S. VAN SYCKEL.

STILL.

No. 176,386. Patented April 18, 1876.

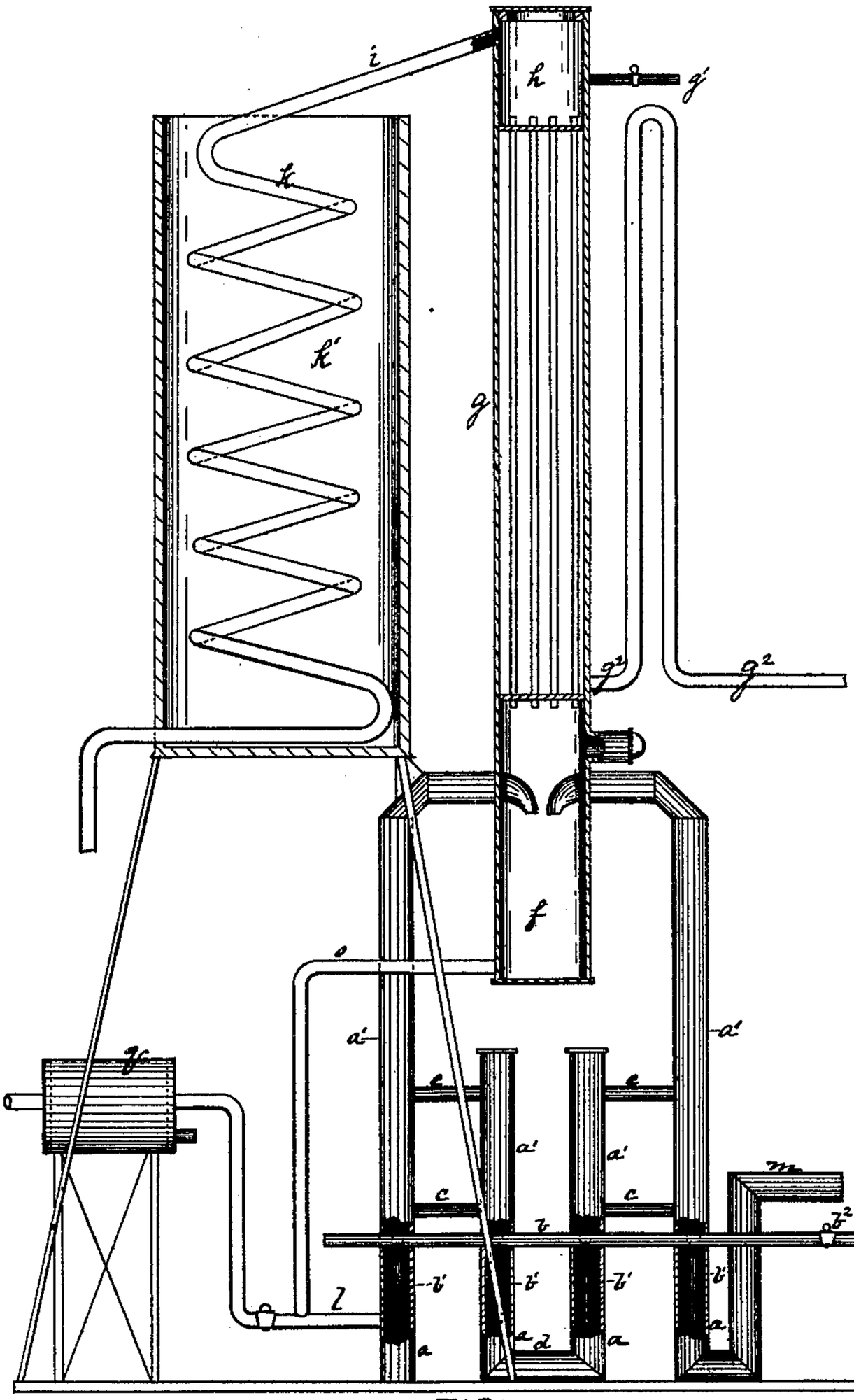

FIG. 2.

FIG. 1.

Witnesses.

J. K. Bakewell.

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UNITED STATES PATENT OFFICE.

SAMUEL VAN SYCKEL, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN STILLS.

Specification forming part of Letters Patent No. **176,386**, dated April 18, 1876; application filed June 18, 1875.

To all whom it may concern:

Be it known that I, SAMUEL VAN SYCKEL, of Titusville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in the Distillation of Fermented Liquors; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, which is a vertical section of my improved distilling apparatus.

To enable others skilled in the art to make and use my invention, I will describe the apparatus I make use of in carrying it into practice.

I arrange together a series of stills, *a*, two or more, as may be desired, for the purpose hereafter described.

In each still *a* I place a steam-pipe, b^1, provided with perforations for jetting the steam on all sides. The pipes b^1 are branches from the main pipe *b*. I provide the pipe *b* with a cock, b^2, and the branch pipes b^1 with cocks b^3 for regulating the admission of the steam thereto. Each still *a* communicates with the next adjoining one on one side at or near the top above the steam-pipe b^1, as at *c*, and with the adjoining one on the other side by a connection, *d*, at the bottom.

As the apparatus is constructed in my drawing the end stills *a* run directly up higher than the middle stills, which at or near the top above the opening *c* communicate with the two outer stills by means of the communications *e*. The outer stills *a* above the communications *e* open into a chamber or receiver, *f*, discharging preferably downward. This construction may be varied by running all of the stills into the receiver *f*, or by making the inner ones those which communicate therewith, the outer stills opening into the inner ones. That portion of each still *a* above the connections *e* constitutes a vapor-chamber, *a*.

Above the receiver *f* I place a condenser, *g*, having a nest of flues and a water-jacket; the water being admitted through the pipe g^1 and discharged by the pipe g^2. The condenser *g* terminates in the dome *h*, from which a pipe, *i*, leads to the ordinary condensing-worm *k* placed in the condensing-tank *k'*.

The liquor is supplied to the series of stills by means of the supply-pipe *l*, which opens into the lower end of the first still, and rising in the still to the steam-pipe b^1, is raised to the boiling-point by the injection of steam, which may be superheated if desired. The supply is regulated so that the liquor shall enter in a small stream, and is therefore completely exposed to the steam-jet, and is furiously agitated and boiled. The vapor thus produced, together with the water vapor or escaping steam, rises into the vapor-chamber *a'*, while the unvaporized liquor passes through the pipe *c* over into the next still *a*, in which it descends, meeting the second jet of steam from the jet-pipe b^1 therein, whereby the temperature is kept up and the vaporizing continued. The vapors thus produced contain another portion of the alcohol or spirit of the liquor. They rise into the vapor-chamber *a'* in the end of the still, and by means of the pipe *e* pass into the vapor-chamber of the first still *a*, thence into the receiver *f*. The liquor passes on into and through the remaining two stills *a*, and in each is again subjected to the boiling or vaporizing operation, and is caused to part with a further portion of its spirits, after which it passes off through the blow-off or discharge-pipe *m*. The vapors ascending through the vapor-chambers *a'* and pipes *n* are discharged into the receiver *f*, and pass thence into the condenser *g*, where the heavier or impure portions are condensed, forming what is known, as "low-wines." These are conducted back to the supply-pipe *l*, by the pipe *o*, to be redistilled, as they contain a certain proportion of spirit. The temperature of the condenser *g* is so regulated as to condense the vapors at any desired point or degree, in order to secure a high or low proof, as may be desired. The supply of water is regulated by the cock g^1. The small size and great number of the condensing-tubes enable me to effect a most thorough condensation.

The vapor which passes over into the worm *k*, being colder from passing through the condenser *g*, is condensed in the worm *k*. The product from the worm is alcohol of the desired proof, such proof being regulated by the condenser.

The liquor used may, if desired, be heated

before entering the supply-pipe in the heating apparatus *q*, which I have provided for that purpose.

In the manufacture of brandy, or other spirits to which the direct contact of the wet steam is injurious, I use in the stills *a* a number of small vertical flues extending through a hot-air or steam drum placed in the still, through which I pass the liquor; or I use hot-air or steam pipes passing through the stills.

The advantages of my invention are the securing of the desired proof with absolute certainty, and the continuous and certain treatment of the liquor.

The steam which is discharged from the discharge-pipe *m* may be used to heat the liquor before entering the supply, and I use it in this way when the circumstances permit.

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

The combination of a series of stills, the end stills of the series being connected with the condenser, the intermediate stills connected with the adjoining stills, and the first still of the series connected with the condenser by a return or low-wine pipe, substantially as and for the purpose specified.

In testimony whereof I, the said SAMUEL VAN SYCKEL, have hereunto set my hand.

SAMUEL VAN SYCKEL.

Witnesses:
T. B. KERR,
J. K. BAKEWELL.