

H. E. SMITH.
Distilling Apparatus.

No. 230,901.

Patented Aug. 10, 1880.

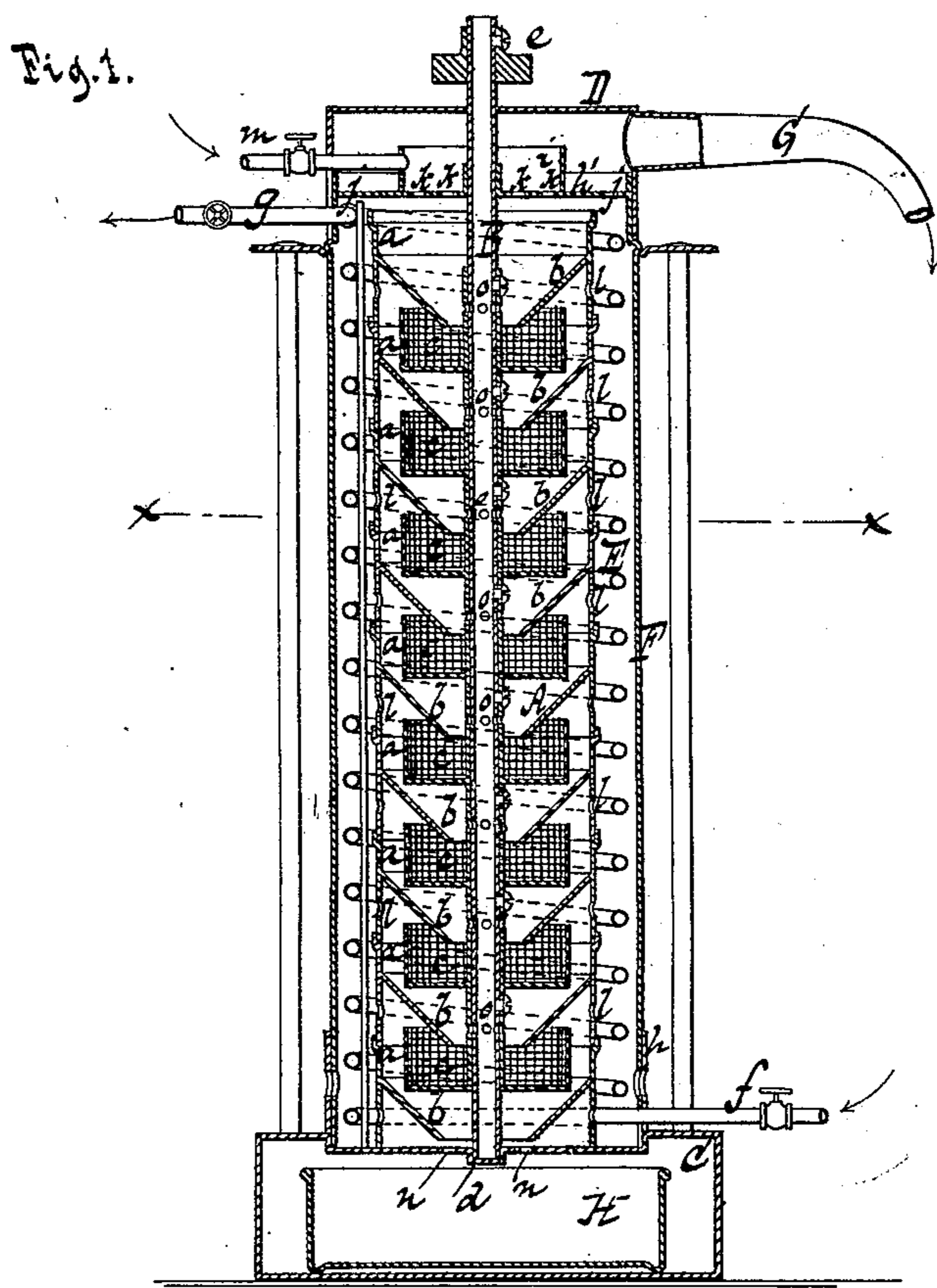
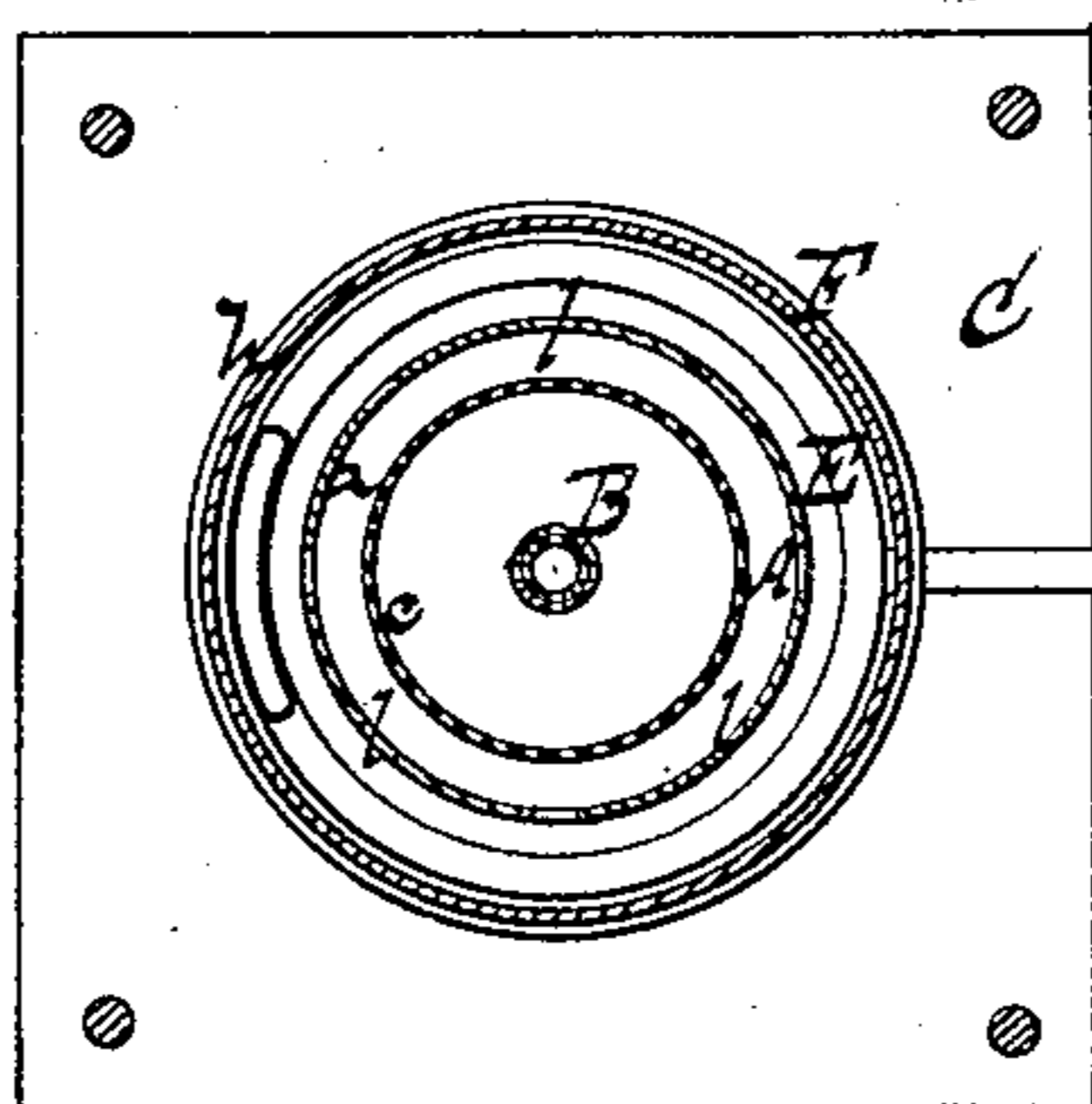


Fig. 2.



Witnesses
Otto Aufeland
William Miller

Inventor
Hamilton E. Smith.
by
Van Santvoord & Hauff
his attys

UNITED STATES PATENT OFFICE.

HAMILTON E. SMITH, OF JERSEY CITY, NEW JERSEY.

DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 230,901, dated August 10, 1880.

Application filed December 10, 1879.

To all whom it may concern:

Be it known that I, HAMILTON E. SMITH, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Distilling Apparatus, which invention is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical central section. Fig. 2 is a horizontal section in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in a column composed of a series of cups provided with tapering open bottoms and placed one above the other, and a shaft carrying a series of circular sieves, one in the interior of each of the cups, so that the alcoholic liquid admitted to the uppermost cup in the column passes successively through the several sieves and cups, and, by imparting to the shaft which carries the sieves a revolving motion, the liquid is forced through the meshes of the sieves and thrown in the form of a fine spray against the sides of the cups, thereby disengaging the alcoholic vapors with great rapidity and at a comparatively low temperature.

The central shaft is made tubular and provided with holes opposite to each of the cups of the column, for the purpose of injecting air or gases, whereby the disengagement of the alcoholic vapors is facilitated and the quality of the liquor is improved.

In the drawings, the letter A designates the column of my distilling apparatus. This column is composed of a series of cups, *a*, which are provided with tapering open bottoms *b*, and placed one into and above the other, as shown in Fig. 1. Through the cups *a* extends a vertical shaft, B, which carries a series of circular sieves, *c*, so placed that one of them is situated in each of the cups *a*, the uppermost cup excepted. The shaft B is stepped in a depression, *d*, in the top of the base C, which supports the column A, and its upper end extends out through a cap, D, and carries a pulley, *e*, for the purpose of imparting to said shaft a revolving motion.

The column A is heated by a steam-coil, E, which surrounds the same, and connects at its bottom end with a steam-supply pipe, *f*, and

at its top with an exhaust-pipe, *g*. A jacket, F, incloses the coil E and the column A, and this jacket fits into a depression in the top of the base C, and it is provided near its bottom with a series of holes, which can be opened or closed by a register, *h*, surrounding the jacket. By adjusting this register, therefore, more or less cold air can be admitted into the interior of the jacket F, and the temperature of the column can be regulated.

The cap D is fitted closely on the top of the jacket F, and it is provided with a bottom, *h'*, from which rises a circular flange, *i*, and which is provided with holes *j* outside this flange, and with other holes, *k*, inside thereof. The cups *a* are also provided with holes *l* in their sides, which form an escape for the alcoholic vapors, and these vapors rise through the holes *j* and escape from the cap D through the goose-neck G, that is intended to connect with a condenser.

The beer or other alcoholic liquid to be distilled is introduced through a pipe, *m*, into the interior of the circular flange *i* in the cap D, and it trickles down through the holes *k* into the uppermost cup of the column, whence it is conducted into the first sieve on the shaft B, and as a rapid revolving motion is imparted to this shaft the liquid is thrown out through the meshes of the sieve in a fine spray against the heated sides of the second cup, through which it passes down to the second sieve, and so on.

From this explanation it will be seen that the liquid is repeatedly separated into a fine spray, and in this condition brought in contact with the heated sides of the successive cups of the column, so that the alcoholic vapors are readily disengaged from the watery liquid, which latter passes through holes *n* in the top of the base C down into a tank or vat, H, placed into the interior of this base, while the vapors escape through the holes *l* and *j* into the cap D, and through the goose-neck G into the condenser.

If desired, the liquid from the vat H may be pumped up and exposed to a second distilling process by passing it again through the column A.

If desired, the liquid to be distilled may be heated before it is introduced into the column A, and as it passes down through the column

its temperature is gradually raised nearly to the boiling-point, so that all, or nearly all, vapors lighter than water are disengaged and pure liquor of from fifty to seventy per cent. of absolute alcohol is obtained, which is comparatively free from fusel-oil.

The shaft B is tubular, open at the top, and provided with holes *o* in its sides, so that air or gases can be injected and distributed throughout the column A, for the purpose of facilitating the disengagement of the alcoholic vapors or for improving the quality of the liquor.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a distilling apparatus, of a column composed of a series of cups provided with tapering open bottoms, and of a vertical shaft carrying a series of circular sieves

situated in said cups, substantially as and for the purpose set forth.

2. The combination, with the column A, shaft B, and sieves *c*, situated in the interior of the column, of a heating-coil, E, and a jacket, F, surrounding said coil, substantially as and for the purpose described.

3. The combination, with the cups *a* and sieves *c*, of a tubular shaft, B, provided with holes in its sides for the introduction of air or gases, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 8th day of December, 1879.

HAMILTON E. SMITH. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.