L. A. SHERMAN.

HYDROCARBON BURNER.

APPLICATION FILED JAN. 11, 1909.

953,441.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

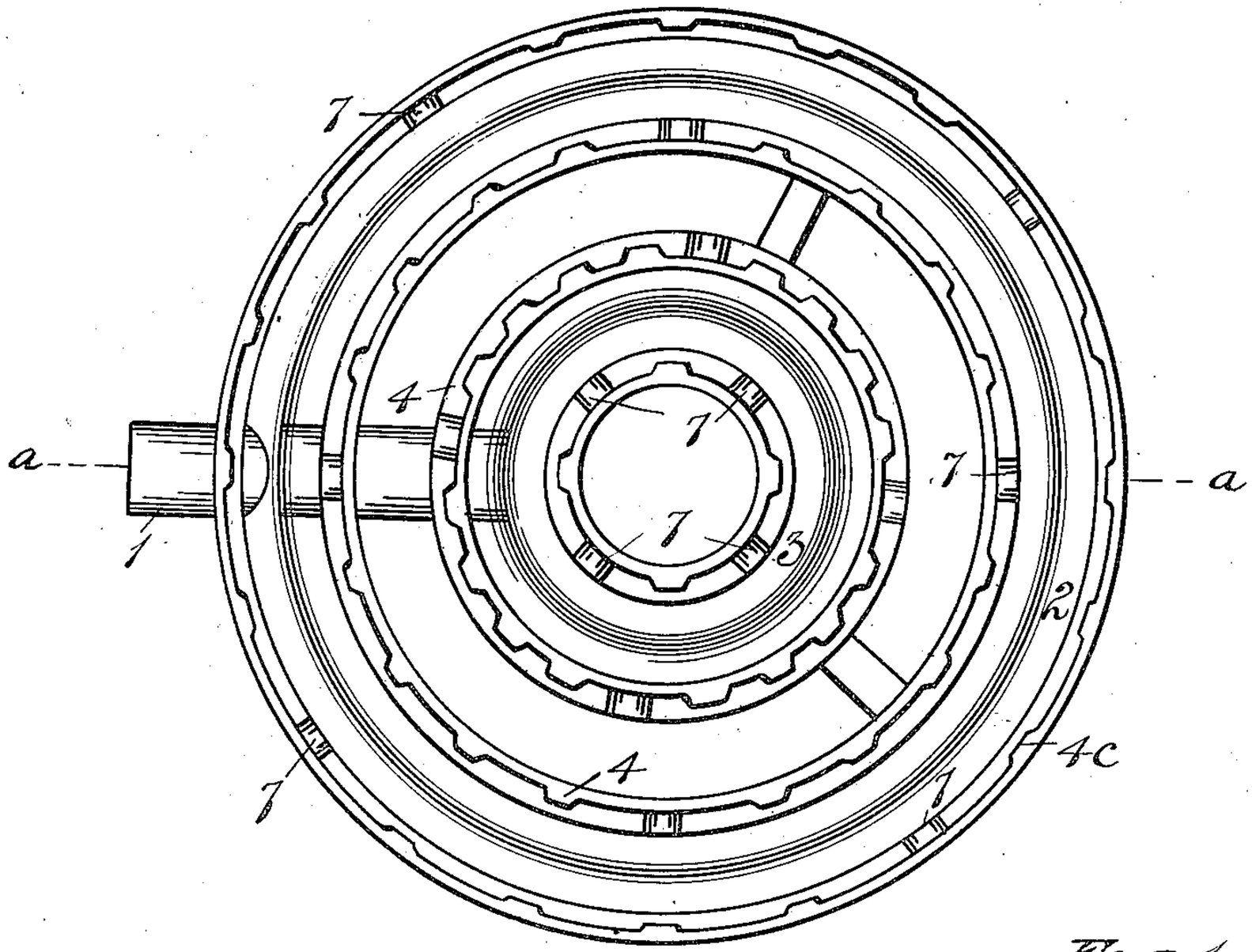

Fig. 1.

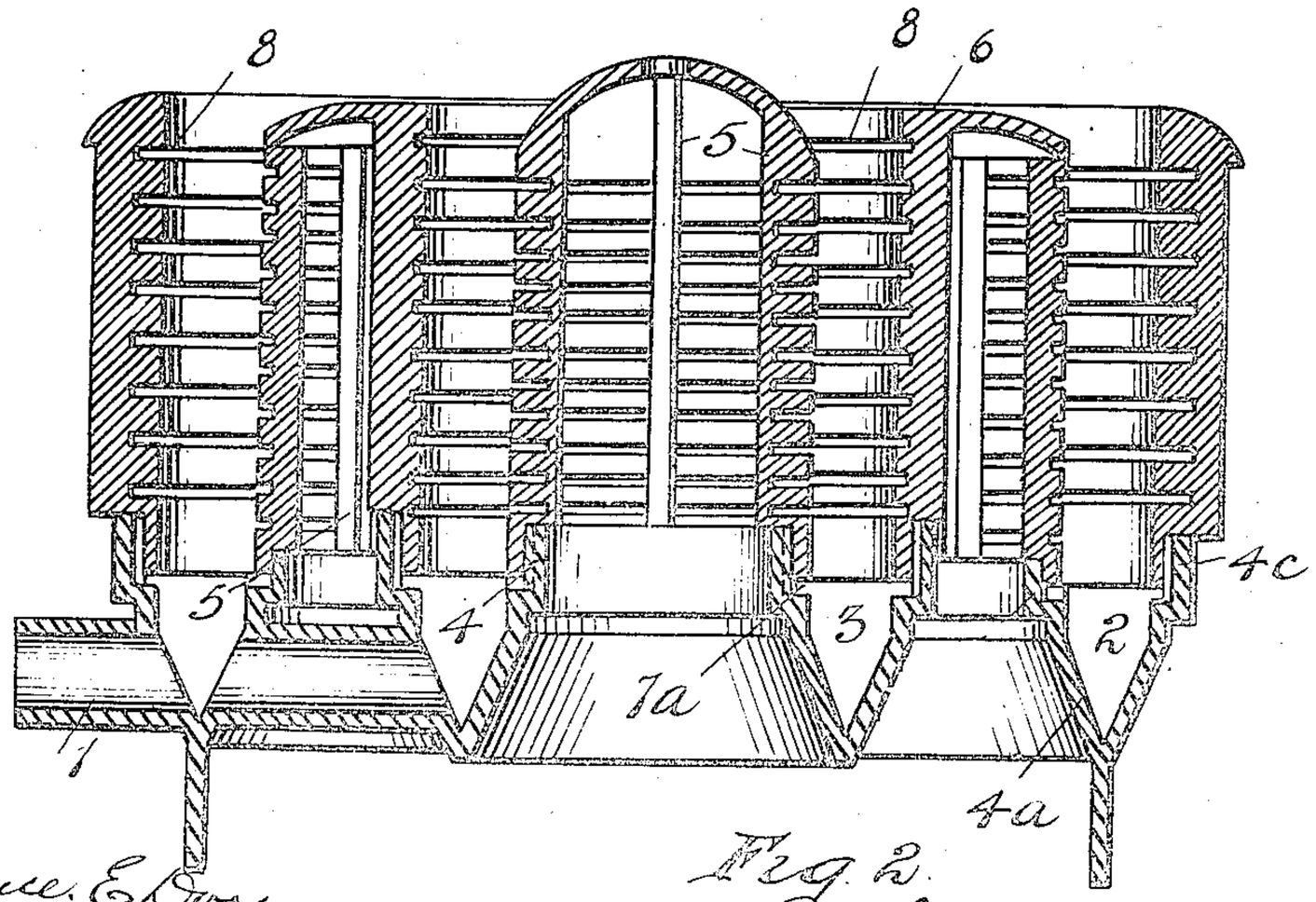

Fig. 2.

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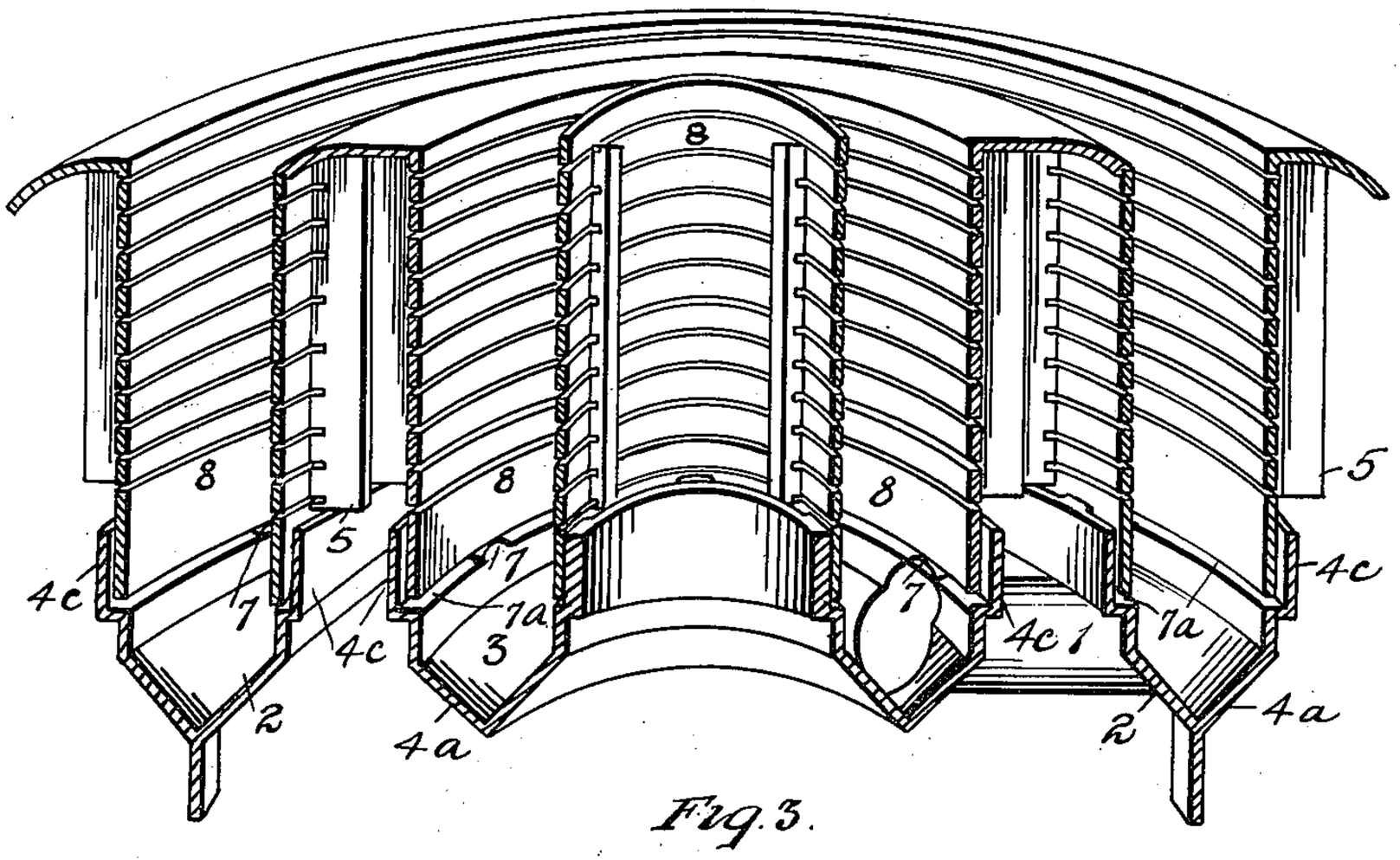

Fig. 3.

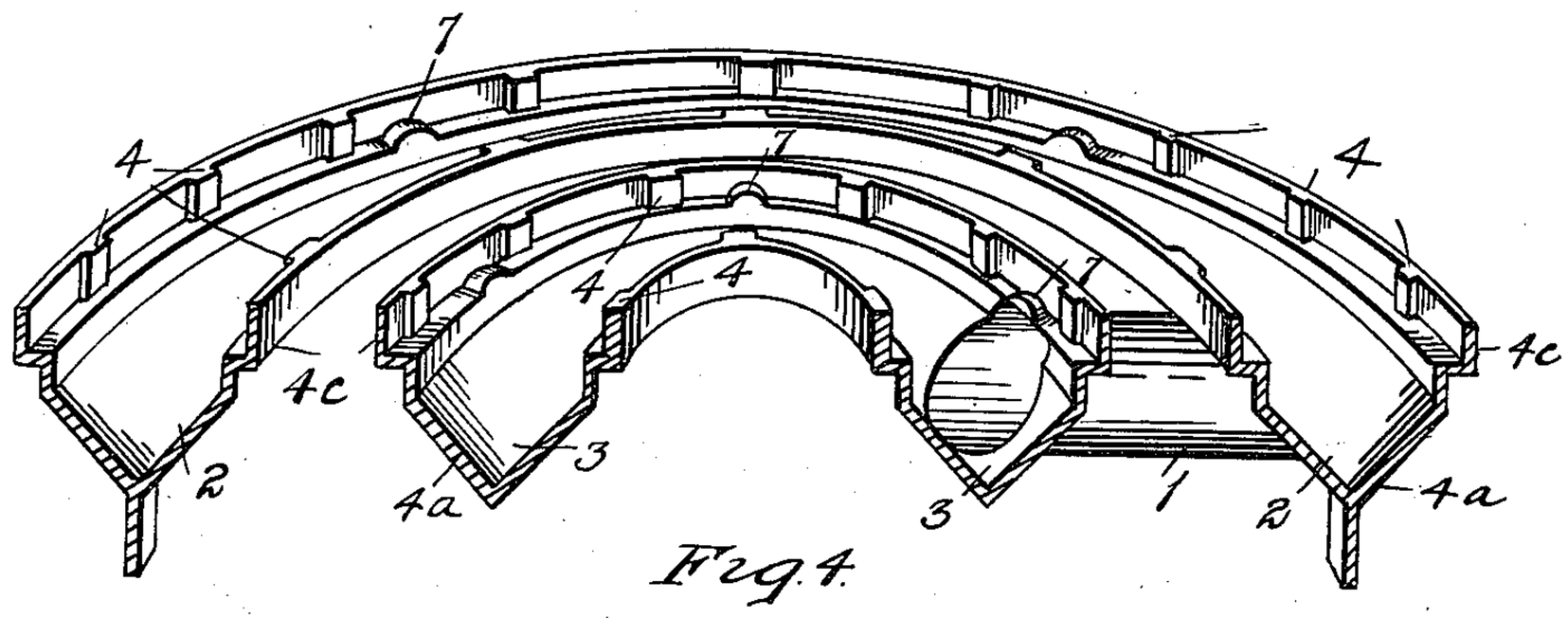

Fig. 4.

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UNITED STATES PATENT OFFICE.

LOUIS A. SHERMAN, OF DETROIT, MICHIGAN.

HYDROCARBON-BURNER.

953,441. Specification of Letters Patent. **Patented Mar. 29, 1910.**

Application filed January 11, 1909. Serial No. 471,599.

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 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, and has for its object an improved device of this type adapted to coöperate with the walls of the foraminous superposed vaporizing member in securing more perfect combustion of the fluid introduced into the trough.

In the drawings: Figure 1, is a plan view of the trough portion of the device. Fig. 2, is a sectional elevation (partly in section) of the burner trough along the line *a*—*a* of Fig. 1 and of the corresponding portion of the superposed vaporizing member. Fig. 3 is a sectional view of the severed half of the vaporizing member and trough, showing the apertured burner member resting on the shoulders of the trough. Fig. 4, is a sectional view of a half of the burner trough.

Through a feed pipe 1 there is introduced from a suitable source of supply a supply of hydrocarbon into the concentrically arranged troughs 2 and 3; these are, at their bottom portion, V shaped in cross section; from the top of these oblique portions 4^a of the walls of the trough rise short vertical portions, which in turn flange outwardly in a horizontal direction (particularly Figs. 3 and 4) and finally rise vertically once more with these uppermost portions 4^c of the wall formed integral with these last-named horizontal portions. From the inner faces of these vertical portions 4^c of the wall project integral shoulders 4, which extend outwardly over the horizontal portions of the trough wall toward those on the opposite inner face. Similarly, at intervals about the top surface of the horizontal portions of the trough wall, rise integral bottom knobs or shoulders 7, which, like the shoulders 4, are relatively so far apart as to be negligible as regards obstruction, with their mass, of the flow of a current of air past them. Upon these knobs 7 rests the bottom edge of the sawed or ribbed vaporizing member 6 whose wall as thus constituted is held together, with the ribs 8 suitably spaced from one another, by the vertically extending bars or rods 5 which are preferably either attached to, or made integral with, the ribs. These bars extend either outward or inward, as the case may be, sufficiently far to reach over the top edge of the adjacent wall portion 4^c of the hydrocarbon trough.

As shown in both Figs. 2 and 3 the various series of concentrically arranged ribbed vaporizing members 6 are of such diameter, that, as arranged with respect to one another and to the supporting trough, their lower ends which extend somewhat below the lower edge of the bars 5, may engage within the opposing vertical upper portions 4^c of the trough walls. Their diameter is made to be such with respect to the diameter of the adjacent wall of the trough, that, if accurately centered, there will be a space or air slit all about the lower end of each between it and the adjacent vertical wall portion 4^c which, however, would be very unlikely to be maintained were it not for the presence of the laterally projecting shoulders 4, which, without appreciably diminishing the possible flow of air through the slit or channel thus left between the parts, serve to evenly and uniformly space the lower edges of these ribbed vaporizing members 6 from the plane face of the wall, thus leaving this air channel 7^a which is thus maintained between the wall 4^c and the lower edge of the ribbed vaporizing member unimpeded.

When the burner is lighted in the first instance, it is designed that atmospheric air be drawn in through this slit or channel 7^a, which, cross sectionally has both a vertical and a horizontal branch, throughout the periphery of the trough, by the rise of the air initially just above the open top of the trough due to its combustive heating. At this stage of use the device is of course, comparatively cool, but as the heat of the metal parts increases the need of this supply of air diminishes, and the intensity of the heat about the channel 7^a serves to diminish to almost nothing the quantity of entering air; in its place a stream or sheet of heated air rises from the vicinity of the top of the vertical wall 4^c and of the channel 7^a, on the outside of the ribbed vaporizing wall 6. When the device is fully heated vaporization takes place, without the aid of entering air about the top of the trough,

almost as fast as the hydrocarbon enters the trough through the pipe 1, aided, of course, by the constant entrance of air through the slitted or sawed apertures in the vaporizing member 6. When the device has cooled from cessation of the combustion it is again ready for the initial aiding flow of air, which it is the office of the channel 7ª to carry.

While I have illustrated and described a foraminous vaporizing member 6 whose walls are ribbed, I have found that any one of several types may be used so long as they are of the proper size to coöperate with the spacing shoulder parts 4 and 7. If the vertical rods 5 are used for the purpose of resting upon the upper edge of the vertical wall 4ᶜ of the trough, it is immaterial just what spacing distance be observed between them, though of course, at least three must be used in order to have enough bearing points to properly support the vaporizing member. If the perforated wall were used the inrush of air through the top portions of the foraminous member would be in the form of streams rather than sheets of air.

What I claim is:—

1. In a hydrocarbon burner, in combination with an oil-containing trough having a V-shaped lower portion and vertically arranged side walls integral therewith, the upper portion of said walls being provided with spaced shoulder portions, extending both from horizontal and from vertical faces of the wall, a vaporizing chamber member provided with laterally projecting lug members adapted to rest on the top of said integral wall portions and to thereby support said vaporizing chamber member in desired relation to said trough with the lower portion of its walls in contact with said projecting shoulder portions, whereby there is maintained between the top of said integral side wall portions of the trough and the bottom of the vaporizing chamber member a channel for the initial flow of air into the trough portion, substantially as described.

2. In a hydrocarbon burner, in combination with an annular burner trough V-shaped in cross-section at its bottom portion, and having the upper portions of its side walls substantially perpendicular, shoulders on said upper portions of the side walls projecting in a plurality of directions therefrom, and an annular vaporizing member whose apertured side walls rest on the top of said burner trough, being spaced from undesirably close contact therewith by said shoulders, whereby there is maintained between said member and trough a channel for the admission of air into the vicinity of the burner trough, substantially as described.

3. A hydrocarbon burner member, having a plurality of concentrically arranged fuel troughs, the upper portion of the side walls of each trough having correlated horizontal and vertical portions from which shoulder portions project, and by engagement against which said shoulder portions the lower portions of the walls of a vaporizing member superposed thereupon are spaced from these faces of the wall, thereby maintaining an annular channel therebetween through which a protecting sheet of air may enter above each fuel trough, substantially as described.

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

LOUIS A. SHERMAN.

Witnesses:

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WILLIAM M. SWAN.