Aug. 29, 1933. R. H. FORNEY 1,924,400

FUEL BURNER

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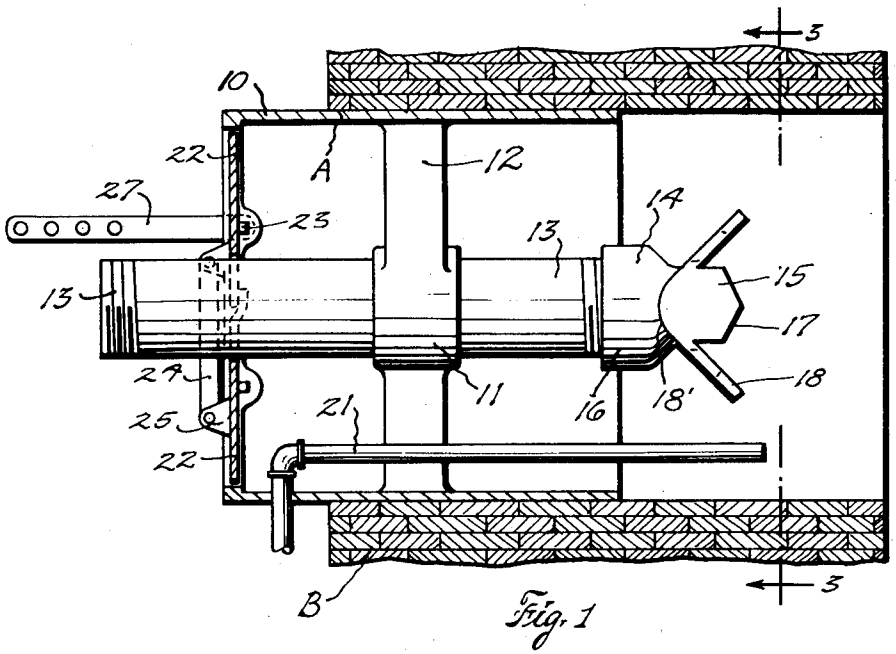


Fig. 1

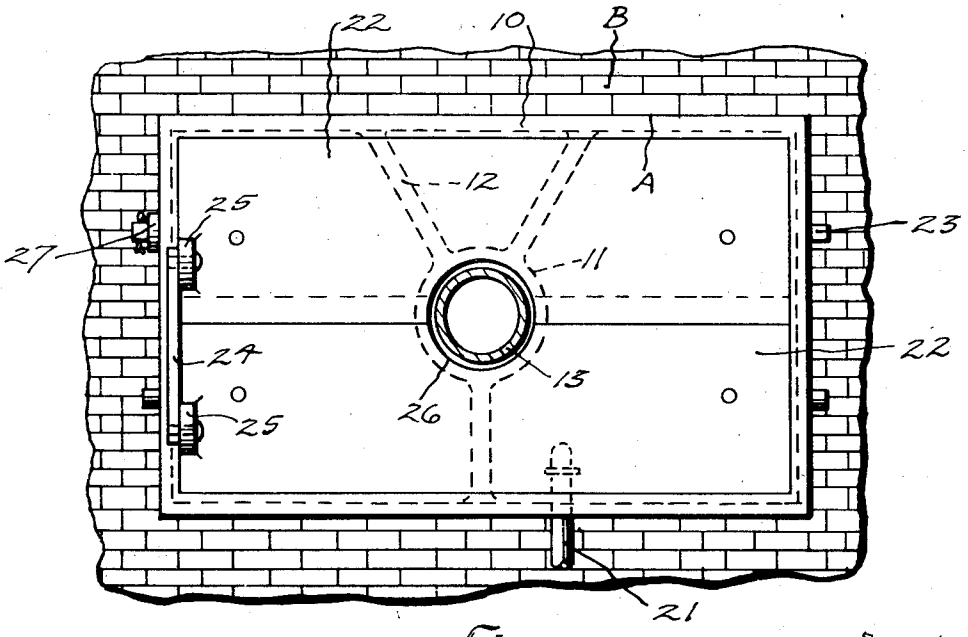


Fig. 2

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FUEL BURNER

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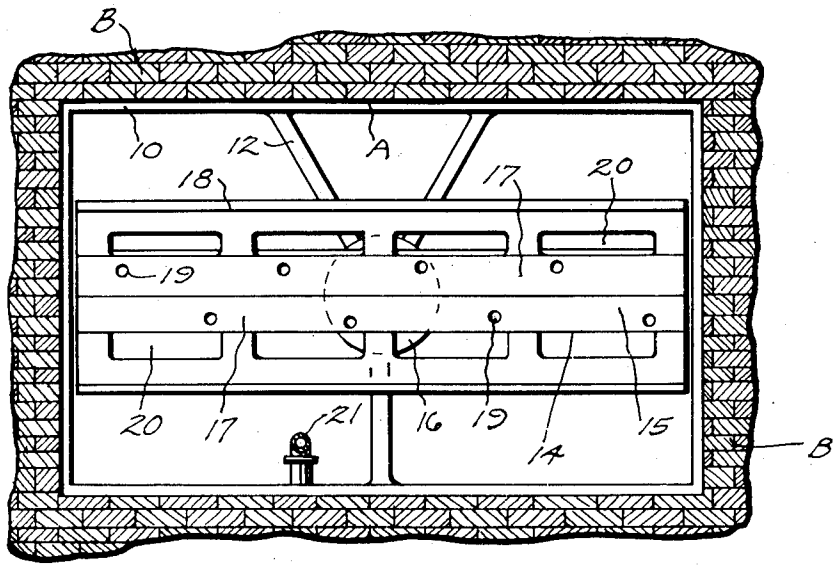


Fig. 3

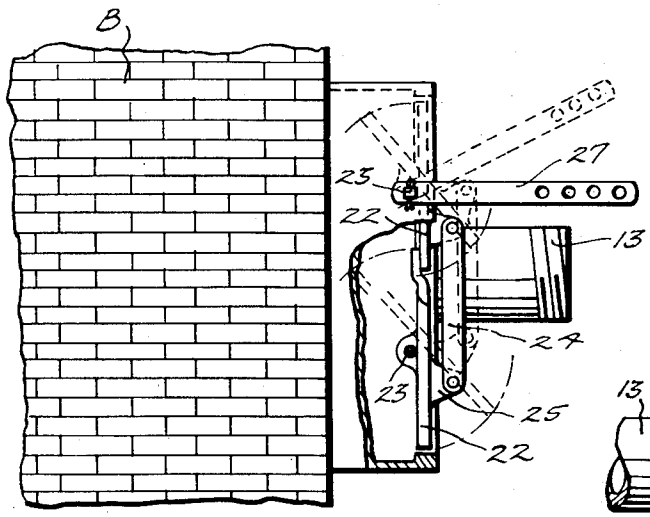


Fig. 4

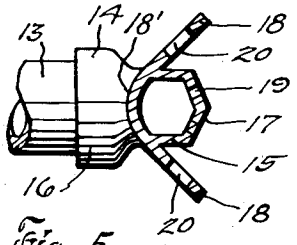


Fig. 5

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UNITED STATES PATENT OFFICE

1,924,400

FUEL BURNER

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Application February 1, 1932. Serial No. 590,092

5 Claims. (Cl. 158—104)

This invention relates to new and useful improvements in fuel burners.

One object of the invention is to provide an improved burner of the low pressure type.

Another object of the invention is to provide an improved burner head mounted so as to be adjusted or to be removed without disturbing the supporting frame.

A further object of the invention is to provide a burner arranged to give a maximum turbulence with low fuel pressure.

Still another object of the invention is to arrange the fuel jets or orifices so as to direct the fuel at an angle to the air currents, thus making for a maximum mixing of gas and air.

An important object of the invention is to provide a low pressure burner which will develop a maximum efficiency with a minimum excess of air and with substantially no pulsation or vibration.

Another object of the invention is to provide air deflecting means adjacent the fuel orifices arranged so as to deflect sufficient of the air currents to prevent extinguishing the flame.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings in which an example of the invention is shown, and wherein:

Figure 1 is a longitudinal vertical sectional view of a burner structure and mounting constructed in accordance with the invention,

Figure 2 is an elevation of the same,

Figure 3 is a transverse vertical sectional view taken on the line 3—3 of Figure 1,

Figure 4 is a side view of the parts shown in Figure 1, partly in elevation and partly in section,

Figure 5 is a vertical sectional view of the burner head.

In the drawings the numeral 10 designates a supporting frame, which is preferably rectangular both in elevation and in cross-section. A frame of this character will fit or may be readily secured in the majority of fire openings of furnaces without alteration. The frame is shown as fitting in the opening A of the furnace wall B. A collar 11 is supported centrally of the frame by a spider 12 and a fuel supply pipe or tube 13 has a snug sliding fit in said collar, so as to be adjusted longitudinally.

On the inner or forward end of the tube 13 is mounted a burner head 14. The head includes a transverse header 15 formed with a central transition 16 into which is secured the forward end of the tube 13. There are certain features of the burner head which are very important. The header is hollow and is of such width or length as to extend substantially entirely across the frame. The front of the header is formed with upwardly and downwardly inclined faces 17, which extend rearwardly from their intersection.

Forwardly inclined wings or deflectors 18 extend from the upper and lower rear edges of the header and the rear side 18' of the header is rounded and merged into the deflectors. This affords maximum deflection and eliminates obstructions which might interfere with the flow of the air currents. The deflectors overhang the faces 17 and act to deflect or divert a portion of the air currents from the flames ignited from the fuel supplied through orifices 19 in said faces. The faces being inclined, the orifices will direct the fuel fluid in the general direction of each deflector.

The orifices 19 are suitably spaced and may be staggered, as shown in Figure 3, but this is subject to variation. A low pressure gas burner requires sufficient air at the orifices to promote combustion, but air currents which are too strong will blow out the flames. The deflectors are provided with longitudinal slots 20 and these permit the passage of sufficient air to form a combustible mixture.

The gas streams from each face 17 co-act with the overhanging deflector so that a maximum turbulence of the air and gas is brought about. The air which passes forwardly along the rear sides of the deflectors and the air which passes through the slots 20 mix with the gas, and a more or less tumbling effect is produced. The admixture of air and gas is ejected from the fire opening A into the fire box (not shown) of the furnace and an efficient fire produced. The burner 14, by reason of the slidable mounting of the tube 13 in the collar 11 may be adjusted to suit conditions.

The rear portion of the frame extends from the opening A. A small gas pipe 21 enters the bottom of the projecting frame and extends to a point below the burner head for supplying gas to a pilot flame. In the rear frame a pair of shutters or dampers 22 are centrally pivoted on trunnions 23. A link 24 is pivoted to ears 25 at one side of the dampers, whereby they may be swung in unison. A lever 27 is secured to one of the trunnions and may be connected to an automatic regulator. The dampers are notched at 26 to fit around the tube 13 and the dampers overlap, as shown in Figure 4, when closed.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

Having illustrated and described a preferred form of the invention, what I claim, is:

1. A low pressure burner head including an elongated header having longitudinal divergent faces provided with orifices, and inclined longitudinal air deflectors overhanging the faces of the header.

2. A low pressure burner head including an elongated header having longitudinal divergent faces provided with orifices, inclined longitudinal air deflectors overhanging the faces of the header, and a transition extending from the central rear portion of the header.

3. In a low pressure fuel burner, an elongated burner head having orifices in its face, and air deflectors overhanging the head longitudinally thereof for deflecting air currents above and below the head longitudinally thereof, said deflectors having air passages spaced longitudinally thereof for directing air currents across the head in streams spaced longitudinally of said head.

4. A low pressure fuel burner comprising, a frame, an elongated burner head extending transversely across said frame and provided in its front side with spaced orifices for directing jets of fuel in a general forward direction, and inclined open deflectors extending longitudinally of the burner head above and below the same for deflecting air currents across said burner head without concentrating said currents, whereby said air currents are distributed transversely of the frame.

5. A low pressure fuel burner comprising, a frame, an elongated burner head extending transversely across said frame and provided on its front side with upwardly and downwardly inclined faces extending longitudinally thereof and formed with spaced orifices for directing jets of fuel in a general forward direction, and inclined open deflectors extending longitudinally of the burner head above and below the same for deflecting air currents across said burner head without concentrating said currents, whereby said air currents are distributed transversely of the frame, the deflectors being inclined oppositely each to the adjacent inclined face of the burner head, whereby part of the air currents are deflected to the burner head and part away therefrom.

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