C. A. KRECHLER.

Alcohol Still.

No. 6,586. Patented July 10, 1849.

FIG. 2.

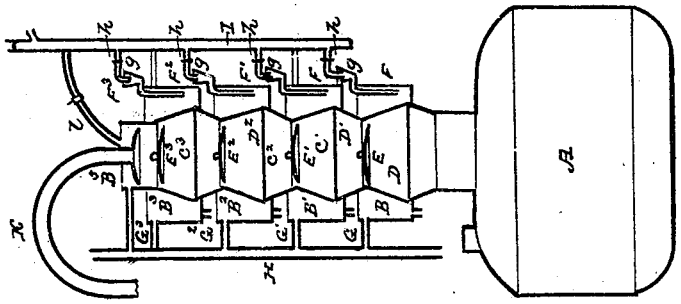


FIG. 3.

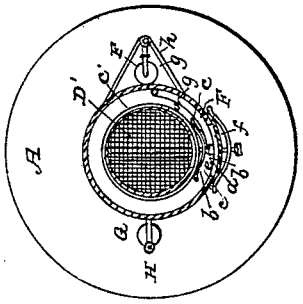
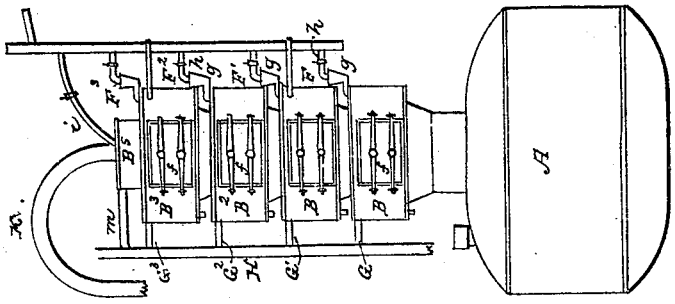


FIG. 1.



UNITED STATES PATENT OFFICE.

CHARLES A. KRECHLER, OF STOCKHOLM, SWEDEN.

IMPROVEMENT IN DISTILLING APPARATUS.

Specification forming part of Letters Patent No. 6,586, dated July 10, 1849.

To all whom it may concern:

Be it known that I, CHARLES A. KRECHLER, of the city of Stockholm, in the Kingdom of Sweden, have invented a new and useful Improvement in Apparatus for Distillation; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a front elevation of my improved apparatus. Fig. 2 is a vertical and central section of it. Fig. 3 is a horizontal section taken through one of the doors of the openings for the supply and removal of charcoal, as will be hereinafter described.

A, Figs. 1 and 2, is a boiling-vessel or evaporator, which may be made of copper, and tinned over on its interior surface, heat being applied to the same in any convenient manner. This vessel is intended to hold the liquid or matters from which spirit or alcohol is to be extracted by heat according to the usual process.

B B′ B^2 B^3 are a series of water tanks or cisterns constructed of copper or other suitable material, and made, respectively, to surround or inclose a series of conical frustum-shaped vessels, C C′ C^2 C^3, each of which is made of two hollow conic frusta as seen in Fig. 2. All these vessels freely communicate with one another and with the main evaporator A. At the junction of the two conic frustra, composing each of said vessels, a perforated partition, (seen at D, D′, D^2, or D^3,) or one made of woven wire, is extended entirely across the vessel. Within the upper part of each vessel is an inverted disk or meniscus-shaped circular plate, as seen at E, E′, E^2, or E^3, this plate being made in diameter a little less than that of the upper part of the interior of the vessel in which it is placed. The said plate is to be supported in position by any suitable contrivances that will allow steam or vapor to pass freely between part or portions of its circumference and the surrounding vessel, and from the said vessel into the one directly above it. The front of each of the vessels C C′ C^2 C^3 is to be provided with a rectangular or other proper shaped opening for the admission of charcoal, the said opening being seen at *a* in Fig. 3. It (the opening) is provided with a covering plate or door, *b*, which is firmly kept in place by means of arched bars *c* and screws *d*. Each of the surrounding water-vessels B B′ B^2 B^3 is also provided with a similar opening and door, as seen at *e* and *f*, the same being arranged directly in front of the openings of the vessels C, C′, &c., the said door being kept closed by any proper means. The object of these openings and doors is to enable a person to supply or fill each of the vessels C C′ C^2 C^3 with charcoal, and when necessary to remove the same therefrom.

Each of the water-cisterns is provided with one inlet and one outlet pipe, as seen at F F′ F^2 F^3 and G G′ G^2 G^3, the inlet pipe being furnished with a tunnel, *g*, at its top, and made to extend down and open into the lower part of the vessel. The outlet-pipe opens out of the top part of the vessel, and is made to enter into one common upright hollow conductor or column, H. Water is supplied to each of the tunnels by a faucet, *h*, connected with and opening from an upright vessel or pipe, I, which communicates with some reservoir or suitable source for supply of water. The top part of the upper vessel, C^3, is surrounded by a smaller water-vessel, B^3, which, like the other water-vessels, also has its inlet and exit pipes, as seen at *l* and *m*. A pipe, K, leads out of the upper part of the vessel C^3, and to a condensing apparatus of the ordinary kind, the latter not being represented, as it constitutes no part of my invention.

The mode of using the apparatus is as follows: The vessels C C′ C^2 C^3 being filled with charcoal, and their doors, as well as those of the surrounding water-vessels, being well closed, the boiler or evaporator is to be charged with raw brandy, whisky, or the matter from which alcohol is to be extracted. Heat is next to be applied to the evaporator in such manner as to boil its contents and cause the steam and alcoholic vapor to rise therefrom and pass up through the perforated partition D into and through the bed of charcoal resting thereon. The plate E above the charcoal reflects the steam and vapor and causes it to pass through and out of the sides of the mass, and thence upward between the plate and vessel C, and into the space directly below the next or succeeding perforated partition D′, thence through the said partition and into and through

the charcoal as before, this process being continued in each vessel until the alcoholic vapor finally escapes through the pipe K and runs into the condenser. When the steam and vapor passes into the first vessel, C, cold water is to be suffered to flow through the inlet-pipes F F, &c., and to fill the water-tanks B B′ B², &c., and escape out of the outlet-pipes G G′ G², &c., the size of the several streams of water flowing into the inlet-pipes being regulated by means of the faucets above them. The steam and alcoholic vapor, in passing through the charcoal, has the ethereal oil (Fuselöhl in the German language) and water extracted from it by the action of the charcoal, and the water or cooling liquid in the surrounding vessel, the temperature of the water being maintained at the point or degree which will condense the water or steam, and not the alcoholic vapor, the water, when so condensed, being suffered to flow back into the boiler or evaporator. By going through the several vessels containing the charcoal the alcoholic vapor will be nearly, if not completely, separated from the ethereal oil and water, and will pass into the condenser in a very pure state. When the charcoal becomes surcharged with the oil it may be again rendered useful by simply firing it, or glowing the whole mass of it, and afterward putting out the fire.

By means of my improved apparatus from one single distillation of common corn or potato whisky of about forty-nine per cent. strength we may obtain a clear alcoholic spirit of ninety to ninety-two and one-half per cent. strength. So with raw brandy or whisky, and the employment of certain chemical means in the apparatus which abstracts the water from the spirit, alcohol of about ninety-six or ninety-seven per cent. strength can be obtained. The apparatus will be found to be very useful in the manufacture of alcoholic spirit to be used with turpentine, and for the purpose of illumination. When a common mash of corn or potatoes is distilled through the apparatus, a clear spirit of about eighty-five per cent. can easily be obtained, and without employing any additional chemical concentrating means. The apparatus is very useful also for distilling alcohol from molasses or many other matters.

In the construction of my apparatus I do not confine my invention to the precise form or details hereinbefore specified, as the same may be changed to any extent and manner so long as the principle or part claimed as new is not altered.

What I claim as of my invention is—

The combination of one or more charcoal-chambers, and one or more water-vessels arranged and applied together, substantially as above specified, and for the purpose of cleansing the alcoholic spirit of ethereal oil (called in the German language Fuselöhl) and water, essentially as hereinbefore explained, each of the said charcoal-chambers being made either with or without the reflecting disk or plate arranged in its top, the same (viz., the disk) being for the purpose of causing the vapor which passes into the charcoal to escape laterally and impinge against the surrounding cooling vessels, whereby its water may be condensed, which would not so effectually take place were the vapor to pass directly and vertically through the mass of charcoal.

In testimony whereof I have hereto set my signature this 29th day of May, A. D. 1849.

CHARLES A. KRECHLER.

Witnesses:
R. H. EDDY,
JOHN NOBLE.