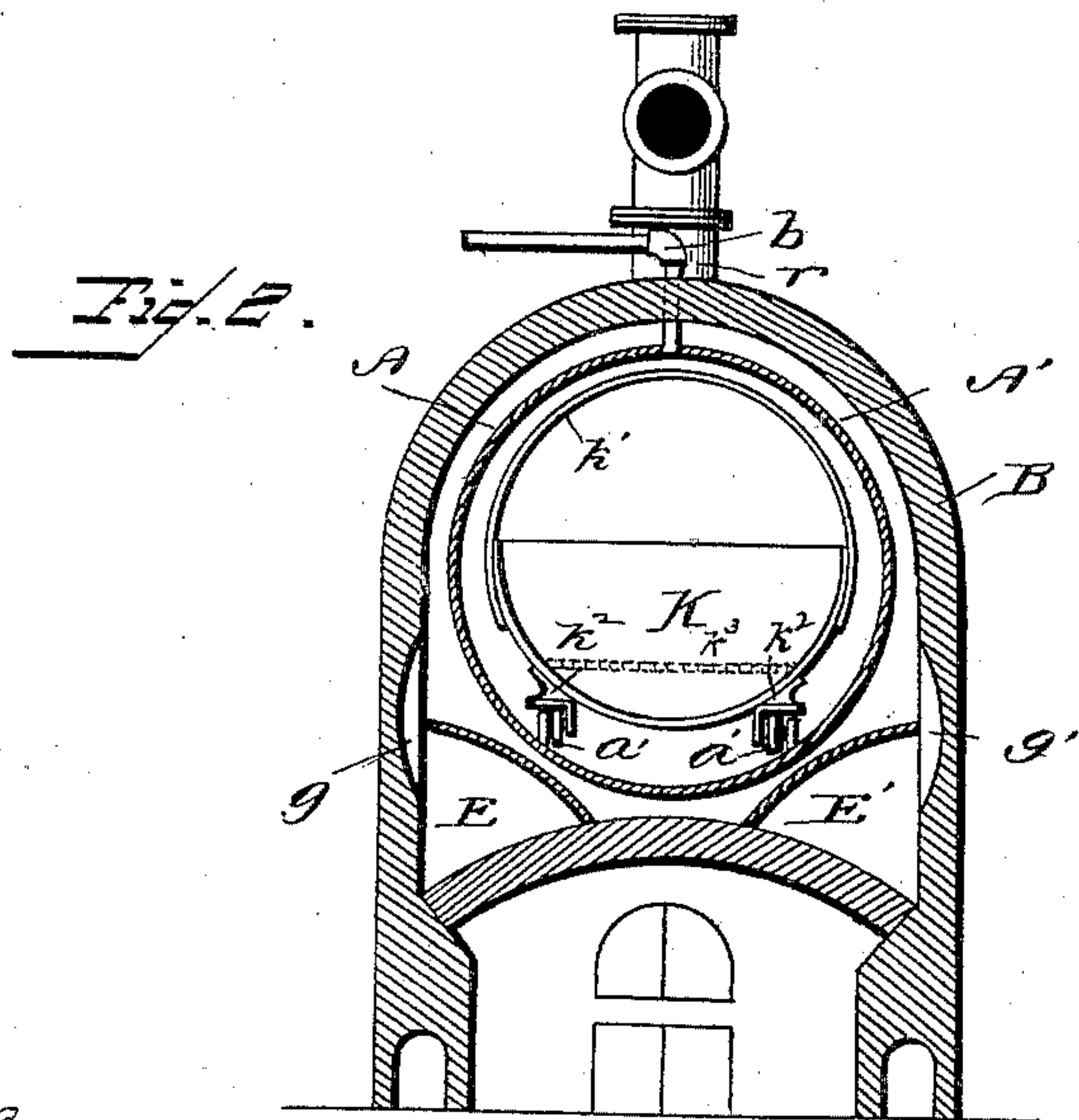
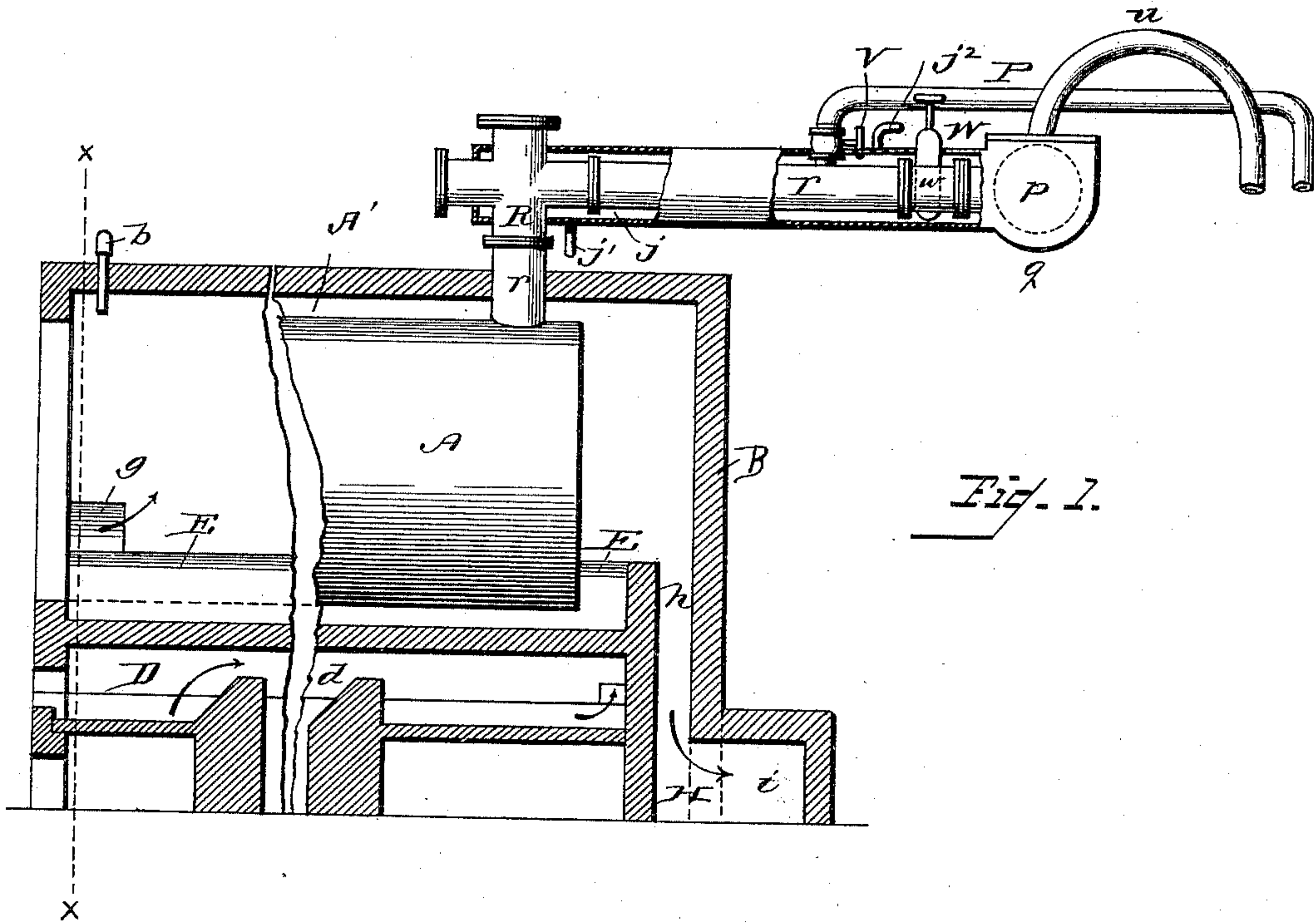


(No Model.)

A. KOCH.
APPARATUS FOR DISTILLING WOOD.

No. 444,704.

Patented Jan. 13, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

AUGUST KOCH, OF NEW ORLEANS, LOUISIANA.

APPARATUS FOR DISTILLING WOOD.

SPECIFICATION forming part of Letters Patent No. 444,704, dated January 13, 1891.

Application filed August 13, 1889. Renewed June 23, 1890. Serial No. 356,484. (No model.)

To all whom it may concern:

Be it known that I, AUGUST KOCH, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in an Apparatus for Distilling and Carbonizing Wood; and I do 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.

My improvements relate to apparatus for distilling and carbonizing wood; and they consist in substantially the construction of parts hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, illustrating an apparatus embodying my improvements, Figure 1 is mainly a vertical longitudinal sectional view of the apparatus. Fig. 2 is a vertical transverse section taken on line $x x$, Fig. 1.

Similar letters designate corresponding parts in the figures of the drawings.

The letter A designates the retort supported in the chamber A' in the upper part of the furnace B. The furnace is constructed with the fire-chamber D, located in its lower front portion, a flue d extending from the fire-chamber to the rear end of the furnace, return-flues E E' above the flue d and at the sides of the furnace and communicating with the retort-chamber through openings $g g'$, and the downwardly-extending flue h at the rear of the furnace, connecting the retort-chamber with the main exit-flue i , leading to the chimney. By this construction and arrangement of the flues d E E' and the openings $g g'$ the flames from the fire-chamber will not come in contact with the retort, thus avoiding the injurious effect of the former upon the latter, and by having the flues E E' opening into the forward end of the retort-chamber and the downwardly-extending flue h at the lower rear end thereof it will be seen that the heated gases from the fire-chamber will completely envelop the retort and heat the same at all points. A pipe b (connected with a steam generator and superheater not shown) passes through the top of the furnace and into the retort to supply steam to the same.

Above the furnace and connected with the

rear end of the retort A is a pipe r , provided with a cross R, through the projecting ends of which the interior of said pipe may be inspected and cleaned. The said pipe is surrounded by a water-jacket j , the water in said jacket being kept cool by a continual supply of cold water entering through a supply-pipe j' at the bottom of the jacket and escaping through an overflow-pipe j'' at the top of the same. The pipe r is connected at its rear end with a cylinder p , and a valve W is placed in the pipe r near the cylinder. The said cylinder p is also surrounded by a water-jacket q . A pipe P is connected with pipe r at about the latter's middle point and leads to any suitable condenser. The said pipe P is provided with a valve V. A pipe u , leading to a separate condenser of any suitable or well-known form, is connected with the upper side of the cylinder p .

A basket K for holding the wood, with rails $k^2 k^2$, is provided to run upon the rollers $a' a'$ into and out of the retort. The basket is composed of an upper open frame k' and a tight lower compartment or sediment-chamber k , to catch and hold the tarry matter that issues from the wood during distillation, to prevent it from falling onto the bottom of the retort. A removable perforated plate k^3 is placed slightly above the bottom of the basket to support the wood which is to be treated.

In operation the basket containing the wood is placed in the retort and the valve W closed. The valve V being now opened the lighter vapors issuing from the retort at the beginning of the distilling process will pass into pipe r and then into pipe P, which will conduct them to a condenser. As soon as the condensed vapors attain a certain degree of gravity the valve V is closed and the valve W opened, so that the vapors may pass into the cylinder p , where they are partially condensed and the lighter and uncondensed vapors will pass into pipe u , thence to be conducted to another condenser.

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

1. In an apparatus for distilling and carbonizing wood, a furnace constructed with the retort-chamber A', the fire-chamber D, the

flue d , and return-flues $E E'$, having openings $g g'$, respectively, at the front ends, in combination with the retort A , substantially as shown and described.

5 2. In an apparatus for distilling and carbonizing wood, the herein-described furnace, constructed with the fire-chamber D , flue d , return-flues $E E'$, having openings $g g'$, respectively, at the front ends, the retort-chamber A' , and the downwardly-extending flue h , in combination with the retort A , substantially as shown and described.

10 3. In an apparatus for distilling and carbonizing wood, the furnace B , retort A , pipe r , having valve W , pipe P , having valve V ,
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and the water-jacket j , the parts being combined substantially as shown and described.

4. In an apparatus for distilling and carbonizing wood, the furnace B , retort A , pipe r , having valve W , pipe P , having valve V , cylinder p , pipe u , and water-jackets $j q$, surrounding said pipe r and cylinder p , the parts being combined substantially as shown and described.

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

AUGUST KOCH.

Witnesses:

EBERHARD KOCH,
JOHN H. ADAMS.