

(No Model.)

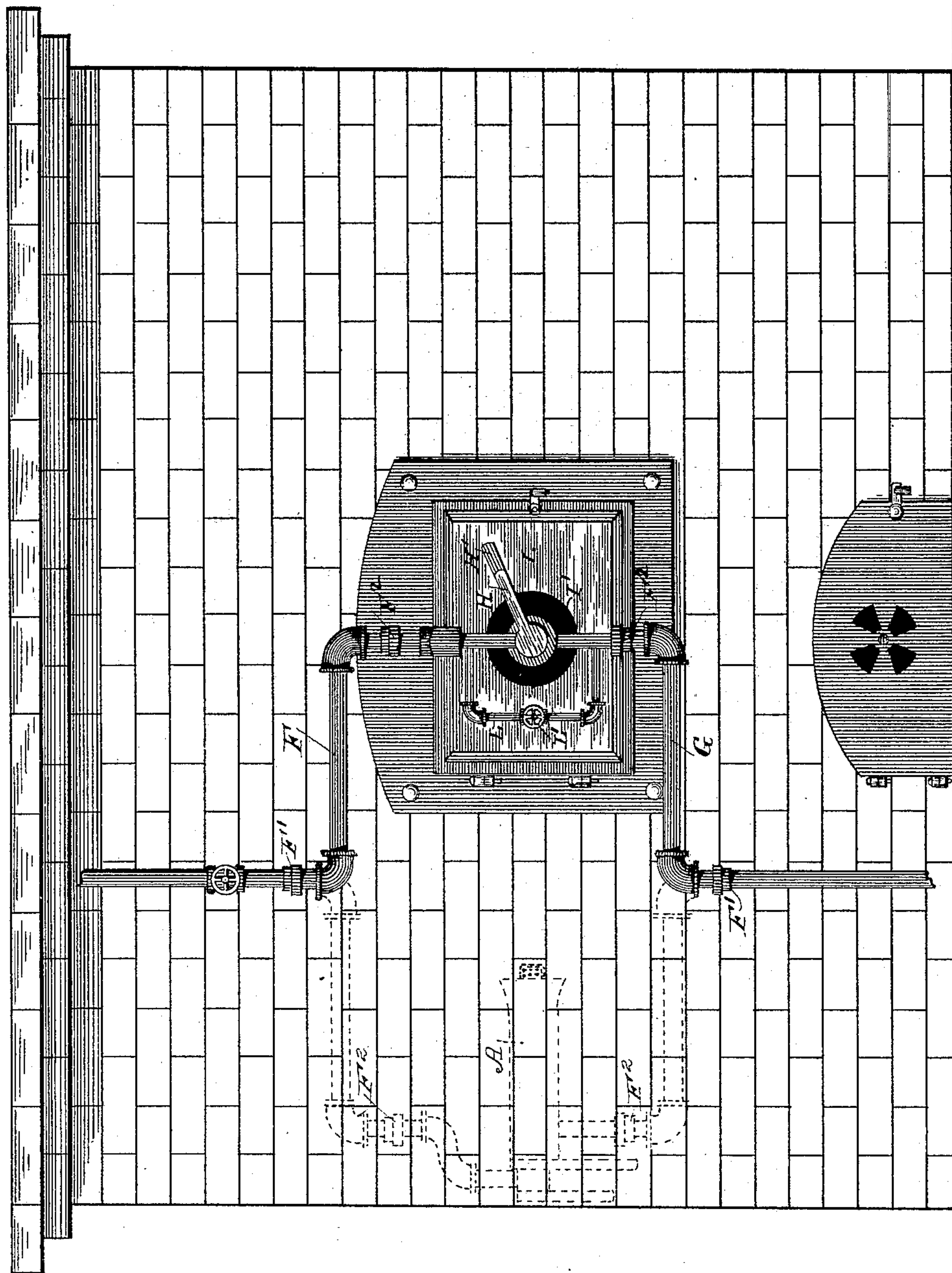
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C. COLE & J. S. PIHLSTRÖM.

HYDROCARBON BURNER.

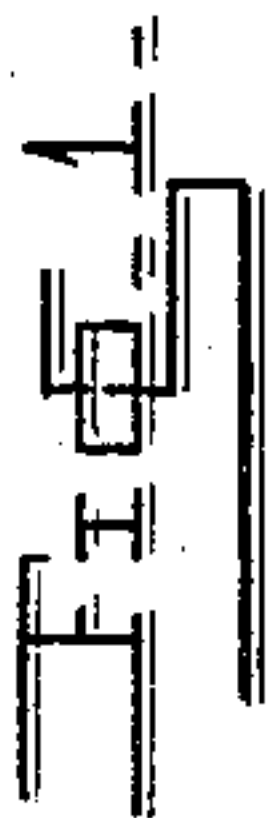
No. 387,053.

Patented July 31, 1888.



Witnesses,

Joseph H. Blackwood
A. B. Blackwood.



Inventors,

Charles Cole
John S. Pihlström.
By Wm. H. Doak Little Attorney.

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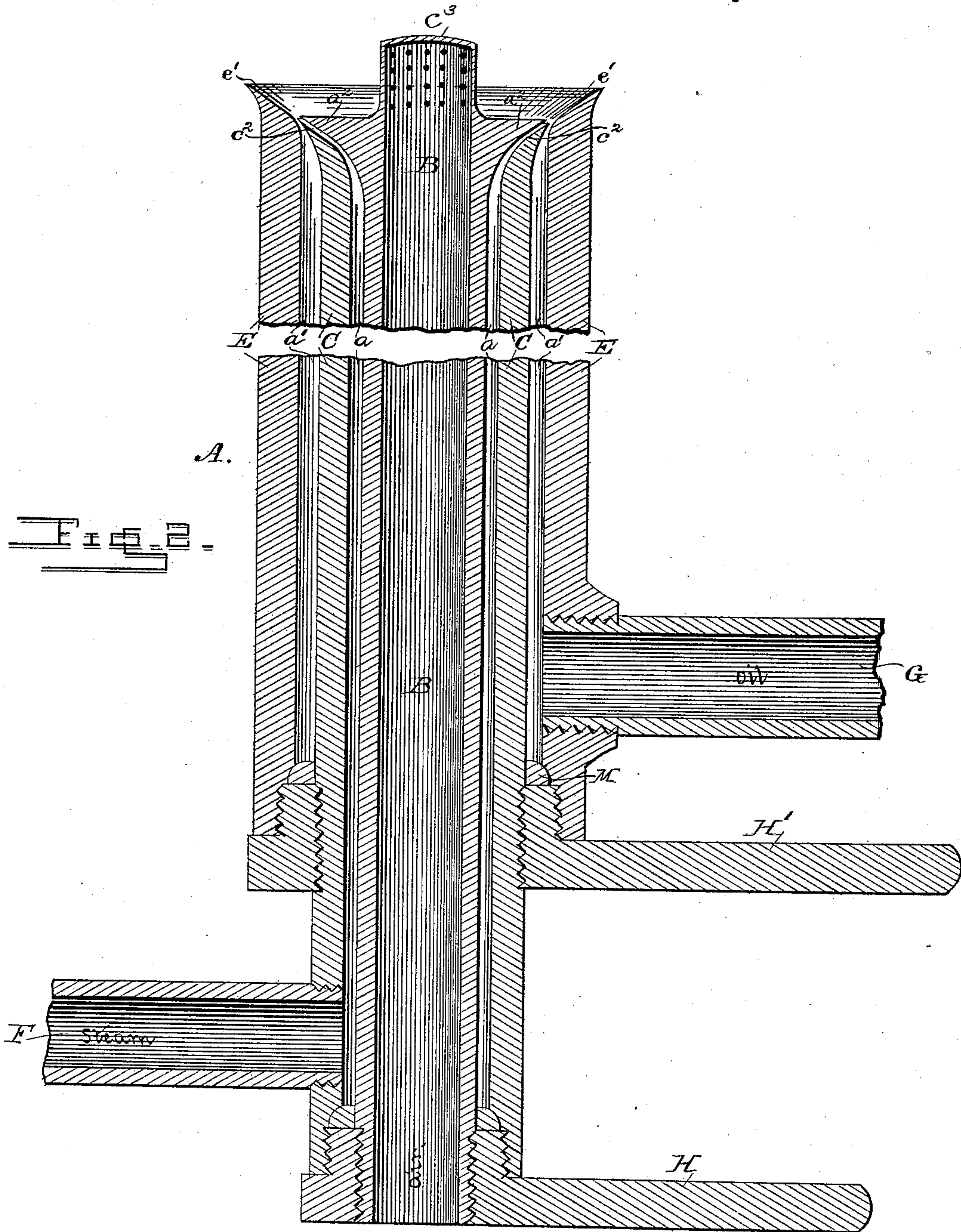
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UNITED STATES PATENT OFFICE.

CHARLES COLE AND JOHN S. PIHLSTRÖM, OF CHICAGO, ILLINOIS.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 387,053, dated July 31, 1888.

Application filed November 3, 1887. Serial No. 254,195. (No model.)

To all whom it may concern:

Be it known that we, CHARLES COLE, a citizen of Canada, and JOHN S. PIHLSTRÖM, a citizen of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Burners; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to hydrocarbon burners; and it consists of improvements in an apparatus for burning petroleum and similar hydrocarbon-fuel, whereby a complete volatilization and combustion of the oil is obtained at that part of the apparatus where the oil is injected into the furnace and without exposing the oil to steam or other agent within the apparatus having a tendency to carbonize and clog it.

An essential to the thorough combustion of petroleum and kindred oils is the presence of a sufficient quantity of air at the point where the oil is converted into gas, and which we obtain by the means hereinafter described.

Our invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation showing the burner attached to the door of a furnace, and Fig. 2 is a central horizontal section of the burner.

In the drawings, A represents the burner. It is composed of a central air-tube, B, an intermediate tube, C, and an outer tube, E, which latter forms the casing of the burner. The space between the air-tube and the intermediate tube, C, constitutes a passage, *a*, for steam, and the space between the tube C and the outer tube, E, constitutes a passage, *a'*, for the oil.

F is a steam-supply pipe screwed into the intermediate tube, C, and G an oil-supply pipe screwed into the outer tube, E, for the supply of oil and steam from suitable sources.

H H' are handles or levers screwed, respectively, to the air-tube B and the intermediate tube, C, by which those tubes are adjusted vertically or horizontally for the purpose of regulating or stopping the supply of oil and

steam to the furnace. As shown in Fig. 2, the air-tube is provided with a deflecting flange, *a*², having an under beveled face corresponding in form to the outward inclined face, *c*², at end of intermediate tube, C. The end of the outer tube, E, is also provided with a similar outwardly-extending flange, *e'*. By this arrangement the oil and steam are deflected outwardly and spread into a thin circular flame around the flange *e'* of the outer tube. By the use of the handles the inclined ends of the respective tubes are independently adjusted nearer to each other or farther apart or closed to regulate the supply of oil and steam through the respective passages above mentioned. The air-tube has an extension, *c*³, closed at the end and perforated on its sides, whereby the air is made to strike the inside of the circle of oil and steam, at which point the oil is converted into gas. The end of the burner is thrust into the furnace through an opening, I', in the furnace-door I.

The steam and oil pipes are provided with hinge-couplings F', whereby the burner can be withdrawn from the opening I' in the furnace-door and turned away therefrom, as shown in dotted lines in Fig. 1, for the purpose of charging the furnace, or for other reasons, and reinserted without the necessity of disconnecting the burner from the supply sources of steam and oil. The opening I' through the furnace-door is also large enough to create a space around the burner for the admission of air thereto and outside of the flame to aid in complete combustion.

L is a branch steam-pipe provided with valve L' for the purpose of conveying steam to the oil-pipe for cleaning out the oil-chamber when deemed necessary. The steam and oil pipes are supplied with the necessary valves.

M is a ring-packing between the oil-chamber and the screw ends of the handles.

If desired, air may be forced through the central pipe, and also heated to any desired degree.

The principal and most important points of our invention are the means whereby the flame is spread in a circle, and fresh air, either hot or cold, and with or without pressure, is furnished to both sides of the flame.

The operation will be understood without further description.

What we claim is—

In a hydrocarbon-burner, the combination
5 of a central air-tube, an intermediate tube,
and an outer tube, the latter forming the cas-
ing of the burner, an oil supply pipe secured
to the said outer tube for the supply of oil,
and the steam-supply pipe secured to the in-
10 termediate tube, each of said tubes provided
at one end with an outwardly-extending flange,
whereby the flame is spread outwardly around
the outward flange, a steam-passage formed
between the said air-tube and intermediate

tube, an oil-passage between the outer tube 15
and intermediate tube, and handles secured,
respectively, to the air-tube and intermediate
tube, by which these tubes are adjusted for the
purpose of regulating or stopping the supply
of oil and steam, substantially as described. 20

In testimony whereof we affix our signatures
in presence of two witnesses.

CHARLES COLE.

JOHN S. PIHLSTRÖM.

Witnesses:

CARL G. BERGSTEDT,
DAVID BERGSTEDT.