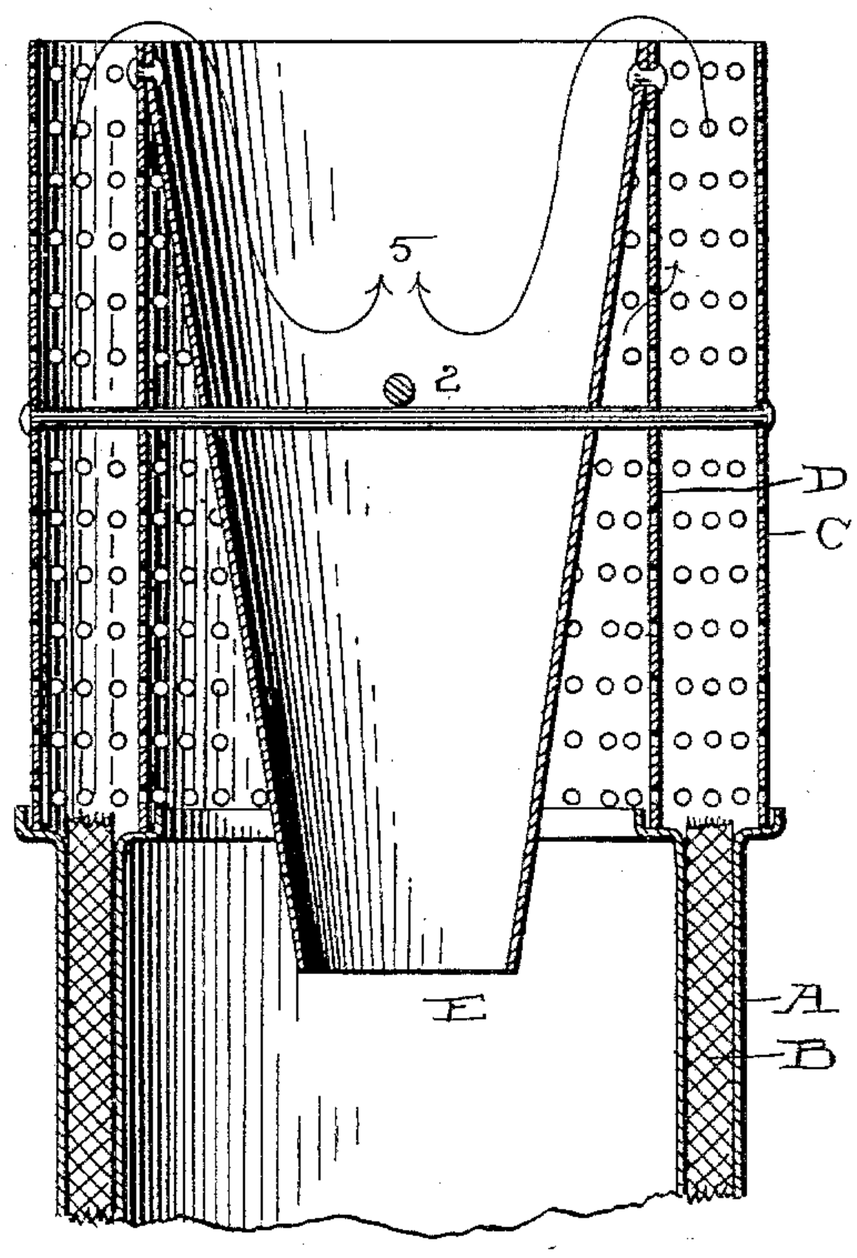
(No Model.)

H. L. MARBACH.

HYDROCARBON BURNER.

No. 566,598. Patented Aug. 25, 1896.



ATTEST.

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UNITED STATES PATENT OFFICE.

HERMAN L. MARBACH, OF LORAIN, OHIO, ASSIGNOR OF ONE-HALF TO ORVILLE P. MOON, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 566,598, dated August 25, 1896.

Application filed June 22, 1896. Serial No. 596,374. (No model.)

To all whom it may concern:

Be it known that I, HERMAN L. MARBACH, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to hydrocarbon-burners; and the invention consists in a hydrocarbon-burner adapted, preferably, to use a wick, although it may be used, also, with other styles of burners and without a wick, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawing I show a vertical central sectional elevation of a burner embodying my invention, and in which—

A represents any suitable wick-supporting tubing, and B the wick therein, or the equivalent of these parts.

C and D are perforated combustion-tubes, and E is an interior funnel-shaped combustion-tube and deflector, and said parts are held rigidly together by the cross tie-rods 2, or equivalent means, which lock said parts together to be handled as one part or piece either to remove or to raise and lower in lighting. Relatively the tubes C and D may be of the same length or of different lengths, and in this instance they are shown as of equal length, and the inner combined combustion-tube and deflector is shown here as also riveted about its top to the inner tube. The said combined combustion and deflector tube E is shown in the drawing as made in a single imperforate piece of light sheet metal and as terminating at the top of inner tube D, but it might be extended above the same more or less and made to flare outwardly somewhat over the primary combustion-chamber between tubes C and D, if this were desired. The lower end of this tube is relatively small, thus allowing only a limited quantity of air to enter while the air which approaches about the outside of the deflector from the bottom to the top of the inner tube is gradually crowded into the combustion-chamber between the side walls C and D; but the service of tube E as an air-deflector is only a part of its function, and its more important service is that of a combustion space or chamber. I have found that by using a tube substantially as here shown, with a relatively small inlet at its bottom and a considerable open chamber above said inlet and a full flaring outlet at its top, there is set up a flame action having the course substantially as indicated by arrows 5, or something like that. It appears that a tendency to vacuum is set up in the top portion of tube E, through the suctions that are going on which naturally inclines the flame out of the primary combustion-chamber to turn into said chamber, and after the flame makes this inward dip all around it diffuses itself under the supply of fresh oxygen from below in perfect combustion about the top of the tubes. In practice I find that this not only occurs, but the inner tube becomes practically incandescent down to the neighborhood of rods 2. In this operation whatever vapors are not consumed in the primary chamber will be certain to be consumed as they are evolved in this secondary chamber with the suppy of fresh air, and thus absolutely perfect combustion is accomplished and all odors are avoided. Furthermore, the air behind burner and deflector tube E is heated to a high degree before entering the primary combustion-chamber, which is of material advantage.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-burner, a pair of perforated tubes forming a combustion-chamber between them, and a combined combustion-tube and deflector inside the inner tube and filling the top end thereof and extending thence downward in converging lines, substantially as described.

2. The burner described comprising a pair of perforated combustion-tubes and an imperforate tube fixed at its top to the top of the inner perforated tube and extending thence downward and having a reduced lower end, substantially as described.

3. The perforated combustion-tubes having a primary combustion-chamber between them and a substantially funnel-shaped in-

ner combined combustion and deflector tube set centrally in the inner tube and fixed rigidly thereto, substantially as described.

4. An oil-burner having a walled combustion-chamber formed of perforated tubes and an imperforate combustion-tube smallest at its bottom and secured to inner combustion-tube about its top and open at both ends, and rods connecting all said tubes, substantially as described.

5. The perforated primary combustion-tubes and an imperforate tube having substantially the same length as the said perforated tubes flaring from its open lower end to its open upper end which fills the inner perforated tube at its top, whereby an air-heating space is formed within the inner perforated tube, substantially as described.

Witness my hand to the foregoing specification this 8th day of June, 1896.

HERMAN L. MARBACH.

Witnesses:

GEO. E. HALL,

THOS. RATH.