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A. P. LIVAR

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DRAFT DIVERTER

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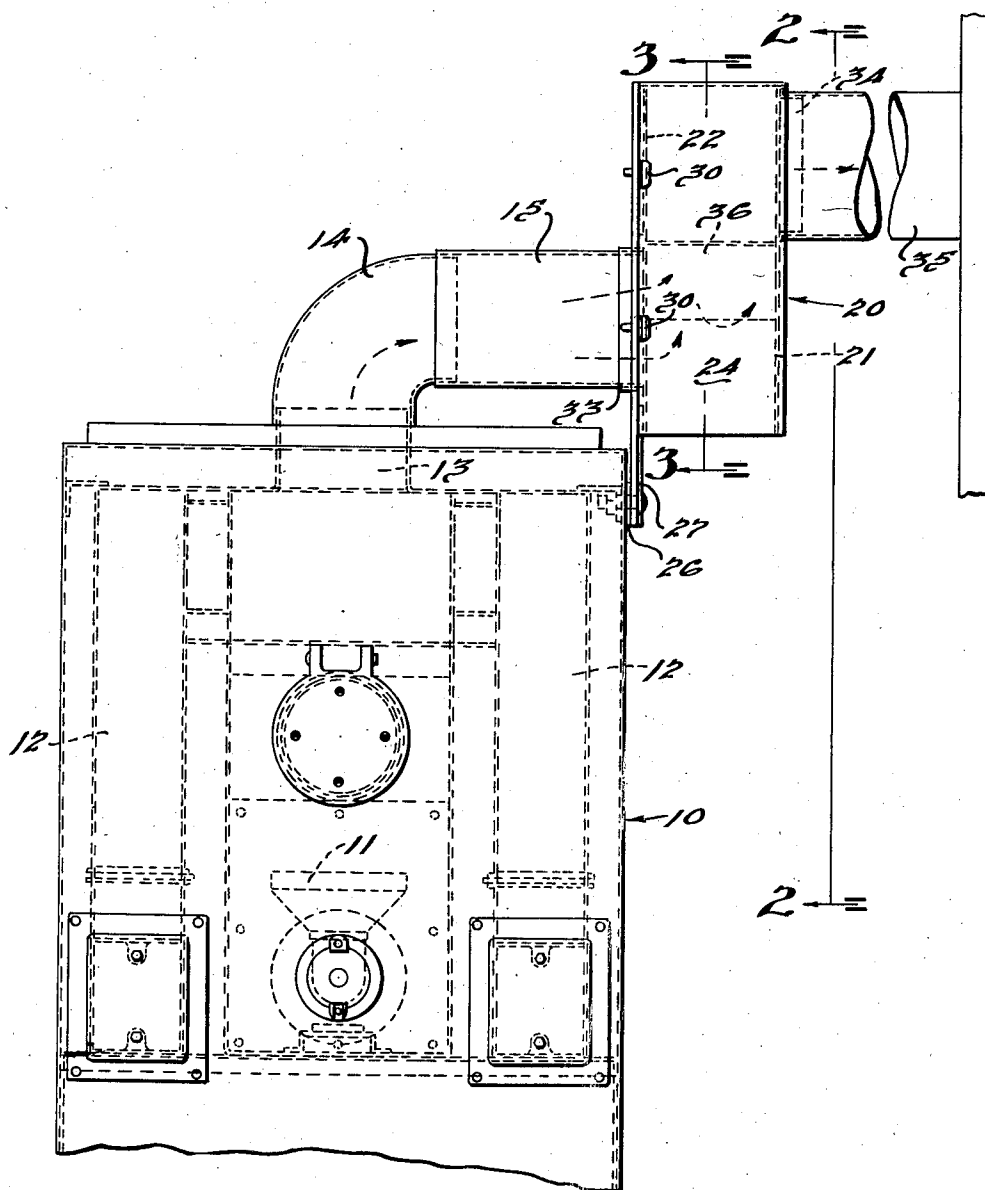


FIG. 1.

INVENTOR
Allen P. Livar
BY *Harnes, Lind, Pate & Harnes*
ATTORNEYS.

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DRAFT DIVERTER

Allen P. Livar, Dayton, Ohio, assignor to Chrysler Corporation, Detroit, Mich., a corporation of Delaware

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4 Claims. (Cl. 126—307)

The present invention relates to gas burning appliances, in particular to draft diverters for such appliances.

It is an object of the present invention to devise a draft diverter to be associated with the smoke outlet and flue of a gas burning appliance which will be economical to manufacture and install, which will be of the highest efficiency, and which will occupy the least possible space.

The purpose of a draft diverter is threefold. The first purpose is to permit products of combustion which would normally travel through the flue to the space outside of the enclosure in which the burner is situated to discharge into the enclosure if the flue should become blocked, without affecting the natural draft of the gas burning unit in the appliance. The second function is to divert any downdraft through the chimney and flue into the cellar or space surrounding the gas burning appliance without affecting the natural draft of the gas burning unit. The third function is to check an updraft of air through the flue from the space surrounding the gas burning appliance, instead of permitting it to create a suction over the surface of the gas burning unit which might tend to pull the flame away from the unit or otherwise affect the combustion characteristics thereof. The present invention provides a simple form of draft diverter which is found to be efficient in all functions of draft diverters.

These and other objects and advantages of the present invention will be more readily apparent from a study of the following specification and claims taken in connection with the accompanying drawings wherein like numerals refer to like parts throughout.

In the drawings, Fig. 1 is a view in front elevation of a gas burning appliance, specifically a furnace such as disclosed and claimed in my previously issued Patent No. 2,196,703, dated April 9, 1940, and having the present invention associated with the smoke outlet thereof;

Fig. 2 is a view in side elevation of the structure disclosed in Fig. 1, taken substantially along line 2—2 of Fig. 1; and

Fig. 3 is a vertical section on an enlarged scale taken substantially along line 3—3 of Fig. 1.

The gas burning appliance is generally designated by the numeral 10 and includes a combustion unit 11 from which products of combustion pass through heat exchangers 12 into a smoke outlet 13 and flue sections 14 and 15. The flue sections preferably comprise an elbow and

straight section of smoke pipe so that the products of combustion are led across the top of the furnace 10 to a point above an edge thereof. Further details of the furnace may be ascertained from a study of the above mentioned patent, the furnace being illustrative of a gas burning appliance of which many hundreds of types exist.

The draft diverter of the present invention comprises a casing 20 including parallel front and rear walls 21 and 22, respectively, side walls 23 and 24, and a top wall 25, the walls being preferably rectangular and at right angles to each other to form a rectangular casing open at the bottom only. The casing 20 is adapted to be mounted upon the body of the furnace as by attaching a horizontal bar 26 to the upper edge of the furnace from which extend vertical risers 27 and 28 adapted to have the casing fastened thereto as by means of integral clips 30 or other suitable fastening means. The casing, of course, may be mounted in the position selected by any suitable means such as are commonly used to support flues or smoke pipes.

The front and rear walls 21 and 22 are preferably spaced apart a distance substantially equal to the diameter of the smoke outlet and connected flue, which distance is represented as D in Fig. 3. In Fig. 3 it is also apparent that the rear wall 22 has an inlet opening 31 therethrough in the lower portion thereof, the diameter of which is substantially equal to the diameter of the smoke outlet. The front wall 21 has an outlet opening 32 therethrough in the upper portion thereof and which also has a diameter substantially equal to the diameter of the smoke outlet. The openings 31 and 32 are located with their centers substantially on the vertical centerline of the front and rear walls of the casing and at such a distance apart that the outlet opening is entirely spaced above the inlet opening, the two openings being vertically spaced a short distance such as would be required for manufacturing clearances, as will presently appear. The inlet opening 31 has a collar 33 associated therewith, and the outlet opening 32 has a collar 34 associated therewith, the collars being welded to the adjacent walls of the casing and projecting laterally so as to receive the ends of the adjoining flue sections 15 and 35, respectively. The collars are preferably attached to the walls of the casing by spot welding an integral flange thereof onto the walls of the casing.

In order that the casing may operate as a draft diverter, there is provided a substantially semi-cylindrical baffle 36 which extends from

front to rear of the casing and which is fastened to the front and rear walls as by means of spot welding integral flanges such as flange 37 to the walls. The flange 37 and the flange at the opposite end of the baffle 36, indicated at 38 in Fig. 2, require some clearance; hence the spacing of the openings 31 and 32. Likewise, the flange on the collar 34 requires some clearance; hence the opening 32 may be spaced a short distance below the top wall 25.

The semi-circular baffle 36 is so located as to be positioned adjacent the upper edge of the inlet opening 31, and substantially coaxial with the inlet opening 31 so that the ends thereof are the closest parts thereof to the side walls 23 and 24. The width of the front and rear walls 21 and 22 is preferably such that the free area at each side of the baffle 36 between an end thereof and a side wall of the casing is equal to at least one-half of the area of the inlet or outlet opening, so that one-half of the volume of gases capable of passing through the openings may pass through each of the free areas. Preferably, the width of the front and rear walls is such as to provide a rectangular free area of which the width is equal to one-half the diameter of the inlet or outlet opening so that the free area at each side of the casing is equal to approximately two-thirds of the area of the inlet or outlet opening in order that greater efficiency as a draft diverter may be realized.

The draft diverter, as so far described, must have a height equal to twice the diameter of the smoke outlet plus the clearances required for manufacturing, which may be approximately one inch regardless of the size of the draft diverter. It is also preferable, in order to prevent spilling of flue gases through the open bottom of the casing, to extend the vertical walls of the casing a short distance below the bottom of the inlet opening 31, it having been determined that a distance approximately equal to one-third of the diameter of the smoke outlet is sufficient. This distance may be increased to approximately one-half of the diameter of the smoke outlet without impairing the functioning of the draft diverter and may in some instances be decreased to a much lesser distance. However, it has been observed that a draft diverter having its vertical walls extended approximately one-third the diameter of the smoke outlet of the appliance will operate very efficiently regardless of the character of the appliance.

It should be obvious to those skilled in the art that the draft diverter herein illustrated and described is as simple to manufacture as can be achieved. The rectangular shape of the side walls may, of course, be modified for the sake of decorative effect, and it is my intention to include such modifications in the scope of the following claims. The dimensions herein illus-

trated and described are those which have been determined to be the most practical for all purposes, and the following claims are intended to cover any reasonable variation therefrom by characterizing such dimensions as being substantially the same as those given. Further, the dimensions given are based upon the diameters of a basic circle, which is the diameter of the smoke outlet 13, and it is obvious that the smoke outlet 13 may be rectangular or oval or irregular in shape in which case the wording of the following claims is intended to cover all such shapes by assuming that the basic dimension is the diameter of a circle having the same area as the area of the smoke outlet regardless of its configuration.

I claim:

1. A draft diverter for a gas burning appliance having a smoke outlet comprising a casing open at the bottom and having substantially parallel front and rear walls spaced apart substantially the diameter of the smoke outlet, said rear wall having an inlet opening therethrough of substantially the same diameter as the diameter of the smoke outlet of the appliance and said front wall having an outlet opening therethrough of substantially the same diameter as the diameter of the smoke outlet, said inlet opening being located in the lower portion of said rear wall and having its center substantially on the vertical centerline of said casing, said outlet opening being located in the upper portion of said front wall and having its center located on the vertical centerline of said casing at such a height above the center of said inlet opening that the outlet opening is entirely above the inlet opening, and a substantially semi-cylindrical baffle extending from front to rear of said casing and substantially coaxial with said inlet opening, with an end of said baffle closely adjacent the upper edge of said inlet opening, the width of said casing at the horizontal diameter of said inlet opening being such as to provide a free area at each side of said baffle equal to at least one-half the area of said inlet opening.

2. The structure set forth in claim 1 in which said free area at each side of said baffle is substantially rectangular and has a width equal to substantially one-half the diameter of said inlet opening.

3. The structure set forth in claim 1 in which the walls of said casing extend below the lower edge of said inlet opening for a distance not less than approximately one-third the diameter of said inlet opening nor more than approximately one-half the diameter of said inlet opening.

4. The structure set forth in claim 1 in which the walls of said casing are rectangular and disposed at right angles to each other.

ALLEN P. LIVAR.