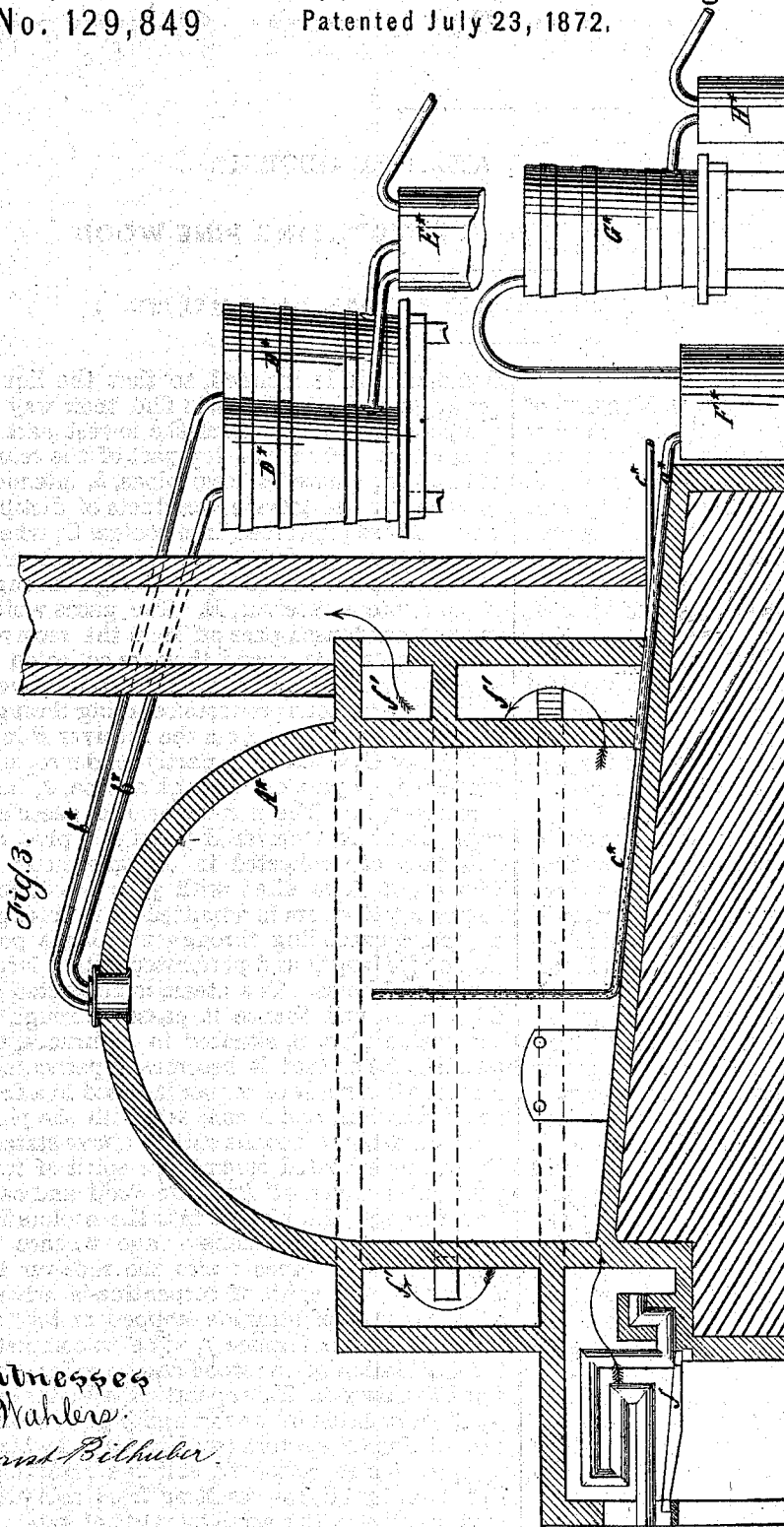


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Improvement in Apparatus for Distilling Pine-Wood.
No. 129,849

Patented July 23, 1872.



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IMPROVEMENT IN APPARATUS FOR DISTILLING PINE WOOD.

Specification forming part of Letters Patent No. 129,849, dated July 23, 1872.

To all whom it may concern:

Be it known that I, WILLIAM MESSAU, of Atlanta, in the county of Fulton and State of Georgia, have invented a new and Improved Apparatus for Distilling Pine Wood; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a sectional side view of my distilling apparatus when a sheet-metal retort is used. Fig. 2 is a horizontal section of the superheating-furnace detached. Fig. 3 is a sectional view of my distilling apparatus when a retort of brick-work or clay is used.

Similar letters indicate corresponding parts.

This invention relates to an apparatus which is composed of a retort made of metal or brick and provided with an inclined bottom, said retort being placed in or on a furnace with lateral serpentine flues, while the retort is furnished with a perforated pipe communicating with a steam-generator, and with a superheater, in combination with suitable pipes, emanating partly from the bottom and partly from the top part of the retort into coolers, in such a manner that when the retort is filled with pine wood and superheated steam is admitted the spirit of turpentine contained in said wood is first driven out in a pure or nearly pure state and separated from the subsequent products of distillation, and then, by raising a fire in the furnace of the retort, the destructive distillation of the wood is completed, and the gaseous and liquid products of distillation resulting from this process are carried off and separated from the charcoal remaining in the retort.

In the drawing, the letter A designates a retort, which is set in a furnace, *f*, provided with serpentine flues *f'*, formed on both sides of the retort, and communicating with a common smoke-stack, so that the products of combustion are compelled to circulate on the sides of the retort, as indicated in Figs. 1 and 3, the retort shown in Fig. 1 being made of boiler-iron, and that shown in Fig. 3 being built up of bricks or formed of clay, as will be hereafter more fully explained. The bottom of the retort is not exposed to the action of the

flame, and it is inclined, so that the liquid products of distillation will find their way to a pipe, *a*, emanating from the lowest part of said retort. From the top part of the retort extend two (more or less) pipes, *b*, intended to carry off the gaseous products of distillation. These pipes lead into coolers D, where the gaseous products are condensed, and whence the condensed liquids escape through pipes *i* into a receiver, E. The gases which are not condensed pass off from the receiver E through a pipe, *o*, and they are collected in a gasometer, I. The pipe *a* leads to a receiver, F, and the gaseous products escaping through said pipe are carried from the receiver F into the cooler G, where they partly condense, and whence they pass off through a pipe, *i'*, into a receiver, H. The non-condensed gases escape from the receiver H through a pipe, *m*, and they are collected in the gasometer I. The retort A is filled with pine wood, and superheated steam is admitted to it through a pipe, *c*, extending throughout a large portion of its length and perforated with a large number of holes. The steam is generated in a boiler, B, and thence it passes through a serpentine pipe, S, situated in a furnace, C, (see Fig. 2,) so that it becomes superheated. The pipe S is made of copper inclosed in a fire-proof material, and it connects with the pipe *c*, which extends into the still, as above stated. By the superheated steam pure spirit of turpentine is driven off from the wood and carried through the pipes *b* into the coolers D, where the same condenses, and whence it passes through pipes *i* into the receiver E. After the pure spirit of turpentine is driven off the supply of steam is stopped and a fire is raised in the furnace *f*, so as to complete the distillation of the wood and to reduce the wood to charcoal. This operation is facilitated by the admission of air through pipe *g*, which extends from the retort, (see Fig. 1,) and which is opened and closed at suitable intervals. The liquid products resulting from this process, together with a small quantity of gaseous products, pass off through the pipe *a*, which connects with the lowest portion of the still. The gas which collects in the gasometer may either be conducted under the furnace *f* and used as fuel, or it may be used for illuminating purposes.

The retort, instead of being made as shown in Fig. 1, may also be constructed of brick, as shown in Fig. 3, where A* represents the retort, surrounded by suitable flues f', which extend from the furnace f to the smoke-stack. The spirit of turpentine passes off through pipes b* and coolers D* to a receiver, E*. The bottom of the retort is inclined, and a pipe, a*, carries the liquid products of distillation into a receiver, F*, which connects with a cooler, G*, and whence said products pass into a receiver, H*. A pipe, c*, connects with the superheater. The furnace f is provided with lateral flues h, to throw jets of heated air into the flame, for the purpose of consuming the smoke.

I am aware that wet steam and superheated steam have been used in the distillation of pine

wood, such being described in the patents of Hull, No. 44,314, and of Emery, No. 46,092; and I distinctly disclaim everything shown and described in these patents.

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

The arrangement of a steam-boiler, B, a superheating-furnace, C, a pipe, c, leading into the still A, and perforated with a large number of holes, said still being provided with a bottom inclined toward one end or side and surrounded by serpentine flues f', all as herein shown and described.

WILLIAM MESSAU.

Witnesses:

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