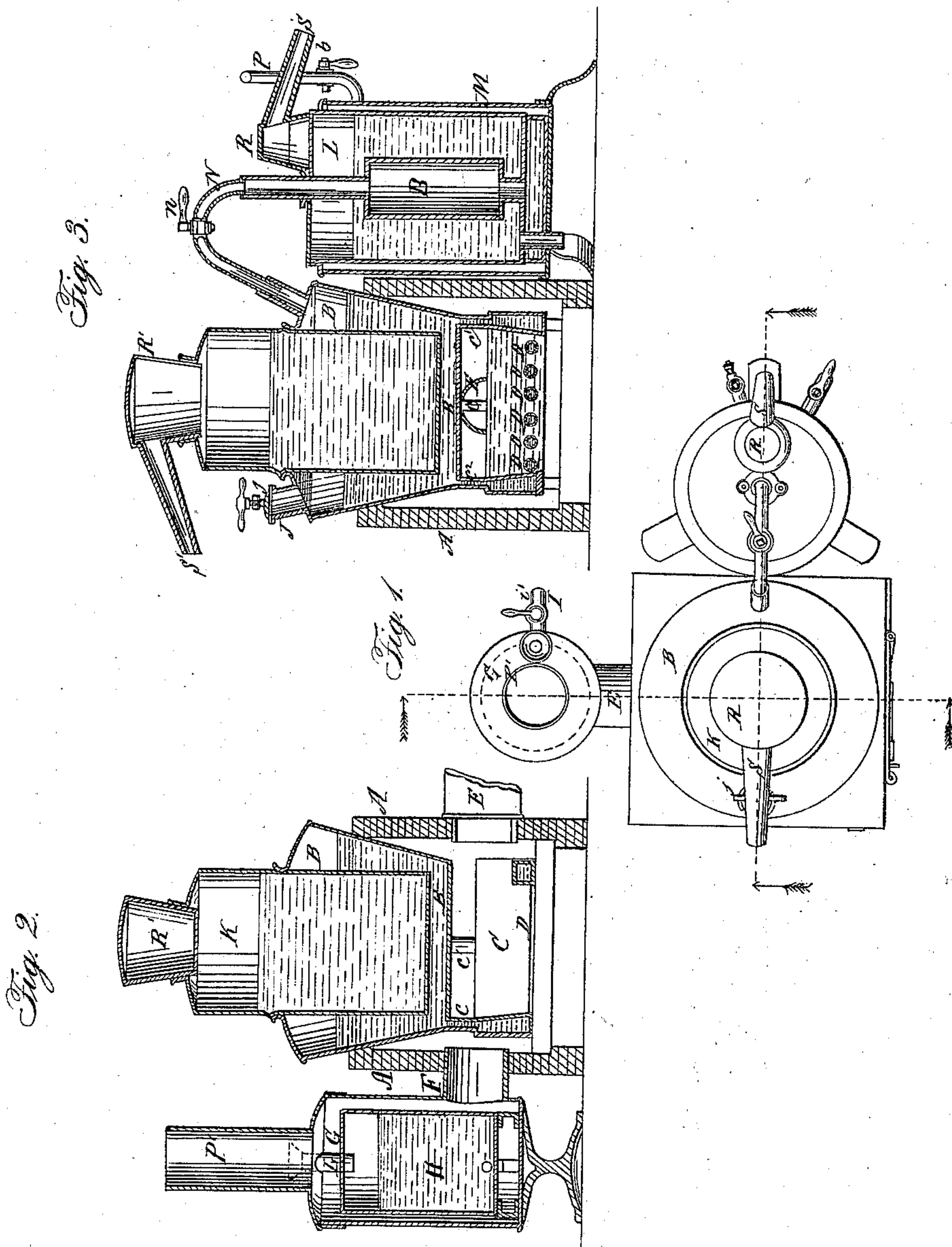


H. G. DAYTON.

Alcohol Still.

No. 39,635.

Patented Aug. 25, 1863.



Witnesses:

T. Schiller
Chas. Smith

Inventor:

H. G. Dayton
By M. W. C. Atty

UNITED STATES PATENT OFFICE.

HENRY G. DAYTON, OF MAYSVILLE, KENTUCKY.

IMPROVED DISTILLING APPARATUS.

Specification forming part of Letters Patent No. 39,635, dated August 25, 1863.

To all whom it may concern:

Be it known that I, HENRY G. DAYTON, of Maysville, in the county of Mason and State of Kentucky, have invented certain new and useful Improvements in Distilling Apparatus; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my improved apparatus. Fig. 2 is a vertical section of the same at *x x*. Fig. 3 is a vertical section of the same at *y y*.

Similar letters of reference indicate corresponding parts in the several figures.

The primary object of this invention is to produce an apparatus which can be advantageously used for distilling in copper vessels with mineral coal with great uniformity and without danger of scorching or otherwise injuring the liquor; and the invention particularly consists, first, in a peculiar construction and combination of "double still" and boiler for heating the same; second, in a peculiar construction of "single still" heated by steam applied in a central pipe and surrounding jacket, as hereinafter described; third, in a peculiar combination of devices to effect the economical heating of the aforesaid single still; fourth, in combining with the said boiler and still a boiler for heating water for mashing or other purposes, which boiler may be heated by the waste heat escaping from the furnace of the first boiler, as will be hereinafter explained.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

A A may represent the external walls of the furnace, in the upper part of which is supported a boiler, B. The fire-box is composed of hollow walls C, inclosing water-spaces, which communicate with the upper part of the boiler through legs *c c' c''* of any suitable number and form.

D D D represent hollow grate-bars adapted to contain water and communicating at their respective ends with the water-spaces within the walls C C.

E represents the fire-door, and F the discharge-flue. The latter may deliver into a

drum, G, within which is an auxiliary boiler, H, which may be employed to heat water for mashing grain or other purposes. The heat of the products of combustion having been thus employed to the greatest possible extent, they are finally discharged through the upper flue, F'. Water may be introduced to the boiler H through a pipe, I, provided with a suitable cock or valve, and drawn off through a pipe, I', by means of the cock *i'*.

J represents the feed-port of the boiler B, which port is closed at will by means of a valve, *j*, or other suitable device.

The "doubling still" K is constructed of copper, and is placed centrally within the boiler B, so as to be heated by means of the water and steam contained therein. The single still L (also formed of copper) is placed within an external casing or shell, M, constituting a surrounding steam-jacket. The beer in the single still L is heated by steam from the boiler B, rising through a goose-neck, N, thence descending through a pipe or drum, O, within the single still, and filling the surrounding jacket M, from whence surplus steam may be taken through a pipe, P, to a feed-water heater of any suitable construction for the heating of water to supply either of the boilers B or H. The pipe P is provided with a stop-cock, *p*, by which it may be opened or closed at will. *n* represents a cock by which the heating apparatus of the single still K may be shut off from the main boiler B whenever needful.

The hoods R R', conducting-pipes S S', and condensing-coils (the latter not here represented) may be in any of the known forms, and do not require specific description.

The single still L may have a capacity of, say, two hundred and forty gallons, and the double still of one hundred and twenty gallons, or in about that proportion.

The operation is as follows: Beer is first placed in the single still L, and there evaporated by the heat of steam within the central pipe, O, and jacket M. The spirituous vapor passing over through the hood R and conducting-pipe S is condensed in any suitable and customary manner. By means of the cocks *n* and *p* the pressure and consequent heat of steam within the central pipe or drum, O, and surrounding jacket M may be regulated as the

work may require, and if there be any superfluity of steam it may be used, as before stated, for heating water, or other purposes. The spirit thus produced is placed in the doubling still K, where it is again distilled by heat imparted by the water and steam in the boiler B. The construction of the said boiler is such as to expose a large extent of fire-surface, and thus employ the heat of the furnace to good advantage, and any heat which would otherwise be lost is used to heat water in the auxiliary boiler H for mashing grain, or other purposes.

From the above description it will be apparent that the entire distilling operation is effected without any direct contact of the fire against copper surfaces. Thus the heat is always uniform and never excessive, all danger of scorching or otherwise injuring the liquor is avoided, and vomiting of the still is effectually prevented. No contact can occur between the steam and beer. Fuel and heat are economized as far as possible by using one fire for three purposes, and by employing the waste steam, as before explained. The result is that the greatest possible amount of spirit of the finest quality may be produced from a given quantity of beer without risk of loss.

The construction and arrangement of the apparatus protect the fluids in process of distillation from danger of contact with the fire, and

for this reason the invention is of great value for the distillation of turpentine, alcohol, and other highly inflammable liquors.

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

1. The combination of the boiler B and double still K, both constructed, arranged, and operating in the manner and for the purposes specified.

2. The single still L, constructed substantially as described, and heated by a central steam-pipe and surrounding jacket, as specified.

3. The described combination of the single still L, with the boiler B, of the double still K, whereby the steam, after heating the double still, may be employed for heating the single still, as explained.

4. The combination of the mash-boiler H with the furnace C and boiler B, constructed and arranged substantially as and for the purposes specified.

The above specification of my improved distilling apparatus signed this 14th day of May, 1863.

HENRY G. DAYTON.

Witnesses:

OCTAVIUS KNIGHT,
CHARLES SMITH.