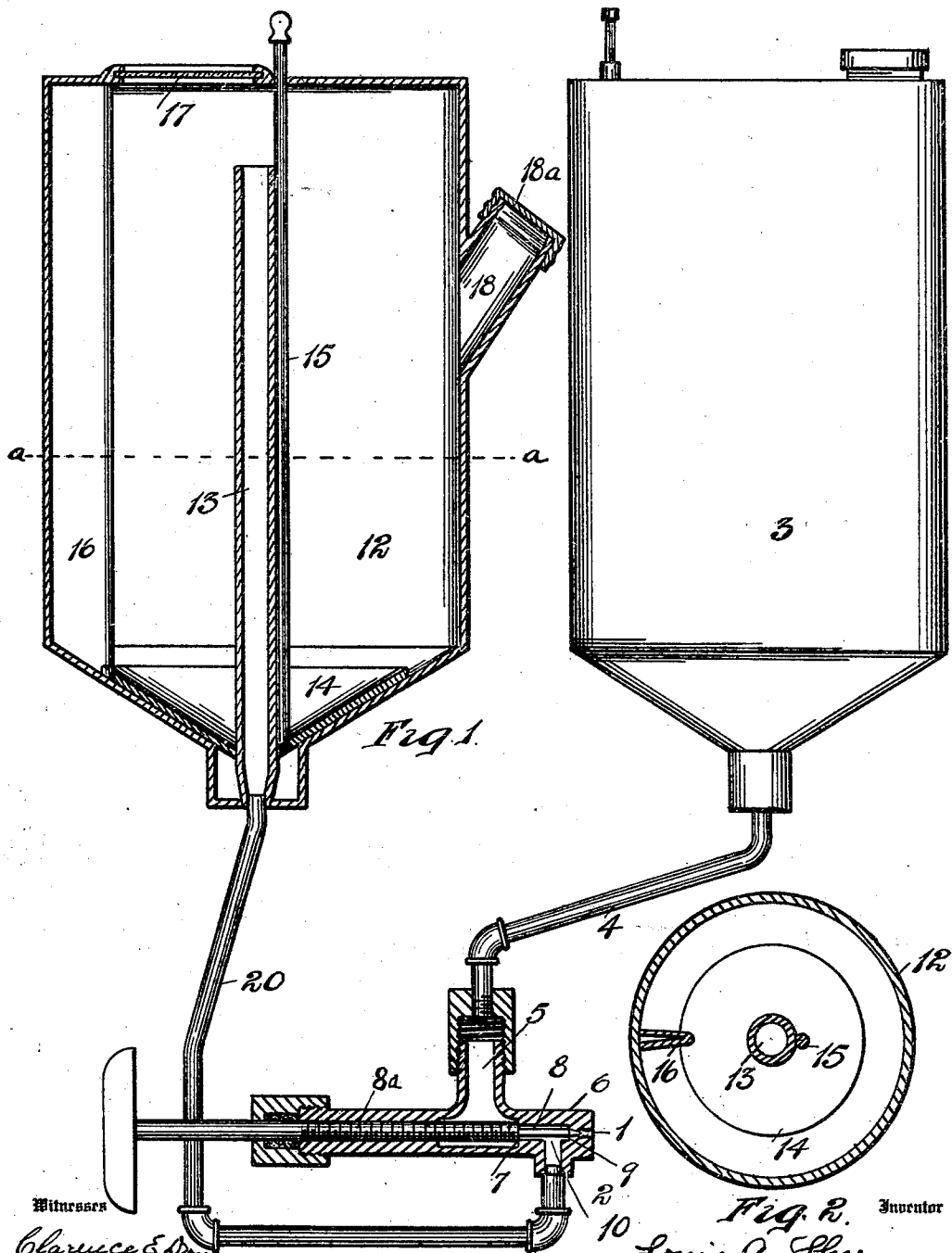


L. A. SHERMAN.
HYDROCARBON BURNER.
APPLICATION FILED MAR. 17, 1909.

960,722.

Patented June 7, 1910.



Witnesses
Clarice E. Day.
Alice Townsend.

Fig.

Fig. 2. Inventor
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UNITED STATES PATENT OFFICE.

LOUIS A. SHERMAN, OF DETROIT, MICHIGAN.

HYDROCARBON-BURNER.

960,722.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed March 17, 1909. Serial No. 483,921.

To all whom it may concern:

Be it known that I, LOUIS A. SHERMAN, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful improvement in Hydrocarbon-Burners, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to hydrocarbon burners; it has for its object an improved means for feeding to a hydrocarbon burner using liquid fuel, a primary charge of easily burning, or easily fired, hydrocarbon, in order that the preliminary charge may heat the combustion chamber, and prepare it for the purpose of continuous consumption of a heavier hydrocarbon.

In the drawings:—Figure 1, shows the connection between the feed jet and hydrocarbon tanks containing the different qualities of fuel. Fig. 2, is a sectional view, at the line *a-a*, Fig. 1.

The fuel is fed through a jet orifice 1, controlled by a needle valve 2, to its place of consumption. The main fuel consists of a heavy hydrocarbon, such as kerosene oil, stored in the tank 3, fed through pipe 4 to the valve chamber 5 in the casing 6, whence it escapes past a double needle valve through the orifice 1. The needle valve is provided with a seat 7, and with a spindle 8 projecting beyond the seat 7, and terminating with a sharply pointed needle that engages in the seat 9 immediately adjacent to the outlet orifice 1. Between the valve face that engages the seat 7 and the valve face which engages the seat 9, is an inlet opening into the small chamber 10, which surrounds the extension of the needle valve, and into this inlet opening leads a conduit 20 from the tank 12. The tank 12 is a storage tank for a lighter hydrocarbon, such as alcohol. The conduit from the tank 12 leads from the lower end of a stand pipe 13, whose upper end rises nearly to the top of the tank 12. Surrounding this stand pipe is a cup, or a spoon 14, provided with a lift rod 15, which extends through the top of the tank 12, and may be actuated manually. The spoon is prevented from turning around the stand pipe by a guide 16, that is secured to the walls of the tank and engages in a notch in

the peripheral upper edge of the cup 14. Through the top of the tank is a glazed inspection window 17, and the tank is provided with a side inlet 18, closed with a cap 18^a; the top of the side inlet 18 which is a filling inlet, rises to an elevation less than that of the stand pipe 13, and prevents the tank from being filled to a depth to overflow the stand pipe.

When it is desired to initially heat the burner, a cup full of alcohol is deposited in the stand pipe 13 by simply lifting the cup until its upper edge rises above the upper edge of the stand pipe, or until its upper edge strikes the top of the tank, when the alcohol will run from the cup into the stand pipe 13, and some part of it will take its place in the chamber 10 in the front part of the valve casing 6, in position to be primarily discharged and burned from the orifice 1 closed by the needle valve. This lighter fuel will continue to burn until the charge has been consumed, after which the oil previously held back by the lighter fuel, and because of the very small orifice around the seat 7, will enter the chamber 10, and be discharged through the same orifice 1, into the burner, and continue to burn so long as that orifice remains open and the fuel supply continues. The tank 12 should be located at such a height as to cause the small amount of fuel in the small conduit pipe 20 to balance hydrostatically the fuel in the tank 3.

It should, of course, be understood that the stand pipe is not necessarily located at the central portion of the tank 12, the essential feature of this part being the relative position of the top of the pipe with respect to the level of the oil inlet.

What I claim is:—

1. In combination, a pair of tanks, one for the storage of a heavy hydrocarbon and the other for the storage of a lighter hydrocarbon, a stand pipe rising within the tank for the lighter hydrocarbon, means within said last named tank for raising and discharging into the open top of said stand pipe a predetermined quantity of hydrocarbon, a discharge pipe leading from connection with the bottom of said stand pipe, a second discharge pipe leading from the interior of the tank for the heavier hydrocarbon, a valve casing into which each of said discharge pipes leads, the point of entrance of the discharge pipe for the lighter

hydrocarbon being nearer the discharge end of the casing than that of the second discharge pipe, and a valve adapted to primarily close both the outlet orifice of the casing and that portion of the chamber into which the lighter hydrocarbon flows from the access of the heavier hydrocarbon, the presence therewithin of the desired quantity of the lighter hydrocarbon serving, when the valve is moved from its seat, to prevent the escape of the heavier hydrocarbon from the casing until after the supply of the lighter hydrocarbon has entirely flowed there-through, substantially as described.

2. In combination, a pair of tanks, one for the storage of a relatively heavy hydrocarbon and the other for the storage of a relatively light hydrocarbon, a discharge pipe leading from each, a stand pipe rising within the tank for the lighter hydrocarbon from connection with the entering end of the discharge pipe therefrom, whereby the flow from the tank is made possible

only through the same, means for introducing into the stand pipe and into this discharge pipe a specific quantity of the lighter hydrocarbon, a valve casing into which both of the discharge pipes lead, the point of entry of the discharge pipe from the tank for the lighter hydrocarbon being nearer the outlet orifice of the valve casing than that of the other discharge pipe, and a valve member engaging therein adapted to close the outlet orifice of the casing and to divide the casing into two chambers, at a point intermediate the points of entry of the discharge pipes, while it is in closing position with respect to the outlet orifice of the casing, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

LOUIS A. SHERMAN.

Witnesses:

C. C. JENNINGS,
WILLIAM M. SWAN.