

(No Model.)

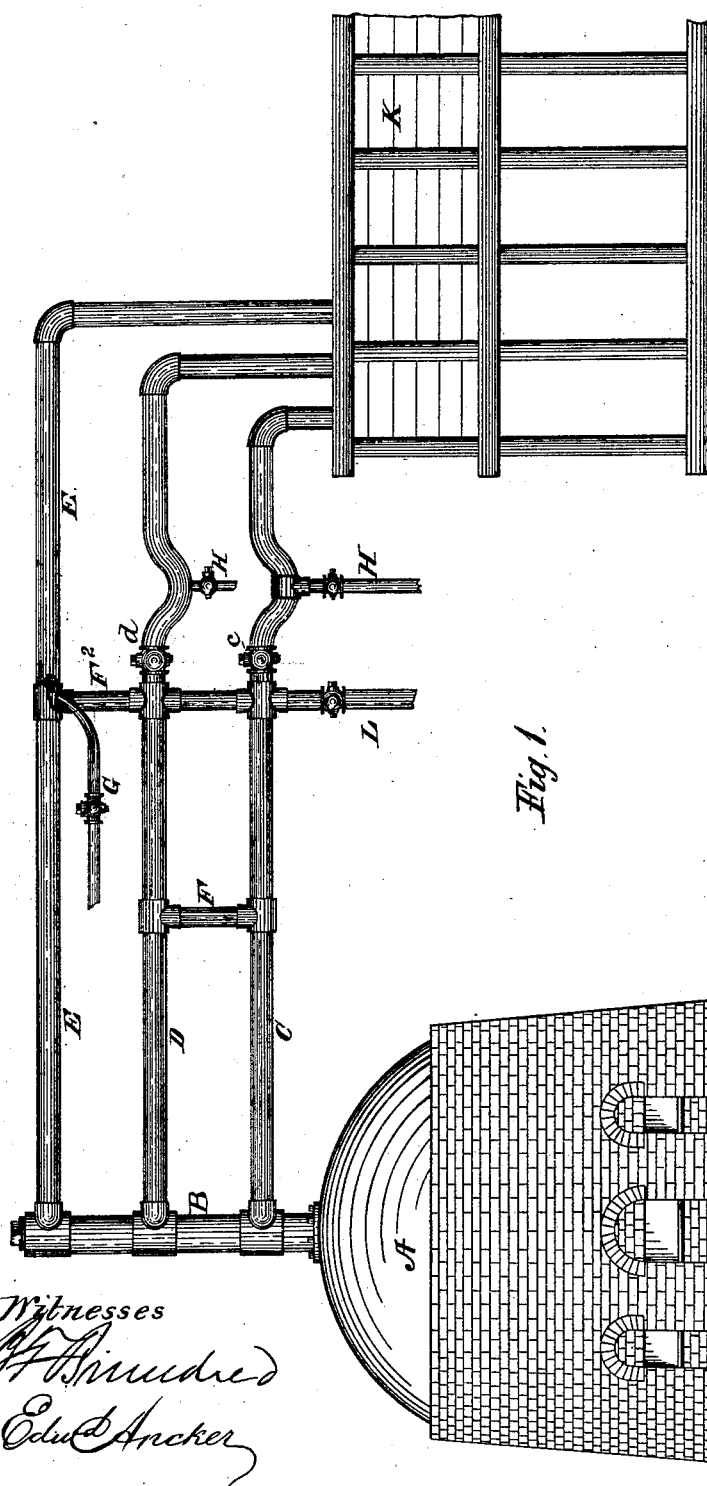
2 Sheets—Sheet 1.

W. C. HALL:

APPARATUS FOR SEPARATING PETROLEUM VAPORS.

No. 266,990.

Patented Nov. 7, 1882.



Witnesses

Alfred
Edw Ancker

Inventor:

William Carson Hall,

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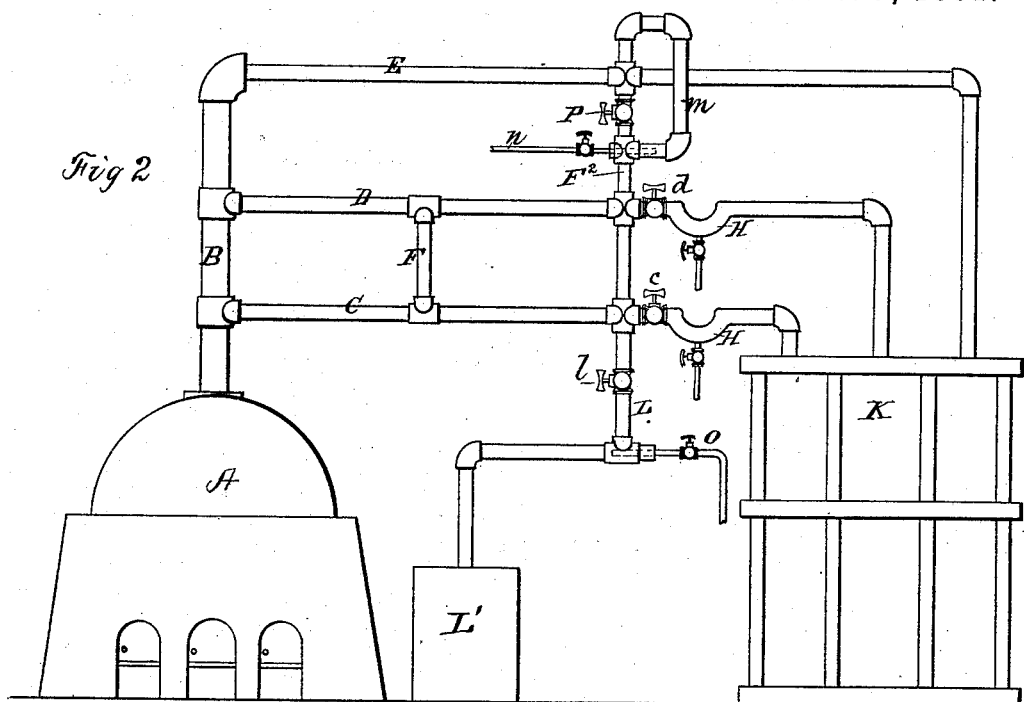
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Witnesses.
B. A. Mumford
Edward Ancker.

Inventor.
William Carson Hall,

UNITED STATES PATENT OFFICE.

WILLIAM C. HALL, OF OIL CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO BENJAMIN F. BRUNDRED, OF SAME PLACE.

APPARATUS FOR SEPARATING PETROLEUM VAPORS.

SPECIFICATION forming part of Letters Patent No. 266,990, dated November 7, 1882.

Application filed July 19, 1881. (No model.)

To all it whom may concern:

Be it known that I, WILLIAM CARSON HALL, a citizen of the United States, residing at Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Separators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to an apparatus for separating petroleum vapors and distillates and obtaining products of different specific gravities in refining petroleum; and it consists in attaching to the goose-neck, at different heights thereon, two or more branches or pipes leading to a condenser, so that the lighter vapors shall seek and pass through the higher branches and the heavier ones through the lower pipes or branches, and also in uniting the said high and low pipes at a point between the goose-neck and the condenser and admitting steam into the pipes carrying the vapors, as will be hereinafter described in connection with the drawings, and then pointed out in the claims.

In the drawings, Figure 1 represents a side view of my apparatus. Fig. 2 is a side view of the same, with the addition of a small tank to receive gummy matter, and showing a slight modification in the arrangement of the pipes through which steam is admitted in the apparatus.

In said drawings, A represents a still; B, the upright outlet or goose-neck thereof.

C, D, and E are horizontal pipes, connected at different heights to said goose-neck to lead the vapors from the upright pipe B toward a condenser, K. The pipes C and D are united by a short vertical pipe, F, and the pipes D and E are united by means of the pipe F².

G is a steam-pipe leading (in Fig. 1) a jet of steam into the upright F², adjacent to the point where it enters the pipe E, its object being to carry over and prevent any vapors condensed in the fore part of the pipe E from running down into the pipe F², and also helps to

draw light vapors up in pipes F and F². The vertical connecting-pipe between the pipes C and D is for the purpose of letting light vapors pass up from the pipe C to D and heavy or condensed vapors to pass down from the pipe D to the pipe C. These pipes C and D have traps H, provided with outlets for emptying them when not in use. These pipes are also connected with the vertical pipe L, used for drawing off the gum or thick products, &c., from the apparatus, and while this is done the stop-cocks *c* and *d* in the pipes C and D are closed.

Fig. 2 shows clearly the means for drawing off the gum through the pipe L. A steam-pipe, O, admitting a jet of steam in the lower end of said pipe facilitates the expulsion of the gum from the pipe L to the tank L'. The pipe F² in Fig. 2 is provided with a cock, P, that can be closed, and the steam-jet is introduced into the apparatus through a coupling-joint under said cock, and into the lower end of the pipe *m*, leading into the top of the upper vapor-pipe, E.

In using the apparatus constructed as shown in Fig. 2, when the vapors start to come over from the still the cock *l* in pipe L and cock P in pipe F² are closed, while the cocks *c* and *d* in pipes C and D are left open and steam is gently admitted in pipe *n*. Light vapors ascend through the vertical pipe or goose-neck B to the pipe E, and also through the pipes C and D, F² and *m*, and are condensed separately. The heavier vapors coming after follow the pipe D to the condenser, and the heaviest vapors follow the pipe C, and thus each gravity of vapors is condensed separately. When using the apparatus to obtain paraffine from tar, the cocks *c* and *d* in pipes C D are closed, and the cock *l* in pipe L is opened, and the thick and heavy products are drawn off through the pipe L into the tank L' with the aid of the steam-jet admitted through the pipe O.

I am aware that it is not new to use traps on outlet-pipes in the condenser or after passing the condenser. Neither is it new to employ steam-jets between a first and second distillation, as such devices are shown in the patent to J. W. Culmer, of July, 1879, and others.

I am also aware that it is not new, broadly, to separate a petroleum distillate in various

gravities, as shown in patent to J. H. Alexander, of June, 1880, and other patented apparatus. Nor is it new to take the vapors at different heights from the side walls of a still; but my construction differs from those heretofore used, as well as the results obtained.

What I claim is—

1. The combination of a still, a vertical pipe, B, secured to the top thereof, a series of pipes, C D E, connected at different heights to the pipe B, and united together again at a distance from the still, with a steam-pipe connected with the uppermost pipe, E, cocks *c d*, and traps H, upon the lower pipes, C D, leading from the still, substantially as and for the purpose described.

2. The combination of a still, a pipe, B, secured to the top thereof, a series of pipes connected at different heights to the pipe B, and united together by means of a suitable pipe, L, with a tank, L', and steam-pipe O to lead a jet of steam toward said tank, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM CARSON HALL.

Witnesses:

EDWD. AUCKER,
B. F. BRUNDRED.