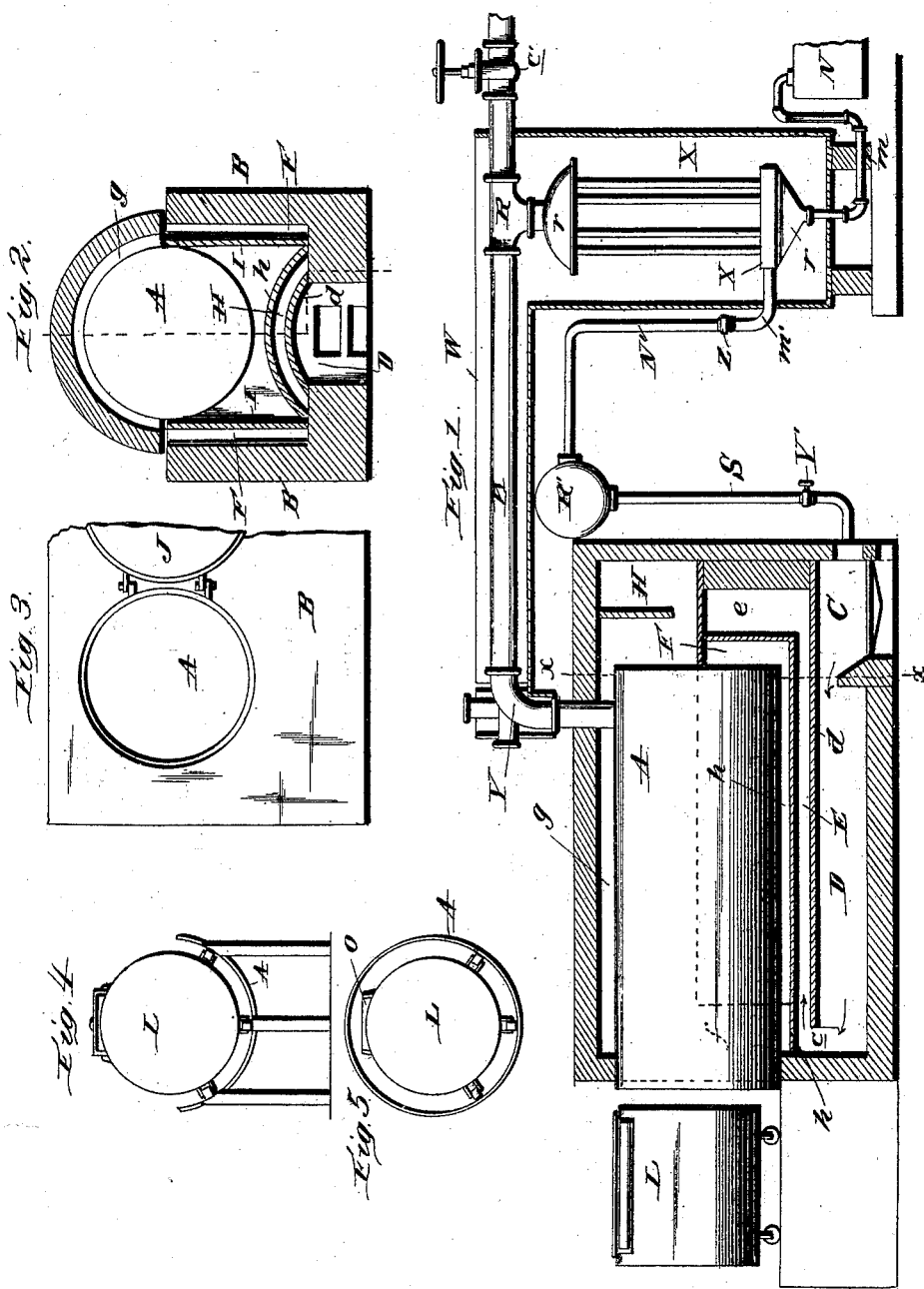


(No Model.)

O. KOCH & W. DANNER.
APPARATUS FOR DISTILLING WOOD.

No. 422,806.

Patented Mar. 4, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

OTTO KOCH AND WILLIAM DANNER, OF NEW ORLEANS, LOUISIANA, ASSIGNORS OF ONE-THIRD TO JOHN B. SCHMITT, OF SAME PLACE.

APPARATUS FOR DISTILLING WOOD.

SPECIFICATION forming part of Letters Patent No. 422,806, dated March 4, 1890.

Application filed August 26, 1889. Serial No. 322,056. (No model.)

To all whom it may concern:

Be it known that we, OTTO KOCH and WILLIAM DANNER, citizens 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 Pine Wood; and we 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.

Our invention relates to apparatus for distilling and carbonizing pine wood; and it consists in the construction and novel combination of parts, as will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical longitudinal sectional view of our improved distilling and carbonizing apparatus, showing the car L just outside of the furnace-door, the section of the furnace being taken in the direction of the dotted lines in Fig. 2. Fig. 2 is a transverse vertical sectional view on the line *xx* in Fig. 1, viewed from the direction the arrow points. Fig. 3 is an end view of the furnace, a portion thereof broken away, and showing the door J open to expose the metal retort A. Fig. 4 is a front view of the car and tramway, showing a portion of the retort; and Fig. 5 is a front view of the retort and car therein.

The object of the present invention is to provide cylinders by the use of which the retort can be charged and discharged without the attendant having to enter the same, which prevents much loss of heat, and also prevents injury to the retort and the masonry which supports it by the frequent heating and cooling of the same, and to further provide for the convenient entrance of the cylinder containing the wood to be charred and its withdrawal from the furnace.

Referring by letter to the said drawings, A designates a metal retort supported upon suitable masonry B over a furnace C, having a horizontal flue D, confined by an arch *d*, extending forwardly and upwardly through the vertical flue *c* into flue E, which is formed by the arches *d* and *p*, thence rearwardly into the vertical flue *e*, thence upwardly into flue

F, which is formed by the walls I and the outside masonry B, thence forwardly into the flue *f*, upwardly into the flue *g*, into the main flue H, and finally into the chimney, which, however, is not illustrated in the drawings.

Extending upwardly from the retort A, and preferably at the rearward end of the same, we provide an elbow Y, with a pipe K, which is suspended in a trough W, the latter being supplied and kept filled by a continuous stream of water to conduct the vapor through T-joint R down into the condenser *r*, the same being immersed in cold water in a suitable tank X.

The lower end of the condenser is provided with a pipe or goose-neck *m*, by which the distillate is conducted into a reservoir N at the side of the tank X, from which it may be removed or further manipulated. At the lower part of the condenser *r* is an opening *x*, which is provided with a pipe *m'*, the latter being designed to conduct the uncondensable gases formed in the retort upward through the valve Z and pipe N' into the cylinder R', thence downward through the pipe S and valve Y' into the furnace, to be consumed as fuel. The T-joint R is provided with a safety-valve *c'*.

A pyrometer, which is not shown in the drawings, communicates inwardly with the retort, and is placed in the door J in any suitable position, by which means the temperature within the furnace may at all times be shown.

The sheet-iron cylinders L are constructed air-tight and are provided with a large opening on the top for the escape of the vapor. The opening is provided with a surrounding flange, on which the lid O fits, to close the same air-tight, thereby avoiding the use of coolers and preventing the carbonized material from igniting when coming in contact with the air.

In operating the device the cylinders are run into the retort on a removable tramway provided for that purpose. The door J is then closed and made air-tight by suitable packing. Fire is then started within the furnace to heat the retort and its contents. The vapor arising from the wood passes out through the pipe K into the condenser *r*, where it is

liquefied and passes through the goose-neck *m* into the receiver *N*, from which it is ready to be taken for further manipulation. When the charge is finished, the door *J* is opened
5 and the cylinder *L*, with the carbonized material, is drawn onto the tramway and immediately covered with the lid *O* and taken to their ultimate destination, after which the retort is charged with another set of cylinders
10 loaded with fresh material, and the same process repeated.

Having described our invention, what we claim is—

1. In an apparatus of the character described, the masonry *B*, having the furnace *C*
15 in one of the lower ends thereof, the horizontal flue *D*, leading from said furnace and having the vertical flue *c*, the horizontal flue *E*, formed by the curved walls *d* and
20 *p*, the rear vertical flue *e*, the lateral flues *F*, formed in the walls of the masonry, and the curved horizontal flue above the retort, the flues all communicating, as shown, in combination with the condenser, the pipe
25 *K*, connecting the furnace with said condenser, the trough surrounding said pipe, the tank surrounding the condenser, the reservoir connected with the base of the condenser, the cylinder interposed between the
30 condenser and the furnace, and the valved

pipes connecting the cylinder with the condenser and the chamber of the furnace, respectively, substantially as specified.

2. The combination, with a furnace adapted to receive a retort and having suitable flues, 35 of a water-tank, a condenser arranged in said tank, a trough leading from the tank, a pipe submerged in the tank and connecting the condenser with one of the flues of the furnace, and one or more valved pipes connecting the 40 condenser with the fire-chamber of the furnace, substantially as specified.

3. The furnace having a fire-chamber, a flue leading horizontally therefrom, a horizontal flue formed from the two parallel curved 45 walls *p*, the forward vertical flue *c*, connecting the two horizontal flues, the lateral vertical flues *F*, the vertical flue *e*, connecting the upper horizontal flue with said lateral flues, and the top flue *g*, surrounding the up- 50 per portion of the retort to serve in connection with a condenser, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

OTTO KOCH.

WILLIAM DANNER.

Witnesses:

HELMUTH HOLTZ,

JOHN B. SCHMITT.