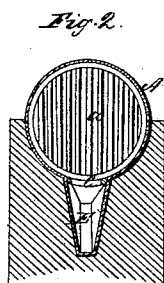
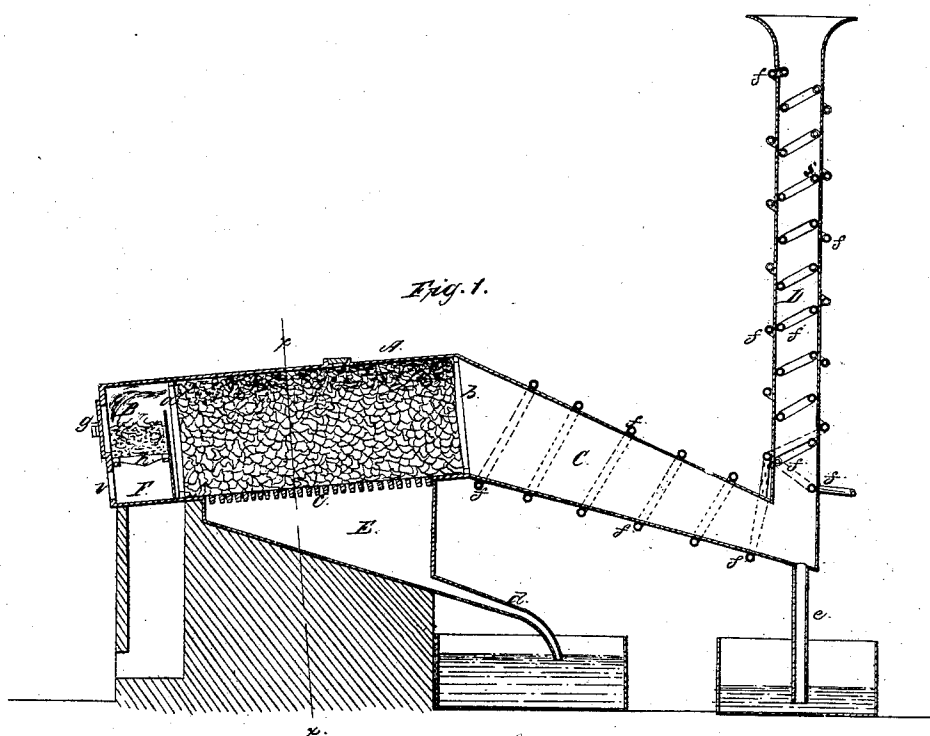


C. I. VAN WYCK.
 APPARATUS FOR DISTILLING OIL FROM COAL.
 No. 27,603. Patented Mar. 20, 1860.



Witnesses:
B. Brown
M. M. Livingston

Inventor:
C. I. Van Wyck

UNITED STATES PATENT OFFICE.

C. I. VAN WYCK, OF NEW YORK, N. Y., ASSIGNOR TO JOHN M. MACAULAY,
OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR DISTILLING OIL FROM COAL.

Specification forming part of Letters Patent No. 27,603, dated March 20, 1860.

To all whom it may concern:

Be it known that I, CORNELIUS I. VAN WYCK, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Distilling Coal and other Substances to Obtain Oils or other Products; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of an apparatus constructed according to my invention. Fig. 2 is a transverse vertical section of the same in the plane indicated by the line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

My invention consists in a certain construction of an apparatus for distilling coal or other substances, with provision for the simultaneous extraction or evolution and separation of oils or other products of two different qualities or specific gravities.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a retort, which may be of the cylindrical form shown or of other form, set in a position slightly inclined from the horizontal, having its ends *a b* of grate-like construction or perforated, and having a narrow grate, *c*, in its bottom, of the whole or nearly the whole length thereof. At the lower end of this retort there is provided a fire-box, B, and from the higher end there descends an inclined taper trunk, C, the lower end of which communicates with an upright hollow chimney-like shaft, D.

Under the grate *c* is a deep conductor, E, of the whole width and depth of the said grate, said conductor having its bottom inclined in the opposite direction to the inclination of the retort, and having at its lower end a pipe, *d*, which is intended to dip into a receiver and condenser, which before the commencement of the operation of the apparatus should contain sufficient water to seal the said pipe.

At or near the lower end of the trunk C and below the upright shaft D there is a descending vertical pipe, *e*, which is intended to dip into a receiver and condenser, which before

the commencement of the operation of the apparatus should contain sufficient water to seal the mouth of the said pipe. The upright shaft D is surrounded externally and internally by a coiled pipe, *f*, which enters it near the bottom, and, after forming numerous coils around the interior, leaves it at the top, and is coiled around its exterior nearly as far as its bottom, from whence it is continued in a coiled form around the trunk C. The portion of this pipe that is outside of the shaft D and trunk C has numerous small perforations; but the portion within the shaft is not perforated. The fire-box B is furnished with a door, *g*, for the introduction of fuel, and the ash-pit F below the fire-grate *h* of the said fire-box is furnished with a suitable opening, *i*, for the admission of air in sufficient quantity to support combustion. The retort A is furnished with one or more man-holes, *j*, for the introduction of the coal or other substance to be distilled and the taking out of the residuum, and for such other purposes as they may be desirable. The retort A having been charged with the coal or other substance to be distilled and its man-holes closed, and fire having been made in the fire-box B with anthracite coal or other fuel that emits little or no smoke or vapor, cold water is admitted freely through the pipe *f*, and the operation is as follows: The heated gaseous products of combustion and all the heat escaping from the fire-box B pass through the grate *a* into and through the retort A and heat the charge therein, and the spent gases escape by the trunk C and shaft D. The lighter vapors evolved from the charge by the heat escape to the trunk C and shaft D, in both of which condensation is produced by the cooling effect of the water circulating through the pipe *f* and oozing from the perforated portions thereof and flowing over the exterior of the said trunk and shaft, so that none of the said vapors escape, but that they are condensed and caused to flow down the sides and bottom of the trunk C and down the shaft D to the pipe *e*, through which the lighter oil or other substance, being the product of condensation, is conveyed to the receiver provided for them; but the heavier vapors and such oily or other matters as may be melted from the coal or other substance in the retort pass through the grate *c* and conductor E to the

pipe *d*, which conveys them into the cooling receiver and condenser provided to receive them, to be afterward subjected to redistillation, purification, or such further treatment as may be necessary. By thus providing for the escape of the heavier products the lighter ones are permitted to be evolved very freely, and a charge is enabled to be worked off in much less time than in any other apparatus.

The retort A, trunk C, shaft D, and conductor E may be made of iron, fire-clay, brick, or such other materials as may be found in practice most suitable. The retort, instead of being heated internally, as described, may be heated by fire applied to its exterior.

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

The construction of a retort with a grate, *c*, in the bottom, and an inclined conductor, *E*, below such grate, as described, such conductor not being the outlet for the gaseous products of combustion of the fire by which the retort is heated.

C. I. VAN WYCK.

Witnesses:

B. GRIOUR,

M. M. LIVINGSTON.