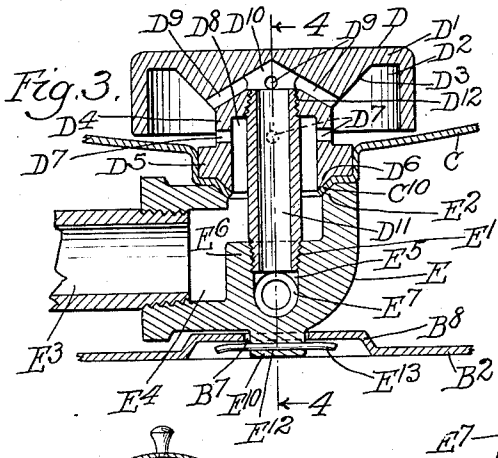
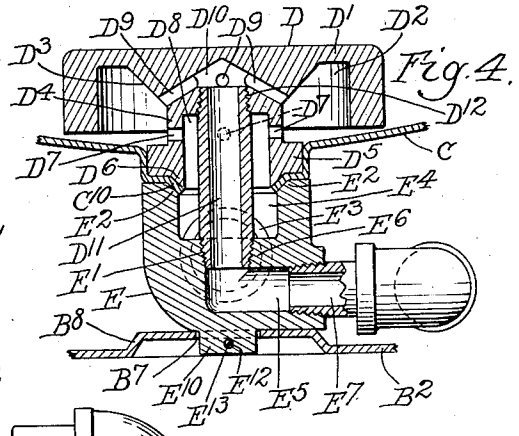
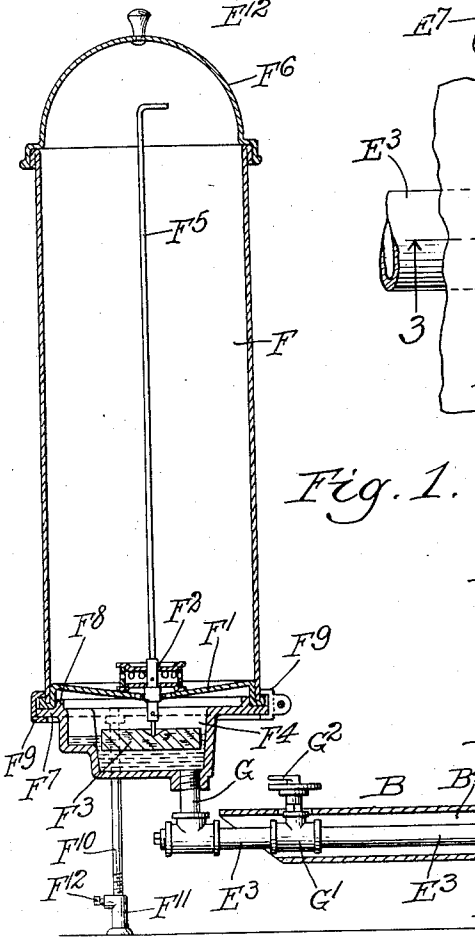
April 1, 1930. J. L. BREESE, JR 1,752,727

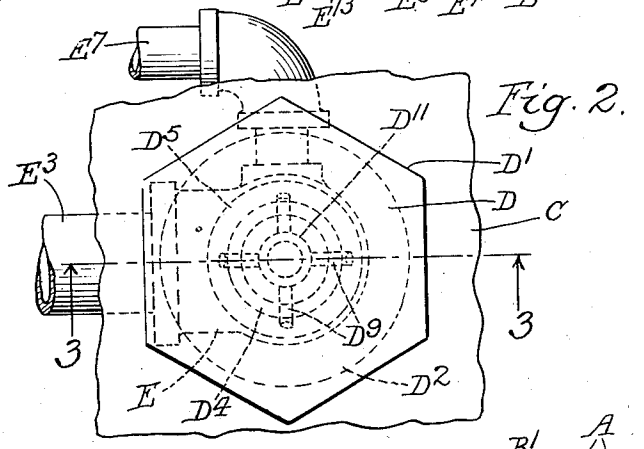
HYDROCARBON BURNER

Filed Dec. 31, 1927









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UNITED STATES PATENT OFFICE

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HYDROCARBON BURNER

Application filed December 31, 1927. Serial No. 243,782.

My invention relates to a device for burning hydrocarbons, which is particularly adapted for the burning, in heating plants, of a liquid hydrocarbon. One object of my invention is the provision of a combination gas and fuel inlet for the mixing chamber of a hydrocarbon burner. Another object is the provision of combined fuel inlet and securing means, adapted to aid in positioning and securing the burner assembly. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a vertical section of the heating unit to which my invention is applied;

Figure 2 is an enlarged top plan view of the combination oil and gas inlet;

Figure 3 is a section along the line 3—3 of Figure 2; and

Figure 4 is a section along the line 4—4 of Figure 3.

Like parts are indicated by like symbols throughout the specification and drawings.

It will be realized that I describe and illustrate a complete fuel supply and burner unit which is adapted to be used with any suitable heater, the combustion member of the burner being for example placed within the ash pit of a coal burning heater.

A generally indicates a heater of a well known type having the usual supporting legs A^1.

B indicates a fuel supply and heater unit having a combustion member B^1. The latter includes a bottom portion B^2 resting upon the bottom of the ash pit A^4 of the heater A, and provided with the upwardly projecting generally cylindrical wall B^3 in communication with which is the longitudinal air inlet passage B^4, which is braced by the member B^5 to the wall B^3.

Seated upon the upper edge of said wall is a mixing chamber having the bottom portion C which may be concave as shown and the upwardly projecting cylindrical side wall C^1, which may be made of two parts C^2, C^3 secured together by the crimp C^4. C^5 are a plurality of large and small apertures penetrating the upper part C^3 of the wall, permitting air to enter the mixing chamber. Exteriorly projecting from the wall C^1 is a circular flange C^6 with a downwardly projecting ring C^7 adapted to be seated upon the upper edge of the drum B^3. C^8 is a conic shaped split ring positioned in the circular depression or groove C^9 in the wall C^1.

D generally indicates a gas and fuel inlet having a top portion D^1 which may be hexagonal in shape, and has an annular channel D^2 in its lower side. Projecting downwardly from the portion D^1 and centrally located within said channel D^2 is the concial portion D^3 associated with a downwardly extending stem D^4 having an outwardly projecting flange D^5 with a conical-shaped end portion D^6. As best illustrated in Figures 3 and 4 the flange D^5 and conical end portion D^6 seat in a correspondingly shaped depressed portion C^{10} centrally located and integral with the concave bottom C of the mixing chamber. D^7 are a plurality of passages in the stem D^4, extending from the fuel passage D^8. D^9 are a plurality of downwardly inclined gas outlet passages extending from the chamber D^{10} above the tube or pipe D^{11} screwthreaded into the member D as at D^{12}. The other end of said stub pipe is threaded into the member E as at E^1. The member E is an elbow with a side outlet. It is provided with a seat E^2 adapted to receive the correspondingly shaped depressed portion C^{10}. The member E and member D are secured to the bottom C of the mixing chamber and held in place by means of the tube D^{11}, to which they are screwthreaded.

E^3 is a liquid fuel pipe screwthreaded into the member E, communicating with the fuel passage E^4. In line with the lower open end of the tube D^{11} is a gas passage E^5 separated from the fuel passage E^4 by means of a wall E^6. E^7 is a gas supply line communicating with the passage E^5. As best shown in Figures 2, 3 and 4, gas for the necessary pilot lights for igniting of the liquid hydrocarbon fuel has free access to the mixing chamber by means of the passage E^5, tube D^{11} and passage D^{10} communicating with the gas outlets D^9. The downwardly inclined flames of the pilot

lights will be in the direct path of the liquid fuel flowing through the apertures D^7. Integral with the member E is a boss E^{10} downwardly projecting through the hole B^7 located in the upwardly pressed portion B^8 of the bottom B^2. E^{12} is an aperture in the boss E^{10} adapted to receive the locking pin E^{13}, thus securing the mixing chamber to the air drum B^3.

F indicates a fuel tank having a conical bottom plate F^1. F^2 is a fuel control valve responding to the action of the float F^3 in the float chamber F^4. Upwardly extending above the upper edge of the fuel tank F is the rotary stem F^5 for controlling the flow of liquid fuel through the valve F^2. F^6 is a cover. The float chamber F^4 is provided with an outwardly projecting circular flange F^7 upon which is seated the fuel tank F, centered by means of the upwardly extending flange F^8 and held in place by the split locking band F^9. Mounted in the flange F^7 at either side of the float chamber are the supporting rods F^{10} F^{10}, having the adjustable base members F^{11} with locking screws F^{12}.

Communicating with the float chamber F^4 is the downwardly extending pipe G associated with the fuel line E^3. The fuel line E^3 is positioned within the air inlet passage B^4 which may be supported by braces B^{10} or other suitable means. The fuel line E^3 is provided with a control valve G^1 having the upwardly protruding handle G^2. If desired the gas line E^7 may also be positioned within the passage B^4 although it is not in detail so shown.

It will be realized that whereas I have shown a practical and operative device, nevertheless many changes might be made in size, shape, number and distribution of parts without departing from the spirit of my invention. I therefore wish my drawings and description to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my specific description and showing.

The use and operation of my invention are as follows:

The heater unit herein shown may be applied to any heater, for example a coal burning heater, by merely lifting off the ash pit door and removing the grates and inserting the mixing chamber. This ready conversion of a coal burning plant to an oil burning plant is of great importance.

Referring to the unit itself oil flows from the float chamber F^4 along the line E^3 to the elbow member shown in detail in Figures 3 and 4. The elbow member also receives gas through the line E^7. It will be noted that the gas and oil flow upwardly through the same member, although being supplied of course through different ducts to the bottom of the mixing chamber. The gas jets which pass through apertures D^9 incline downwardly into the path of delivery of the oil through the passages D^7, the gas jets being vertically aligned with the oil ducts.

I claim:

1. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member having a liquid fuel inlet passage and a gaseous fuel inlet passage.

2. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member having a liquid fuel inlet passage, in communication with a liquid fuel line, and a gaseous fuel inlet passage, in communication with a gas line, and outlet passages extending from said liquid and gaseous fuel inlet passages to the interior of the inner drum.

3. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member being penetrated by concentric liquid fuel and gaseous fuel inlet passages, in communication with the interior of the inner drum.

4. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member including a portion positioned beneath the bottom of the inner drum and a portion positioned above the bottom of the inner drum and means for drawing them together about said drum bottom, said member having liquid and gaseous fuel inlet passages in communication with the interior of said drum.

5. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member having a liquid fuel inlet passage and a gaseous fuel inlet passage, said member including a portion positioned beneath the bottom of the inner drum and a portion positioned above the bottom of the inner drum and means for drawing them together about the drum bottom, including a passage member in screwthreaded relation with each.

6. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member having a liquid fuel inlet passage and a gaseous fuel inlet passage, said member including a portion positioned beneath the bottom of the inner drum and a portion positioned above the bottom of the inner drum and means for drawing them together about the drum bottom, including a

passage member in screwthreaded relation with each, said passage member being in communication with the gaseous fuel inlet passage at its lower end and being in communication with the interior of the inner drum at its upper end.

7. The combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, of a fuel admission member in communication with said inner drum, said member having a liquid fuel inlet passage and a gaseous fuel inlet passage, said member terminating at its upper end in an overhanging mushroom portion, and having liquid and gaseous fuel discharge outlets positioned therebeneath.

8. In combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, a fuel admission member in communication with said inner drum and in contact with said outer drum, said member being adapted to secure said outer and inner drums against relative movement, said member including a portion positioned between the inner and outer drum, a portion positioned within the inner drum and means for securing them together.

9. In combination with a hydrocarbon burner assembly including an outer drum and a perforated inner drum, a fuel admission member in communication with said inner drum and in contact with said outer drum, said member being adapted to secure said outer and inner drums against relative movement, said member including a portion positioned between the inner and outer drum, a portion positioned within the inner drum and means for securing them together, the portion positioned between the drums having associated with it a downward extension adapted to pass through the bottom of the lower drum and a securing member, exterior of the bottom of the lower drum, associated therewith.

Signed at Chicago, county of Cook and State of Illinois, this 28th day of December, 1927.

JAMES L. BREESE, JR.