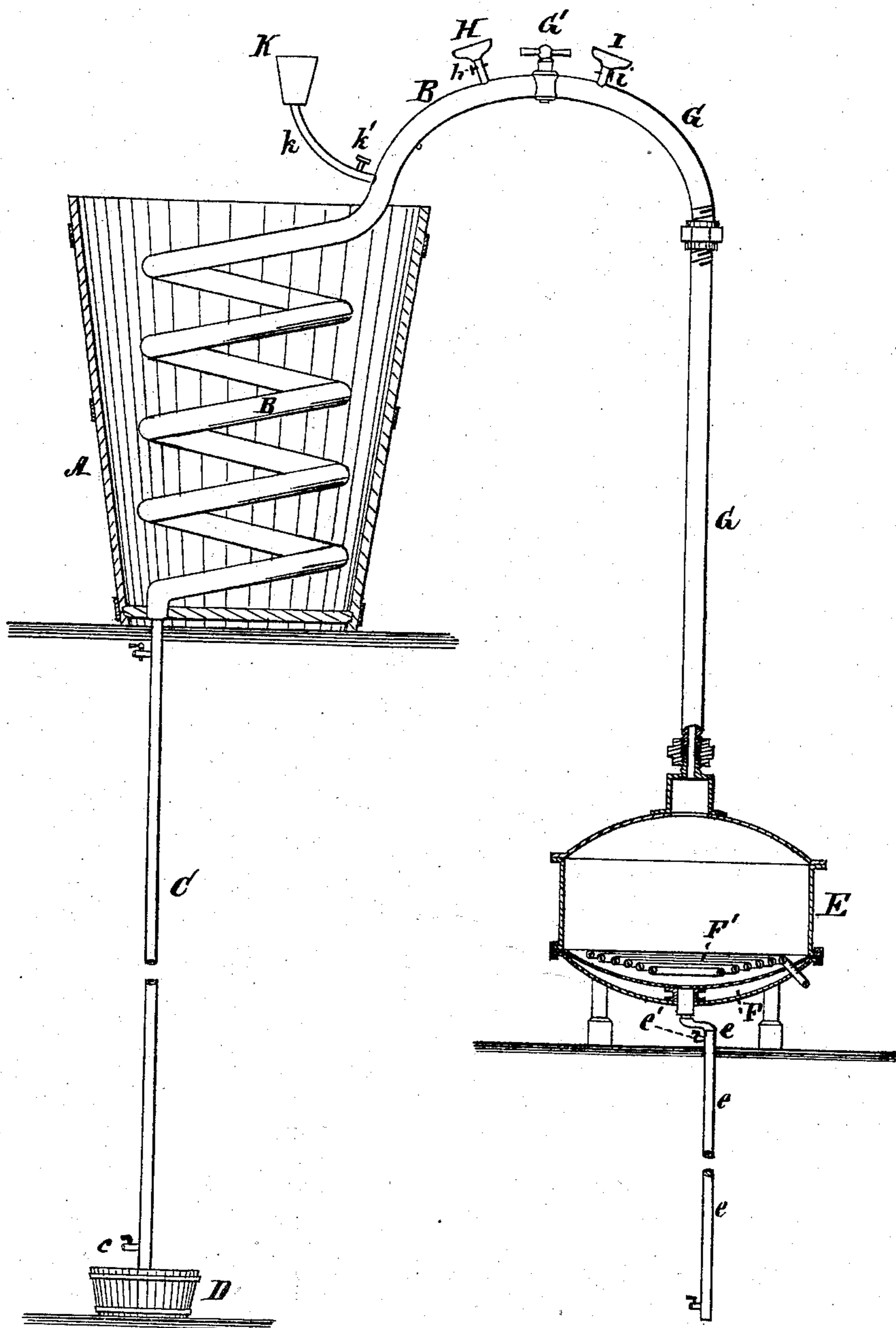


A. P. BROWN.
Vacuum-Pans.

No. 138,375.

Patented April 29, 1873.



Witnesses:
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UNITED STATES PATENT OFFICE.

AURELIUS P. BROWN, OF UPPERVILLE, VIRGINIA.

IMPROVEMENT IN VACUUM-PANS.

Specification forming part of Letters Patent No. **138,375**, dated April 29, 1873; application filed January 11, 1873.

To all whom it may concern:

Be it known that I, Dr. AURELIUS P. BROWN, of Upperville, in the county of Fauquier and State of Virginia, have invented a new and useful Improvement in Vacuum-Pans; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

The invention consists in an apparatus for vaporizing liquids consisting of elements, combined as hereinafter described and claimed.

The drawing is a vertical sectional elevation, showing my invention applied to the ordinary evaporating-pans.

A represents the cooler containing ice-water or other refrigerating substance; B, the condensing coil, in which the vapor is converted into liquid; and C, the discharge-pipe thirty-three or thirty-four feet long, through which the liquid passes out into the tub or receptacle D. The pipe C has a stop-cock, *c*. E is the well-known boiler or vaporizer extensively used in the manufacture of sugar and for distilling saline or other impure water, or those liquids from which alcohol may be eliminated. F is a chamber beneath the liquid in which is ordinarily discharged steam for heating the liquid, while F' represents a coil of pipe arranged in the liquid and filled with steam, superheated to a high temperature to accelerate the vaporization. The boiler E is provided with a downwardly-projecting pipe, *e*, which is sufficiently long to receive a column of water to counterbalance the upward pressure of the atmosphere. G is a pipe which connects the boiler with the condensing-coil B. H I are funnels placed on top of pipes G B, one on each side of a stop-cock, G', and each provided with its own stop-cock *h* or *i*.

The operation is as follows: The cock G' of pipe G and the cock *c* of pipe C are closed, while the cock *h* of funnel H is opened. Water or other liquid corresponding to that which is to be obtained by the distillation is then poured through funnel H until the condens-

ing-pipe B is filled. The cock *h* is then closed and the cock *c* opened when the liquid will flow down the pipe C and into the tub D until a column of water is left, which exactly counterbalances the upper atmospheric pressure. As fast as the vapor is condensed in pipe B and the column thereby increased in length so as to destroy the equilibrium between its weight and the upward pressure of air, the liquid will flow into the tub D. Thus a complete vacuum is always maintained in the condensing-pipe B, while the condensed liquid is allowed to enter the tub D with perfect regularity and without the least obstruction.

After the pipes B C have been prepared in the manner above described, the liquid which is to be distilled may be poured into the boiler E in any preferred manner, and the operation completed by opening the cock *i* of funnel I and filling up the pipe G while the cock *e'* of pipe *e* is closed. The cock *i* is then closed, the cock *e'* opened, and the liquid allowed to fall until it forms a column in the pipe *e*, which will counterbalance atmospheric pressure. This leaves a vacuum in the pipe G and prevents the liquid in boiler from flowing upwardly therethrough. The heat is now applied, and the cock G' which separates the condensing-pipe B from the vapor-pipe G is closed.

K is a tank, which may be used to convey through a pipe, *k*, jets of cold liquid into the condensing-pipe B to assist in the condensation of the vapor, if deemed necessary. It is also provided with a cock, *k*, which regulates the supply.

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

The combination of an evaporating-pan with the pipe *e*, as and for the purpose described.

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Witnesses:

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