J. L. HENRY.

HYDROCARBON BURNER.

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952,194.

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Fig. 1.

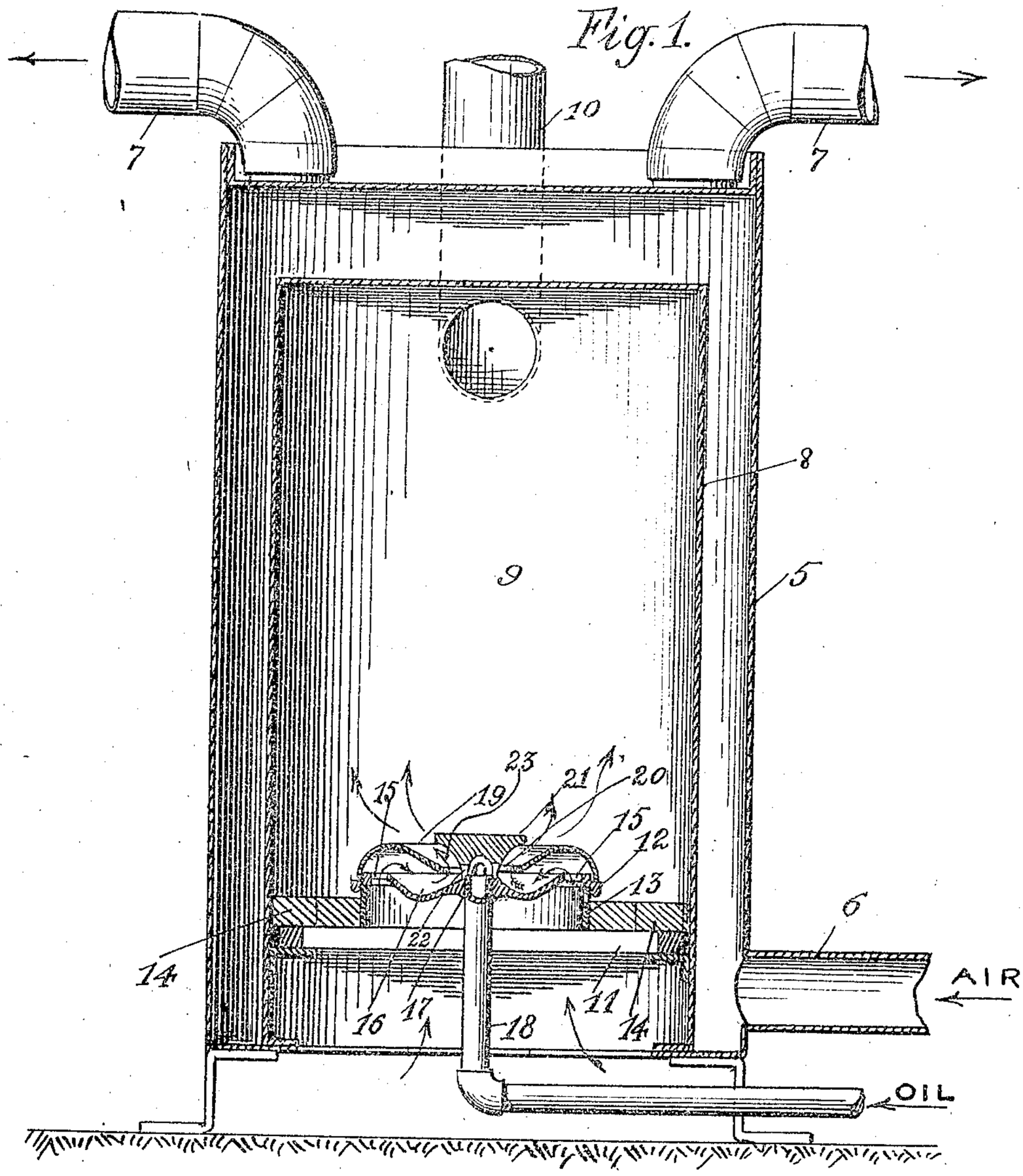
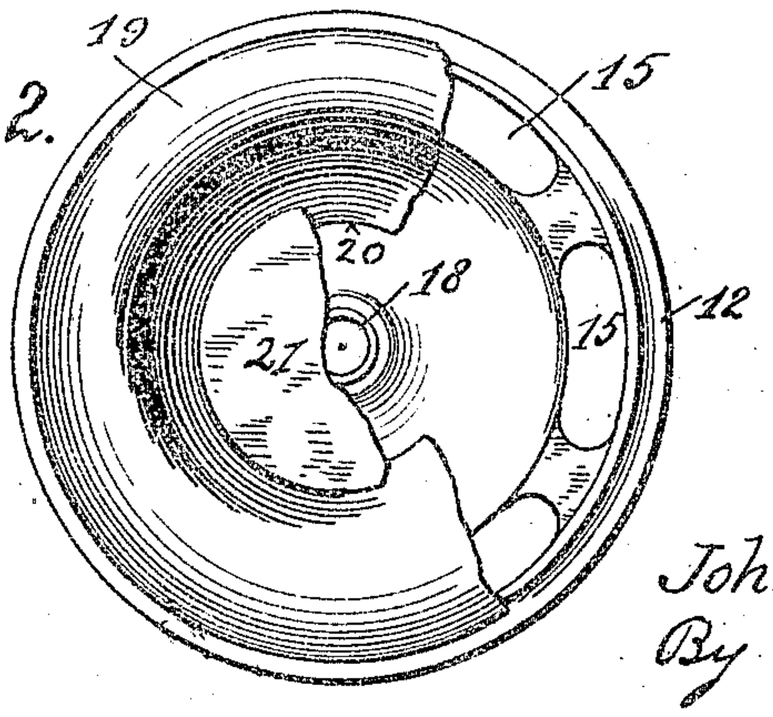


Fig. 2.



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UNITED STATES PATENT OFFICE.

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HYDROCARBON-BURNER

952,194. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed April 3, 1909. Serial No. 487,754.

To all whom it may concern:

Be it known that I, JOHN L. HENRY, a citizen of the United States, residing in the city of Los Angeles, county of Los Angeles, and State of California, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

My invention relates to a hydro-carbon burner primarily designed for domestic uses, such as heating furnaces, kitchen ranges and other like structures, and the object thereof is to produce a simple and efficient burner that will burn the lighter hydro-carbon liquid fuels under the ordinary draft conditions of the flues and without the use of expansible fluid pressure such as steam or compressed air. I accomplish this object by means of the burner described herein and illustrated in the accompanying drawings in which:

Figure 1 is a longitudinal central vertical section of a heating furnace equipped with my improved burner. Fig. 2 is a plan of the burner detached, with parts broken away for clearness of illustration.

In the drawings 5 is the outside casing of a hot air furnace which is supplied with a cold air pipe 6 entering the bottom thereof. 7 are the service pipes opening from the top of the outer casing and leading the hot air to the place of use.

8 is the casing of the combustion chamber 9, and 10 is the draft pipe opening from the combustion chamber and leading to the chimney.

11 are the ordinary grate bars in the bottom of the combustion chamber.

My burner is preferably placed upon the grate bars of the furnace or kitchen range as illustrated in Fig. 1.

The burner consists of the bed plate 12 which for a circular furnace would preferably be circular in shape as shown in the drawings. I prefer to have the bed plate supported by an annular ring 13 as the space around the burner must be closed by brick work 14 so as to cause all the air entering the combustion chamber to pass through the burner, and by using the supporting ring the base plate is lifted above the brick work, but if desired the base plate could be placed directly upon the grate bars and the supporting ring omitted. Adjacent to the outer edge thereof the base plate is provided with draft openings or ports 15. Adjacent to and within the line of draft ports is an annular trough 16, the sides of which slope upwardly and outwardly to the draft ports and upwardly and inwardly to near the center of the bed plate. In the center of the bed plate is an aperture 17 which is internally threaded for the reception of the upper end of the liquid fuel supply pipe 18 which is preferably screwed into said opening. If desired, however, the threads may be omitted and the parts slightly tapered to make a tight fit. Upon the top of the base plate and surrounding and inclosing the draft ports is the hood or draft directing plate 19, which curves upwardly and inwardly and then downwardly and inwardly and terminating with a draft opening 20 in the center thereof. A spreader plate 21 having legs 22 rests upon the central portion of the base plate. The legs of this spreader plate straddle the top of the supply pipe which projects slightly above the top of the bed plate so as to keep the spreader plate centrally alined upon the bed plate. This spreader plate is circular and the diameter of the top thereof is some greater than the diameter of the draft opening through the hood. The sides of the spreader curve inwardly and downwardly so as to leave a draft channel 23 all around the spreader plate. By making the diameter of the top of the spreader greater or less a broader or less broad flame is produced in the furnace. The height at which the spreader stands where it projects over the hood is controlled somewhat by the draft of the chimney. For an ordinary furnace burner I have found the following dimensions produce satisfactory results. A bed plate twelve inches in diameter, with draft openings about seven eighths of an inch in width. The trough in the bed plate is about one inch deep. The hood is about eleven and one half inches in diameter and the aperture through the hood about four and one half inches in diameter. The top of the spreader is about six inches in diameter and about two inches high. The draft channel between the spreader and hood is about one inch, the supporting ring for the bed plate is about eleven inches in diameter and about three inches in height.

It will be observed that the hood curves upwardly and inwardly and then down-

wardly and inwardly, so that the inner portion of the hood is substantially parallel with the walls of the outer portion of the trough of the bed plate, thereby permitting the air to pass upwardly and then downwardly between the hood and the bed plate and then out between the hood and the spreader. The spreader and hood are held in place by their own weight. The oil supply pipe is furnished by suitable regulating means, not shown, to control the flow of the fuel. In starting a small amount of oil would be permitted to flow into the trough in the bed plate. This could be ignited by a torch or lighted in any other suitable manner. The burning of the oil soon heats the hood and the spreader and thereafter a small continuous flow of oil is permitted from the supply pipe. This vaporizes upon the bed plate and the air coming through the draft openings unites therewith and forms a combustible gas which burns in a flame around the spreader, keeping the same red hot. Should any residuum be deposited on the bed plate the spreader and hood can easily be removed and such residuum taken off the bed plate in any suitable manner. As the flame burns over the top of the hood the same becomes very hot and the air passing through the draft openings of the bed plate strikes this hot surface and is deflected downwardly into the ascending vapor as it rises off the bed plate, thereby causing an intimate mixture of the air and oil vapor before it passes out from between the spreader and hood, thus making a perfect gas which burns readily and without soot.

By this construction a simple and efficient burner is provided of detachable parts which can be easily replaced when burned out and which can be quickly and easily cleaned and kept in order.

Having described my invention what I claim is:—

1. A hydro-carbon burner comprising a bed plate having draft openings near the outer edge thereof and a trough between said openings; a hood adapted to rest upon said bed plate and having a draft opening in the center thereof, said hood curving upwardly and inwardly and then downwardly and inwardly; a liquid fuel supply pipe projecting through the center of said bed plate; and a spreader having legs adapted to rest upon the bed plate, said spreader curving upwardly and outwardly and projecting above the inner part of the hood.

2. A hydro-carbon burner comprising a bed plate and a detachable hood, the bed plate having air ports in the outer portion thereof and the hood having an aperture in the center portion thereof and being so arranged that the air passing between the two shall be deflected downwardly, said hood curving upwardly and inwardly and then downwardly and inwardly; and a spreader adapted to deflect the air upwardly and outwardly.

3. A hydro-carbon burner comprising a bed plate having draft openings in the outer edges thereof and a liquid feed supply pipe opening in the center thereof and a trough surrounding said central opening, the walls of which slope from the bottom of the trough in both directions; a hood adapted to rest upon said bed plate having a draft opening in the center thereof, said hood having its walls sloping upwardly and inwardly and then inwardly and downwardly; a spreader having legs adapted to rest upon the central portion of the bed plate and having the body thereof sloping upwardly and outwardly and projecting above the inner part of the hood; and a supporting ring below said bed plate.

In witness that I claim the foregoing I have hereunto subscribed my name this 29th day of March, 1909.

JOHN L. HENRY.

Witnesses:
G. E. HARPHAM,
S. B. AUSTIN.