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R. F. ANDLER

2,090,567

OIL BURNER

Filed Dec. 29, 1936

FIG. 1

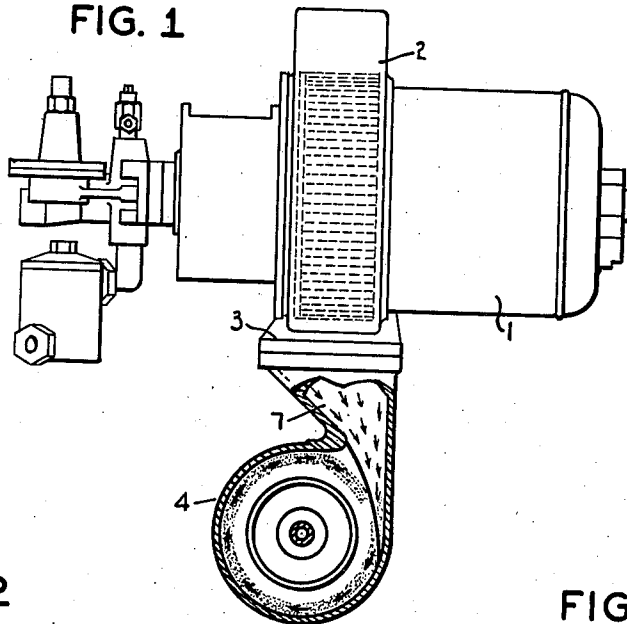


FIG 2

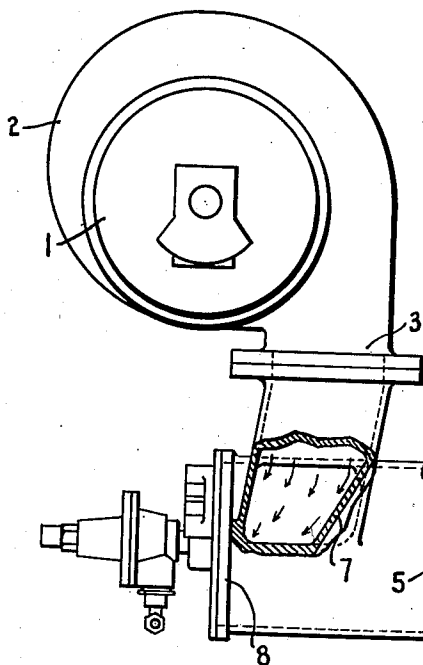
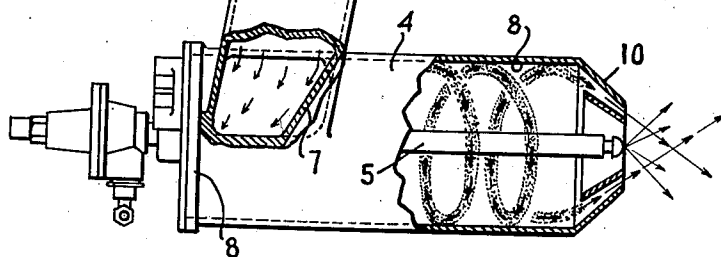
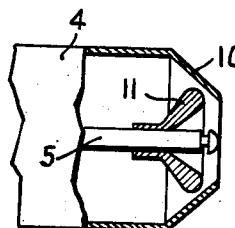


FIG. 3



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UNITED STATES PATENT OFFICE

2,090,567
OIL BURNER

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tion of Delaware

Application December 29, 1936, Serial No. 118,080

4 Claims. (Cl. 153-76)

My invention relates to apparatus designed to carry out the improved combustion method described in my copending application Serial No. 118,081, filed Dec. 29, 1936.

As described in that application, practice has shown that greater efficiency, due to more perfect combustion, can be attained if the air is formed into an annulus having a gyrating motion imparted to it so that when it is discharged from the nozzle in an outwardly flaring conoidal annulus, having a gyrating motion where the oil is sprayed into it, it will be formed a vortex with the result that a short distance from the nozzle, the whirling mixture will be drawn inwardly and in this manner produce better combustion.

My invention has for its object to provide a very simple form of apparatus to produce the foregoing desirable result.

My means of accomplishing the foregoing objects may be more fully comprehended by having reference to the accompanying drawing, which is hereunto annexed and is a part of this specification in which:

Fig. 1 is a front elevation of a burner a portion being shown in section;

Fig. 2 is a side view having portions of the outer covering broken away to show the interior construction; and

Fig. 3 is a detail view of a modified form of nozzle.

Similar reference numerals refer to similar parts throughout the entire specification.

As shown in the drawing, the electric motor 1 is directly connected to a blower fan 2 of standard construction. The outlet 3 of the blower fan 2 is tangentially connected to a cylindrical chamber sleeve 4. An oil tube 5 extends axially of the chamber 4.

A directional wall 7 is formed in the tangential connection to said chamber which directs the air in lamina, as shown by the arrows in Figs. 1 and 2, against the end wall 8 of the chamber 4 which turns it so as to cause it to have a gyratory motion while still retaining the form of annulus (clearly seen in Fig. 2) the outer part of which will hug the wall of the chamber 4.

It is important to have the diameter of the chamber sufficiently great so there will be absolutely an annulus of air utilizing substantially all of the air currents. At the end of the chamber 4 the wall 10 is tapered inwardly and forms a truncated cone. Inside of this cone I mount a smaller truncated cone which is spaced from the inwardly extending wall 10. This leaves an an-

nular conoidal space intermediate the two for the passage of the air. This serves to compress the air current forming a vortex at its center.

The oil is sprayed from the nozzle in a substantially conical spray into the mass leaving the chamber with the result that the oil intersects and mixes with this whirling gyrating current of air and is thoroughly and completely mixed therewith so that when it is ignited, in any of the usual ways used in burners of this type, the flame comes in contact with the entire surface of each globule of oil because the vortex draws the mixture inwardly as shown by the arrows and in that way complete combustion is attained.

In Fig. 3 I have shown a reversed inner conoidal member 11 which is mounted upon the oil tube 5. This form is desirable in some cases and operates satisfactorily if proper space is left between the base of the member 11 and the inwardly tapering end wall 10 of the chamber 4.

Having described my invention, what I regard as new and desire to secure by Letters Patent is:

1. In an oil burner, an electric motor, a blower fan driven by said motor, a substantially cylindrical chamber having one end open, conduit means connecting the discharge of the fan tangentially to the said chamber, said conduit means formed to direct the air in a lamina and to cause it to enter the chamber as an annular mass having a gyrating movement, an oil supply tube in said chamber, a nozzle on said tube discharging the oil in a spray beyond the open end of said chamber, the open end of said chamber being formed by an inwardly tapering truncated cone, an inner cone spaced from the first cone to provide an annular space intermediate said cones whereby the gyrating mass of air is discharged from the chamber and forms a vortex into which the oil is sprayed.

2. In an oil burner, an electric motor, a blower fan driven by said motor, a substantially cylindrical chamber having one end open, conduit means connecting the discharge of the fan tangentially to the said chamber, said conduit means formed to direct the air in a lamina and to cause it to enter the chamber as an annular mass having a gyrating movement, an oil supply tube in said chamber, a nozzle on said tube discharging the oil in a spray beyond the end of said chamber, the open end of said chamber tapering inwardly, an outwardly flaring conoidal member mounted on said oil tube adjacent the inwardly tapering portion of said chamber, the edge of the base of said member being spaced from the inwardly tapering wall to provide an annular

space intermediate said wall and said member whereby the gyrating mass of air is discharged from the chamber and forms a vortex into which the oil is sprayed.

- 5 3. In an oil burner, an electric motor, a blower fan driven by said motor, a substantially cylindrical chamber having one end open, conduit means connecting the discharge of the fan tangentially to the said chamber, said conduit means 10 formed to direct the air in a lamina and to cause it to enter the chamber as an annular mass having a gyrating movement, an oil supply tube in said chamber, a nozzle on said tube discharging the oil in a spray beyond the open end of said 15 chamber, the open end of said chamber being formed by an inwardly tapering wall, an inner cone mounted on said oil tube, said cone tapering inwardly toward the discharge end of said 20 chamber, said cone being spaced from the inwardly tapering wall to provide an annular space intermediate said cone and said wall, whereby the gyrating mass of air is discharged from the

chamber and forms a vortex into which the oil is sprayed.

4. In an oil burner, an electric motor, a blower fan driven by said motor, a substantially cylindrical chamber having an open end, conduit 5 means connecting the discharge of the fan tangentially to the said chamber, said conduit means formed to direct the air in a lamina and to cause it to enter the chamber as an annular mass having a gyrating movement, an oil supply tube in 10 said chamber, a nozzle on said tube discharging the oil in a spray beyond the open end of said chamber, the open end of said chamber being formed by an inwardly tapering wall, an inner cone mounted on said oil tube, said cone tapering 15 inwardly away from the discharge end of said chamber, said cone being spaced from the inwardly tapering wall to provide an annular space intermediate said cone and said wall, whereby the gyrating mass of air is discharged from the 20 chamber and forms a vortex into which the oil is sprayed.

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