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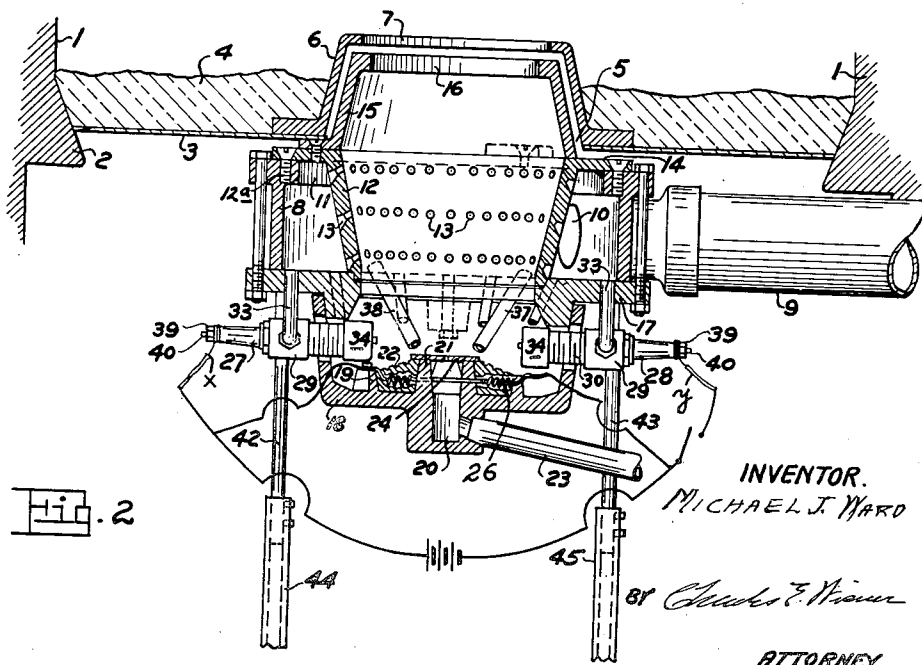
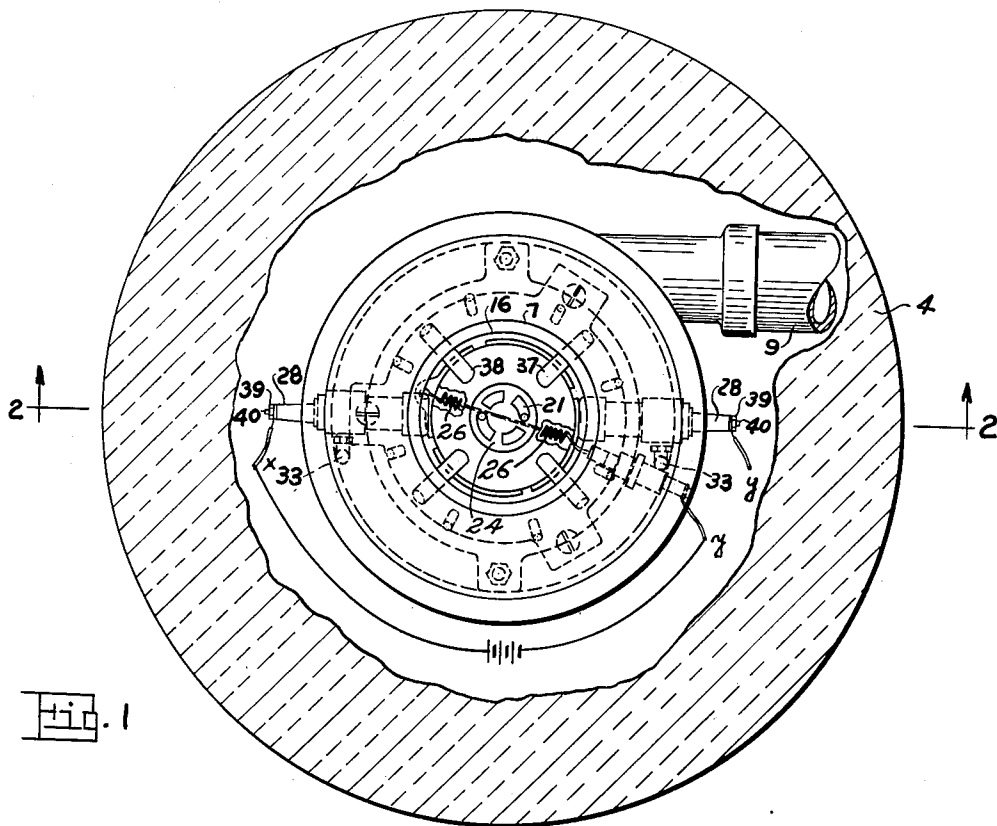
M. J. WARD

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BURNER FOR LIQUID FUELS

Filed April 22, 1947

2 SHEETS—SHEET 1



INVENTOR.
MICHAEL J. WARD

BY *Charles E. Hogue*

ATTORNEY.

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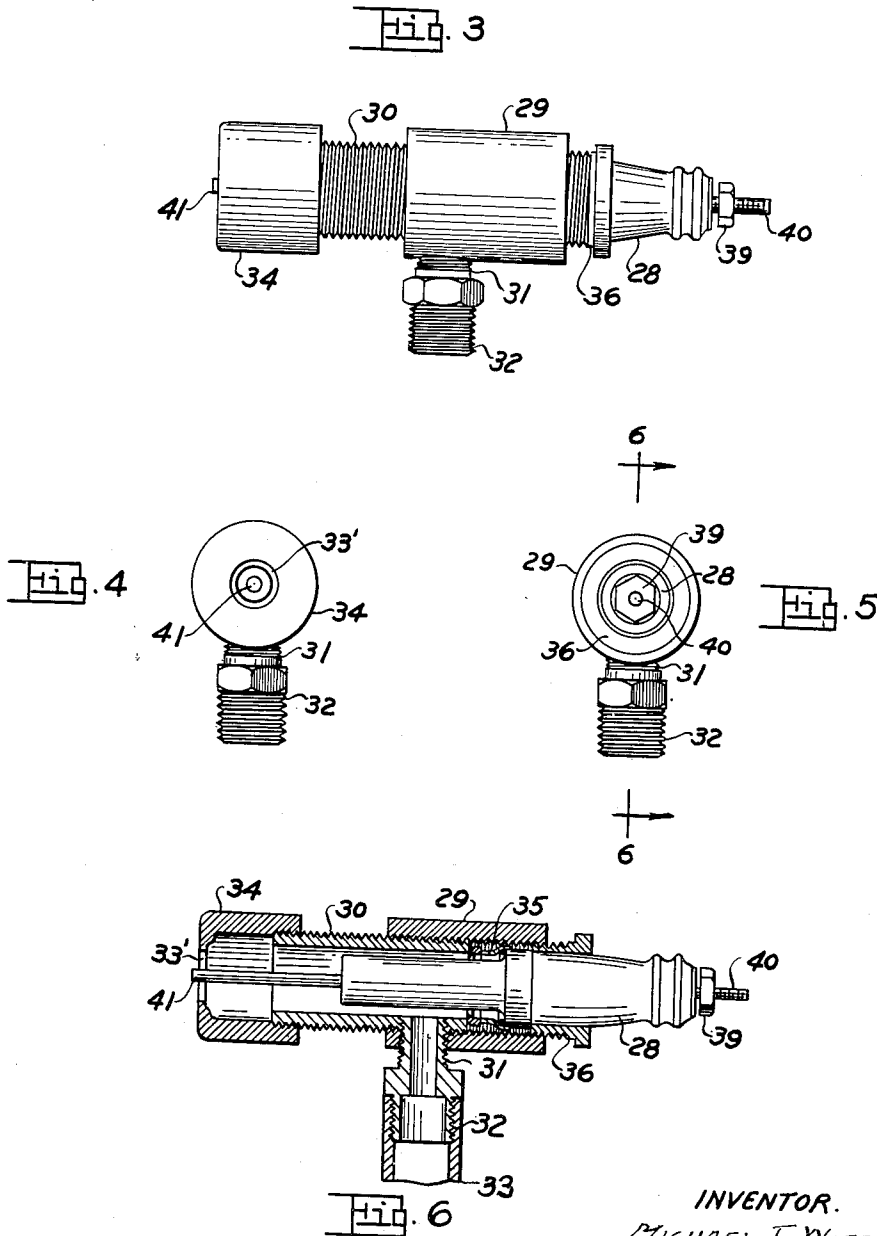
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BURNER FOR LIQUID FUELS

Filed April 22, 1947

2 SHEETS—SHEET 2



INVENTOR.
MICHAEL J. WARD.

BY

Charles E. Harris
ATTORNEY

UNITED STATES PATENT OFFICE

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BURNER FOR LIQUID FUELS

Michael J. Ward, Detroit, Mich.

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2 Claims. (Cl. 158—28)

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This invention relates to burners for a liquid fuel adapted for use in a furnace, the object being to provide a new character of construction and arrangement of parts whereby fuel is fed to a burner and air is supplied directly to the burner and to the burning gases thereabove and by means of an electric circuit, including a temperature controlled switch in the space being heated, the motor is energized to discharge air to the burner.

These and other features and objects of the invention are hereinafter more fully described and a burner embodying my invention is shown in the accompanying drawing in which:

Fig. 1 is a plan view of the burner.

Fig. 2 is a transverse section taken on line 2—2 of Fig. 1.

Fig. 3 is an elevation of my improved ignition device.

Fig. 4 is an end elevation taken from the left hand side of Fig. 3.

Fig. 5 is an elevation taken from the right hand side of Fig. 3.

Fig. 6 is a longitudinal section taken on line 6—6 of Fig. 5.

As will be understood more clearly from Fig. 2 the burner is positioned within a furnace the walls of which are indicated at 1 and as here shown is of circular form and has an inwardly extending flange 2. Supported on this flange is a plate 3 on which is positioned insulating material 4.

The plate 3 has an aperture 5 and if the furnace chamber is cylindrical in form the aperture is centrally disposed and on the plate is supported a hood 6 the side walls of which are inwardly tapered and provide an opening 7 in the upper face thereof.

Below the plate 3 is an air chamber 8, here shown as being of cylindrical form and an air supply conduit 9 is provided on one side thereof and air is discharged thereinto through an opening 10 to the interior of the cylindrical chamber 8 which has an opening 11 in its upper side. Within the chamber 8 is an air distributor 12 having a series of inwardly and upwardly inclined passageways 13 in the side wall.

By this arrangement air discharging through the conduit 9 passes through the inwardly and upwardly inclined passageways 13 in the distributor wall. The flange 14 of the distributor 12 is secured to the upper face of the chamber 8 by means of screws 12a. Secured to the upper face of the flange 14 is a flame chamber 15 having the walls thereof reversely inclined in re-

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spect to the walls of the member 12 said flame chamber having a central opening 16 at the upper end and the gases in combustion pass therethrough into the body of the furnace.

Secured to the bottom wall 17 of the chamber 8 is a pan 18 which is provided centrally of its upper surface with a flange 19 and centrally of the bottom wall of the pan 18 is a vertical recess 20, a wall 21 of which extends upwardly above the flange 19.

Between the flange 19 and the tubular portion 21 is an element 22 of refractory material having a ribbed surface and fuel is supplied thereto by the conduit 23 opening to the vertical recess 20 in the pan 18. At the upper end of the recess 20 is a plate 24 and fuel may flow through an aperture in said plate and over the ribbed surface of the refractory element 22.

The refractory element has embedded therein a heating coil or coils 26 connected with the terminals *x* and *y* of an electric circuit with which the respective ignition plugs 27 and 28 are to be understood as being connected. The ignition plugs are of special construction as shown in detail in Figs. 3 to 6 inclusive.

As shown more particularly in Fig. 6 the plug consists of the body 29 internally threaded to receive the end of an externally threaded tubular member 30. Each of the members 29 and 30 have aligned apertures in one side to receive the terminal 31 which is externally threaded as indicated at 32 to receive the air supply tube 33 as shown in Fig. 6. The air supply tube 9 has an opening 10 to the air space between the member 8 and the member 12 into which space air is discharged and thus cools the body of the plug.

As shown in Fig. 6 there is a sealing element 35 between the end of the tube 30 and the cap 36 which secures the plug in place. By this arrangement a constant stream of air flows about the body of the plug and thus tends to prevent overheating thereof and further discharges air over the burner plate as will be understood from Fig. 2.

Air also discharges over the burner plate through the tubes 37 and 38 the upper ends of which are open to the air space to which the tubes 33 are also open and, as the air ascends through the flame chamber 15, additional air is provided through the apertures 13 in the air distributor.

It will be more clearly understood from Fig. 6 that the plug 28 may be connected in the electric circuit by means of a nut 39 on the terminal 40, the opposite end 41 of which extends centrally through the aperture 33' in the cap 34.

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The plug is prevented from becoming overheated due to air supply pipes 33 which supply also air for combustion.

The burner as a whole is supported by standards 42 and 43 which are vertically adjustable in the supporting elements 44 and 45 the lower end of which are supported by the bottom of the furnace, not here shown.

It is to be understood that there is an electrically operated blower not here shown for supplying air to the conduit 9 and the blower is connected in the circuit with the ignition plugs and thus, when the thermostat opens the electric circuit is opened, the blower ceases to function as is also true of the spark plugs. When the circuit is closed by a drop in temperature in the space being heated the spark plugs are caused to function at the same time.

By this arrangement of parts the temperature of the space being heated is maintained practically constant.

Having thus briefly described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is:

1. A liquid fuel burner comprising a chambered element having a lower horizontal wall and being open at its upper end, an open ended air distributor of substantially conical form extending downwardly thereinto, an outwardly directed horizontal flange at the top of said distributor bearing upon the upper end of said chambered element, the lower wall of the chambered element having an aperture to which the lower end of said distributor is connected, said distributor having a series of transverse apertures in its wall, means for supplying air to said chambered element to discharge through said apertures to the interior of said distributor, a burner pan supported below the lower open end of said distributor and depending from the lower wall of said chambered element in communication with its aperture, means by which fuel is discharged into said pan, a fuel ignition device, an electrical circuit therefor, and a plurality of conduits connected at their upper ends to the interior of said

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chambered element and with their lower ends extending into the said pan.

2. A liquid fuel burner comprising a chambered element having a lower horizontal wall and being open at its upper end, an open ended air distributor of substantially conical form extending downwardly thereinto, an outwardly directed horizontal flange at the top of said distributor bearing upon the upper end of said chambered element, the lower wall of the chambered element having an aperture to which the lower end of said distributor is connected, said distributor having a series of transverse apertures in its wall, means for supplying air to said chambered element to discharge through said apertures to the interior of said distributor, a burner pan supported below the lower open end of said distributor and depending from the lower wall of said chambered element in communication with its aperture, means by which fuel is discharged into said pan, a fuel ignition device having a chambered body and an open inner end projected through the side wall of said pan, and a conduit communicating at one end with the interior of said chambered element with its other end opening into the interior of said body for delivering air therethrough.

MICHAEL J. WARD.

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