Aug. 16, 1927. 1,639,167

W. DEGEN

OIL BURNER

Filed May 21, 1927

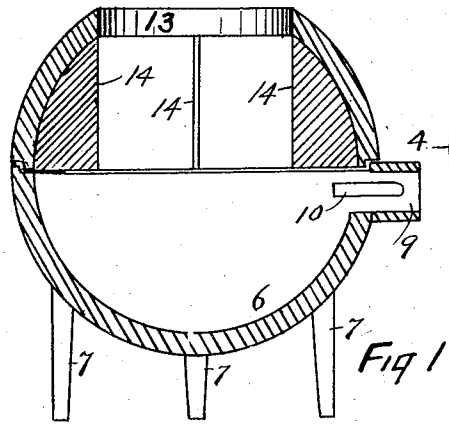

Fig 1

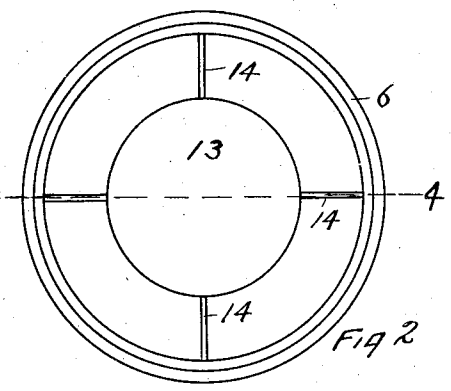

Fig 2

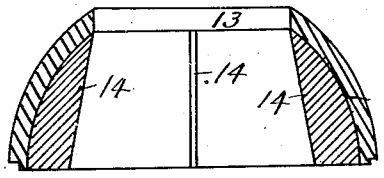

Fig 4

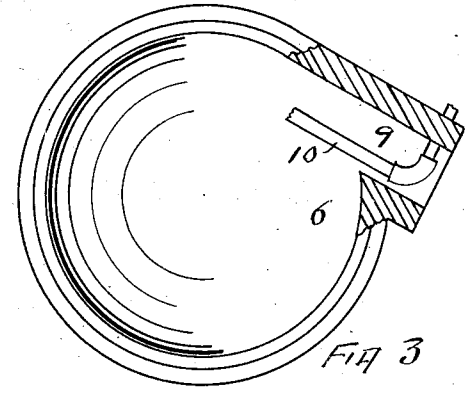

Fig 3

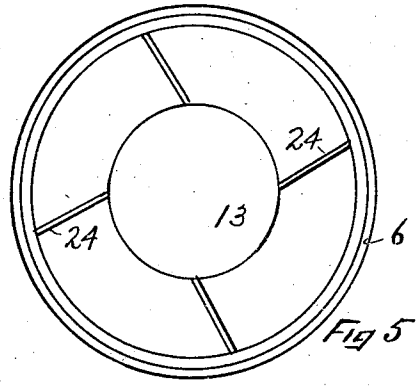

Fig 5

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Patented Aug. 16, 1927. 1,639,167

UNITED STATES PATENT OFFICE.

WALTER DEGEN, OF FRESNO, CALIFORNIA.

OIL BURNER.

Application filed May 21, 1927. Serial No. 193,103.

My invention relates to an oil burner and more specifically to a burner adapted to convert a low grade fuel oil into gas and to afford complete combustion of the gas thus formed. My present invention is an improved form of an oil burner for which an application was made for Letters Patent in the United States Patent Office on February 23rd, 1927, Serial No. 170,232.

The object attained is a more complete combustion of the gases after they are formed, and to prevent the gas from escaping from the mixing chamber without being consumed. In the oil burners of the spherical, or semi-spherical type now in common use in which the oxygen and the fuel are mixed by means of a circular or helicoidal movement, some gas escapes around the edges of the opening in the top and the gas is not consumed, thus adding danger and discomfort to the users of the device. My experiments have shown that this is caused by the continued swirling or helicoidal movement of the gas as it emerges from the top opening, and the centrifugal force applied to the gas as it emerges permits it to escape without coming in contact with the flame. My invention overcomes this fault by stopping the circular movement of the gas before it emerges from the opening in the fire bowl, the combustion taking place after it has passed out of the bowl.

This object is accomplished by means of the device hereinafter described and illustrated on the accompanying drawing, in which Fig. 1 is a sectional view of the complete bowl with dome, showing baffle plates in the dome thereof. Fig. 2 is an inside view of the dome or cap. Fig. 3 is a top view of the lower portion of the bowl. Fig. 4 is a sectional view of a modified form of the dome or cap along the line 4—4 in Fig. 2. Fig. 5 is another modified form of the dome.

I have formed a mixing bowl 6 which can be approximately semi-spherical in shape, and which is supported by legs 7. Mixing bowl 6 has an inlet opening 9 for air, and an inlet 10 for fuel. A cap or dome 11 is formed approximately semi-spherical and is adapted to fit on the top of the bowl 6. The approaching edges of the mixing bowl and dome are rabbeted so they readily fit together. Dome 11 has an opening 13 at the top which is preferably circular. Inside the dome are a plurality of baffle plates 14 which extend on a radial plane from the wall of the dome but do not extend as far as the center. The space described by an imaginary wall connecting the inside edges of the baffles 14 will describe a cylinder when constructed as shown in Fig. 1, or an inverted frustum of a cone if constructed as shown in Fig. 4. I have shown four of these baffles on the drawings, although a larger or a smaller number can be used, depending somewhat upon the size of the bowl. In using this burner the oxygen or air is introduced through opening 9, which, as shown in Fig. 3, is tangential to the wall of the bowl. The fuel is introduced through a smaller pipe into the same opening. When the fuel and air enter the bowl in a constant stream, it is noted that a circular or helicoidal movement of the mixture is produced. In the old forms of bowls the dome would permit this movement to continue until the mixture emerged at the top where it was consumed. The flame would burn at the center of this opening and much gas would escape along the outside circle of the opening caused by the centrifugal force disposing of the gas tangentially to said movement as it left the burner. The baffles 14 stop said circular movement and force the mixture out of the opening 13 in a straight draft, thus eliminating the effect of the centrifugal movement except within the bowl. The combination of the lower part of the mixing chamber, having a smooth wall around which to travel, which tends to mix the gas, and the interruption of such movement before it emerges for combustion, throws all of the gas into the flame. It is here noted that the baffles are shown as extending from the top opening to the center diametrical plane. It is noted that they may be constructed shorter and the same result obtained.

The form disclosed in Fig. 5 has vanes or baffles which are placed obliquely to a horizontal diametrical plane. If these vanes are arranged so the top leans in the direction of the movement of the gas within the chamber, the curve of the inside wall combined with the oblique baffle will force the gas in a slightly different direction than when the top of the baffles lean against the movement of the gas. My invention covers all three

types as described. In Fig. 5 the oblique baffles are shown as 24. The baffles may extend very near to the center.

Having described my invention I claim as new and ask for Letters Patent:

1. An oil burner consisting of a semi-spherical chamber open at the top and on the diametrical plane, an inlet for fuel and air tangentially to the inside wall of the chamber, a cover for said chamber having an opening at the top, and a plurality of baffles therein adapted to force upwardly the gas passing through the chamber.

2. An oil burner consisting of a circular mixing chamber open at the top, intakes for fuel and air tangentially to the wall of the chamber, and a plurality of baffles in the upper part of the chamber adapted to interfere with the said circular movement of the gas as it escapes from the top of the chamber.

WALTER DEGEN.