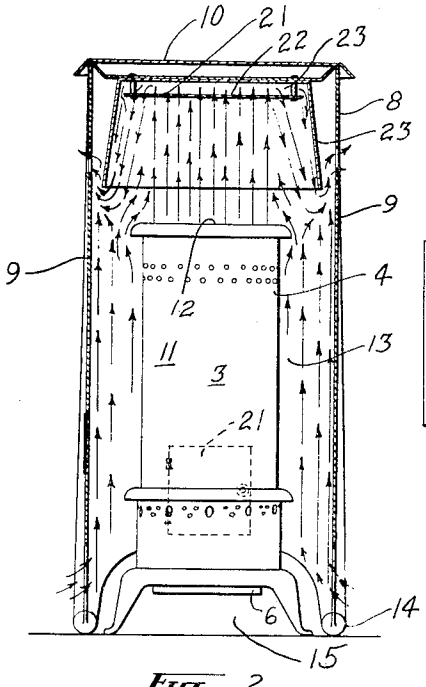

Fig. 2.

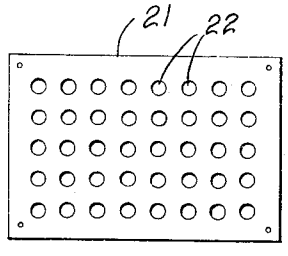

Fig. 3.

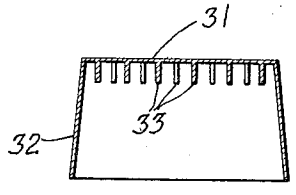

Fig. 4

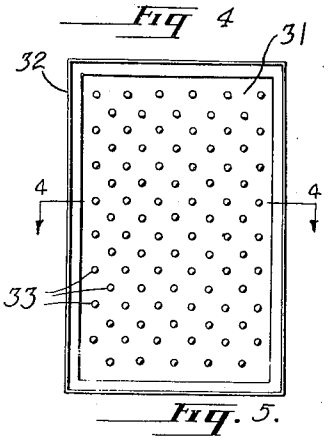

Fig. 5.

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CIRCULATOR CASING FOR HEATERS

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2 Claims. (Cl. 126—96)

The invention relates to a means particularly adapted for converting household heaters of the type which are designed to warm the surrounding air by radiation and conduction, as well as convection, into a unit which will warm the air practically entirely by convection, such as by drawing the air therethrough in accordance with the commonly designated circulating principle.

An object of the invention is to provide a means of the character described which is easily portable and arranged for removable positioning over a heater such as the ordinary kerosene burning type whereby the heating of the air may be effected by circulation thereof induced between the walls of heater and the means of my invention.

Another object of the invention is to provide a means of the character described which may be used to convert into a heater unit of the air circulating type, the type of heater in which the warmth furnished thereby is in part provided by the discharge of the heated products of combustion therefrom directly into the area surrounding the heater.

A further object of the invention is to provide means which may be effectively combined with the last mentioned, to bring about complete combustion of all the burning products discharged from the heater and to cause a superheating of the discharging products whereby a maximum degree of warmth may be provided with a minimum amount of fuel.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a side elevation of the means of my invention operatively associated with an oil heater.

Figure 2 is a vertical longitudinal section of the means as shown in Figure 1.

Figure 3 is a plan view of a plate comprising a part of the flow retarding device of my invention.

Figures 4 and 5 are respectively sectional and bottom plan views of a modified form of the flow retarding means.

As illustrated in the drawing the means of my invention is depicted in operative association with a heater 3 which as here shown is of the common household oil or kerosene burning type and comprises a combined flue and combustion chamber 4 at the bottom of which is disposed the reservoir 6 and wick burner 7 and at the top of which are suitable openings through which the heated products may escape into the area about the heater, suitable openings being also provided adjacent the bottom of the flue so that sufficient air for burning may enter.

It will be understood that in the operation of oil heaters as above described, the warmth produced thereby is through the combined effect of heat radiation, conduction, and convection, the heating through means of activity of the latter kind being materially curtailed as the amount of air admitted into the heater must necessarily be limited to prevent the cooling effect on the flame and the resultant poor combustion and undesirable odor. In order therefore that the full warming effect produced by maximum convection activity be made available, I have provided a converting means which is arranged to fit over the heater so as to provide a heating unit operative in accordance with the well known air circulating system and at high efficiency.

As here illustrated the converting means of my invention is of rather simple form and comprises a shell or casing 8 arranged for insertion over the heater and completely enclosing same. The casing is of such size that the side and top walls 9 and 10 thereof will lie in spaced relation to the corresponding walls 11 and 12 of the heater so that a chamber 13 is defined therebetween when the casing is operatively disposed. The casing is preferably formed at the lower extremity thereof with legs 14 and as clearly shown in Figures 1 and 2, openings 15 are defined between the legs so that air from around the casing may freely enter the chamber at the bottom. Outlet openings 17 are provided in the casing, preferably at a point below the top thereof and above the top 12 of the heater. For convenience in handling the converter in placing the same over or removing it from the heater, the casing is provided with handles 18 near the top thereof, while a sight opening 19 and an opening 21 for permitting access to the heater for operating same, is formed in the sides of the casing.

It will be evident that in the operation, the heated products ascending from the heater and discharging through the outlet openings 17 create an upward draft in the portion of the chamber surrounding the sides of the heater, and thereby

cause a stream of air to enter the chamber and pass upward therethrough in intimate relation to the hot side walls of the heater before being permitted to pass out through the openings 17 together with the heated products from the flue. In this way the operation of the heater is converted into the desired circulating system.

In addition to serving as a medium for converting the heating operation as aforesaid, the means of my invention is arranged to promote the complete combustion of the discharging gases and at the same time cause the products to discharge from the unit at an extremely high temperature so that the speed of circulation is materially increased and the area surrounding the heater unit more quickly and effectively warmed. Preferably fixed to the casing so as to be interposed between the top wall 12 thereof and the top of the heater, is a transversely-extending flatly-lying plate 21 perforated to provide a plurality of openings 22. The plate lies in spaced relation to the top 12 and is positioned directly over the openings in the heater top so that the products discharging from the heater pass directly through the openings 22 and are entrained in the space 23 above the plate. Owing to the concentration and crowding of the rising products at the central portion of the plate, the products entrained above the plate are forced to the side edges thereof where they are thence forced and drawn downwardly to the outlet openings 17 for discharge, together with the air rising about the sides of the heater as clearly indicated in Figure 2. Preferably the edges of the plate are terminated sufficiently inward to permit the more or less free exit of the entrained products. In order to better guide the entrained products to the outlet openings, the casing top is formed with a downwardly extending and outwardly flaring skirt 23 the lower end of which terminates near the lower edges of the openings 17. It will now be clear that since the flow of the products while over the heater is retarded by the restricted passages 22 and the entraining space above the plate, such products are forced to linger while directly exposed to the heat of the heater burner. In this manner not only will any of the unburned fuel particles be assured of complete combustion before leaving the heater unit, but all of the particles discharging from the heater will be superheated.

In the modified form of the flow retarding means shown in Figures 4 and 5, the plate 31 is imperforate and the skirt 32 is formed integral therewith. In this arrangement momentary retention of the products over the heater is effected by means of projections 33 extending downwardly from the plate.

I claim:

1. In a converter for open-top heaters, a casing arranged to enclose the heater to define a chamber around the sides and top thereof and having inlet and discharge openings respectively adjacent the bottom and sides of the casing, means on the inside of said casing fixed to the top thereof for entraining and retarding the flow of products discharged from the heater and comprising a member forming an inverted bowl arranged for the reception of the heated products issuing from the heater, and having the lower extremity thereof extending substantially below said discharge openings, and a perforated plate fixedly held in said bowl in spaced relation from the base thereof and arranged to be positioned over the heater to receive the products discharged therefrom.

2. In a converter for an open-top heater, a casing arranged to enclose the heater to define a chamber around the sides and top thereof and having inlet and discharge openings respectively adjacent the bottom and top of the casing, a member forming an inverted bowl disposed within said chamber above said discharge openings and arranged for the reception of the heated products issuing from the heater and having the lower extremity thereof extending substantially below said discharge openings, and means within said bowl for entraining and retarding the flow of the products discharged from the heater.

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