DRAFT HOOD FOR GAS BURNERS

INVENTOR.

John W. Miller

BY

Dunne Kessler Laughlin Lindell

Attorneys.
This invention relates to a draft hood and, more particularly, to a draft hood for gas burning heating devices.

It is an object of this invention to produce a draft hood of the type described which is economical to manufacture and which is constructed so that it may be connected more conveniently with a chimney flue.

More specifically, the invention contemplates a draft hood in the form of a housing having a tubular baffle member mounted therein, the baffle member having an outlet fitting thereon projecting through an elongated slot in the wall of the housing so that the baffle may be rotatably adjusted to a position wherein the outlet fitting is aligned with the chimney, thereby reducing the number of elbows required in the flue line connecting the draft hood with the chimney. The baffle is arranged within the housing so that there will be zero draft on the outlet flues of the heating device.

In the drawings:

Fig. 1 is a plan view, partly in section, showing the draft hood arranged on a gas floor furnace and connected with a chimney.

Fig. 2 is a side elevation, partly in section, of the floor furnace with the draft hood of this invention arranged thereon.

Fig. 3 is a sectional view taken substantially along the lines 3—3 in Fig. 2.

Fig. 4 is a sectional view taken substantially along the lines 4—4 in Fig. 3.

Fig. 5 is a fragmentary elevational view of the draft hood with parts broken away to show the interior construction thereof.

Fig. 6 is a perspective view of the draft hood with the baffle removed therefrom.

Fig. 7 is a perspective view of the baffle.

The draft hood of this invention is designed to be used with gas burning heating devices which require zero draft. For the purpose of illustration, I have shown the draft hood, generally designated 10, used in conjunction with a gas floor furnace 11. A furnace of this type is usually supported within an opening in the floor of the structure being heated such as by the floor joists or headers 12. Furnace 11 is provided with an outer shell 13 within which there is disposed a heat exchanger 14 and a gas burner 15. The products of combustion from burner 15 flow through heat exchanger 14 and out through a pair of flue outlets 16.

The draft hood 10 is provided for connecting the flue outlets 16 of the furnace with a chimney 17 and, in the case of gas burning heating devices, the hood is constructed such that there will be zero draft at the inlet of the draft hood. Draft hood 10 is preferably formed as a housing having a back wall 16, a front wall 19 which is flanged at each end as at 20 for connection with back wall 18, and a top wall 21. Back wall 16 is formed with a pair of inlet openings 22 which are spaced apart to correspond with the spacing of outlet flues 16 on furnace 11. A ferrule 23 surrounds each opening 22 and is arranged for connecting the interior of the draft hood with outlet flues 16. The front wall 19 of the draft hood has an outwardly extending, semi-cylindrically shaped portion or bulge 24 which is centrally located relative to inlet openings 22. Wall portion 24 is provided with a horizontally extending elongated opening 25 which is spaced between the upper and lower edges of wall 19.

Within the housing formed by walls 15, 18 and 21 (the bottom of the housing being open) there is positioned a tubular or cylindrical baffle member 25 having its axis extending vertically within the housing. Baffle 25 is open at its top and bottom ends and is slidably nested in the semi-cylindrical wall portion 24. Baffle 25 is dimensioned in diameter such as to slidably fit nicely between wall portion 24 and rear wall 16 as at 27. At one side the cylindrical baffle 25 is provided with an outlet opening 28 around which is arranged a tubular ferrule 29. Ferrule 29 has a diameter corresponding to the height of opening 25 and, in turn, supports one side of baffle 25 in opening 25. The opposite side of baffle 25 is slidably supported by and between a pair of brackets 30 which are welded or otherwise affixed to the rear wall 15 of the housing. Brackets 32 engage the upper and lower edges of the cylindrical baffle 25. Baffle 25 is thus supported and adjustment within the housing, the extent of rotative movement being limited by the length of the elongated opening 25. In the construction shown, baffle 25 can be rotated through approximately 120°, the ferrule 25 being capable of being arranged in any angular position between the two extreme positions shown in Fig. 3 in broken lines.

Bolts 31 provide reinforcements extending between the front and back walls of the housing. The front wall 18 may be further reinforced by forming a circumferentially extending rib 32 around the semi-cylindrical wall portion 24.

Baffle 25 has a width greater than the diameter of inlet openings 22 and is arranged such that its upper and lower edges are disposed above and below openings 22, respectively, with the upper end of baffle 25 spaced below the top wall 21 of
the housing and with the lower end of the baffle spaced above the open bottom 33 of the housing.

In mounting the draft hood on the furnace, the hood is arranged with inlet ferrules 23 inserted within the outlet flues 16 of the furnace and necessary, brackets may be utilized for additionally supporting the draft hood on the casing 13 of the furnace. After the draft hood is thus arranged on the furnace, ferrule 28 is rotated within opening 25 such as to be disposed in a convenient angular position for extending a flat plane 24 between the draft hood and the chimney 17. It will be appreciated that the rotational adjustment of ferrule 25 permits the extension of flue 34 from the draft hood to the chimney with a minimum of elbows. In many localities the number of elbows permitted in the flue extension from the furnace to the chimney is limited by safety codes, and the use of the draft hood of this invention is, under such circumstances, especially advantageous.

It will be noted that the cylindrical baffle 26 forms an obstruction in the direct path between inlet openings 22 and outlet 28. The flue gases flowing from the burner are therefore caused to travel a circuitous path in flowing from inlets 22 to outlet 28. These gases must flow either upwardly over the upper edge of baffle 26 or downwardly around the lower edge of baffle 26. This circuitous path through which the flue gases must pass and the effect of the open bottom of the draft hood result in a substantially zero draft at the inlet of the draft hood. In case of a down draft in the chimney, the gas flowing into the draft hood through opening 20 is reflected by baffle 26 and directed downwardly through the open bottom 23 of the housing. Baffle 26 bars any down draft entering the hood through openings 22 from flowing across the hood into openings 22 and thus protects the burner from extinguishment by a down draft.

I claim:

1. A draft hood for a gas burning heating device comprising a housing having top and side walls and a substantially open bottom, said side wall having an inlet opening therein for the combustion products from said gas heating device, and a tubular baffle within said hood, said baffle having an open end disposed within said housing and communicating directly with said open bottom of said housing, said tubular baffle having an outlet opening in its side wall, the side wall of said baffle being spaced from said inlet opening and having a portion lying in the direct path of travel between said inlet and said outlet openings whereby the side wall of said tubular baffle causes the gas flowing from said inlet opening to said outlet opening to travel a circuitous path to and through the open end of said tubular baffle, the side wall of said housing having a second opening therein of greater lateral extent than the outlet opening in the side wall of said baffle, said baffle being positioned in said housing with the portion of its side wall provided with said outlet opening adjacent the portion of the side wall of the housing provided with said second opening so that said outlet opening registers with said second opening and is accessible from exteriorly of said housing to said housing supporting said baffle for rotation on its axis to shift said outlet opening throughout the lateral extent of said second opening while in registering relation therewith, said baffle being provided with means for connecting a smoke outlet duct with said outlet opening, and closure means on said housing closing said outlet opening of greater lateral extent except for the portion thereof which registers with the outlet opening on said baffle.

2. The combination set forth in claim 1 wherein said baffle is a cylinder positioned vertically in said housing and open at the upper and lower ends thereof.

3. The combination set forth in claim 2 wherein said side wall portion of said housing provided with said second opening is of semi-cylindrical shape corresponding with the semi-cylindrical shape of said baffle, said baffle being disposed against the inner face of said cylindrical wall portion throughout the extent of said opening, the portion of said baffle which is not disposed against said cylindrical wall portion providing said wall in said chamber which prevents direct communication between said inlets and outlet openings.

4. The combination set forth in claim 2 wherein the upper edge of said baffle is spaced below the top wall of said housing and the lower edge of said baffle is spaced above the lower edge of said housing.

5. The combination set forth in claim 4 wherein said outlet opening is disposed at a level between the upper and lower ends of said baffle.

6. A draft hood for a gas burning heating device comprising a housing open at its bottom side, and a tubular baffle member within said housing having an end opening toward the bottom side of said housing, said tubular baffle member having an outlet opening in the side wall thereof and being rotatable about its axis within said housing, said housing having an inlet opening in a side wall opposite said outlet opening, said inlet opening being located in said side wall at a point spaced from said open end of said baffle member whereby the wall of said tubular baffle member causes the gas flowing from said inlet to said outlet openings to travel a circuitous path to and through said open end of said tubular baffle member, said housing being provided with an elongated opening in the side wall thereof of spaced from said inlet opening, and an outlet fitting on said baffle member surrounding said outlet opening and extending through said elongated opening, said baffle member being rotatable in said housing to move said outlet fitting laterally through the extent of said elongated opening, and means movably mounted on the wall of said housing opening and closing said elongated opening except for the portion thereof through which said outlet fitting extends.

7. The combination set forth in claim 6 wherein said baffle member is cylindrical in shape, the wall portion of said housing provided with said elongated opening being arcuate in shape to correspond with the cylindrical surface of said baffle member, said baffle member being supported against said arcuate wall portion with the cylindrical wall thereof providing said means closing said elongated opening except for the portion thereof through which said outlet fitting extends.

8. A draft hood as called for in claim 6 wherein in a port through the side wall of said baffle is disposed adjacent the portion of said housing provided with said elongated opening and forms said closure means.

9. A draft hood for a gas burning heating device comprising a housing having top and side walls and a substantially open bottom, said side
wall having an inlet opening therein for the combustion products from said gas burning heating device, a tubular baffle positioned vertically within said hood and having an outlet opening in its side wall, said baffle having a lower open end which is disposed in a plane above said open bottom and below said inlet opening, the side wall of said baffle being spaced from said inlet opening and extending vertically to above and below said inlet opening so as to lie in the direct path of travel between said inlet and outlet openings whereby the side wall of said baffle causes the gas flowing from said inlet to said outlet opening to travel a circuitous path to and through the open end of said tubular baffle, duct means connected with said outlet opening and extending to a point exteriorly of said housing, said last mentioned means being adapted for connection with a smoke outlet duct, and means in said housing supporting said baffle for rotation on a vertical axis to vary the angular position of said outlet opening and the duct means connected therewith relative to said housing.

10. A draft hood as called for in claim 9 wherein the side wall of said housing is provided with a second opening of greater lateral extent than the outlet opening in said baffle, said duct means extending through said second opening, and the side wall of said baffle closing said opening of greater lateral extent except for the portion thru which said duct means extends.

11. The combination called for in claim 10 wherein said duct means slidably engages the lower edge of said second opening to support one side of said baffle in said housing, and means on a wall of said housing opposite said opening of greater lateral extent engaging said baffle for supporting the opposite side of said baffle.

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