H. B. EVEREST.
Distillation of Oil.

No. 212,914 Patented Mar. 4, 1879.

FIG. 1.

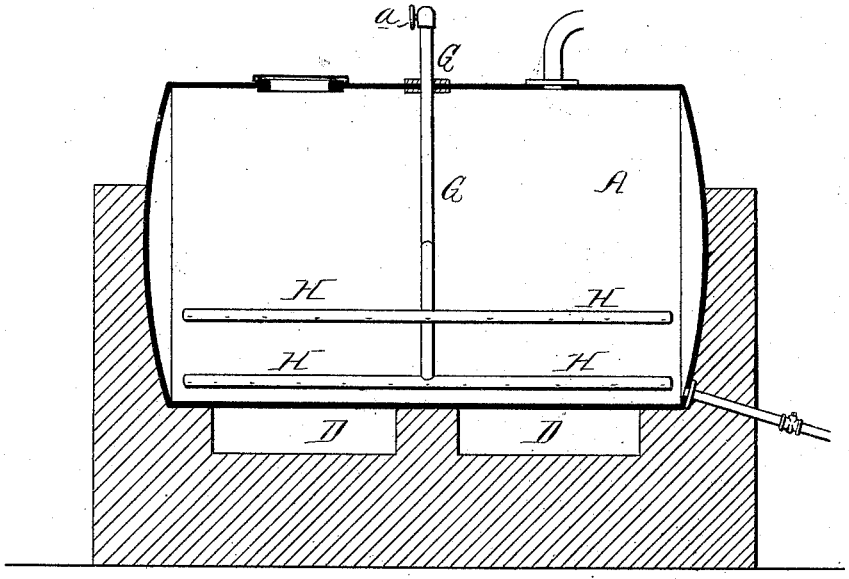
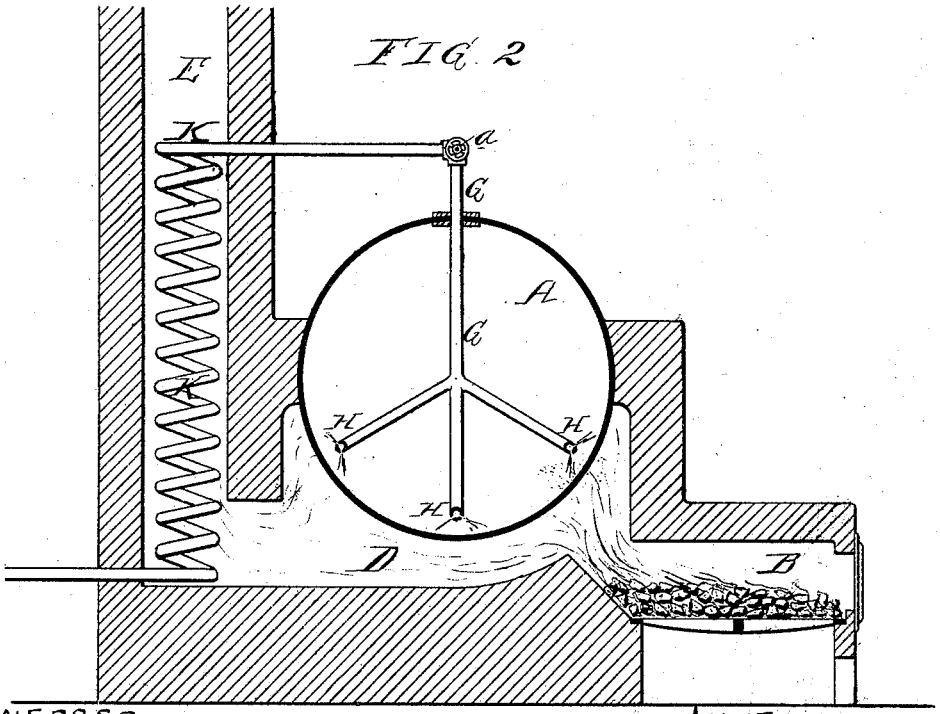


FIG. 2



WITNESSES.
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UNITED STATES PATENT OFFICE.

HIRAM B. EVEREST, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN THE DISTILLATION OF OILS.

Specification forming part of Letters Patent No. **212,914**, dated March 4, 1879; application filed November 11, 1878.

To all whom it may concern:

Be it known that I, HIRAM B. EVEREST, of Rochester, New York, have invented a new and useful Improvement in the Distillation of Oils, of which the following is a specification:

The object of my invention is to prevent the scorching or burning of the residual heavy hydrocarbon oil in a petroleum-still when such residual oil is produced at so high a temperature in the distilling-vessel as to be in danger of ignition while drawing the same directly from the still on the completion of the finished batch, and when, by leaving the finished batch in the still to cool, it would be sure to scorch or burn, and thus injure the quality of the manufactured residual oil.

For a more definite description of what I mean by the term "unburned residual heavy carbon oil" reference may be had to the reissued Patent No. 7,321, dated September 26, 1876.

In the accompanying drawings, Figure 1 is a transverse section, and Fig. 2 a longitudinal section, of a petroleum-still in which my invention may be carried into effect.

The still consists, in the present instance, of a cylindrical vessel, A, set in suitable brickwork containing two fire-places, B B, and flues D, communicating with the chimney. It will be unnecessary to describe the structure minutely, as my invention may be practiced in many of the oil-stills now in use.

It will be sufficient to state that there is the usual outlet-pipe for the passage of the vapor to the condensing-worm, the usual pipe for the introduction of the oil into the still and outlet for discharging the residual oil, and the ordinary man-hole with its cover.

A pipe, G, passes into the still, where it communicates through branches with horizontal pipes H, three in number in the present instance, and these are situated near the shell of the still above the flue D. A supply of steam is introduced into the pipe G, and, under the circumstances explained hereinafter, is projected in jets through perforations in the pipes H against the interior of the shell at points immediately above the flues, the steam being derived from any neighboring generator, and being superheated by causing it to pass through a coil, K, in the chimney E before it reaches the pipe G, which is furnished with a suitable valve or cock, *a*.

In stills heated by the direct action of the products of combustion, steam has been applied directly to the oil in the still, preferably in close contact with the inner surfaces of the still nearest to the fire, through perforated pipes—a plan by which better results have been obtained than when direct fire is used without the application of steam to the oil; but prior to my invention no successful manufacture of unburned residual heavy oils had been accomplished by this process, for the following reasons: After the batch had been reduced, by distilling off the volatile oils, to the desired grade or gravity it had reached so high a temperature in the still that it could not be drawn off without danger of ignition when being brought in contact with the air; hence the attendant was compelled to leave the finished oil in the still for several hours, or until it was reduced to such a temperature that it could be drawn off with safety. The invariable plan of facilitating this cooling prior to my invention was to draw the fires and rely upon the gradual effects of the atmosphere for a reduction of temperature. The result of this was the deterioration of the batch by scorching or burning, owing to the heavy oil in the still being permitted to remain in a quiescent state while exposed to the heat imparted to the still by the surrounding brickwork, which retained the heat acquired from the fuel long after the fires were drawn.

It has been usual, prior to my invention, to shut off the steam at or about the time the fires were drawn; but I have ascertained that by continuing the introduction of steam into the still, and preferably into the oil, after the fires have been drawn, the cooling of the oil is so facilitated that it can be drawn off without danger of ignition, and the finished batch is thereby prevented from being impaired by burning or scorching. This introduction of steam has a twofold effect: As it is no longer superheated in the coil after the fires have been drawn, it exerts a cooling influence on the oil in the still, and at the same time maintains it in a state of agitation. This, with the cooling of the exterior of the still after the fires have been drawn, soon reduces the re-

sidual heavy oil to a condition which permits its withdrawal from the still before it can be scorched or burned.

It will thus be seen that my invention does not consist of the application of steam to the oil in a still, but in continuing the injection while the exterior of the still is exposed to the cooling influences of the atmosphere; hence

I claim as my invention—

The mode herein described of preventing the scorching or burning of residual heavy oils in stills, which consists in injecting steam into the still after the distilling operation has been discontinued, and after the fires have been drawn, thereby cooling and agitating the residual oil by the steam simultaneously with the cooling of the surface of the still, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HIRAM B. EVEREST.

Witnesses:

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