

No. 741,157.

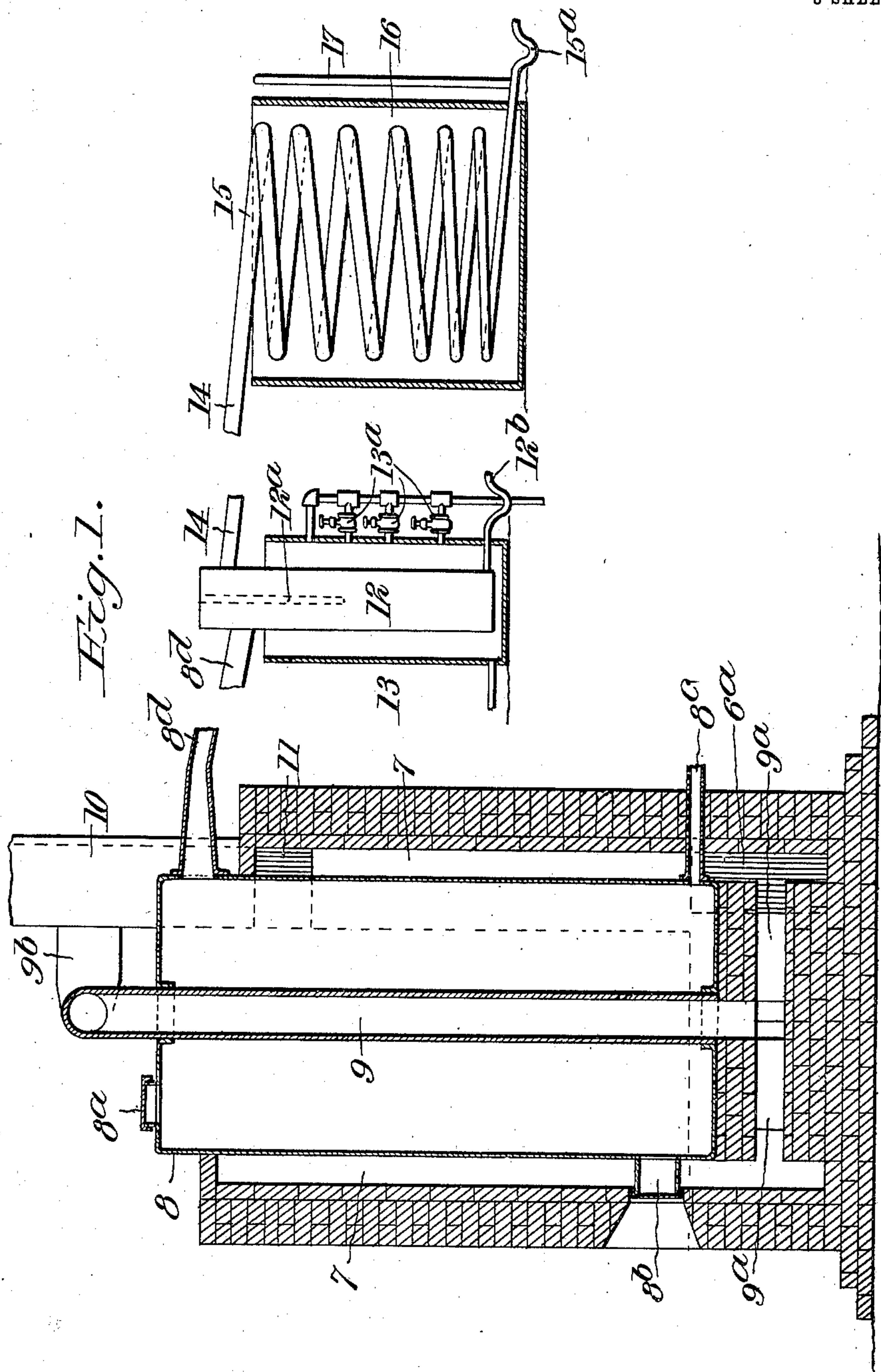
PATENTED OCT. 13, 1903.

A. A. McKETHAN.
APPARATUS FOR DISTILLING WOOD.

APPLICATION FILED FEB. 16, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Inventor

Alfred A. McKethan

Witnesses

C. H. Walker.

By

Milo B. Stevens & Co.

Geo. E. Tew.

Attorneys

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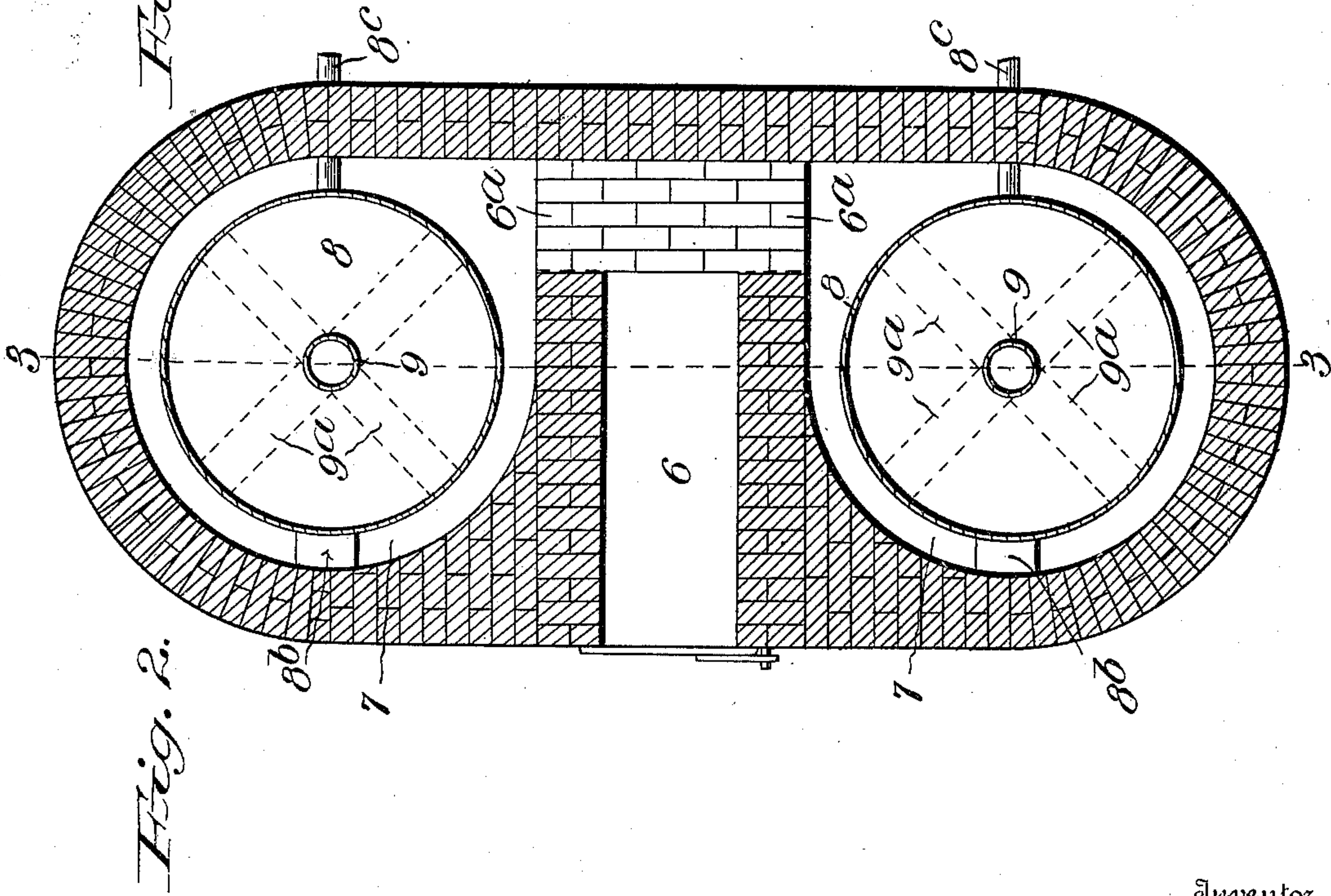
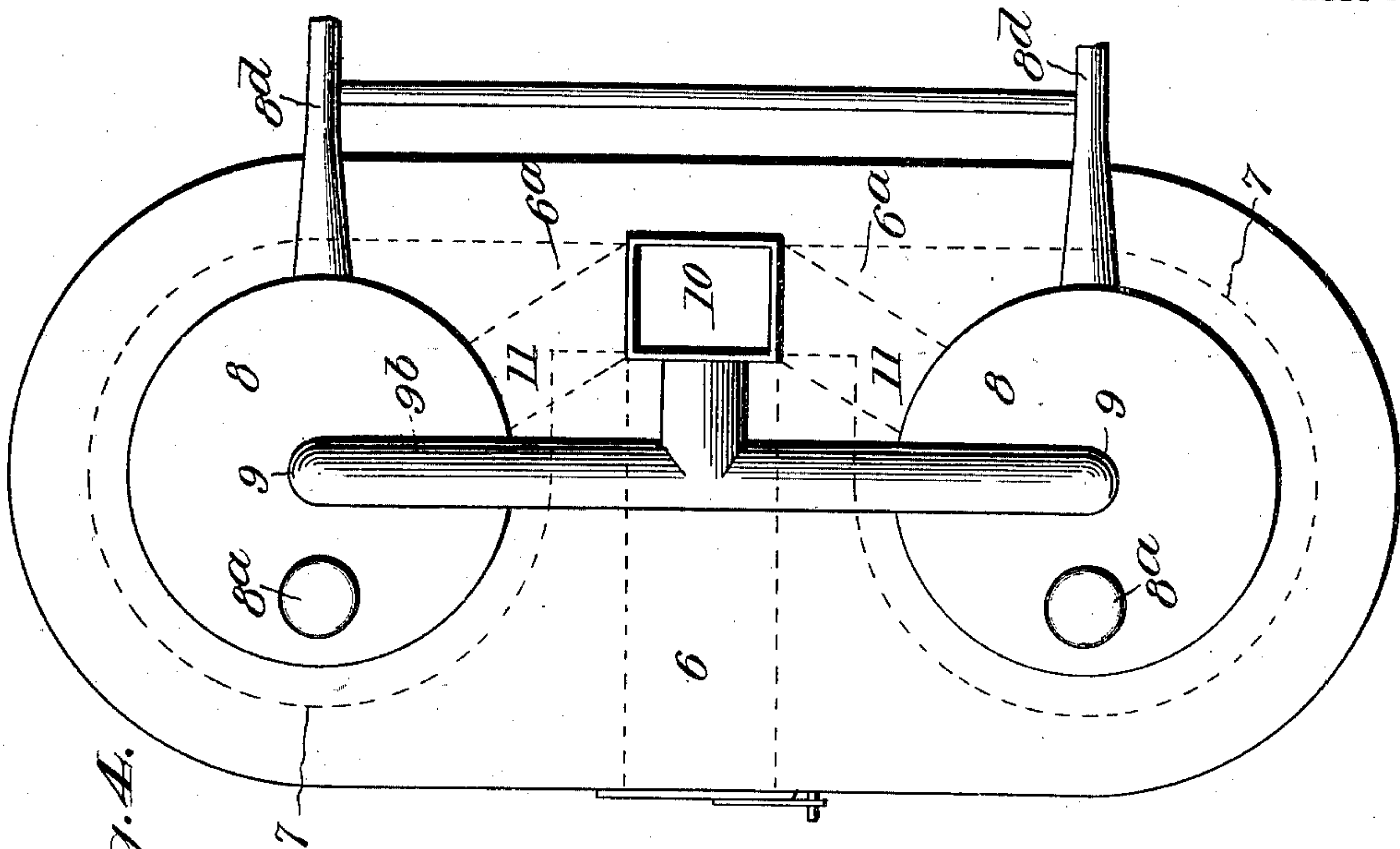
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3 SHEETS—SHEET 2.



Inventor

Alfred A. McKethan

Witnesses

C. H. Walker.
Geo. E. Tew

By

Milo B. Stearns & Co.
Attorneys.

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3 SHEETS—SHEET 3.

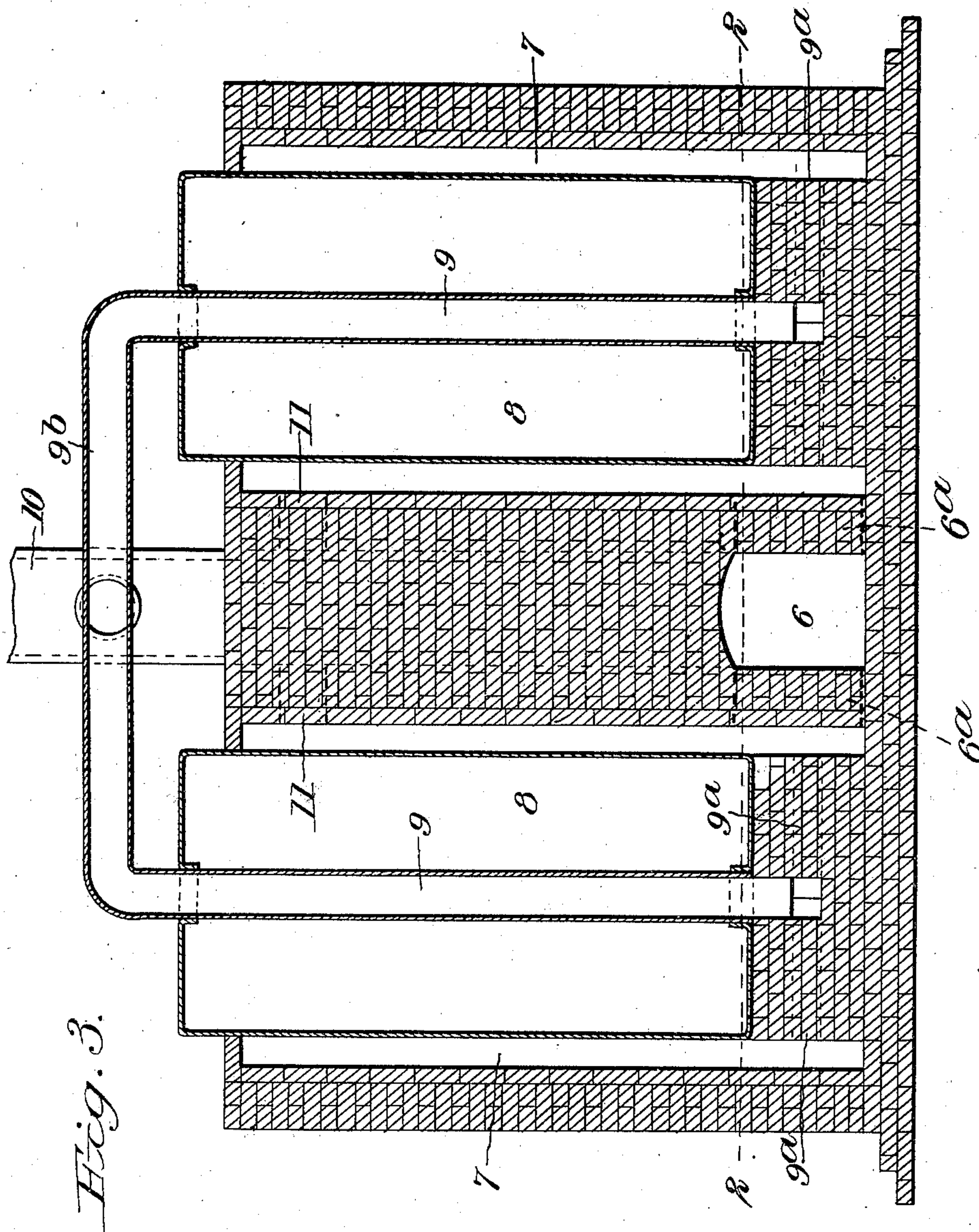


Fig. 3.

Inventor

Alfred A. McKethan

Witnesses

C. H. Walker

By

Milo B. Stevens

Geo. E. Tew

Attorneys

UNITED STATES PATENT OFFICE.

ALFRED AUGUSTUS MCKETHAN, OF FAYETTEVILLE, NORTH CAROLINA.

APPARATUS FOR DISTILLING WOOD.

SPECIFICATION forming part of Letters Patent No. 741,157, dated October 13, 1903.

Application filed February 16, 1903. Serial No. 143,537. (No model.)

To all whom it may concern:

Be it known that I, ALFRED AUGUSTUS MCKETHAN, a citizen of the United States, residing at Fayetteville, in the county of Cumberland and State of North Carolina, have invented certain new and useful Improvements in Apparatus for Distilling Wood; and I 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an apparatus used in the distillation of wood for the purpose of obtaining tar, turpentine, and other products therefrom; and the object of the invention is to form an apparatus having a novel and advantageous arrangement of furnace and retorts conducive to economy of fuel and heat and rapid distillation.

A further object of the invention is to produce a novel form of retort.

With these and other objects in view the invention is hereinafter described and is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section through one retort and both condensers. Fig. 2 is a horizontal section through the furnace and retorts. Fig. 3 is a vertical section on the line 3 3 of Fig. 2, and Fig. 4 is a top plan view of the furnace and retorts.

The apparatus includes a pair of retorts heated from a single furnace, a primary condenser to separate the creosote and heavy stuff, and a secondary worm condenser for separating the lighter distillates from which the turpentine is extracted.

In the accompanying drawings, 6 indicates a furnace located between two circular ovens or heating-chambers 7. These ovens receive the gases of combustion from the furnace 6 through flues 6^a, which extend laterally from the rear end of the furnace. The heating-chambers also contain the retorts 8, which are of peculiar construction, in that they have a central vertical flue 9, connecting at the bottom with the radial flues 9^a, formed in the brickwork which supports the retorts. This

provides a circulation of the products of combustion from the furnace 6 through the flues 6^a, around the retorts in the space 7, under the retort, through the flues 9^a, and up through the center flue 9 thereof. The flues 9 are continued above the brickwork and unite into a pipe 9^b, which enters the stack 10. Direct flues from each of the combustion-chambers 7 are indicated at 11 and join the stack 10. These flues may, if desired, be controlled by suitable dampers.

Charging-holes are indicated at 8^a in the top of the retorts and bottom holes at 8^b to withdraw the charcoal, the pipe at 8^c to take off the tar and heavy liquids which will not vaporize, and a pipe at 8^d for the gaseous products arising from the distillation. The pipe 8^d leads to the first condenser, which consists of a closed vessel 12, immersed in a tub 13 of water. The vessel 12 has a partition 12^a extending from the top about one half-way down within the vessel, and this partition serves as a baffle-plate to direct the gases down into the lower part of the vessel where the heavy oils condense and may be drawn off through a pipe 12^b. The extent of condensation is controlled by the depth of water in the tub, which may be regulated by overflow-cocks 13^a in the sides thereof. A continuous supply of water being provided in any suitable manner, the depth of the water may be regulated by opening and closing the cocks as desired, said cocks being at different levels. The creosote and heavy oils, which condense at a higher temperature than the lighter oils, are gathered in this condenser. The remainder of the gaseous distillates is carried over through the pipe 14 into the worm 15, which is coiled in a tub 16 of water, wherein the turpentine-oil is condensed and from which it may be drawn through the pipe 15^a. The non-condensed gases escape through the open pipe 17. The double condensation effected by this apparatus is advantageous in that it permits a separation of the oils and gives a larger product.

The arrangement of the furnace between the retorts and of the flues around and under the retorts conserves the heat to a great degree and effects the distillation in a comparatively short time and has other advantages of ease and cheapness of construction and

operation. The central flue in the retorts allows the combustion-gases to go up through the middle of the retort, thereby exposing a greater area of heating-surface to the wood
5 and avoiding the extreme heating of the retort which would otherwise be necessary to reach the wood at the center.

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

10 In a distilling apparatus, in combination, a pair of heating-chambers standing side by side, a retort in each chamber spaced from the walls thereof and having a central vertical flue, radial flues extending from said

spaces under each retort to the lower end of its vertical flue, a furnace between the chambers and separated by walls therefrom, a flue extending laterally from the rear end of the furnace into the bottom of each of said spaces, and direct-draft flues extending from the top
20 of said spaces.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED AUGUSTUS MCKETHAN.

Witnesses:

A. S. HUSKE,
N. MCA. DAVIS.