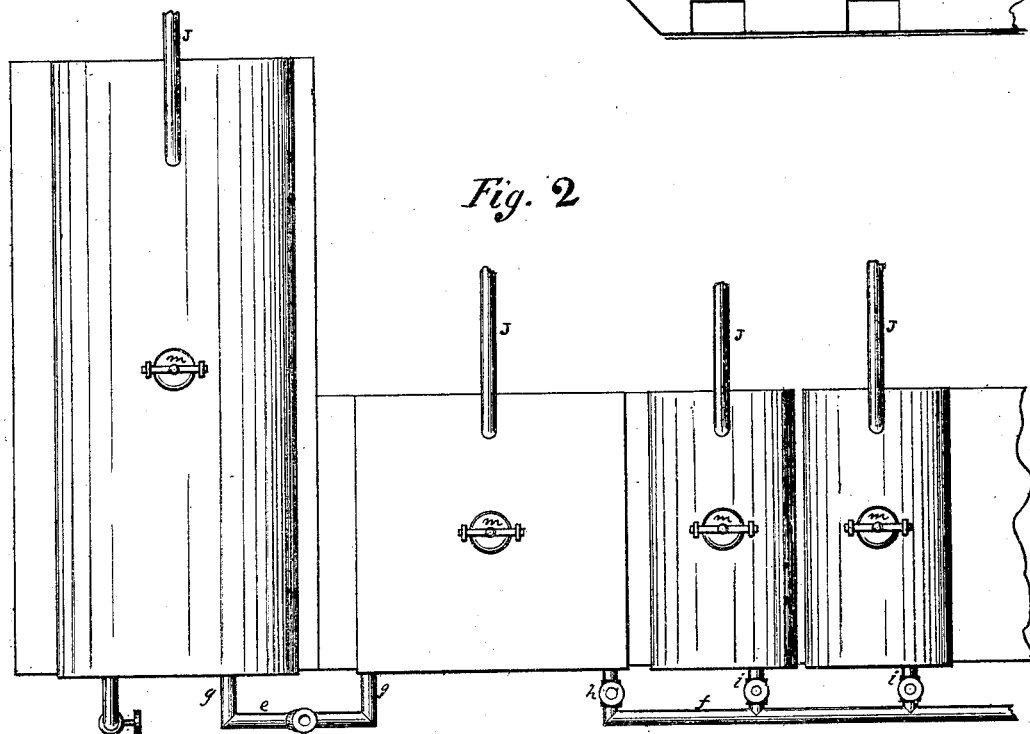
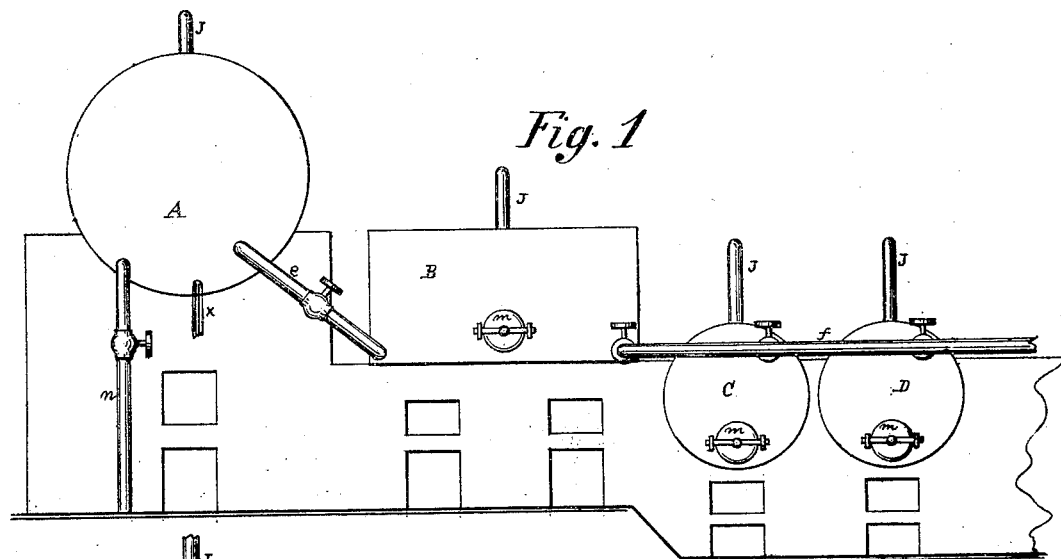


S. A. HILL & C. F. THUMM.

Improvement in Distilling Hydrocarbon Oils.

No. 114,293.

Patented May 2, 1871.



Witnesses.

James L. Johnston
L. C. Thomas

S. A. Hill
Chas F. Thumm

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. 114,293, dated May 2, 1871.

IMPROVEMENT IN DISTILLING HYDROCARBON OILS.

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, both of Oil City, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Operating Stills for the Purpose of Preventing Explosions; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The object and nature of our invention consist in preventing the explosion of stills used for distilling hydrocarbon oils where hot oil is transferred from one still to another in the process of distilling it, by placing in the still which is to receive the hot hydrocarbon oil a small quantity of cold oil which is heated to the evolving point prior to its receiving the hot oil, or by placing a quantity of oil in the still to which is to be transferred the hot oil, and arranging the pipes which convey the oil from one still to the other so that the hot oil will enter the still at a point which is below the surface of the cold oil, or by charging the still which is to receive the hot oil with carbonic-acid gas or its equivalent prior to charging it with the hot oil, the whole being for the purpose of expelling the air from the still prior to transferring hot oil into it.

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

In the accompanying drawing which forms part of our specification—

Figure 1 represents a front elevation of a series of stills for distilling hydrocarbon oil by evolving a portion of the oil in one still and then transferring it to another in the process of distillation.

Figure 2 is a top view of the same.

In the accompanying drawing—

A, B, C, and D represent a series of stills, which is connected together by means of pipes *e* and *f* and branch pipes *g*, *h*, and *i*.

Each still is provided with a "goose-neck," J, which should be connected to a suitable condenser.

The stills are also provided with man-hole openings. *m* represents the furnaces for the stills.

The operation of distilling the oil is as follows:

The crude oil is placed in the still A through the medium of pipe *n*, where it is, by the application of heat, freed from water and dirt, which will settle down to the bottom of the still and is then drawn off at pipe *z*. The benzole in the oil is evolved in this still and

passes off at the goose-neck J, and is condensed in the usual manner.

After the oil is freed from the water, dirt, and benzole it is transferred to still B, and then still A is again filled with crude oil.

The oil in still B is then evolved until it is near the point where it is liable to incrust the bottom of the still; it is then transferred to still C.

The still B is then filled from still A, and it again filled with crude oil.

The oil in still C is evolved until there is nothing but tar or a dry residuum remaining in the still.

The next oil from still B is transferred to still D, so that the still C can be cleaned for the purpose of receiving a fresh supply of oil from still B.

The stills C and D are alternately filled from the still B, and each time the oil in still B is transferred to still C or D it is again filled from still A, which is again filled with crude oil.

From the foregoing description the skilled refiner will readily understand the manner of working with the stills.

We will now proceed to describe the means we use for preventing the explosion of stills, which is very liable to occur when hot oil is transferred from one still to the other in the process of distilling in the manner hereinbefore described.

To prevent the explosion of the still which is to receive the hot oil, we place a small quantity of the crude oil in the still and heat the still until the oil evolves and expels the air from the still; or we place a small quantity of oil in the still and allow the hot oil to flow gradually into the still under the surface of the oil in the still, and thereby gradually heat it and evolve it so as to expel the air from the still; or we charge the still which is to receive the hot oil with carbonic-acid gas or its equivalent prior to charging the still with the hot oil. By expelling the air from the still which is to receive the hot oil all danger of explosion is avoided.

Having thus described the nature and object of our improvement,

What we claim as of our invention is—

The method and means hereinbefore described for displacing or expelling air from stills prior to charging them with hot oil, as and for the purpose set forth.

S. A. HILL.

C. F. THUMM.

Witnesses:

JAMES J. JOHNSTON, Jr.,

HENDERSON E. DAVIS.