DRAFT DIVERTER HOODS

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This application is a division of our copending application, Serial No. 147,848, filed October 26, 1961, entitled, Air Heating and Cooling Apparatus, and relates to improvements in back draft diverter hoods.

This invention relates broadly to draft diverter hoods more commonly known as vent termination hoods employed with gaseous fuel burning appliances for preventing back draft through the chimney. The object of the apparatus for the purposes of ventilating the products of combustion formed in the appliance to the atmosphere.

It is accordingly the chief object of this invention to provide a vent termination hood for effectively disposing of the products of combustion formed in a fuel burning appliance in a manner suggesting resistance to the flow of air through the appliance of the kind that could extinguish the ignitions forming part of the appliance are prevented.

These and other objects and features of the invention will be apparent upon a consideration of the ensuing specification and drawings in which:

FIGURE 1 is a perspective view of an air heating and cooling apparatus equipped with a vent termination hood forming the invention.

FIGURE 2 is a top perspective view of the apparatus shown in FIGURE 1 wherein the details of the vent termination hood are illustrated by removal of one of the sides thereof.

Referring to the drawings for an illustration of a preferred embodiment of the invention, there is shown air heating and cooling apparatus serving as a fuel burning appliance of the type with which the vent cover of the apparatus. Air to be heated is routed through the vent termination, serving as the invention, may be used. An air heating and cooling apparatus is described in detail in copending patent application Serial No. 147,848, identified above. The particular air heating and cooling apparatus does not form a part of this invention but is shown as one illustration of a fuel burning appliance with which the novel vent termination hood may be used. In order to more readily appreciate the invention, the appliance will be described in general terms, it being understood that information as to the specific details of the appliance may be obtained by reference to the copending application.

The air heating and cooling apparatus incorporates a direct fired heating unit wherein a mixture of air and gaseous fuel is burned and flows through a heat exchanger to a duct 8, through which the air flows through the apparatus. To be heated is routed through the heat exchanger and passed to the flue of the apparatus. Air to be heated is routed through the heat exchanger and passed to an enclosure such as a residential unit to provide comfort heating to the occupants thereof.

As will be understood by those skilled in the art, provision must be made for the continuous flow of the burned gaseous fuel as the products of combustion from the flue or duct 8. Under certain atmospheric conditions, ambient air may be caused to flow in a direction opposite to the flow of the products of combustion and may be of such a magnitude as to cause reverse flow of the products of combustion rendering inoperative the igniting means for igniting the fuel supplied to the heat exchanger. The vent termination hood herein disclosed prevents this occurrence by a unique arrangement of openings and passages constructed to provide resistance to the down draft as this reverse flow of air is known.

With the panels, covers and door, connected to surround the operating components of the air heating and cooling apparatus, a top cover assembly including member 10 is provided to complete the housing. The top member 10 is formed of sheet metal material and provided with flanges permitting assembly with the structural elements described. Also provided in the top cover 10 are three openings 12, 14 and 16. Opening 12 is arranged to overlie the condenser discharge plenum associated with the cooling unit forming a part of the apparatus. Opening 14 overlie a chamber accommodating the compressor also associated with the cooling unit. Circular opening 16 accommodates the flue 8 through which the products of combustion formed in the heat exchanger referred to above pass to the atmosphere.

Completing the top cover assembly is a channel-shaped member 18 adapted to form, in conjunction with the upper surface of cover 10, a duct for the flow of ambient air into the apparatus to satisfy the air flow requirements of certain of the components such as the gas burner assembly situated within the housing. The channel-shaped member 18 is provided with an opening 20 slightly larger in diameter, and in registry with, the opening 16. When assembled on the upper surface of the apparatus, one end of member 18 overlies opening 14. Vent termination hood 76 is assembled about the end of the flue 8 projecting upwardly from the housing. Vent termination hood 76 is arranged so that air pressure in the vicinity of opening 20, wherein combustion air is supplied to the burner unit 55, is so related to the air pressure at the discharge of the hood that positive flow of the products of combustion is assured and reverse flow of air under the influence of “back draft” sufficient to extinguish the pilot or prevent normal purging of the products of combustion is prevented under high atmospheric wind conditions. To this end, the hood 76 is composed of opposed side plates 76a, note FIGURE 1, connected by a base 76b having an opening accommodating flue 8, inclined end plates 76c having parallel flanges 76d and cover 76e arranged in spaced relation to the upper flanges 76f. Lower flanges 76g of end plates 76c are formed with openings 76h and with vertical baffles 76i in the manner shown in FIGURE 2 to further assure proper flow of flue gas. V-shaped baffle 76j is arranged to direct flow from flue 59 in two directions, depending upon the direction of atmospheric air flow. Central plate 76k engages a stop member, not shown, on the flue to position the hood to assure a space between the underside of base plate 76l and the upper surface of member 18. With the arrangement shown, the apparatus may be operable in snow reaching a depth measured by the height of cover 10 above the ground without interference with the flow of combustion air to the gas burner 55. Further, the arrangement of baffles assures prevention of “short-circuiting” of the airflow from the hood.

Considering the operation of the vent termination hood the products of combustion flow from the collector in the appliance through flue 8 to the atmosphere through vent termination hood 76. Air necessary for mixture with the gaseous fuel delivered through supply main to the burner assembly is available through a path originating with the space defined by opening 20 surrounding the flue 8. The duct formed by the member 18 and cover 10 directs the air to opening 14 where it flows through chamber accommodating the compressor, and into the burner chamber through communicating opening. It will thus be obvious that air from the atmosphere is available without providing openings in the side panels which permit access to the burner assembly chamber by children or foreign material or malfunction due to rain, wind or snow.

While we have described a preferred embodiment of our
invention, it will be understood the invention is not limited thereto but may be embodied within the scope of the following claims.

We claim:

1. A vent termination hood for deflecting gaseous products of combustion flowing from a flue pipe comprising a base member having a flue accommodating opening therein, opposed side plates connected at the lower edges thereof to opposed edges of said base member, a cover connected to opposed upper edges of the side plates, inclined end plates connected to said side plates to define openings with the unconnected ends of the cover, each of said inclined end plates having a lower flange extending outwardly in spaced relation to the unconnected edges of and parallel to said base member to form an air passage, and a vertical baffle member opposite each flange and forming with each flange and said base plate a pair of openings communicating with said air passage, the plane of which is substantially parallel to the plane of the base member.

2. The invention set forth in claim 1 wherein an internal baffle is connected to the opposed side plates in spaced relation to said cover.

References Cited by the Examiner

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