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121,409

Examiner

Jan. 18, 1938. J. McDONALD 2,105,546

FLAME CONE OR DIFFUSER

Filed Jan. 21, 1937

Fig. 2

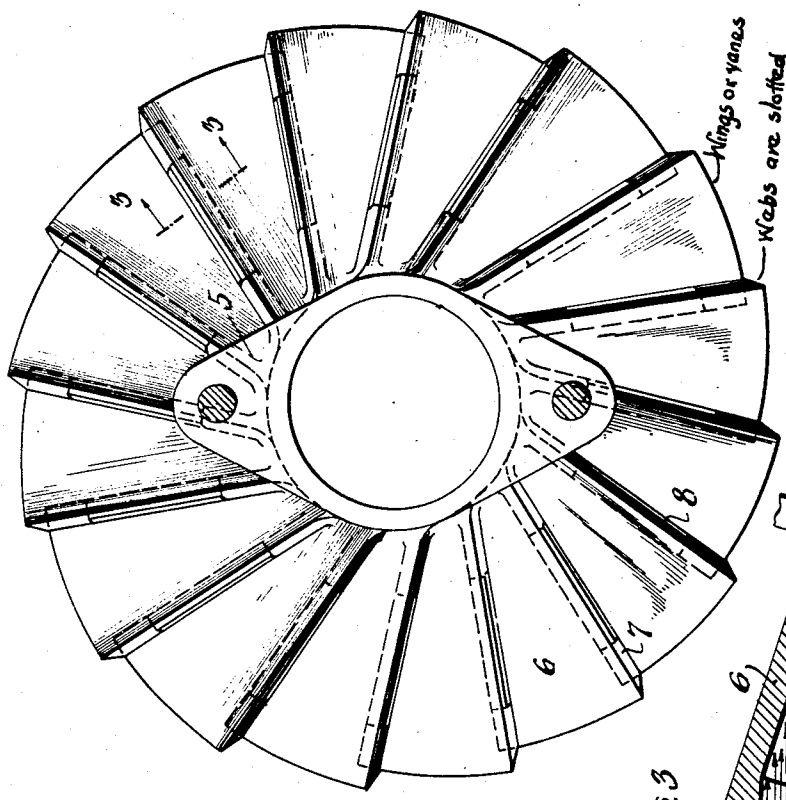


Fig. 3

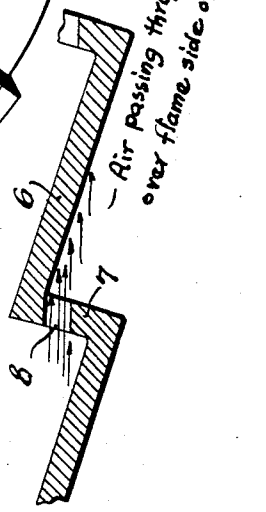
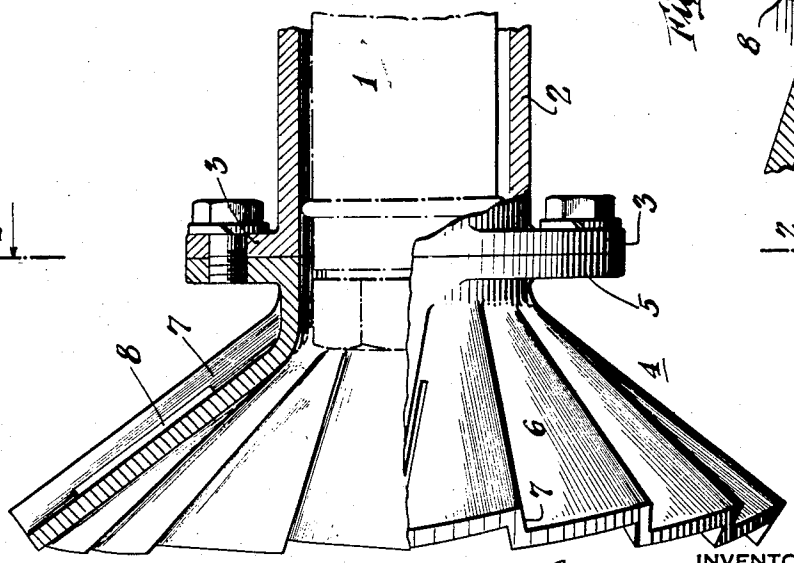


Fig. 1



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FLAME CONE OR DIFFUSER

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Application January 21, 1937, Serial No. 121,409

1 Claim. (Cl. 158—1.5)

With liquid fuel burners employing mechanical pressure atomizers of the "Todd" type it is customary to employ a flame cone located about the burner nozzle to serve as an air diffuser to obtain ignition of the fuel spray at the burner nozzle. Such flame cones or diffusers have previously been provided with slots through their walls for the purpose of admitting air into the cone for admixture with the atomized fuel passing therethrough.

The air admission slots heretofore employed have failed however to perform one necessary function, viz: that of preventing the formation of carbon on the inner face of the cone.

Therefore my present invention has for its object the provision of means, in the cone structure, whereby air admitted through the cone slots will scour or sweep the inner surface of the cone wall and thereby positively prevent carbon formation.

To this end the cone wall is formed in a series of jogs or flutes which have the effect of collecting air flowing over its outer surface, and slots are provided in the webs created by the flutes, said slots admitting and giving definite direction to the collected air, causing the current thereof to scour the inner surface of the cone and thus keep the latter free from carbon.

Other features and advantages of my invention will hereinafter appear.

In the drawing:—

Figure 1 is a side view, partly in section, of a flame cone as attached to the rearward end portion of a burner tube casing.

Fig. 2 is a front view thereof, on the line 2—2 of Fig. 1, and

Fig. 3 is an enlarged detail section on the line 3—3 of Fig. 2.

In said views let 1 indicate the rearward portion of a burner tube, 2 the casing therefor having flange 3, and 4 my improved flame cone, which latter is shown attached by means of its flange 5 to flange 3.

The wall of the flame cone is composed of a succession of tangential vanes 6 which are all equally angled circumferentially and connected one with another by means of webs 7, whose faces constitute each an inclined shoulder between the respective outer surfaces of adjacent vanes.

These webs 7 are each provided with a slot 8 for the flow of air into the cone interior, there to mingle with and permit combustion of the atomized fuel that issues from the burner nozzle. Also these slots enable the air flowing therethrough to sweep over and scour the inner surfaces of vanes 6 and thus to prevent the formation of carbon deposits on the cone interior.

In practice the pressure of air encountered by the outer surface of the cone is caught by the webs and released with increased velocity through the slots, thereby efficiently sweeping the inner surfaces of the vanes to keep them clean.

Variations within the spirit and scope of my invention are equally comprehended by the foregoing disclosure.

I claim:—

An air directing cone for liquid fuel burners whose wall comprises a succession of circumferentially equally angled vanes, the lateral boundaries thereof being defined by lines tangential to a cylinder coaxial with said cone, and webs connecting said vanes and arranged substantially at right angles to the surfaces of said vanes, each web having a slot which extends therethrough at an acute angle to the inner surface of an adjacent vane whereby air flowing through each slot is directed in scouring relation onto and across the inner surface of said adjacent vane.

JAMES McDONALD.