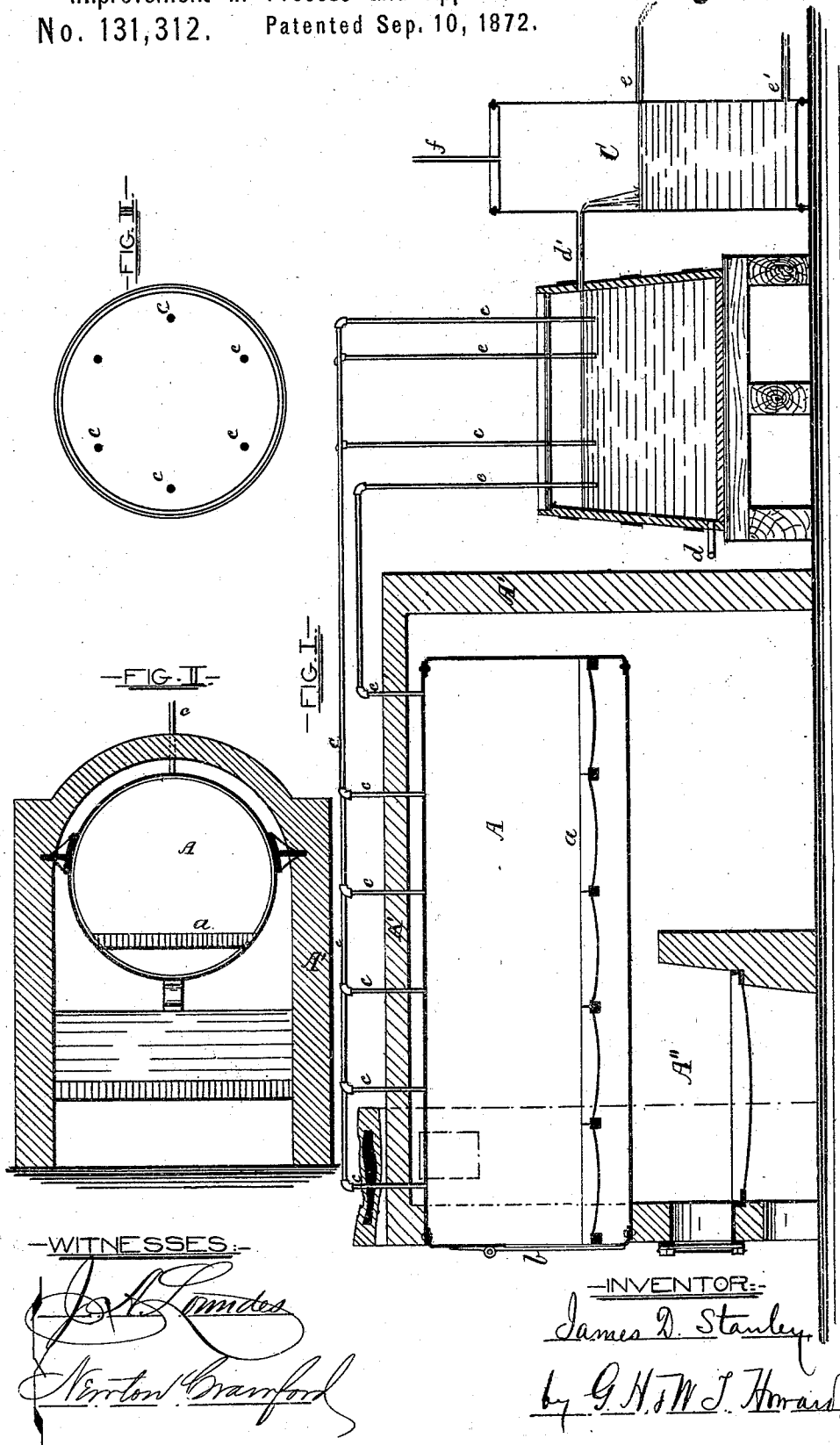


J. D. STANLEY.

Improvement in Process and Apparatus for Producing Oils, &c.
No. 131,312. Patented Sep. 10, 1872.



—WITNESSES—

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UNITED STATES PATENT OFFICE.

JAMES D. STANLEY, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR PRODUCING OILS, &c.

Specification forming part of Letters Patent No. 131,312, dated September 10, 1872.

To all whom it may concern:

Be it known that I, JAMES D. STANLEY, of the city of Baltimore and State of Maryland, have invented certain improvements in process and apparatus whereby oil is distilled from pine wood, and purified inflammable gas produced for purposes of illumination or otherwise, of which improvements the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates, first, to a process in which a vapor caused to issue from pine wood is introduced into condensing water, to the surface of which it, as a condensed body, by reason of its inferior specific gravity, arises in the form of oil; the portion of the vapor not undergoing condensation rising as an inflammable gas, purified by its passage through the condensing water. The process is completed by the separation of the floating oil and gas from the water and united acids, the oil passing into a separating-chamber, the gas into a gasometer, and the condensing water and acids passing or flowing off as waste. My invention relates, secondly, to certain improved apparatus hereinafter described, used in the above-named process.

In the accompanying drawing, forming a part of this specification, Figure 1 is a vertical longitudinal section of the apparatus above named. Fig. 2 is a sectional front view. Fig. 3 is a top view of the condenser.

Similar letters of reference indicate similar parts of the invention in all the figures.

A is a cylindrical retort of any suitable contents, constructed of sheet or cast iron, and provided with a grate, *a*, front-hinged door *b*, and free discharge-openings and pipes *c*. The retort is set in masonry *A'* having an ordinary furnace or grate, *A''*. The pipes *c* leading from the retort enter the upper head of a condenser, B, extending downward some distance therein. An open inflowing pipe is shown at *d*, attaching to a pump, hydrant, or other point from which cold water may enter the condenser under pressure. An open outflowing pipe, *d'*, leads from the condenser B to a separating-chamber and gasometer, C, the upper portion of this receptacle being the gasometer, and the

lower the separating-chamber. A pipe, *f*, rises from the gasometer leading to any desired point. Two free discharge-pipes leading from the separating-chamber are represented by *ee'*.

The process of distilling and producing oil and purified inflammable gas by means of the apparatus herein described is as follows: Pine-wood sticks are placed lengthwise upon the grate *a* of the retort. The door *b* is then closed and fire applied to the furnace A. Cold water is injected through the pipe *d* into the condenser B, overflowing through that *d'* into the separating-chamber C, in turn issuing from it through the pipe *e'*. The pipes *c* are designed to extend below the level to which the water is allowed to rise within the condenser, reaching a short distance below the overflow-pipe *d'*. The vapor and acids generated and distilled from the heated wood enter the condenser B through the submerged pipes *c*, a portion of the vapor being condensed. This condensed body rises as an oil to the surface of the water. The water, by reason of its contact with the vapor, becomes heated, the heated water occupying with the oil the upper surface of the liquid, because specifically lighter than the cooler portion thereof. The warm water and floating oil flow together through the pipe *d'* into the separating-chamber C, when, again, because of the differences in specific gravity existing between the oil and water, the former flows off from the pipe *e*, and the latter through that *e'*. The necessity of providing a separating-chamber, C, is apparent. Otherwise condensation would soon cease by reason of the condensing water becoming warm. By the use of the pipe *d'* and chamber C the warmed water is continually displaced by cool water forced into the condenser B through the pipe *d*. The oil as it departs from the pipe *e* is entirely separated from the water. The acids from the wood unite with the water in the condenser and pass off with it as waste. That portion of the vapor not condensed issues with the oil and warm water from the condenser B through the pipe *d'* into the gasometer formed of the upper portion of the separating-chamber C. This vapor is conveyed thence as an inflammable gas by means of the pipe *f* to any desired locality. The wood at the end of the process is removed from the retort in good condition as charcoal.

A principal object of my invention is to produce an apparatus for the purposes named, in which the expensive worm-pipes, condensers, and receivers ordinarily used, shall be dispensed with.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. The process of producing oil and inflammable gas, substantially as hereinbefore described.

2. In combination with the retort A, the condenser C and open pipes *c*, substantially as and for the purposes set forth.

3. The condenser B having the pipes *d* and *d'*, combined with the separating-chamber and gasometer C having the pipes *e e'* and *f*, substantially as set forth, for the purposes specified.

In testimony whereof I have hereto subscribed my name in the city of Washington, this sixth day of August, in the year of our Lord eighteen hundred and seventy-two.

JAMES D. STANLEY.

Witnesses:

GEO. H. HOWARD,
EDM. F. BROWN.