L. K. FULLER.

APPARATUS FOR DEVAPORIZING AIR.

No. 169,535. Patented Nov. 2, 1875.

Fig. 1.

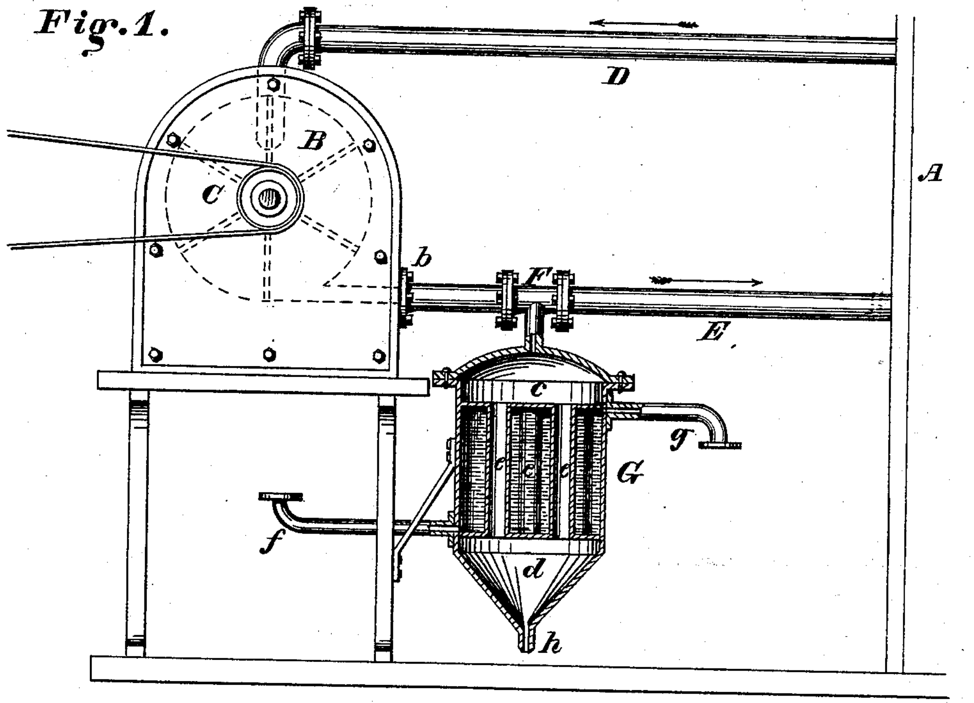
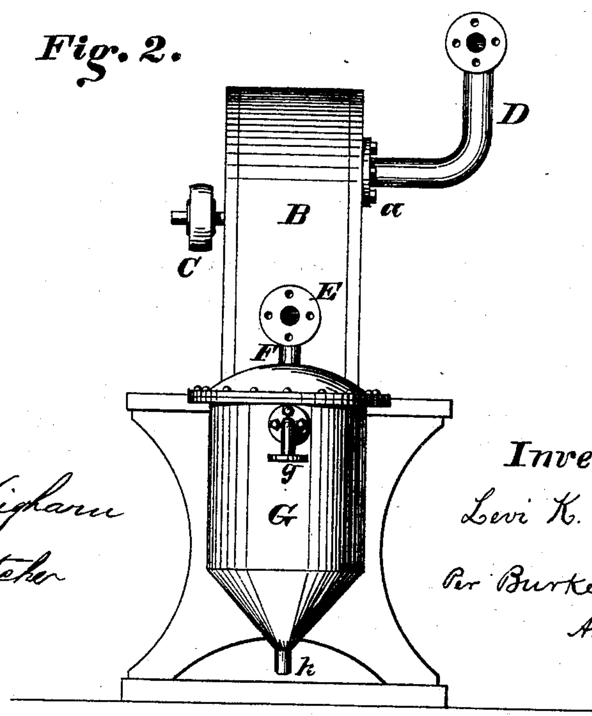


Fig. 2.



Witnesses;

Thomas J. Keighan

George W. Thatcher

Inventor:

Levi K. Fuller

Per Burke & Fraser

Attys.

UNITED STATES PATENT OFFICE.

LEVI K. FULLER, OF BRATTLEBOROUGH, VERMONT.

IMPROVEMENT IN APPARATUS FOR DEVAPORIZING AIR.

Specification forming part of Letters Patent No. **169,535**, dated November 2, 1875; application filed September 23, 1875.

To all whom it may concern:

Be it known that I, LEVI K. FULLER, of Brattleborough, in the county of Windham and State of Vermont, have invented certain Improvements in Apparatus for Devaporizing Air, of which the following is a specification:

This invention relates to that class of apparatus in which the moist air is taken from the drying-chamber by a fan or otherwise, devaporized by suitable means, and passed back again to the chamber.

It has been usual in apparatus of this character to pass the air extracted from the drying-chamber through a condenser to remove the moisture, from whence it passes back again to the chamber; but this process necessarily lowers the temperature of the air.

An apparatus of the kind above described is shown in my patent of June 29, 1875.

If, however, the moisture in the circulating air can be condensed without passing the current directly through a condenser, the temperature will not be materially reduced, and extensive reheating will be obviated.

The apparatus herein described aims to accomplish this purpose; and the invention consists in the peculiar construction and arrangement of the blast, the air-current, and the condenser, in such manner that the current does not pass directly through the condenser, but the vapor of water contained therein comes in contact with the condensing-surface, and the resulting water of condensation is carried off below. It consists also in the peculiar construction of the condenser.

In the drawings, Figure 1 is a side view of my improved apparatus, in which the condenser is shown in section. Fig. 2 is a front view of the apparatus, taken at right angles to Fig. 1.

Let A represent any form of drying-chamber, and B a casing containing a fan or blower of any approved kind, the latter being driven by a pulley, C, on the same shaft therewith. A suitable exhaust-pipe, D, extends from the drying-chamber to the blower, entering the casing at *a*. A suitable inlet-pipe, E, taps the blower-casing at *b*, and passes thence to the drying-chamber, as shown. The inlet-pipe E is tapped at any point by a branch pipe, F, and this branch connects the interior of the pipe E with the interior of a condenser, G. This condenser has an upper chamber, *c*, a lower conical chamber, *d*, and a central water-chamber, the chambers *c* and *d* being connected by condensing-tubes *e e*, which pass through the water-chamber, as shown. Cold water is supplied to the central chamber by means of the inlet and outlet pipes *f g*, in the usual manner.

The operation is as follows: The blower or fan draws the warm air, mixed with watery vapor, from the drying-chamber A through the pipe D, and forces it back through the pipe E. The back pressure from the chamber causes the column of air in the pipe to fill the condenser, where its moisture is condensed upon the heads and in the pipes *e e*, whence it passes down into the chamber *d*, the conical form of which, and the force of the blast from above, cause it to escape at the outlet *h*.

The conical lower chamber *d* of the condenser plays a very important part in the apparatus, as it not only serves to collect the water of condensation, but the column of air from above is also acted upon and deflected to the center, thus increasing its effect in forcing out the water.

Having thus described my invention, what I claim as new is—

1. In a drying apparatus, a condenser communicating with the pipe from the blower to the chamber by means of a connection-branch, as shown, so that the air-current will not pass directly through the condenser, but be in connection therewith, as described.

2. The combination of a blower or fan, the outlet and inlet pipes D E, and a condenser, G, the latter being connected with the inlet-pipe E by means of a branch, F, in the manner and for the purposes set forth.

3. In combination with the inlet-pipe E and outlet-pipe D, a condenser, G, provided with a branch, F, and a conical lower head or chamber, *d*, to deflect the downward blast to the center, and collect the water of condensation, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEVI K. FULLER.

Witnesses:

L. W. HAWLEY,

W. S. UNDERWOOD.