

L. FETTY.
CRUDE OIL BURNER.
APPLICATION FILED JULY 20, 1909.

956,695.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

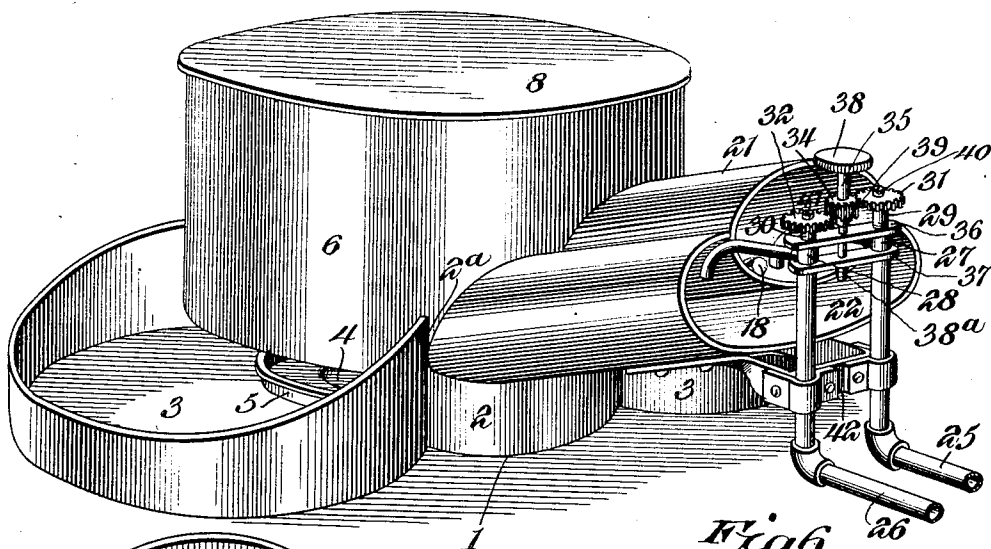


Fig. 6.

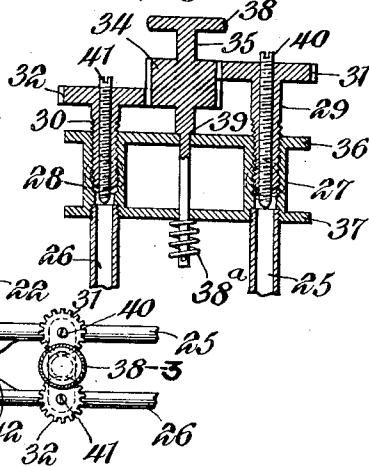
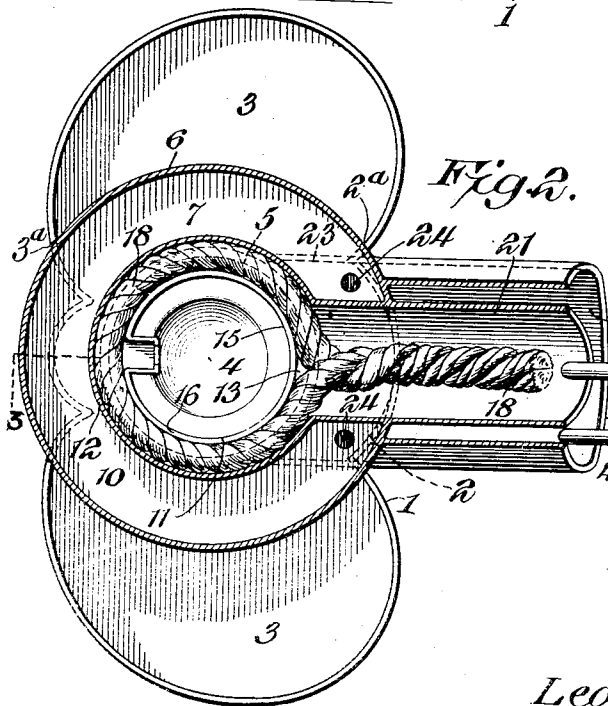


Fig. 2.



Witnesses

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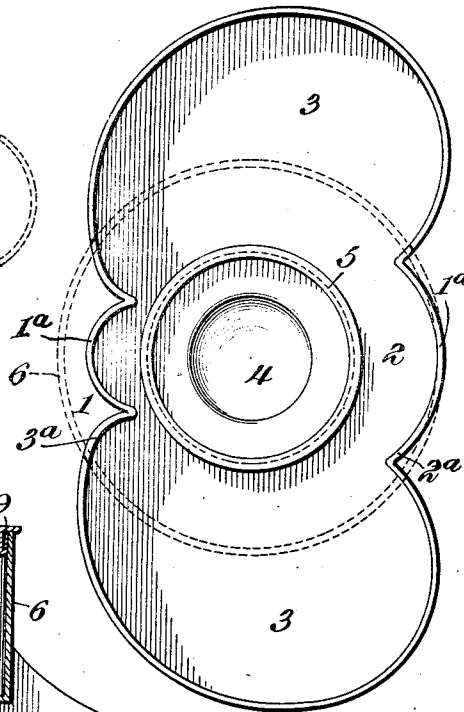
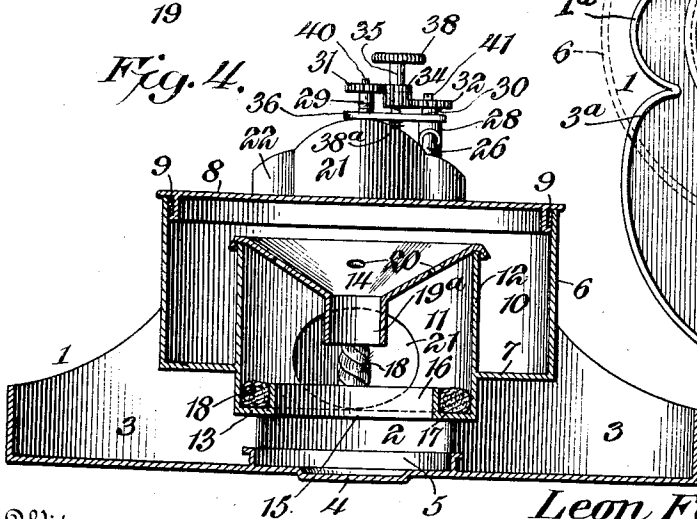
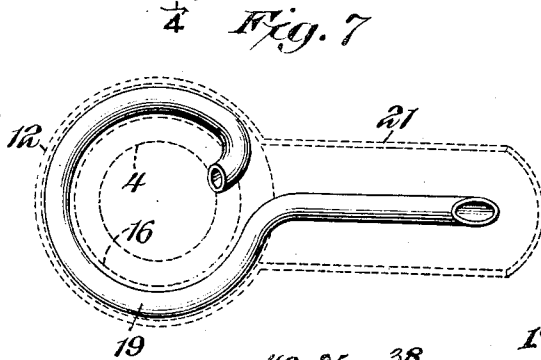
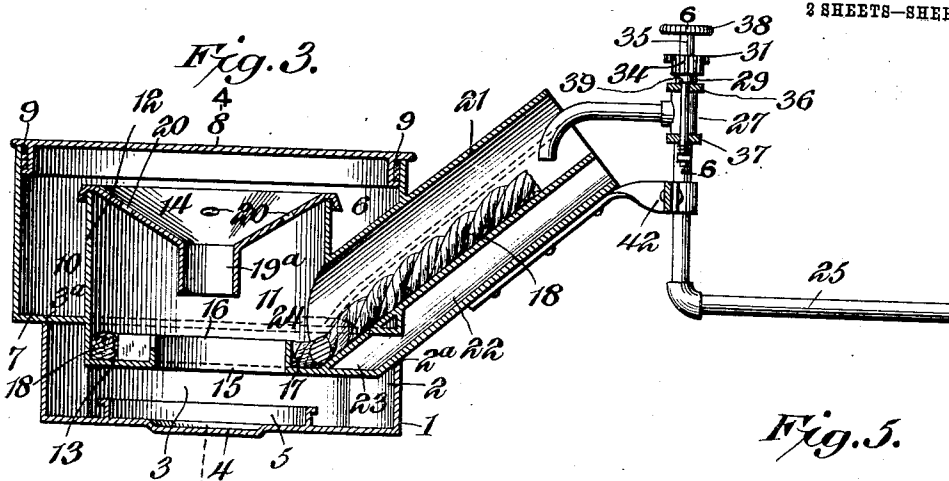
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

LEON FETTY, OF HUTCHINSON, KANSAS.

CRUDE-OIL BURNER.

956,695.

Specification of Letters Patent.

Patented May 3, 1910.

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To all whom it may concern:

Be it known that I, LEON FETTY, a citizen of the United States, residing at Hutchinson, in the county of Reno and State of Kansas, have invented a new and useful Crude-Oil Burner, of which the following is a specification.

The invention relates to improvements in crude oil burners.

10 The object of the present invention is to improve the construction of crude oil burners, and to provide a simple and comparatively inexpensive hydro-carbon burner, designed for use in stoves, and capable of heating water and of supplying steam for mixing with the hydro-carbon fuel, and of creating a sufficient draft to supply oxygen enough to create a hot blast that will burn hydro-carbon fuel without forming soot and
20 fouling the burner.

A further object of the invention is to provide a hydro-carbon burner of this character, equipped with means for enabling the supply of water and crude oil to be simultaneously controlled and readily adjustable to feed the proper capacity of water with the oil.

With these and other objects in view, the invention consists in the construction and
30 novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

40 In the drawings:—Figure 1 is a perspective view of a crude oil burner, constructed in accordance with this invention. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a central vertical sectional view, taken on the line 3—3 of Fig. 2. Fig. 4 is a similar view, taken on the line 4—4 of Fig. 3. Fig. 5 is a plan view of the base or flame pan of the burner. Fig. 6 is a detail
45 sectional view, taken substantially on the line 6—6 of Fig. 3 and illustrating the construction for operating the oil and water faucets. Fig. 7 is a detail view of a tube for conducting oil to the center of the burner.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The burner comprises in its construction a base or flame pan 1, designed in practice to consist of a casting of suitable material, but it may be constructed in any other desired manner, as will be readily understood. The base or flame pan, which has an imperforate bottom, is composed of a central portion 2 and approximately circular extensions 3, and it is formed by a horizontal bottom and the marginal wall or flange 1^a. The extensions 3, which are open at the top, project beyond the burner casing, hereinafter described, and are adapted to direct the flame upward. The central portion 2 of the flame pan or base is provided with a central depression 4, and it has an annular vertical flange 5 surrounding the depression and forming an inner drip chamber, which is adapted to catch the drip of oil if any. Although only two circular extensions are illustrated in the accompanying drawings, the base of the burner may be equipped with three or more, and the said base may be varied in size and shape to adapt the burner to the character of the stove to which it is applied.

Mounted upon the base or flame pan in a seat formed by suitable front and rear recesses 2^a and 3^a of the marginal flange is the burner casing, comprising an outer cylindrical shell 6, having a horizontal bottom 7, and equipped with a removable lid 8 having a packing 9 of asbestos, or other suitable material, adapted to prevent the escape of steam. The casing, which rests upon the marginal wall or flange of the base or flame pan, is divided into an outer annular steam chamber 10, and an inner mixing and combustion chamber 11 by an inner cylindrical shell 12, extending upward through the bottom 7 of the outer shell and terminating short of the top or lid thereof. The inner cylindrical shell is provided with an annular bottom 13, and it has a substantially funnel-shaped lid 14. The annular bottom 13, which has a central opening 15, is provided with an upwardly extending annular flange 16, surrounding the opening 15 and forming a bottom groove 17 for the reception of a wick 18 or a tube 19. The funnel-shaped top or cap 14 has a central depend

ing tubular portion 19^a to provide a main passage-way for the steam, and it is also perforated at intervals to provide minor outlets 20. The steam from the chamber 10 passes downward through the main outlet 19^a and the perforations 20 and enters the combustion and mixing chamber where it commingles with the vaporized fuel and the oxygen of the air forming a combustible gas, which ignites at the bottom of the casing and which burns thereat and in the extensions of the base or flame pan.

The burner casing is equipped with a combined draft and oil pipe 21, arranged at an inclination and extending upward and downward from the casing and piercing the inner and outer shells at the front of the burner and communicating with the interior of the inner shell, as clearly illustrated in Fig. 3 of the drawings. The water is admitted to the outer steam chamber or compartment through a conduit 22, arranged at an inclination and located beneath the bottom of the draft pipe 21 and extending laterally beyond the same, the metal of which the conduit is constructed being connected with the exterior of the draft pipe at opposite sides thereof and to the exterior of the outer shell. The water conduit is provided at its lower end with an extension 23, located beneath the front portion of the outer cylindrical shell and connected with the same and with the front of the outer or depending portion of the inner shell and communicating with the interior of the outer shell through openings 24 in the bottom thereof. The water is thus permitted to enter the outer shell where it is converted into steam and passes out through the apertures of the funnel-shaped top of the inner shell. The passage of steam through the inner mixing and combustion chamber 11 produces a sufficient draft through the pipe or conduit 21 to support combustion and to create a hot blast that will burn crude oil without forming soot.

The oil and water are supplied to the burner through pipes 25 and 26, connected with tanks (not shown) and equipped with faucets 27 and 28. The faucets 27 and 28 have horizontally projecting spouts, arranged to discharge into the draft pipe and the conduit, respectively, and extending from vertical tubular portions or barrels, which are interiorly threaded for the reception of the vertically adjustable valve plugs 29 and 30. The valve plugs 29 and 30 are provided at their upper ends with horizontal gears 31 and 32, which mesh with a pinion 34 of an operating shaft 35, adapted to simultaneously open and close the faucets. The operating shaft, which is journaled in suitable bearings of supporting plates 36 and 37, is equipped at its upper end with a milled head 38, or other suitable operating

device for enabling it to be readily rotated. The operating shaft 35 is movable vertically into and out of mesh with the gear 32 of the water supply to enable the latter to be adjusted independently of the oil supply to properly proportion the water to the oil. Should the supply of water in proportion to the oil be greater than desired, the pinion may be disengaged from the gear 32 and the latter adjusted to afford a proper supply. The simultaneous rotation of the valve plugs 29 and 30 through the gearing provides a simple, easy and simultaneous adjustment of the water and oil supplies. The pinion of the operating shaft may be maintained in engagement with the gears of the valve plugs by a coiled spring 38^a, mounted on the lower portion of the operating shaft and interposed between the same and the lower connecting plate 37, a suitable stop 39 being provided for limiting the downward movement of the operating shaft. The lower portion of the operating shaft may be reduced to provide a shoulder for this purpose, but any other form of stop may be employed. Also the valve plugs may be equipped with adjusting screws 40 and 41 mounted in threaded bores or openings of the valve plugs and provided at their upper ends with grooves for the reception of a blade of a screw driver, or other suitable tool for rotating them. The adjusting screws provide for a fine adjustment of the faucets independently of the adjustment afforded by the gearing. The supply pipes 25 and 26 have upright portions, which are mounted in a bracket 42 having attaching portions secured to the conduit 22 and extending outwardly therefrom. Any other suitable means, however, may be employed for supporting the supply pipes and also the operating shaft. In practice the faucets are designed to be arranged at the front of a stove, and the wick 18 consists of a rope of asbestos, or other suitable material, bent at its center in circular form to fit within the groove 17 of the inner shell and having its terminal portions twisted together and arranged in the draft pipe 21. Instead, however, of employing the wick, the pipe 19 shown in Fig. 7 may be employed for conducting the fuel to the combustion chamber. The burner is adapted to be lighted at the front of the stove by igniting the wick, which conducts the flame to the interior of the burner, and the tube operates in a similar manner.

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

1. A burner of the class described including a burner casing provided with an outer steam chamber and having a mixing chamber extending into and surrounded by the steam chamber, said burner casing being also

provided with means for supplying water to the steam chamber and fuel to the mixing chamber, and a flame pan or base having an imperforate bottom and provided with a seat supporting the burner casing and having an extension projecting beyond the burner casing for directing the flame upward.

2. A burner of the class described including a burner casing provided with an outer steam chamber and having a mixing chamber extending into and surrounded by the steam chamber, said burner casing being also provided with means for supplying water to the steam chamber and fuel to the mixing chamber, and a flame pan or base having an imperforate bottom and supporting the burner casing and provided with a plurality of extensions having marginal flanges and arranged to direct the flame upward.

3. A burner of the class described including a burner casing provided with a steam chamber and having a mixing chamber, said burner casing being also provided with means for supplying water to the steam chamber and fuel to the mixing chamber, and a flame pan or base having a marginal flange recessed to receive the casing, said base or flame pan being extended beyond the casing and adapted to direct the flame upward.

4. A burner of the class described including a burner casing provided with an outer steam chamber and having a mixing chamber extending into and surrounded by the steam chamber, said burner casing being also provided with means for supplying water to the steam chamber and fuel to the mixing chamber, and a flame pan or base consisting of an imperforate bottom, and a marginal flange and extending beyond the casing for directing the flame upward, said base or flame pan being also provided with an inner upwardly extending flange forming a drip chamber.

5. A burner of the class described including a burner casing provided with a steam chamber and having a mixing chamber, said burner casing being also provided with means for supplying water to the steam chamber and fuel to the mixing chamber, and a flame pan or base consisting of a bottom, and a marginal flange extending beyond the casing for directing the flame upward, said base or flame pan being provided beneath the casing with a central depression and having an annular flange surrounding the same and forming a drip chamber.

6. A burner of the class described including an imperforate base or flame pan, and a burner casing arranged over the base or flame pan and comprising inner and outer shells forming an outer steam chamber and an inner mixing chamber which extends into

and is surrounded by the steam chamber, a combined draft and fuel supply pipe piercing the shells and communicating with the inner shell, and a water conduit connected with the space between the inner and outer shells.

7. A burner of the class described including an imperforate base or flame pan, and a superimposed burner casing comprising an outer cylindrical shell constituting a steam chamber, an inner cylindrical shell forming a mixing chamber and extending upward through the bottom of the outer shell and terminating short at the top thereof and provided at the top with a passage for the steam, said inner casing being also provided at the bottom with an opening, and means for supplying water to the steam chamber and fuel to the interior of the inner shell.

8. A burner of the class described including a base or flame pan, and a superimposed burner casing comprising an outer shell constituting a steam chamber, an inner shell forming a mixing chamber and provided with a substantially funnel-shaped top and having an opening at the bottom, and means for supplying water to the steam chamber and fuel to the mixing chamber.

9. A burner of the class described including an imperforate base or flame pan having a seat, and a superimposed burner casing arranged on the said seat and comprising an outer cylindrical shell constituting a steam chamber and provided with a removable lid, an inner cylindrical shell forming a mixing chamber and extending upward through the bottom of the outer shell and having a bottom opening and provided at the top with a lid having an opening for the passage of steam, and means for supplying water to the outer shell and fuel to the inner shell.

10. A burner of the class described including an imperforate base or flame pan, and a superimposed burner casing comprising an outer shell constituting a steam chamber, an inner shell forming a mixing chamber and extending through the bottom of the outer shell and provided at its bottom with an opening and having an upwardly projecting flange extending around the opening and forming a wick-receiving groove, and means for supplying the steam chamber with water and the inner shell with fuel.

11. A burner of the class described including an imperforate base or flame pan, and a superimposed burner casing comprising an outer shell constituting a steam chamber, an inner shell extending through the bottom of the outer shell and forming a mixing chamber and provided at its bottom with an opening and having a wick-receiving groove surrounding the same, a combined draft and fuel pipe extending from one side of the burner casing and connected with the inner shell, and a water supply conduit extending

from the same side of the burner casing as the said pipe and connected with the outer shell.

12. A burner of the class described including a base or flame pan, and a superimposed burner casing comprising an outer shell constituting a steam chamber, an inner shell extending through the bottom of the outer shell and provided at its bottom with an opening and having a wick-receiving groove surrounding the same, a combined draft and fuel pipe piercing the outer shell and communicating with the interior of the inner shell, and a water conduit arranged beneath and extending laterally beyond the said pipe and mounted thereon, said conduit being extended beneath the outer shell and communicating with the interior thereof to supply the same with water.

13. A burner of the class described including a base or flame pan, a superimposed burner casing comprising an outer shell having a removable lid, an inner shell extending through the bottom of the outer shell and provided with a substantially funnel-shaped top having an opening, said inner shell having its lower portion arranged below the bottom of the outer shell and provided with an

opening and having a groove surrounding the same, a combined draft and fuel pipe extending through the outer shell and communicating with the interior of the inner shell, and means for supplying the outer shell with water.

14. A burner of the class described including a base or flame pan, and a superimposed burner casing comprising an outer shell constituting a steam chamber, an inner shell extending through the bottom of the outer shell and provided at the bottom with an opening and having a wick receiving tube surrounding the same, a combined draft and fuel pipe piercing the outer shell and communicating with the interior of the inner shell, and a water conduit arranged beneath and mounted on the said pipe and extending beneath the outer shell and communicating with the interior thereof.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LEON FETTY.

Witnesses:

O. C. AMBLER,
C. C. ADAMS.