No. 667,522. Patented Feb. 5, 1901.

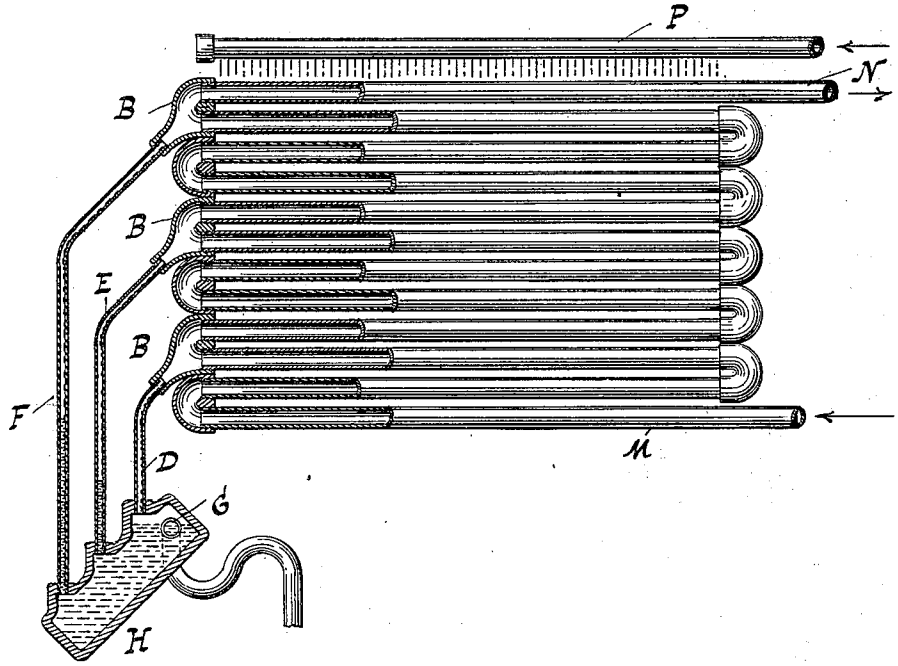
N. H. HILLER.

DISTILLING APPARATUS.

(Application filed Oct. 11, 1900.)

(No Model.)

Fig. 1



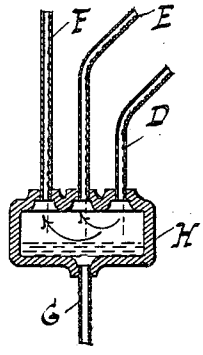




Fig. 2.

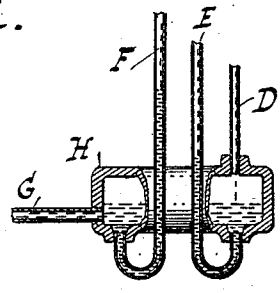



Fig. 3.

WITNESSES:

Charles Hanimann

John Smith Jr.

INVENTOR

Nicolai H. Hiller

BY

Rae & Dorsey

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

NICOLAI H. HILLER, OF CARBONDALE, PENNSYLVANIA.

## DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,522, dated February 5, 1901.

Application filed October 11, 1900. Serial No. 32,672. (No model.)

*To all whom it may concern:*

Be it known that I, NICOLAI H. HILLER, a citizen of the United States, residing at Carbondale, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Distilling Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to apparatus for rectifying volatile gases distilled from aqueous solutions.

The type of apparatus illustrated in the drawings and with which my invention is embodied comprises, essentially, a return-bend coil, through which the gas is passed, and a sprinkling-trough, which distributes a thin film of water over the coil, the return-bends at various heights being tapped by drip-pipes to receive the moisture or liquor deposited on the coil-pipes and convey the same to a receiver or header, from which this condensation is returned to the still.

In the accompanying drawings, Figure 1 represents such parts as will give a full understanding of the apparatus and with which my invention is embodied; Fig. 2, a detached view of that part of the apparatus as heretofore used and to which my invention appertains, and Fig. 3 a detached view of a header arranged horizontally with the respective pipes relatively connected like Fig. 1.

Referring to the drawings, it will be understood that the gas to be rectified enters the coil through the pipe M at the bottom and passes out through the pipe N at the top.

P is a sprinkling-trough, which distributes a thin film of water over the coil in the usual way. The return-bends B are tapped at various heights of the coil and communicate with drip-pipes D E F and through which the condensed liquor deposited in the coil-pipes A is conveyed to the receiver or header H and from this is returned to the still by means of a pipe G, this method of operation being well known in this class of apparatus in association with the horizontal receiver or header shown in Fig. 2.

In the use of the apparatus as referred to—that is, with the receiver or header H placed in its horizontal position and connected with the drip and return pipes, as shown in Fig. 2—a certain percentage of the gas passing down the lower drip-pipe D is by-passed through the other drip-pipes E and F, and thus escapes rectification.

The object of the present invention is to obviate this difficulty by preventing this by-passing of the gas through the pipes D E F in order to obtain a more perfect rectification.

The invention consists in connecting the return-pipe G with the header at a point below the first drip-pipe D and above the drip-pipes E and F, whereby the latter are sealed by the liquor and all by-passing of the gas thereby prevented. This may be accomplished by placing the receiver or header H in an inclined position, with the drip-pipes connected at different planes of elevation and the return-pipe G below the first drip-pipe D and above the drip-pipes E and F, as shown in Fig. 1 or as shown in Fig. 3, wherein the same relative connection of the respective pipes is made with a header used in a horizontal position.

While either arrangement above referred to will practically secure the result desired, I prefer the former arrangement—that is, with the header inclined, as shown in Fig. 1, which provides for any great variation of pressure between the coil-pipes M N, whereby the level of the liquid in the header might suddenly drop below the drip-pipe E. In this event the pipe F would still be sealed, due to its connection with the header at a lower point.

It will be observed that when the drip-pipes D E F are connected with the coil at different elevations, the height of the liquid column will be greater in the pipe F than in the pipe E preceding, due to the decreased pressure in the higher return-bend connecting with the pipe E.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for rectifying volatile gases, comprising a condensing-coil or equivalent, and a series of drip-pipes connecting with said coil at different heights and with a header or receiver in which the condensed liquor is collected and from which it is returned to the still for redistillation, a header having

the return-pipe connected at a point beneath the first drip-pipe connection and above the successive drip-pipe connections, whereby the latter are sealed by the liquor and the by-passing of the gas prevented, substantially as described.

2. The header or receiver H inclined from a level position with the drip-pipes connected at different heights of the collected liquor and the return-pipe connected at a point beneath the first drip-pipe connection, substantially as shown and for the purpose set forth.

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

NICOLAI H. HILLER.

Witnesses:
E. D. YARRINGTON,
J. R. VANDERFORD.