

No. 667,522.

Patented Feb. 5, 1901.

N. H. HILLER.  
DISTILLING APPARATUS.

(Application filed Oct. 11, 1900.)

(No Model.)

Fig. 1

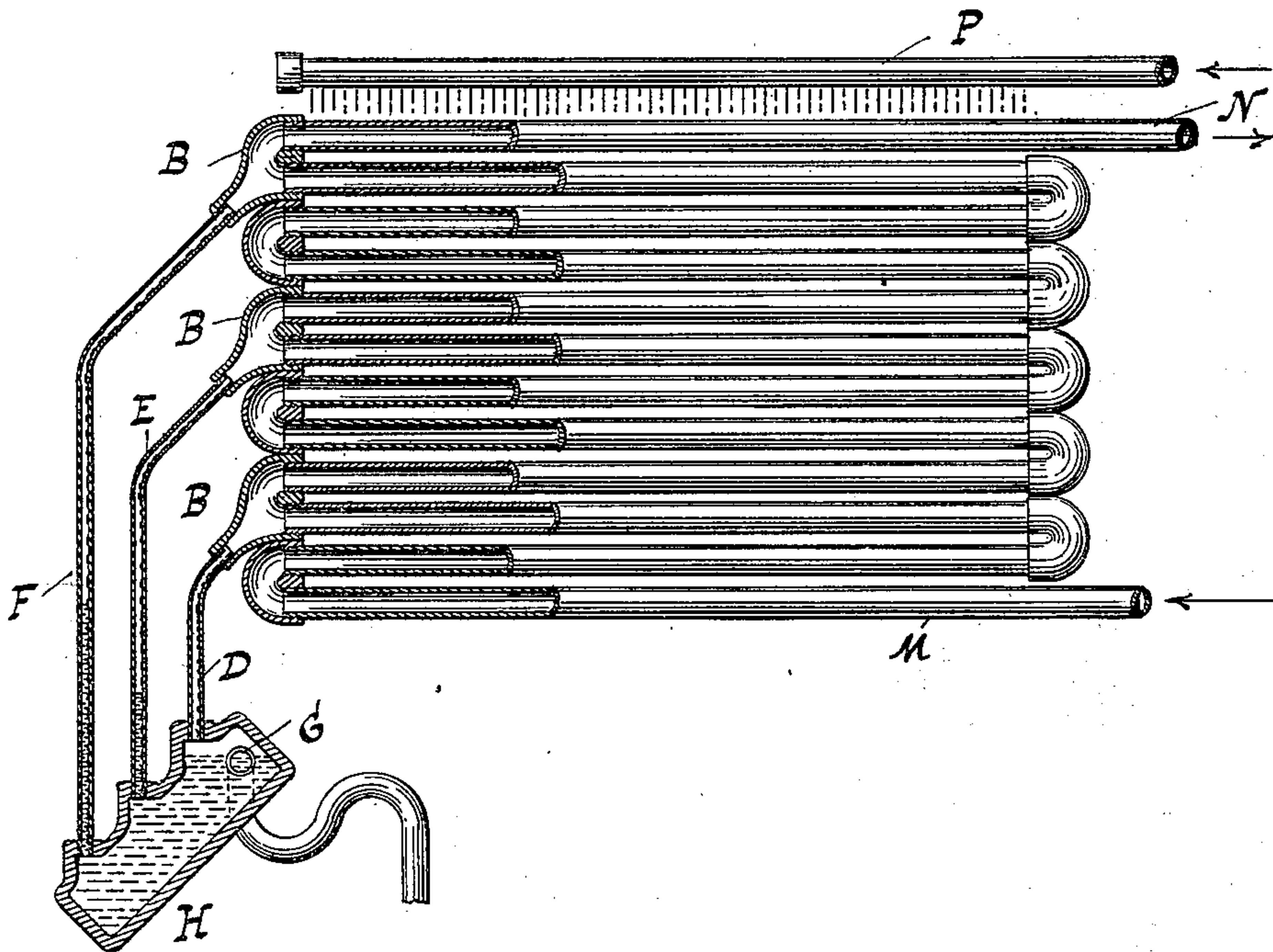


Fig. 2.

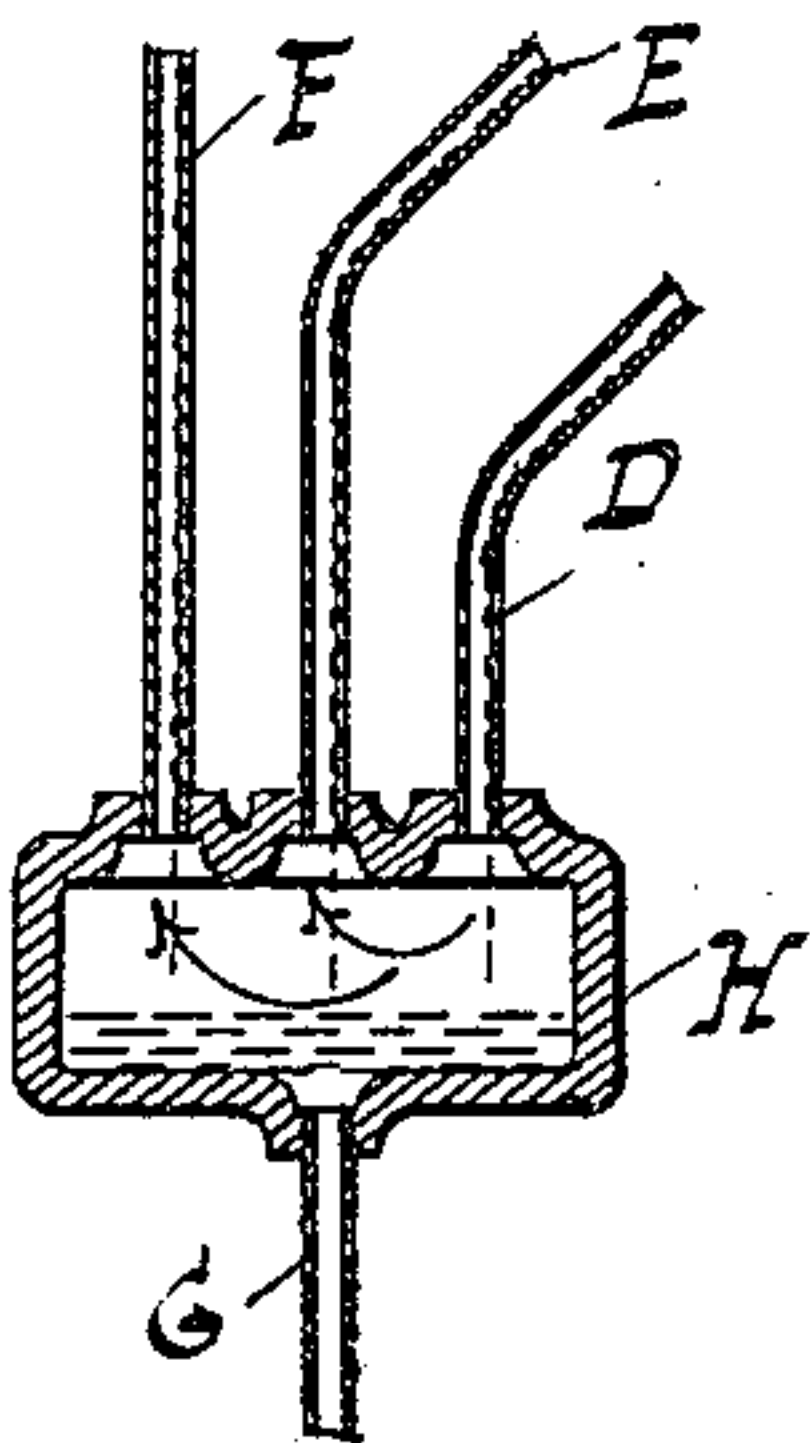
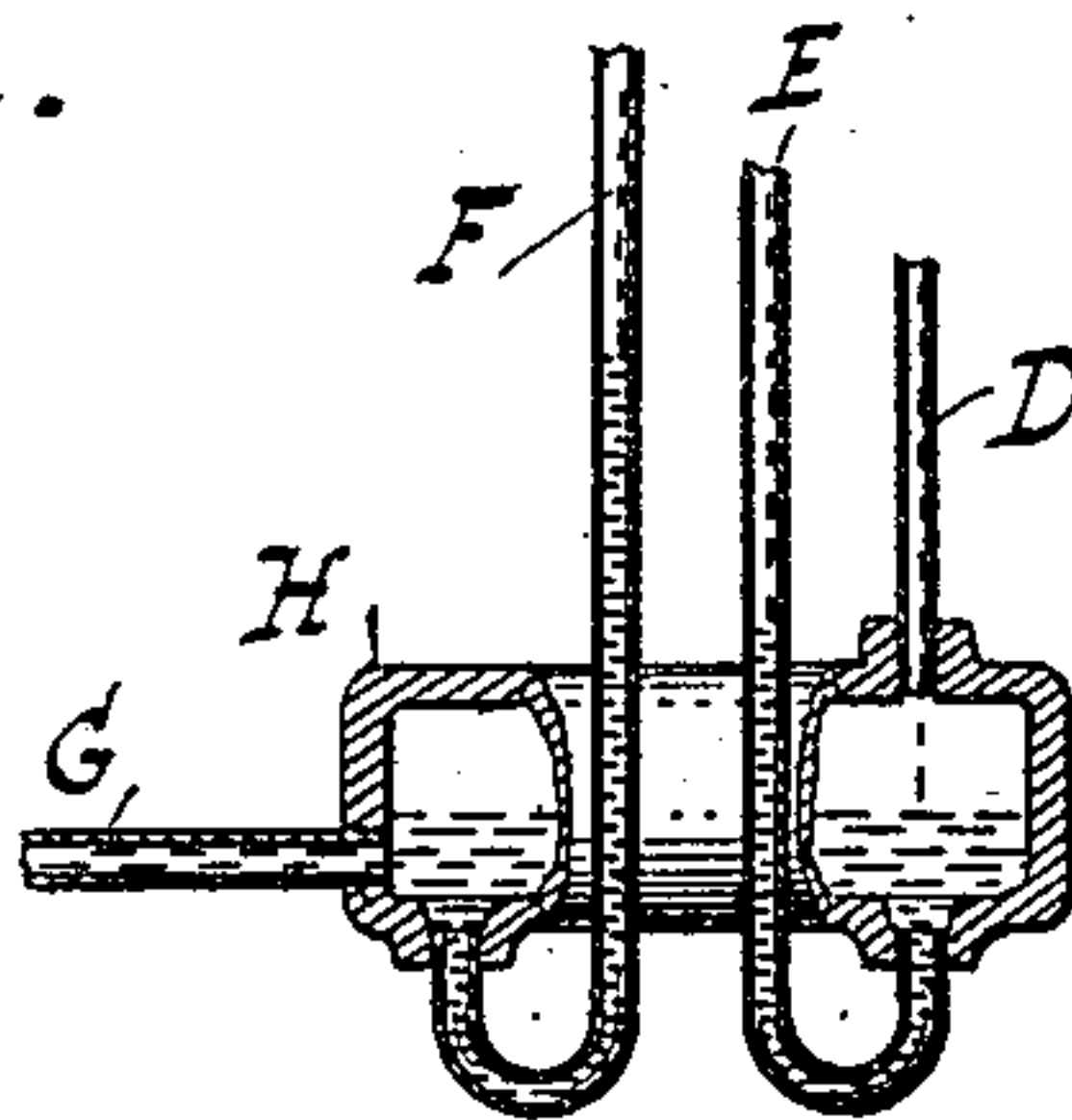


Fig. 3.



WITNESSES:

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## 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 Carbon-  
bondale, in the county of Lackawanna and  
5 State of Pennsylvania, have invented certain  
new and useful Improvements in Distilling  
Apparatus, of which the following is a speci-  
fication, reference being had therein to the  
accompanying drawings.

10 This invention relates to apparatus for rec-  
tifying volatile gases distilled from aqueous  
solutions.

The type of apparatus illustrated in the  
drawings and with which my invention is em-  
15 bodied 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  
20 to receive the moisture or liquor deposited  
on the coil-pipes and convey the same to a re-  
ceiver or header, from which this condensa-  
tion is returned to the still.

In the accompanying drawings, Figure 1  
25 represents such parts as will give a full un-  
derstanding of the apparatus and with which  
my invention is embodied; Fig. 2, a detached  
view of that part of the apparatus as here-  
tofore used and to which my invention ap-  
30 pertains, and Fig. 3 a detached view of a  
header arranged horizontally with the respec-  
tive pipes relatively connected like Fig. 1.

Referring to the drawings, it will be un-  
derstood that the gas to be rectified enters  
35 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 vari-  
40 ous 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  
45 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—  
50 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 55  
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 rectifica- 60  
tion.

The invention consists in connecting the  
return-pipe G with the header at a point be-  
low the first drip-pipe D and above the drip-  
pipes E and F, whereby the latter are sealed 65  
by the liquor and all by-passing of the gas  
thereby prevented. This may be accom-  
plished by placing the receiver or header H  
in an inclined position, with the drip-pipes  
connected at different planes of elevation 70  
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, where-  
in the same relative connection of the respec-  
tive pipes is made with a header used in a 75  
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, 80  
which provides for any great variation of  
pressure between the coil-pipes M N, where-  
by 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, 85  
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 differ-  
ent elevations, the height of the liquid col- 90  
umn will be greater in the pipe F than in the  
pipe E preceding, due to the decreased pres-  
sure in the higher return-bend connecting  
with the pipe E.

Having thus fully described my invention, 95  
what I claim, and desire to secure by Letters  
Patent, is—

1. In an apparatus for rectifying volatile  
gases, comprising a condensing-coil or equiv-  
alent, and a series of drip-pipes connecting 100  
with said coil at different heights and with a  
header or receiver in which the condensed liq-  
uor 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  
5 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  
10 and the return-pipe connected at a point be-

neath 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:

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J. R. VANDERFORD.