

R. E. HUMPHREYS.
 PETROLEUM DISTILLING APPARATUS.
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1,122,002.

Patented Dec. 22, 1914.

Fig. 2.

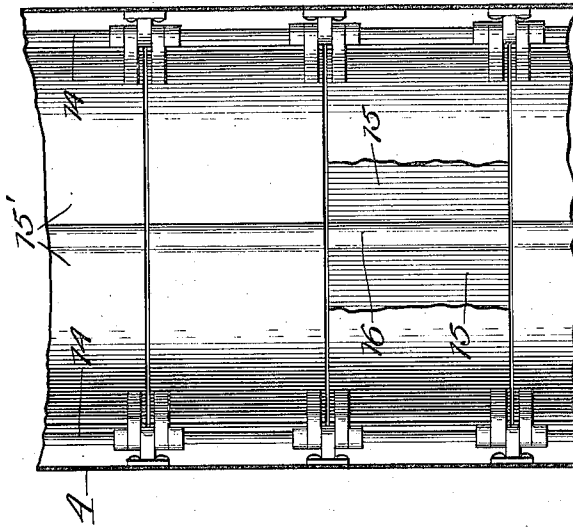
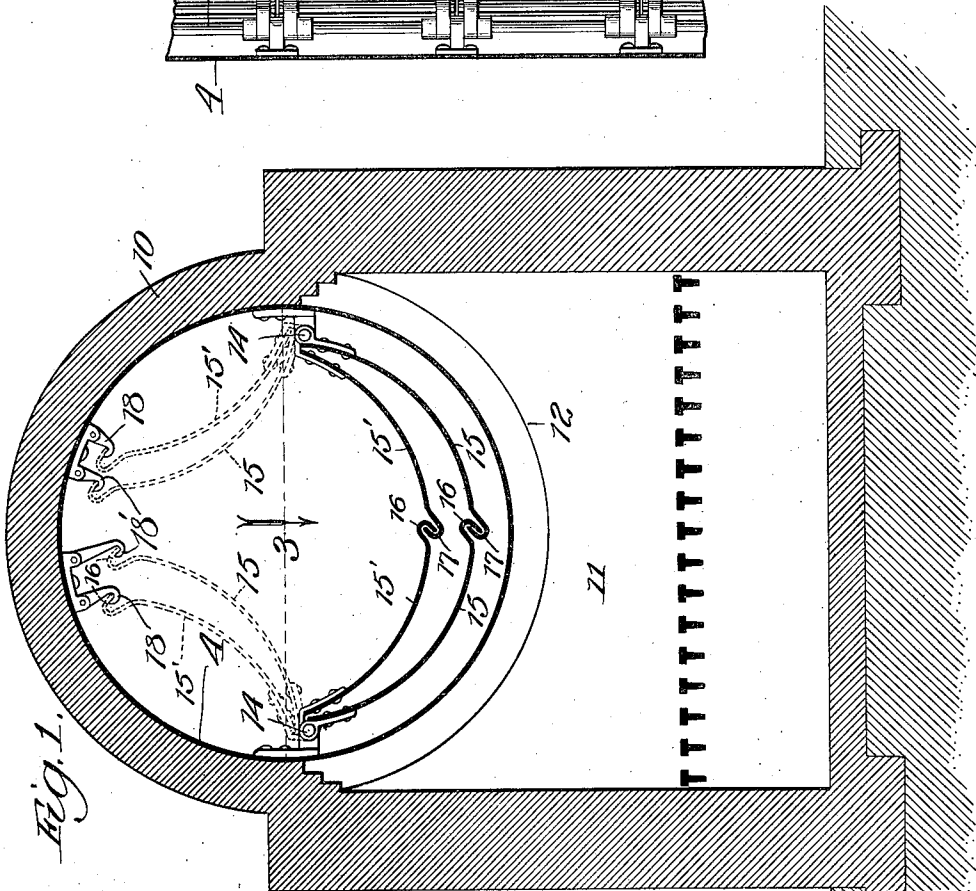


Fig. 1.



Witnesses:
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Inventor:
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 By D. W. Griffith, Jr., Attorney.

UNITED STATES PATENT OFFICE.

ROBERT E. HUMPHREYS, OF WHITING, INDIANA, ASSIGNOR TO STANDARD OIL
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PETROLEUM-DISTILLING APPARATUS.

1,122,002.

Specification of Letters Patent.

Patented Dec. 22, 1914.

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To all whom it may concern:

Be it known that I, ROBERT E. HUMPHREYS, a citizen of the United States, residing at Whiting, in the county of Lake and State of Indiana, have invented a new and useful Improvement in Petroleum-Distilling Apparatus, of which the following is a specification.

My invention relates to an improvement in the still of petroleum-distilling apparatus, which I have devised, more immediately, for the apparatus employed in practising the process of manufacturing gasoline set forth in United States Letters Patent No. 1,049,667, granted January 7, 1913, to W. M. Burton.

In commercially practising the aforesaid process on a large scale, wherein the capacity of the still and the quantity of the material treated therein is several thousand gallons, it is found that the accumulation of carbon on the still bottom precludes conducting the run long enough to convert into gasoline more than about one-third of the material contained in the still. This is because the carbon, being a good insulator of heat, becomes red hot and if the run were continued, would soon burn through the bottom of the still, besides tending to retard the progress of distillation.

The primary object of my invention is to prolong the run to an extent that will enable, say, two-thirds, more or less, of the still-contents to be converted into gasoline without incurring the objectionable consequences referred to, and this I accomplish by the means illustrated in the accompanying drawing, in which—

Figure 1 is a transverse section through a still provided with my improvement, and Fig. 2 is a plan section of a broken portion of the same on line 3, Fig. 1.

In the still, 4, and preferably along diametrically-opposite points therein, extend pintle-rods 14, 14, reaching approximately to the ends of its cylindrical section. On these opposite rods are hinged, at their outer ends, concavo-convex plate-sections 15 to form a series thereof along each rod, opposite sections, or members of the series, releasably interlocking at their inner ends, as by means of a hooked edge 16 formed along each section of one series and a hooked edge 17 along each section of the other series, to form a plate covering, and conforming at

least approximately to the curved shape of, the still-bottom; although the curved shape of the sections is not an essential feature of my invention. These sections 15 may mutually overlap each other, lengthwise of the still, at their meeting edges, or be there more or less slightly separated, as represented in Fig. 3; but they should interfit more or less loosely, and there is ample space about their outer hinged edges to permit the liquid contents of the still to circulate freely therein, in boiling, in contact with the upper and lower plate-surfaces. Hooks 18 are shown to depend in two series inside the still along the central portion of its top to engage the hooks on the respective sections when they are raised, and hold them up when it is desired to clean out, from the still, any accumulation of free carbon beneath them. It is desirable to provide at least two sets of these plates, and a second set is shown suspended to extend over the lower set already described, and is formed, like the latter, of interlocking sections 15', these sections being hinged along their outer edges on the pintles 14 in a manner to alternate their hinge-knuckles with those of the lower set, and being adapted to be held in their raised positions by hooks 18'.

In the operation of the still, the liquid-hydrocarbon contents being boiled by the heat from the furnace, circulate freely about the plates and over their upper and lower surfaces, upon which the carbon, produced by the aforesaid reaction, forms for the most part, and in comparatively small quantity, producing a mere film. The primary purpose of forming the plates of adjustable sections is to adapt them to be raised out of the way to permit access to the lowermost for removing the carbon formed upon it after removing that which has similarly formed on the upper plate, and to permit access to the bottom of the still for the same purpose. After a run of the apparatus, or when the accumulations of carbon render it desirable, the still is opened and the carbon formed on the top surface of the upper plate is brushed off and taken out through the man-hole, whereupon the sections 15' are raised and locked in the raised position, and the bottom surfaces of the raised sections and top-surface of the lower plate are cleaned; then the sections 15 are raised and their lower surfaces are cleaned

in the same way, and access to the still-bottom is thus afforded for removing from it the relatively-small quantity of carbon formed thereon.

5 I realize that considerable variation is possible in the details of construction thus specifically shown and described, and I do not intend by illustrating a single, specific or preferred embodiment of my invention
10 to be limited thereto; my intention being in the following claims to claim protection upon all the novelty there may be in my invention as broadly as the state of the art will permit.

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

1. In an apparatus of the character described, the combination with a still, of a plurality of plate extending therein one
20 over the other and spaced apart and from the still-bottom, said plates forming spaces for the circulation about and over them of the still-contents undergoing distillation.

2. In an apparatus of the character described, the combination with a still, of adjustable plate-forming sections extending
25 therein over and spaced from the still-bottom, and forming spaces for the circulation about and over them of the still-contents undergoing distillation.

3. In an apparatus of the character described, the combination with a still, of a

plate extending therein over and spaced from the still-bottom and comprising sections hinged in the still to its opposite sides
35 to meet at their inner edges and provided with releasable means for interlocking them in their meeting position.

4. In an apparatus of the character described, the combination with a still, of a
40 plate extending therein over and spaced from the still-bottom, and comprising series of sections hinged at their outer edges in the still to its opposite sides to meet at their inner edges, and provided on said inner
45 edges with hooks for releasably interlocking them in their meeting position.

5. In an apparatus of the character described, the combination with a still, of pintles extending along its opposite inner sides,
50 curved plate-sections having knuckles on their outer edges at which they are hinged on the pintles and adapted to meet at their inner edges in their plate-forming relation, hooks on the inner edges of said sections for
55 releasably locking them in said relation, and hooks depending in the still from its top-portion in position to engage with the hooks on said sections to hold them when raised.

ROBERT E. HUMPHREYS.

In presence of—

L. HEISLAR.

A. C. FISCHER.