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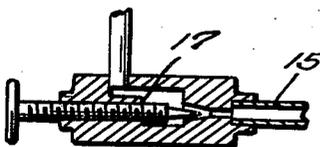
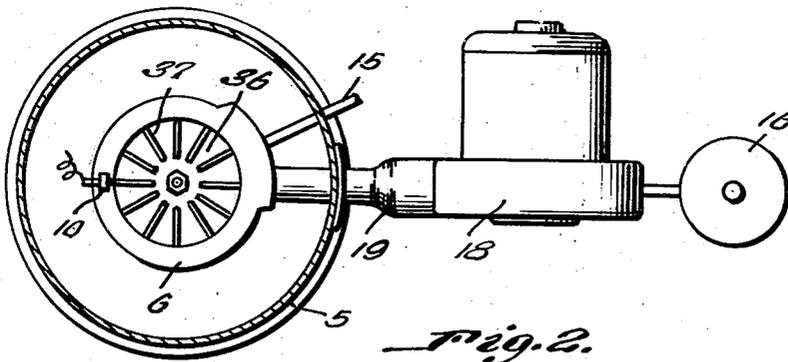
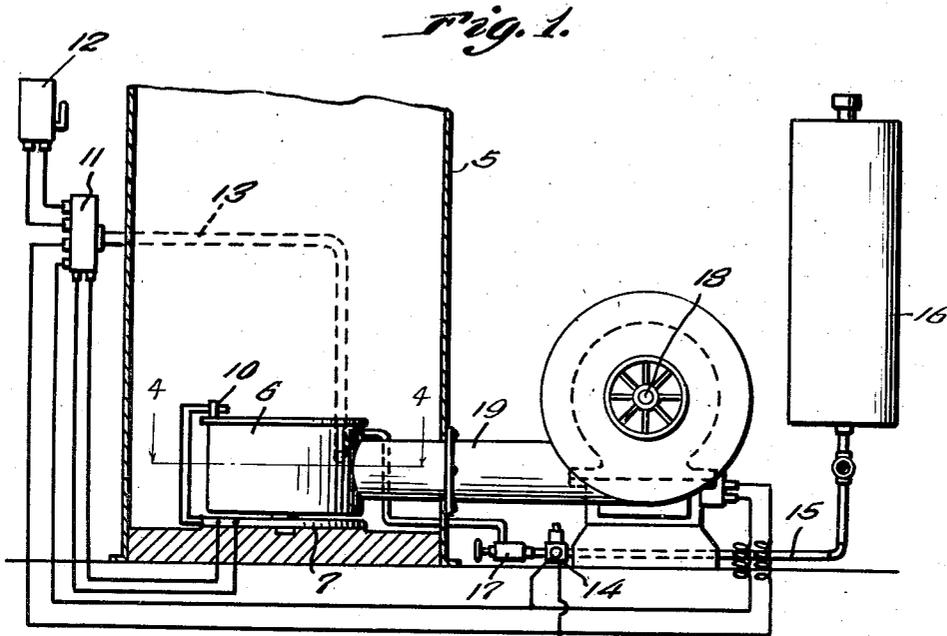
A. PALKO

2,458,630

FAN TYPE OIL GASIFYING BURNER

Filed Sept. 26, 1945

2 Sheets-Sheet 1



Inventor

*Andrew Palko*

By *Alvince A. O'Brien*  
*and Harvey B. Jacobson*  
Attorneys

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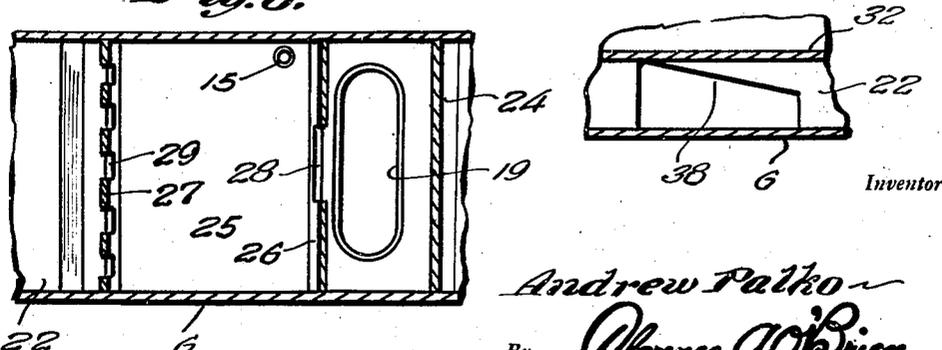
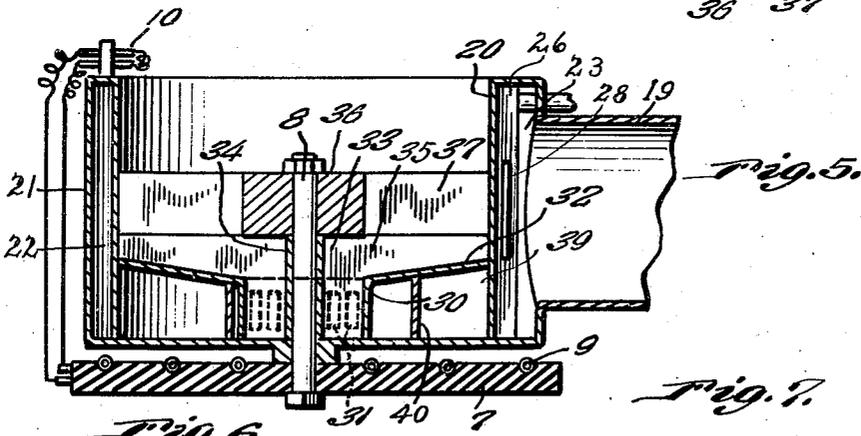
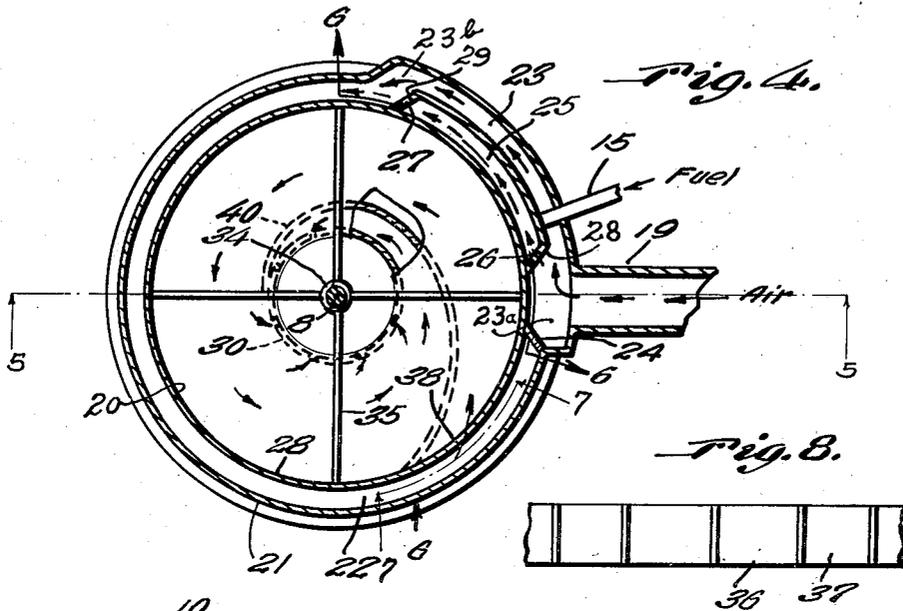
A. PALKO

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PAN TYPE OIL GASIFYING BURNER

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2 Sheets-Sheet 2



Inventor  
 Andrew Palko  
 By Clarence W. O'Brien  
 and Harway B. Jacobson  
 Attorneys

# UNITED STATES PATENT OFFICE

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## PAN TYPE OIL GASIFYING BURNER

Andrew Palko, Spring Valley, N. Y.

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3 Claims. (Cl. 158—53)

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The present invention relates to new and useful improvements in pan type oil gasifying burners and has for its primary object to provide a burner unit adapted for efficiently vaporizing and feeding vaporized fuel to the combustion chamber of the burner.

A further object is to provide a burner unit of simple and practical construction, which is reliable in performance, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages will presently appear when the following description and claims are read with reference to the accompanying drawings in which:

Figure 1 is a side elevational view of the burner installed in a furnace,

Figure 2 is a top plan view of the burner with the furnace shown in section,

Figure 3 is an enlarged sectional view of the needle valve for the fuel supply line,

Figure 4 is an enlarged transverse sectional view of the lower or vaporizing chamber of the burner unit, taken on the line 4—4 of Figure 1 and drawn to a larger scale,

Figure 5 is a vertical, transverse sectional view thereof, taken on the line 5—5 of Figure 4,

Figures 6 and 7 are fragmentary sectional views taken substantially on the lines 6—6 and 7—7 of Figure 4, and

Figure 8 is a side elevational view of the burner block.

Referring now to the drawings in detail, wherein, for the purpose of illustration, I have disclosed a preferred embodiment of the invention, the numeral 5 designates a furnace or boiler of conventional construction having an oil burner unit designated generally at 6 mounted in the lower portion thereof.

The burner unit 6 is of substantially open pan construction and is secured on top of a disk 7 of insulation material by means of a bolt 8, the disk having an electric heating coil 9 mounted in its surface below the bottom of the burner unit 6, as shown to advantage in Figure 5 of the drawing.

An electric igniter, or electrode 10 is connected with the heating coil 9 to an automatic switch 11 of conventional construction to which is also connected a manually controlled switch 12, the automatic switch being controlled by a thermostat 13 leading therefrom to the burner unit 6.

Also connected to the automatic switch 11 is a solenoid-operated valve 14 positioned in a fuel line 15 leading from a liquid fuel supply tank

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16 to the burner. Positioned in the fuel line between the solenoid valve 14 and the burner is a threadedly adjustable needle valve 17.

Also connected in the same circuit with the solenoid valve 14 is a motor-driven fan 18 having an air pipe 19 connected to its outlet side and leading into the furnace 5 to one side of the burner 6.

The burner 6 is constructed with an inner annular wall 20 and an outer annular wall 21 spaced from each other for the greater portion of the circumference of the burner, as indicated in Figure 4 of the drawing, to provide a vapor chamber 22 between the inner and outer walls of the burner.

The air pipe 19 communicates with an intake end 23a of an elongated air chamber 23 formed at one side of the burner 6 to extend circumferentially thereof and which is separated at said intake end from the vapor chamber 22 by means of a wall 24. The other end 23b of the air chamber 23 opens directly into the vapor chamber 22 to admit air thereto.

Inwardly of the air chamber 23, the inner and outer walls 20 and 21 form the sides of an arcuate fuel and air mixing chamber 25 having its ends closed by end walls 26 and 27, the end wall 26 being adjacent the intake end 23a of the air chamber 23 and provided with an opening 28 above its bottom portion to admit air into the fuel and air mixing chamber 25. The end wall 27 of the fuel and air mixing chamber 25 is also provided with a plurality of openings or ports 29, by means of which mixed vaporized fuel and air are discharged from the mixing chamber 25 into the vapor chamber 22.

The fuel pipe 15 enters the fuel and air mixing chamber 25 adjacent the end wall 26.

Positioned in the bottom of the burner 6 and surrounding the bolt 8 is a burner sleeve 30 having vertically extending, circumferentially spaced slots 31 therein, the upper edge of the sleeve being formed with an upwardly inclined, outwardly projecting ring 32 having its outer edges bearing against the inner wall 20 of the burner.

A spider designated generally at 33 includes a hub portion 34 surrounding the bolt 8 and from which separator plates 35 project radially, the separator plates 35 extending downwardly throughout the height of the sleeve 30 and outwardly to the inner wall 20 above said ring 32.

Supported on the upper edge of the spider 33 is a burner block 36 of suitable material having radial slots 37 therein extending vertically there-through.

The inner wall 20 is formed with an opening 38 adjacent the wall 24 to admit vapor from the chamber 22 into a lower vapor chamber 39 formed by the inner wall 20 and the ring 32 below the ring 32.

A spiral baffle 40 is connected at one end to the inner wall 20 adjacent the opening 38 and extends into the lower vapor chamber 39 and partly surrounds the sleeve 30 and is connected at its other end thereto.

Accordingly, in the operation of the burner, the manual control switch 12 is closed and automatic switch 11 will then energize the electric heating element 9 and igniter 10. When the burner has become thoroughly heated the thermostat 13 will cause switch 11 to open solenoid valve 14 and start fan 18 to admit fuel and air to the burner.

Fuel will enter the fuel and air mixing chamber 25 and become immediately vaporized and will pass out of said mixing chamber 25 into the vapor chamber 22 and travel around the burner between the inner and outer walls 20 and 21 and through the opening 38 into the lower vapor chamber 39 and then through the openings 31 into the sleeve 30, where it is separated by the plates 35 and directed radially above the ring 32 and upwardly through the slots 37 in the burner block 36 to be ignited by the electrode 10 and burned in the burner above the block 36. Automatic switch 11 will then de-energize the electric heating element 9 and electrode 10 and the flame from burner block 36 will continue to heat inner annular wall 20 so that liquid fuel will continue vaporization and operation of burner.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though I have herein shown and described a preferred embodiment of my invention that the same is susceptible to certain changes fully comprehended by the spirit of the invention as hereindescribed and the scope of the appended claims.

What I claim is:

1. An oil burner comprising an open substantially circular pan formed with a vaporized fuel and air mixing chamber therein, and a vapor chamber with which said mixing chamber communicates, means for feeding liquid fuel into said mixing chamber, means for feeding air under pressure into said mixing chamber to form a mixture with the vaporized fuel therein and force the mixture under pressure out of said mixing chamber and into the vapor chamber, means for preheating the vapor chamber to preheat the mixture therein, a sleeve upstanding in said pan in the center thereof and provided with inlet apertures therein, means for directing the preheated mixture from said vapor chamber into said sleeve including a spiral baffle, a circular burner block supported in the pan above the sleeve and having radial slots therein,

and plates extending out of said sleeve to the block for directing mixture rising out of said sleeve to the slots in said block.

2. An oil burner comprising an open substantially circular pan formed with a vaporized fuel and air mixing chamber therein, and a vapor chamber with which said mixing chamber communicates, means for feeding liquid fuel into said mixing chamber, means for feeding air under pressure into said mixing chamber to form a mixture with the vaporized fuel therein and force the mixture under pressure out of said mixing chamber and into the vapor chamber, means for preheating the vapor chamber to preheat the mixture therein, a sleeve upstanding in said pan in the center thereof and provided with inlet apertures therein, means for directing the preheated mixture from said vapor chamber into said sleeve including a spiral baffle, a circular burner block supported in the pan above the sleeve and having radial slots therein, and means between said sleeve and block for directing mixture rising out of said sleeve to the slots in said block.

3. An oil burner comprising an open substantially circular pan formed with a vaporized fuel and air mixing chamber therein, and a vapor chamber with which said mixing chamber communicates, means for feeding liquid fuel into said mixing chamber, means for feeding air under pressure into said mixing chamber to form a mixture with the vaporized fuel therein and force the mixture under pressure out of said mixing chamber and into the vapor chamber, means for preheating the vapor chamber to preheat the mixture therein, a sleeve upstanding in said pan in the center thereof and provided with inlet apertures therein, means for directing the preheated mixture from said vapor chamber into said sleeve including a spiral baffle, a circular burner block supported in the pan above the sleeve and having radial slots therein, and plates extending out of said sleeve to the block for directing mixture rising out of said sleeve to the slots in said block, said pan being provided with an air chamber at one side thereof into which air is fed by said air feeding means and from which air discharges into said vapor chamber.

ANDREW PALKO.

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