G. P. KITTEL.

HYDROCARBON BURNER.

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1,330,635.

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Fig. 1.

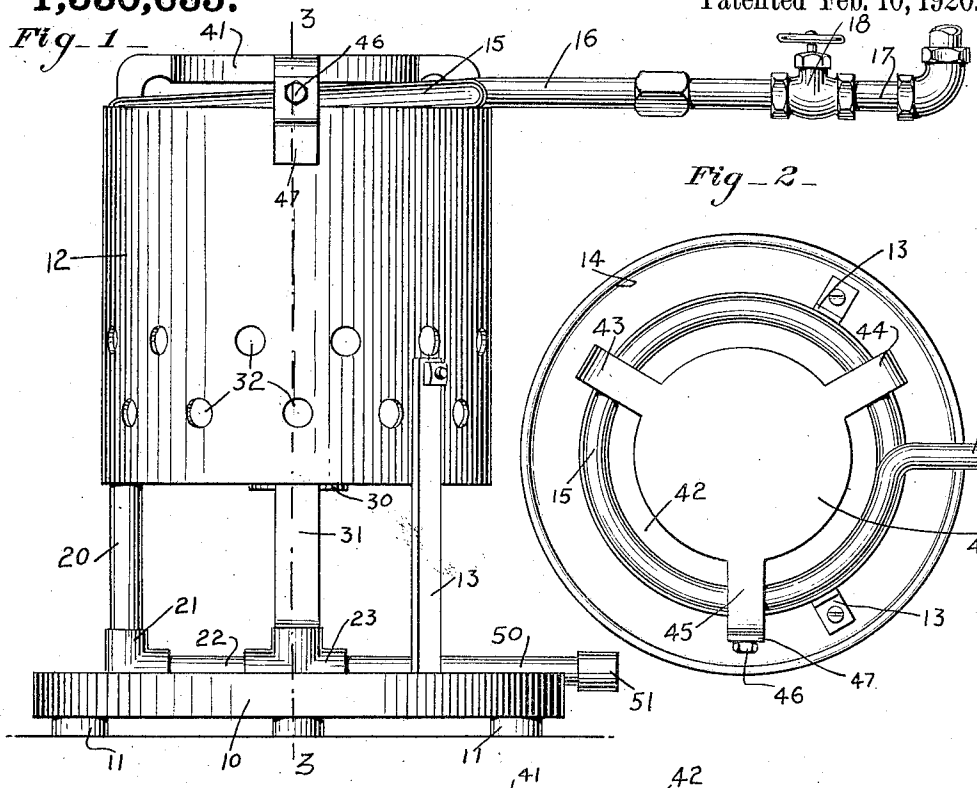
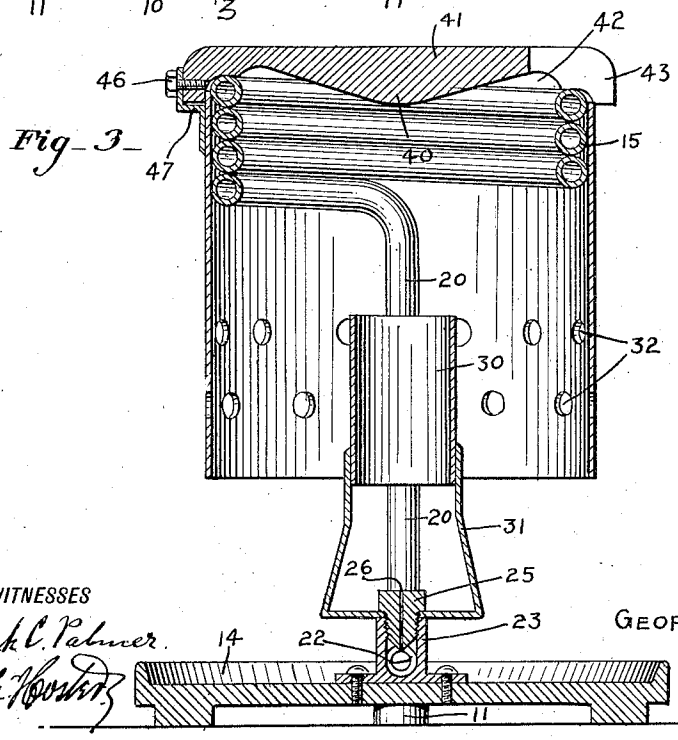


Fig. 2.

Fig. 3.



WITNESSES

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HYDROCARBON-BURNER.

1,330,635. Specification of Letters Patent. Patented Feb. 10, 1920.

Application filed December 7, 1918. Serial No. 265,745.

To all whom it may concern:

Be it known that I, GEORGE PAUL KITTEL, a citizen of Germany, having declared my intention to become a citizen of the United States, and a resident of Weehawken, in the county of Hudson and State of New Jersey, have invented a new and Improved Hydrocarbon-Burner, of which the following is a full, clear, and exact description.

The invention relates to hydrocarbon burners using kerosene and other hydrocarbon liquids as fuel and such, for instance, as shown and described in the application for Letters Patent of the United States, Serial No. 208,438, filed by me on December 22, 1917.

The object of the present invention is to provide a new and improved hydrocarbon burner arranged to insure a thorough vaporization of the liquid fuel during its passage through the burner and to cause the generated vapor to issue through a jet orifice at a high velocity to form a mixture with the air and to produce a large, hot, blue flame. Another object is to prevent the flame from being accidentally blown out by wind or other strong air currents. Another object is to insure a thorough vaporization of the liquid fuel even should the latter enter the vaporizing coil at a low temperature or in small quantity. Another object is to reduce the formation of carbon deposit within the burner to a minimum and to allow of readily removing such deposit from time to time. Another object is to provide a hydrocarbon burner which is simple and durable in construction, cheap to manufacture and not liable easily to get out of order.

With these and other objects in view, the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the hydrocarbon burner;

Fig. 2 is a plan view of the same; and

Fig. 3 is a cross section of the same on the line 3—3 of Fig. 1.

The base 10 of the hydrocarbon burner is in the form of a pan and is provided with legs 11 adapted to rest on a table or other suitable support. Above the support 10 is arranged a shell 12 supported by legs 13 from the base 10, the legs extending within the rim 14 of the base. Within the upper portion of the shell 12 is arranged a vaporizing coil 15, the upper convolution of which projects slightly above the top of the shell 12, as plainly indicated in the drawings. The coil 15 has one end 16 extending outwardly and connects by a supply pipe 17 with a suitable source of liquid fuel, the flow of which through the coil 15 is regulated by a suitable valve 18 arranged on the said supply pipe 17.

The lower end of the coil 15 is provided with an outlet pipe 20 extending downwardly and connecting with an elbow 21 attached to the base 10, and the said elbow is connected by a pipe 22 with a nozzle holder 23 in the form of a T-fitting and likewise secured to the base 10 at the middle thereof, as plainly shown in the drawings. A nozzle 25 screws into the top of the nozzle holder 23 and this nozzle 25 is provided with a jet orifice 26 for the passage of the vapors generated in the coil 15. Centrally above the nozzle 25 is arranged a combustion chamber 30, preferably in the form of an open ended tube secured at its lower end to a bracket 31 attached by the nozzle 25 to the top of the nozzle holder 23. The lower end of the combustion chamber 30 is approximately flush with the lower end of the shell 12 and the latter as well as the combustion chamber are a distance above the base 10 and the combustion chamber 30 is a distance above the nozzle 25. Thus the jet issuing from the nozzle 25 passes centrally through the combustion chamber 30 and in doing so air is drawn into the lower end of the combustion chamber 30 to form a combustible mixture of the vapor and air and which mixture is burned within the shell 12. It will be noticed that a large amount of air can readily pass into the shell by way of the lower end thereof to insure a complete combustion of the burning mixture within the shell. The lower portion of the shell 12 is preferably provided with apertures 32 for the admission of air in addition to the air passing in through the lower open end of the shell.

The flame arising from the burning mix-

ture strikes the conical bottom 40 of a deflector 41, preferably in the form of a disk arranged in the upper portion of the shell and having its edge spaced from the top convolution of the coil 15 so as to form a passage 42 for the flame spread outward by the conical bottom 40 of the deflector 41. By the arrangement described the flame comes in contact with the upper convolution of the coil 15 and heats the same convolution to a high degree with a view to insure a rapid vaporization of the liquid fuel passing through the coil 15. The deflector 41 is provided with three arms 43, 44 and 45 resting on top of the uppermost convolution of the coil 15 to support the deflector. The arms 43, 44 and 45 have downwardly extending angular lugs to hold the deflector in central position relative to the coil 15 and the shell 12. The lug on the arm 45 is fastened by a screw 46 or other fastening device to a bracket 47 secured to the outside of the shell 12 to prevent the deflector from becoming accidentally detached from the burner. It will also be noticed that by this arrangement, the deflector 41 can be readily removed, in case it becomes defective, and replaced by a new one.

From the nozzle holder 23 extends a clean-out pipe 50 reaching over the rim 14 of the base 10 and normally closed at its outer end by a cap 51. When it is desired to clean the burner of any carbon deposit or other extraneous matter that may have accumulated in the coils of the pipes then the cap is removed to allow the vapor to forcibly eject or blow out the extraneous matter through the pipe 50.

In starting the burner, a wick or the like is placed in the base 10 and saturated with gasolene or like liquid fuel to be burned with a view to heat the burner sufficiently to convert the liquid fuel in the coil 15 into vapor which on issuing through the nozzle 25 is burned in the combustion chamber 30 with air, as previously explained. The flame issuing through the upper end of the combustion chamber 30 strikes the conical bottom 40 of the deflector 41 whereby the flame is spread outwardly and strikes the coil 15 and passes upward through the passage 42 over the uppermost convolution of the coil 15 to highly heat such convolution and thus insure a rapid vaporization of the liquid fuel flowing through the coil 15.

It will be noticed that by having the shell 12 considerable of the heat is retained within the shell to highly heat the coil 15 for the thorough vaporization of the fuel passing through the coil. It will also be noticed that an abundance of air can pass into the burner to insure proper combustion thereby producing the desired blue flame.

The hydrocarbon burner shown and described is very simple and durable in construction and composed of comparatively few parts not liable to get easily out of order.

It will be noticed that by arranging the combustion chamber 30 within the shell 12, wind or strong air currents are not liable accidentally to extinguish the flame especially when the burner is used in the open air or in a drafty room.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A burner comprising an open ended shell, a vaporizing coil arranged in the upper end of the shell and having one end connected with a source of liquid fuel, and its other end extending downwardly into the shell below the same and provided with a jet nozzle, an open ended combustion chamber in the shell above the jet nozzle and into which the said nozzle discharges, and a deflector at the top of the shell centrally over the combustion chamber and forming a passage with the vaporizing coil for the flame to spread outward over the upper convolution of the said coil.

2. A burner, comprising a vaporizing coil connected at one end with a source of liquid fuel, a jet nozzle in the other end of the said vaporizing coil, a shell inclosing the said coil and open at top and bottom, a combustion chamber within the shell and into which discharges the said jet nozzle, and a deflector centrally above the said combustion chamber and forming a passage with the said vaporizing coil for the flame to spread outward by the said deflector, the said deflector having a plurality of supporting arms of which sundry rest on the said vaporizing coil and one of the said arms is attached to the said shell.

3. A burner, comprising a vaporizing coil connected at one end with a source of liquid fuel, a jet nozzle in the other end of the said vaporizing coil, a shell inclosing the said coil and open at top and bottom, a combustion chamber within the shell and into which discharges the said jet nozzle, a deflector provided with a conical bottom and centrally disposed above the said combustion chamber, the said deflector bottom extending into the opening of the said coil and the edge of the deflector being spaced from the said coil to form a passage between them, the said deflector having arms, of which sundry rest on the said coil, a bracket on the said shell and engaged by another of the said arms, and fastening means detachably fastening the said arm and bracket together.

4. A burner, comprising a vaporizing coil connected at one end with a source of liquid fuel, a jet nozzle in the other end of the said vaporizing coil, a shell inclosing the said coil and open at top and bottom, a combustion chamber within the shell and

into which discharges the said jet nozzle, a pan forming the base of the burner, a nozzle holder carrying the nozzle and secured to the said pan, a bracket on the said nozzle holder and supporting the said combustion chamber, and a deflector in the opening of the said coil above the said combustion chamber.

5. A burner, comprising a vaporizing coil connected at one end with a source of liquid fuel, a jet nozzle in the other end of the said vaporizing coil, a shell inclosing the said coil and open at top and bottom, a combustion chamber within the shell and into which discharges the said jet nozzle, a pan forming the base of the burner, a nozzle holder carrying the nozzle and secured to the said pan, a bracket on the said nozzle holder and supporting the said combustion chamber, a deflector in the opening of the said coil above the said combustion chamber and provided with a conical bottom and arms of which sundry rest on the said coil, and a bracket on the said shell and on which another of the said arms is detachably secured.

6. A burner, comprising a vaporizing coil connected at one end with a source of liquid fuel, a jet nozzle in the other end of said vaporizing coil, a shell inclosing the said coil and open at top and bottom, a combustion chamber within the shell and into which discharges the said jet nozzle, a pan forming the base of the burner, a nozzle holder carrying the nozzle and secured to the said pan, a bracket on the said nozzle holder and supporting the said combustion chamber, a deflector in the opening of the said coil above the said combustion chamber and provided with a conical bottom and arms of which sundry rest on the said coil, a bracket on the said shell and on which another of the said arms is detachably secured, and legs held on the said pan within the rim thereof and attached to the said shell to support the latter above the pan.

GEORGE PAUL KITTEL.