No. 885,148. PATENTED APR. 21, 1908.

T. H. ELLIS.

HYDROCARBON STILL.

APPLICATION FILED DEC. 4, 1906.

Fig. 2.

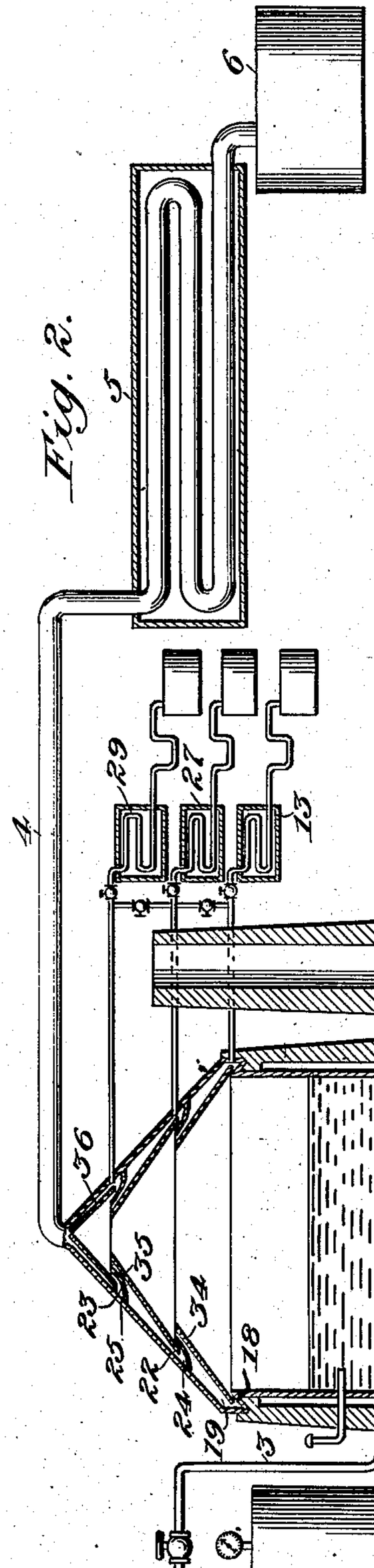

Fig. 1.

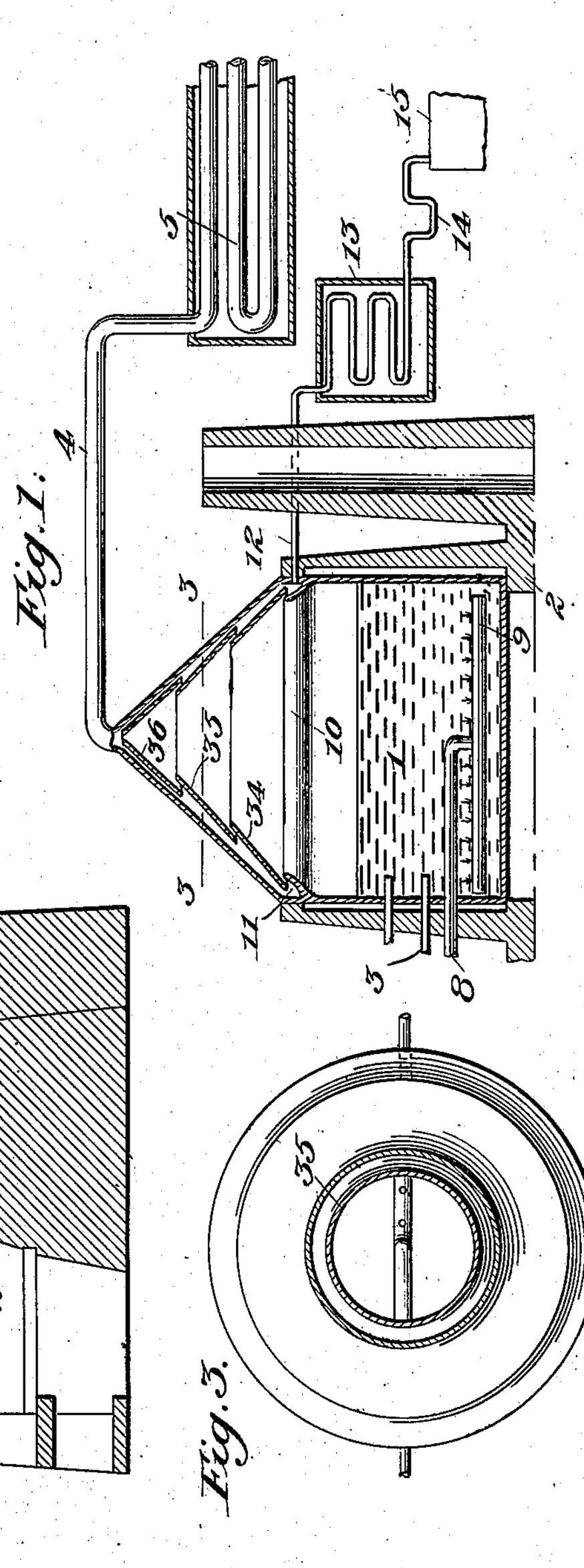

Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

THEODORE H. ELLIS, OF BALTIMORE, MARYLAND.

HYDROCARBON-STILL.

No. 885,148. Specification of Letters Patent. Patented April 21, 1908.

Application filed December 4, 1906. Serial No. 346,343.

To all whom it may concern:

Be it known that I, THEODORE H. ELLIS, a citizen of the United States of America, and resident of Baltimore city, and State of Maryland, have invented certain new and useful Improvements in Hydrocarbon-Stills, of which the following is a specification.

My invention relates particularly to stills of the type employed in the distillation of hydro-carbons, and has for its object a construction of the still such that the aqueous, and light or deleterious oil vapors driven off in the distillation, recondensed in part within the still by contact with the walls thereof, may be prevented from passing back to the residue.

I accomplish the purposes of my invention by a peculiar construction within the walls of the still, by means of which all vapors condensing within the still are guided down and carried from the still without reaching the residue.

Having set forth the objects and nature of my invention I will now describe the same in connection with the accompanying drawings, in which

Figure 1 is a view showing a central, vertical section of a still embodying my invention. Fig. 2 is a view similar to Fig. 1, showing a different form of the invention. Fig. 3 is a horizontal section on the line 6—6 of Fig. 1.

Referring to the drawings,—in Fig. 1 is shown a still 1, mounted on a suitable furnace 2, and connected at 3 with the source of oil supply and at 4 with a condenser 5. The still shown is of the type described in my copending application No. 335,484, filed Sept. 20, 1906, in which the distillation is largely effected by means of compressed air supplied from tank 7 see Fig. 2 by means of pipe 8, to a coil 9, at the bottom of the still, perforated to admit air into the same. The present invention may, however, be used with any type of still.

Referring to Fig. 1 there is shown mounted within the still somewhat above the level of the liquid within the same a plate 10, which, together with the wall of the still, forms a gutter 11. A pipe 12, communicates with the gutter and leads to the auxiliary condenser 13, connected by pipe 14, with an auxiliary receiver 15. The device 10, forming the gutter and the off-take therefrom, constitutes one form of the present invention. The plate 10 is annular or extends entirely around the still, and may have a slight deflection toward one side thereof in order that the liquid in the gutter may more readily pass to the off-take. If the still is other than circular, the plate 10 is shaped to accord therewith.

Plates 34, 35 and 36 are attached to the still above the plate 10. The plate 34 extends over the gutter formed by the plate 10, the plate 35 over the plate 34 and the plate 36 over the plate 35. By means of the arrangement shown in Fig. 1 any fluids condensed upon any of the plates 34, 35, or 36, pass to the inside of the plate below and ultimately reach the gutter formed by the plate 10, which, is suitably connected to the condenser 13 and receptacles 14.

In Fig. 2 there is shown a modification of my invention. As in Fig. 1, the still is provided with a lower gutter plate 18, and plates 34, 35 and 36 above the same. In Fig. 2, however, the still, is also provided with plates, 22 and 23, forming with the wall of the still gutters, 24 and 25. Each of the gutters 19, 24 and 25, is provided with separate connection to separate condensers 13, 27 and 29. In Fig. 2 the plate 34, as in Fig. 1, extends over the gutter 19 formed by the plate 10. The plate 35, however, instead of delivering to the plate 34 extends over the gutter 24, and the plate 36 instead of delivering to the plate 35 extends over the gutter 23. In Fig. 2, therefore, the condensed distillates from the plates 34, 35 and 36 instead of passing to a common condenser, as in Fig. 1, pass to separate condensers, whereby the distillates may be separately recovered. If desired, one or both of the condensers 27 and 29 may be cut out of use.

Whereas I have shown three gutters or collecting devices, the number shown may be varied according to circumstances or desire. In fact, the number is preferably determined by the nature of the material being distilled, by the temperature of the still, the pitch of the plates the draft or rate of condensation and other features. If the recondensed oil is heavy, or of considerable viscosity, and the temperature of the still is comparatively low, the recondensed fluid may adhere more tenaciously to the roof of the still, in which case a smaller number of gutters or offtake will be sufficient. If, however, the oil is light and thin, or the temperature of the still is comparatively high, the oil or water may drop from the roof of the

still before it reaches the bottom, and unless the still is provided with additional plates or gutter-ways, as shown, may drop back into the residue. It will therefore be seen that the number and design of the gutters or collecting devices is to be determined according to conditions of distillation and material being distilled.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. In a still, a receptacle for holding the material to be distilled, a gutter on the interior wall of the receptacle, and a condensing surface composed of a series of plates of different diameters mounted one over the other within the still, the lower edge of the top plate lying outside of the top edge of the next plate, and the lower edge of the bottom plate over the gutter.

2. In a still, a receptacle for holding the material to be distilled; a condensing surface composed of a series of plates mounted one above the other within the still, the lower edge of each plate lying outside of the top edge of the plate next below, so that the inside of each plate drains onto the outside of that next below it; and means for draining the lower plate of the series.

Signed by me at Baltimore city and State of Maryland this 23rd day of November 1906.

THEODORE H. ELLIS.

Witnesses:
W. W. POWELL,
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