

(No Model.)

2 Sheets—Sheet 1.

A. QUENTIN.

HEATING APPARATUS FOR USE WITH LIQUID HYDROCARBONS.

No. 583,940.

Patented June 8, 1897.

Fig. 2.

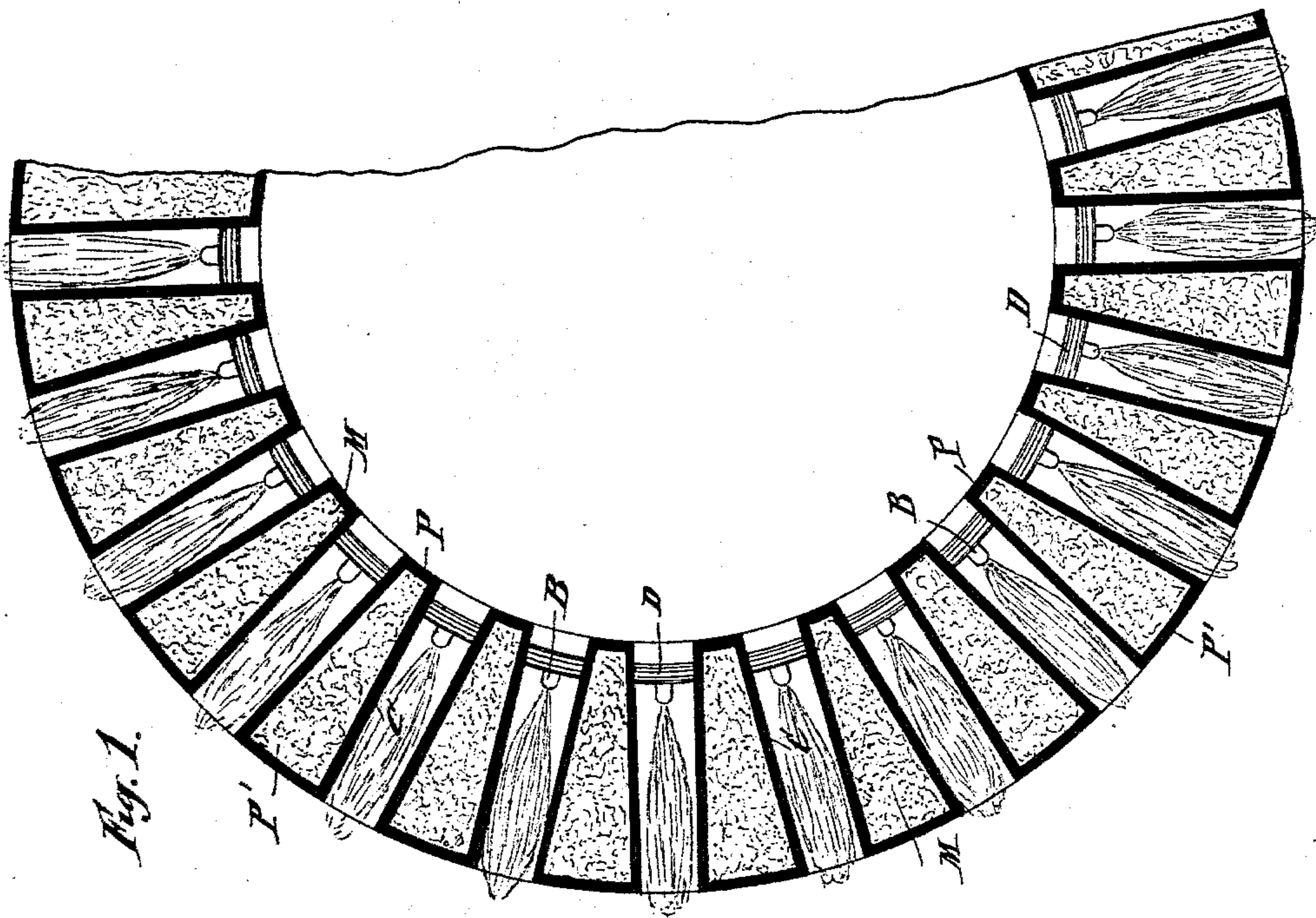
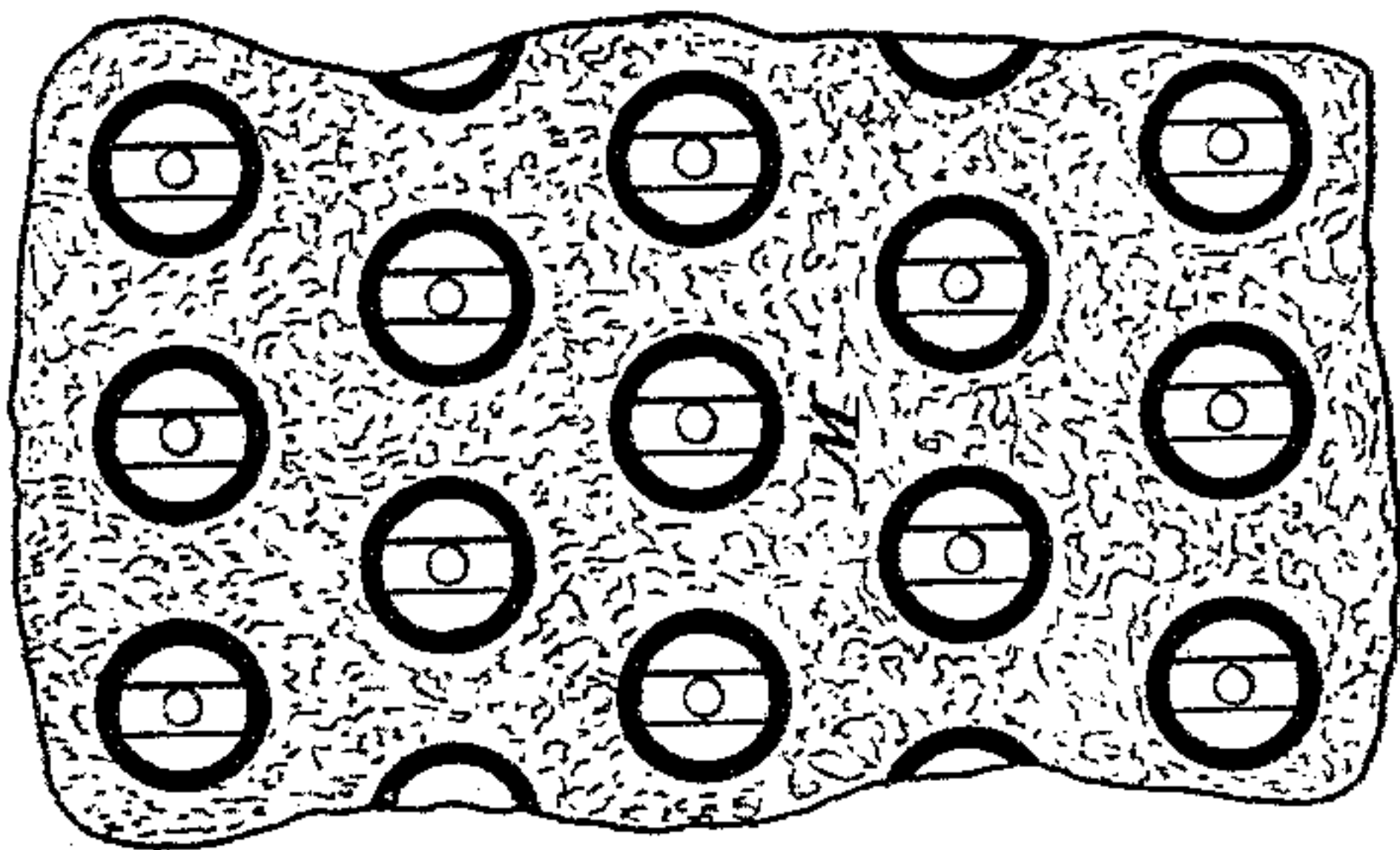


Fig. 1.

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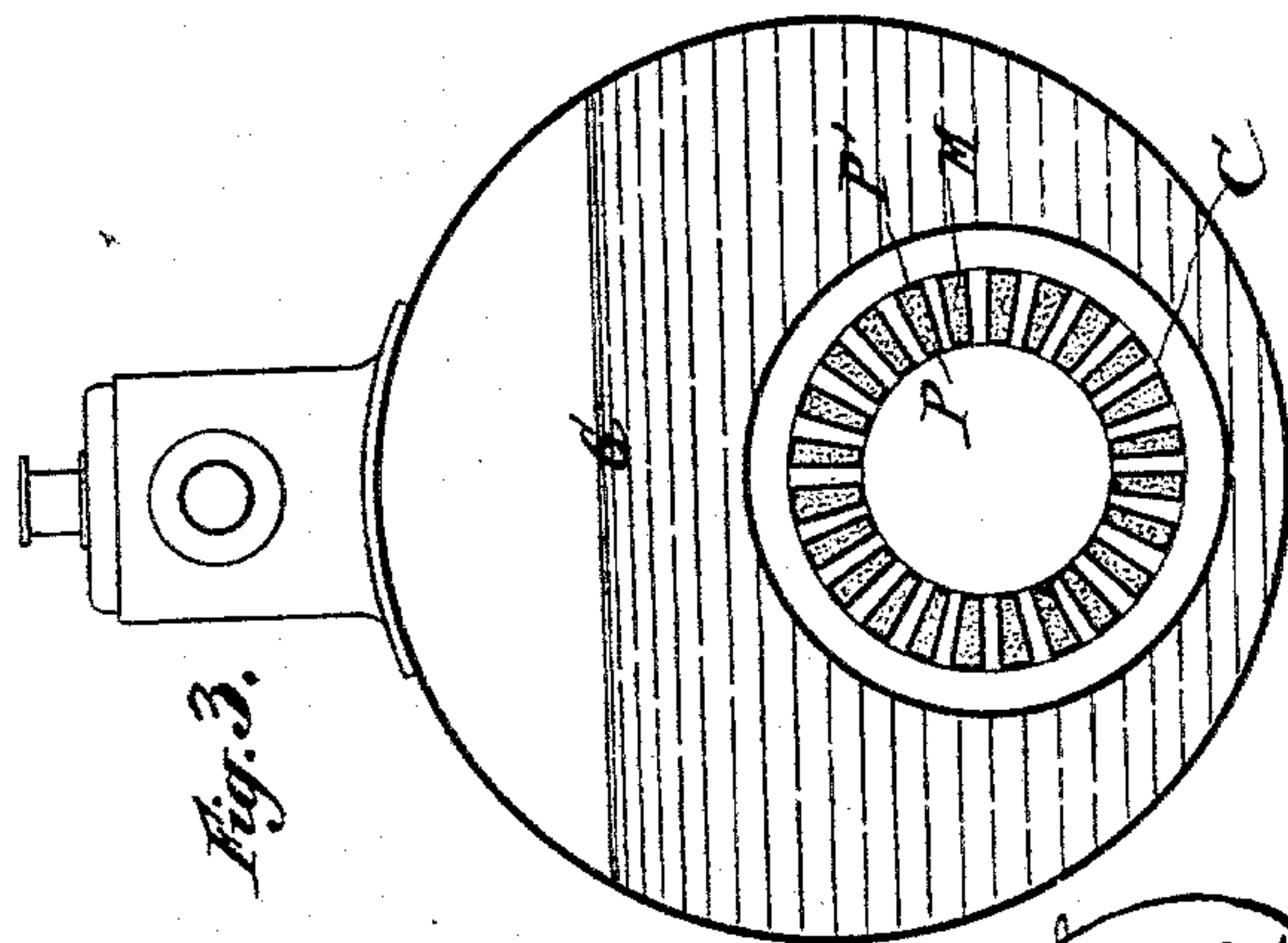
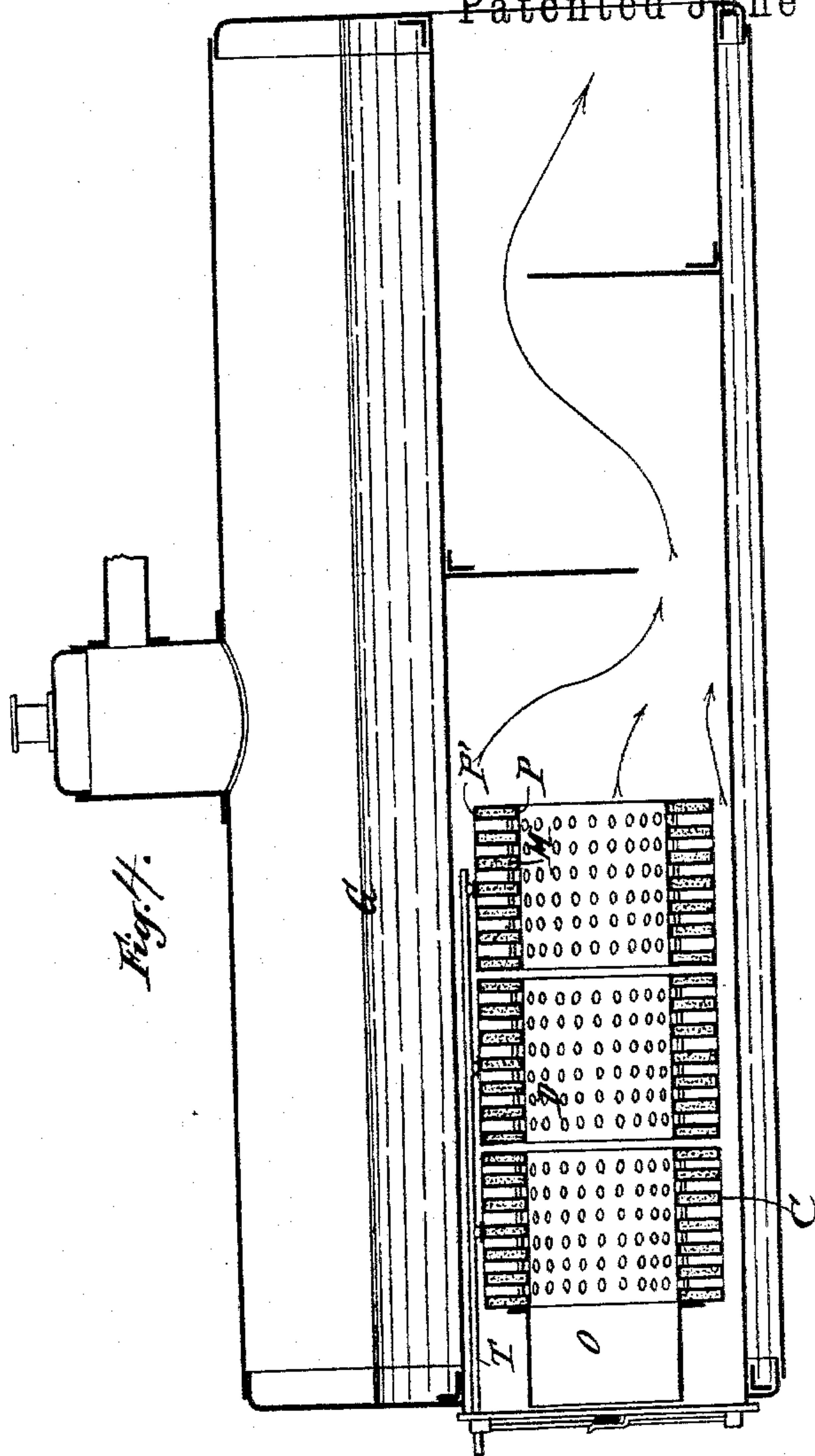
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UNITED STATES PATENT OFFICE.

AUGUSTE QUENTIN, OF BRUSSELS, BELGIUM.

HEATING APPARATUS FOR USE WITH LIQUID HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 583,940, dated June 8, 1897.

Application filed April 29, 1896. Serial No. 589,592. (No model.) Patented in Belgium October 18, 1895, No. 117,942; in Germany December 28, 1895, No. 27,011; in France February 27, 1896, No. 254,311; in Austria March 20, 1896, No. 46/4,474; in Hungary March 27, 1896, No. 7,032; in Italy March 28, 1896, No. 36; in Spain April 22, 1896, No. 18,946, and in Canada April 28, 1896, No. 52,444.

To all whom it may concern:

Be it known that I, AUGUSTE QUENTIN, a subject of the King of Belgium, residing at Brussels, in the Kingdom of Belgium, have
5 invented a new and useful Improvement in Heating Apparatuses for use with Liquid Hydrocarbons, (for which patents have been obtained in Belgium on the 18th day of Oc-
tober, 1895, No. 117,942; in Germany on the
10 28th day of December, 1895, No. 27,011; in France on the 27th day of February, 1896, No. 254,311; in Austria on the 20th day of March, 1896, No. 46/4,474; in Hungary on the 27th day of March, 1896, No. 7,032; in
15 Italy on the 28th day of March, 1896, No. 36; in Spain on the 22d day of April, 1896, No. 18,946, and in Canada on the 28th day of April, 1896, No. 52,444,) of which the follow-
ing is a full, clear, and exact description.

20 This invention relates to the construction of heating apparatuses for use more especially with the heavier liquid hydrocarbons—such as petroleum, schist, and like oils—in order to obtain a complete combustion of the said
25 heavier liquid hydrocarbons and prevent the condensation and deposit of tarry matters; and it consists, essentially, in arranging burners entirely within or between tubes of a
vaporizing-chamber which is packed with a
30 gasifying medium through the interstices in which the liquid hydrocarbon passes and is thereby finely divided and vaporized by the heat of the burner or burners, the vaporized hydrocarbon then passing to the burners,
35 where it is burned with the admixture of air, complete combustion and great heating effect being obtained.

Figure 1 is a transverse section of a large heating apparatus for use in a furnace pro-
40 vided with an interior heating-tube. Fig. 2 is a developed plan of part of a circular section taken around the heating apparatus illus-
trated in Fig. 1. Figs. 3 and 4 are transverse and longitudinal sections, respectively, show-
45 ing the application of a large heating apparatus to a steam-boiler.

The gasifying medium M consists, prefer-
ably, of finely-divided metallic clippings or
50 turnings tightly packed, so as to leave be-
tween them narrow interstices, through which

the hydrocarbon filters, covering the clippings in the form of a very fine layer and being vaporized in a very complete manner as soon as the medium is heated to the desired tem-
perature.

55 In order that the high temperature necessary to vaporize the heavy hydrocarbons may be obtained, the burner B is placed at the extremity of the cylinder C, so that the flame is almost entirely within the cylinder C and
60 vaporizing-chamber, the heat of the flame being thus caused to act upon the annular vaporizing-chamber for almost the whole of its height. By this arrangement complete and rapid vaporization is obtained, owing to
65 the hydrocarbon being spread out in thin layers, and it is rapidly consumed with the admixture of air drawn into the cylinder C through the openings formed in the end of the cylinder at each side of the transverse piece
70 D to produce a rich blue flame.

The gasifying medium M is kept directly between the various cylinders C in such a manner that the layers of clippings will re-
75 ceive the heat of the flames immediately adjacent and are thus exposed to greatly-increased heating effect.

As shown, for use in a furnace for a steam-boiler provided with an interior heating-tube the burners are arranged radially between
80 the concentric cylinders P P', the whole being fixed in the axis of the heating-tube, so that the exterior surface of the heater will be in proximity to the metal of the heating-tube, which is surrounded with the water in the
85 generator G. The inlet-tube T for the hydrocarbon may extend some distance into the interior of the furnace in order to insure great fluidity of the hydrocarbon before its admis-
90 sion into the vaporizer, thereby facilitating the operation, and this part of the tube T may be made removable for the purpose of cleaning to remove any tarry deposits which may settle in the tube, the hydrocarbon being not
95 vaporized in the latter as in the vaporizer, where the volatilization is complete by reason of the fine subdivision of the material in contact with the clippings heated to a high temperature.

The air for feeding the burners is admitted 100

through the central tube O, which is also exposed to the temperature of the furnace, so that the air is heated before being mixed with the gases from the burners, thus facilitating the operation of the heater.

The heater may be constructed in various forms and variously arranged to suit the furnace to which it is applied.

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

A burner comprising an inner and an outer shell with a plurality of cylinders or tubes

extending between them and open to the air at both ends, the filling within the shells and between the tubes or cylinders, and the cross-pipes at the inner ends of the cylinders, connecting through the walls of the cylinders with the surrounding space, substantially as described. 15

AUGUSTE QUENTIN.

Witnesses:

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