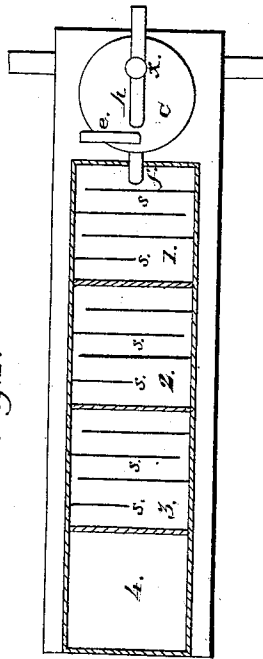
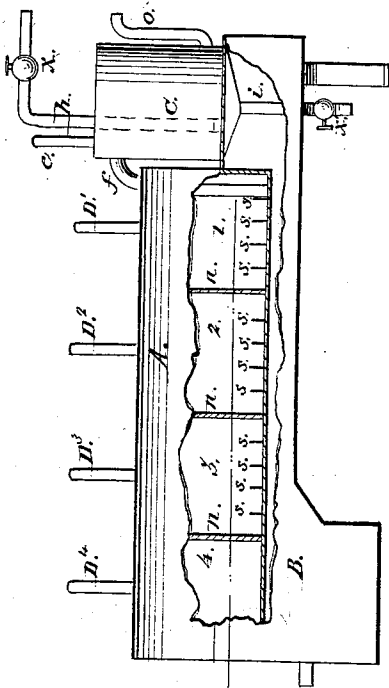
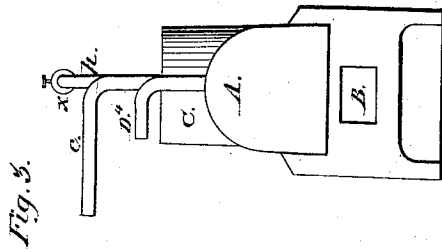


Hill & Thumm, Oil Still,

N^o. 101,365.

Patented Mar. 29. 1870.



Witnesses:
Geo. H. Thomas
Wm. J. Hutchinson

Inventors:
Hill & Thumm
By their attorney J. Johnston

United States Patent Office.

SAMUEL A. HILL AND CHARLES F. THUMM, OF OIL CITY, ASSIGNORS TO THEMSELVES
AND OLIVER P. SCAIFE, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 101,365, dated March 29, 1870; antedated January 18, 1870.

IMPROVEMENT IN STILLS FOR HYDROCARBONS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, SAMUEL A. HILL and CHARLES F. THUMM, of Oil City, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Stills for Hydrocarbon; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

The nature of our invention consists in dividing a still for hydrocarbon into a series of compartments which communicate with each other by suitable opening in the partitions at or near the bottom of the still, and providing each compartment with a goose-neck and condensing-pipe, and providing the bottom of the still with a series of plates, so arranged that the hydrocarbon will flow in a zigzag current over the bottom of the still, the whole being so constructed and arranged that a continuous distillation may be carried on.

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

In the accompanying drawings which form part of our specification,

Figure 1 is a side elevation of our improvement in stills for hydrocarbons, and represents a portion of the still broken out for the purpose of showing the arrangement of the interior of it.

Figure 2 represents a section of the still when cut through at line *y*, fig. 1.

Figure 3 is a front end elevation of the still.

In the drawing—

A represents the still, which is provided with a flat bottom, and is divided into a series of compartments by means of the partitions marked *n*. In each of the partitions, at or near the bottom of the still, are made suitable openings for the purpose of allowing the hydrocarbon to flow from one compartment into the other.

The bottom of the still is provided with a series of plates set on their edge, and so arranged as to form a zigzag course or ways for the hydrocarbon oil to flow through and over the bottom of the still.

Each compartment of the still is provided with a suitable goose-neck, to which may be connected condensing-pipes.

B represents the furnace of the still, at the back end of which is arranged a tank, C, for heating the hydrocarbon oil and for separating it from the water prior to the oil entering the still.

To the bottom of the tank C is attached a pipe, *i*, for drawing off the water which is separated from the oil. This pipe is provided with a suitable valve, *x*.

To the upper end of the tank C are attached two pipes, marked *e* and *h*.

The pipe *h* extends down into the tank near to its bottom, and is used for conveying oil into the tank, and is provided with a valve, *x*.

The pipe *e* is used for carrying off the vapor and gas evolved during the heating of the oil and separating of the water from it. This pipe *e* may be connected with a suitable condensing device when so desired.

To the side of the tank C is attached a pipe, *f*, which leads into the still, and is used for conveying the oil from the tank into the still, and should be provided with a valve to regulate the flow from one to the other.

The pipe marked O is used as a waste-pipe for carrying off the water from the tank.

Having all things arranged as herein described and represented, with the goose-necks D¹ D² D³ D⁴ attached to suitable condensing-pipes, the crude hydrocarbon oil is allowed to flow from its reservoir, or is forced by a pump through pipe *h* into the tank C.

A fire is then made in the furnace B. The oil in the tank C becomes heated sufficiently to cause a complete separation of the water from it. The water settles to the bottom of the tank, and the oil rests on the top of the water.

When the oil rises up in tank C to pipe *f* it commences to flow into the still in the compartment marked 1; and flows in a zigzag current between the plates *s* in a thin sheet over the bottom of compartment 1, and passes through openings in the partitions *n* into the compartment 2, and, flowing in like manner over the bottom of compartment 2, enters compartment 3, and, flowing in the same manner through it, finally enters compartment 4.

By thus causing the oil to flow in zigzag currents and in a thin sheet over the bottom of the several compartments of the still, a continuous distillation can be carried on with great advantage as to cost, and gain in the quantity and quality of the product of oil.

The crude oil, as it flows in the manner hereinbefore described in compartment 1 of the still, evolves the light volatile portion of it which passes off through the goose-neck D¹ to its condenser; that portion which is not evolved passes into compartment 2, where another portion of it is evolved. The evolved portion passes off through goose-neck D² to its condenser, and the unevolved portion flows into compartment 3, where another portion of it is evolved, which evolved portion passes off through the goose-neck D³ to its condenser, and the unevolved portion finally flows into the compartment 4, where another portion is evolved, which passes off through the goose-

neck D' to its condenser, and that portion which is not evolved (a tarry matter known as residuum) is drawn off and used as a fuel or for other purposes.

By distilling hydrocarbons in the manner hereinbefore described, oils of four different degrees of specific gravity are obtained, which may afterward be so mixed and combined together as to always obtain a burning oil of a uniform specific gravity and desired "fire-test."

We do not claim a still divided into a series of compartments, for such device may be seen in the patent granted Jacob Reese, May 19th, 1863.

Having thus described the nature, construction, and operation of our improvements,

What we claim as our invention is--

A still divided into a series of compartments, the bottom of each compartment being provided with zig-zag ways or channels, the compartments communicating with each other, and provided with a "goose-neck" and condenser, substantially as described.

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Witnesses:

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