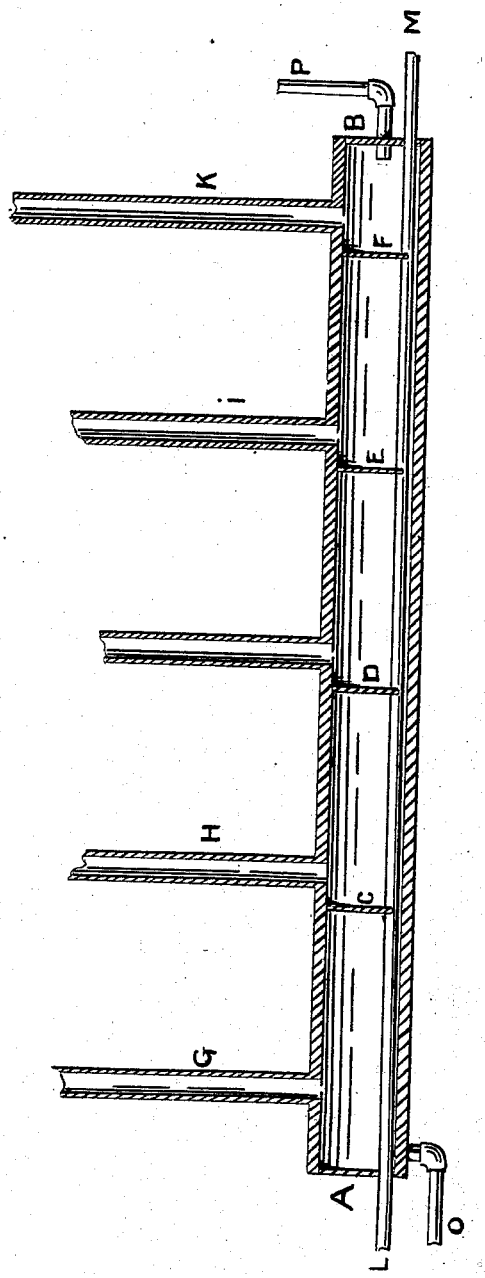
T. McGOWAN.

Distillation of Hydrocarbon Oils.

No. 166,285. Patented Aug. 3, 1875.



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UNITED STATES PATENT OFFICE.

THOMSON McGOWAN, OF MEREDITH, PENNSYLVANIA.

IMPROVEMENT IN THE DISTILLATION OF HYDROCARBON OILS.

Specification forming part of Letters Patent No. **166,285**, dated August 3, 1875; application filed January 25, 1875.

To all whom it may concern:

Be it known that I, THOMSON McGOWAN, of Meredith, Venango county, State of Pennsylvania, have invented an Apparatus for the more perfect Distillation of Hydrocarbons, of which the following is a specification:

My invention is based upon the structure of the component parts of hydrocarbons being in regular and successive layers or series of different gravities, and upon the fact that for the purpose of securing the best results in the distillation each member or layer of these series should be removed successively, no more heat being applied at the time than is necessary to remove the member or series uppermost at that time.

In the drawings, A B represent the still or vessel used in the distillation. The shape of its cross-section is not essential, sufficient length being the greatest requisite. This still or vessel is set at a pitch or fall of about two inches in every one hundred feet. C, D, E, and F are divisions or partitions in the still, extending from the top and sides, which they closely join, nearly to the bottom. These partitions are sufficient in number to divide the still or vessel A B into as many compartments as there are products desired from the liquid being distilled. G H I K represent the vapor-pipes for conducting the several vapors to the condensers. L M represent a pipe through which is passed superheated steam, extending throughout the entire length of the still or vessel A B near its bottom. P is the feed-pipe, and O the discharge-pipe, of the still or vessel, by which any residue is removed which is not susceptible of vaporization by the heat evolved from superheated steam.

The liquid being introduced at one end, and the superheated steam at the other, the liquid being introduced into the exterior still, and the steam into the pipe P, two prime results are inevitable: First, the steam, in passing through the pipe L M, will gradually part with its heat, until the steam which passes out of the end M, and which may be used for other purposes, is of a much lower temperature than the steam which passes in at L; consequently the pipe L M is a cylinder of gradually decreasing temperature from one end to the other. Second, the liquid to be distilled, being introduced into the still at the eduction end of the steam-pipe, will encounter as it passes through the still, by means of the slight pitch or fall before mentioned, a constantly increasing heat, and its component parts or series, varying as they do in specific gravity, and requiring corresponding degrees of heat, would pass off successively in their proper order through the vapor-pipes, to be condensed in the usual manner.

The total length of the still, and the distance between the divisions and partitions, and the number of them, should be such as will secure a sufficient delay of the liquid in each compartment as to permit the passing off of such component parts of the fluid as will be vaporized by the degree of heat therein encountered.

I claim as my invention—

The combination, in an oil-still, of the elongated vessel A B, having a series of partitions, steam-pipe L M, extending throughout the length of the vessel, and vapor-pipes G, H, I, and K, projecting from the elongated vessel, all substantially as herein described.

THOMSON McGOWAN.

Witnesses:

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