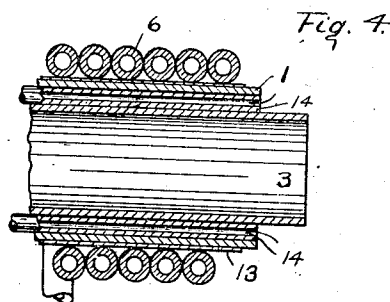
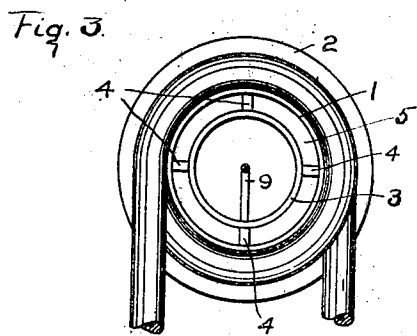
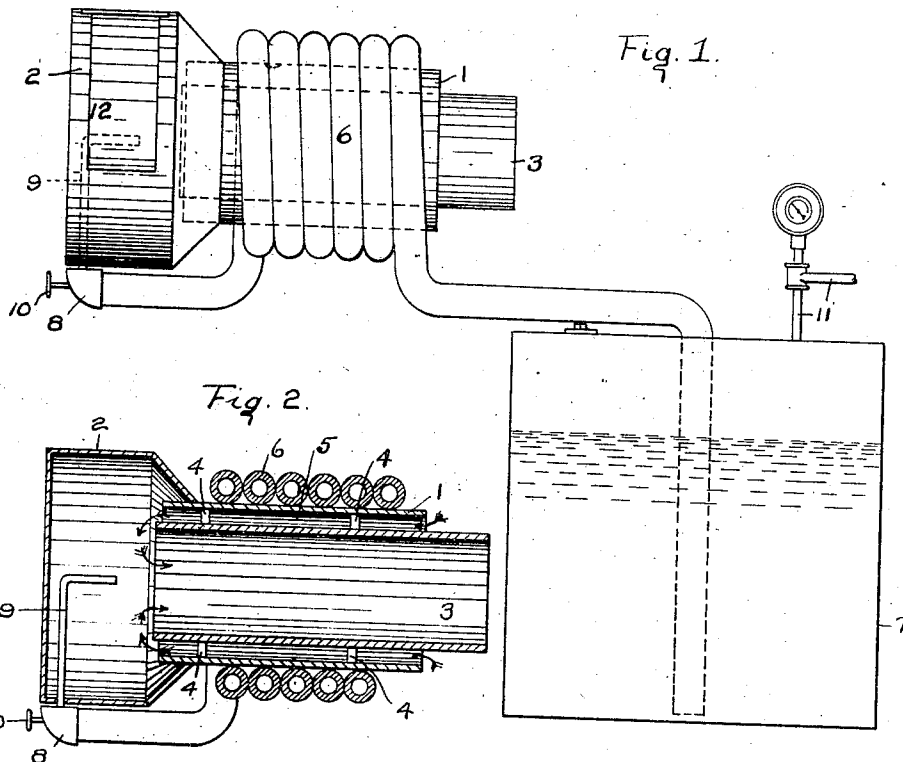


J. R. DONNELLY.
LIQUID FUEL BURNER.
APPLICATION FILED APR. 26, 1911.

1,059,660.

Patented Apr. 22, 1913.



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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL BURNER.

1,059,660.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed April 26, 1911. Serial No. 623,392.

To all whom it may concern:

Be it known that I, JOHN R. DONNELLY, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented new and useful Improvements in Liquid-Fuel Burners, of which the following is a specification.

My invention relates to an improved liquid fuel burner. Its object is to provide a cheap, simple and efficient burner for burning hydrocarbon liquids which are rich in carbon, without decomposing the oil vapor and depositing carbon in the vaporizing chamber.

With these objects in view among others hereinafter set forth, the invention consists in certain novel features of construction and combinations and arrangements of parts, hereinafter described and illustrated in the drawings in which—

Figure 1 is a side elevational view of a device constructed according to my invention; Fig. 2, a central longitudinal section of the burner of Fig. 1; Fig. 3, an end view of the burner and Fig. 4, an elevation in section of a modified form of my invention.

Referring to the drawings, 1 is a tubular member or sleeve formed of suitable material to one extremity of which is secured a cap or hood 2 by which said end of the sleeve is closed and rendered substantially air tight. Within this sleeve is supported a removable tube 3, lugs 4, which are secured to tube 3 or are integral therewith, forming spacers by which the sleeve 1 and tube 3 are spaced to form an air space or passageway 5 between the same. Tube 3 projects beyond the open end of sleeve 1 a suitable distance and it forms the combustion chamber of the burner, the space or passageway 5 serving to admit air, in the direction of the arrows, into the combustion chamber.

A fuel coil 6 is supported on sleeve 1, one end of which is suitably connected to fuel reservoir 7 and the other end of which is provided with a suitable elbow 8 to which a suitable nozzle 9 is connected. Nozzle 9 passes through the wall of hood 2 and is disposed a suitable distance forwardly of the forward open end of combustion chamber 3. A suitable valve 10 in elbow 8 serves

to control the passage of the vapor which is discharged from the nozzle 9.

Reservoir 7 is provided with a suitable air supply through pipe connections 11, by the pressure of which the fuel is forced through coil 6.

Hood 2 is provided with one or more doors 12 through which access to the interior of the hood for the purpose of cleaning the nozzle or for any other purpose is had.

I may also insert between sleeve 1 and the coil 6 a layer of asbestos or other refractory material 13 (Fig. 4) and I may insert tubes 14 of suitable diameter between the sleeve 1 and tube 3 to serve as conductors of heated air into the combustion chamber, thereby preventing overheating of the coil.

In practice the coil 6 is first heated to the desired or proper temperature by suitable means; then the air pressure is turned into the reservoir and valve 10 is opened. The liquid in passing through the heated coil is vaporized and the vapor discharged from nozzle 9 into combustion chamber 3 where it ignites, the heat thereby generated serving to continuously heat the coil and maintain continuous vaporization of the fuel in the coil. The pressure behind the vapor draws the outside air through the air space 5 or tubes 14 into the forward end of the combustion chamber where it mixes with the vapor to support its combustion. The air in passing through the space 5 becomes more or less heated by the heat generated in the combustion chamber, thereby greatly aiding the combustion of the vapor and producing a high degree of heat and insuring perfect combustion of the fuel.

The moving heated air in space 5 serves to insulate the vapor coil from the combustion tube, thereby preventing overheating of the coil. The use of the asbestos layer 13 will also assist in the prevention of overheating of the coil 6.

The tubes 1 and 3, coil 6 and nozzle 9 will, of course, be properly proportioned as to diameter and length to accomplish my purpose, and a great many changes might be made in the general form and arrangement of the parts described without departing from my invention, and hence I do not confine myself to the precise details set forth, but consider myself at liberty to make

such slight changes and alterations as fairly fall within the spirit and scope of my invention.

What I claim is:

5 1. A liquid fuel burner comprising a combustion tube, a second tube surrounding the combustion tube and spaced therefrom, means secured to one end of the second tube for closing said end and a fuel coil encircling
10 the second tube and a nozzle having a connection with the coil and adapted to discharge vapor into the combustion tube.

2. A liquid fuel burner comprising a fuel coil, a sleeve within the coil, means secured
15 on one end of the sleeve for closing the same, a combustion member within the sleeve and in spaced relation therewith whereby an air space is formed between the sleeve and combustion member, and a nozzle connected to
20 the fuel coil and adapted to discharge vapor into the combustion member, the discharging vapor drawing outside air through said air space to insulate the sleeve from the combustion member and to support the combustion
25 of the vapor within the combustion member.

3. A liquid fuel burner comprising a sleeve, a head secured to the rear end of the sleeve for closing the same, the forward end
30 of the sleeve being open, a combustion tube within the sleeve and in spaced relation therewith, whereby an air passageway is formed between the sleeve and tube which is open to outside air at the forward end of the
35 sleeve, a fuel coil encircling the sleeve, and a nozzle connected to the coil and adapted to discharge vapor into the combustion tube

wherein said vapor is combusted to continuously vaporize the fuel in the coil, the discharging vapor drawing outside air through
40 said air passageway to support the combustion of the vapor and to insulate the fuel coil from the combustion tube.

4. A liquid fuel burner comprising a fuel coil, a combustion member within the coil, 45 a nozzle connected to the coil and adapted to discharge vapor into the combustion member wherein the vapor is combusted to heat the same and also heat the coil whereby the fuel is vaporized in the coil, and means between the coil and combustion member providing a passageway between the same for
50 the admission of outside air into one end of the combustion member to support the combustion of the vapor and to insulate the coil from said member. 55

5. A liquid fuel burner comprising a fuel coil, a cylindrical member within the coil open at its forward end, a combustion tube within the member and having its forward
60 end projecting beyond the forward end of the annular member, means closing the rear end of the member and a nozzle within said means and connected to the coil and adapted to discharge vapor from the coil into the
65 rear end of the combustion tube, the combusting vapor discharging from the forward end of the tube.

In witness whereof I hereunto sign my name this 24th day of April, 1911.

JOHN R. DONNELLY.

Witnesses:

HELEN F. GLENN,
EDWIN M. HULSE.