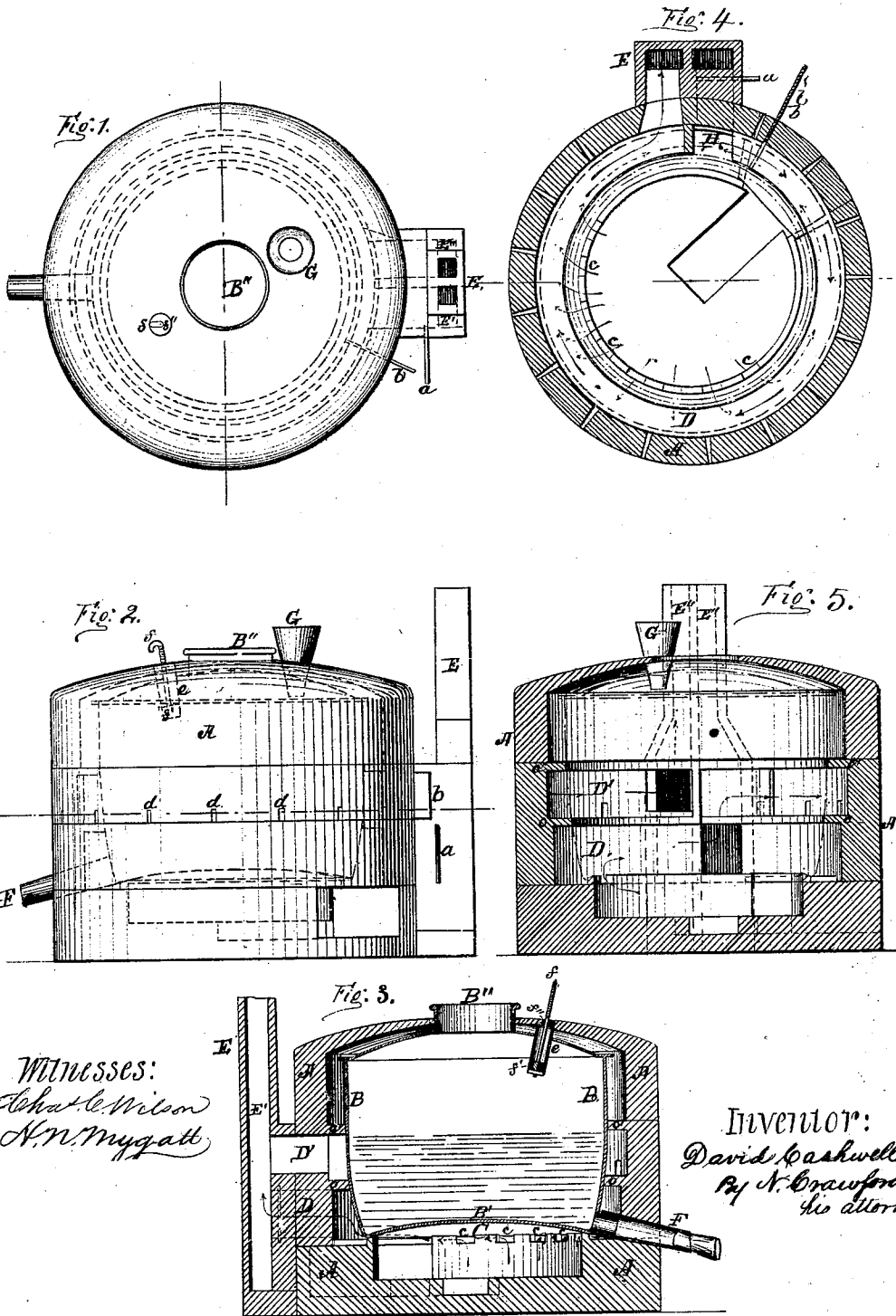


D. Cashwell,

Turpentine Still.

No. 102,774.

Patented May 10, 1870.



Witnesses:
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United States Patent Office.

DAVID CASHWELL, OF WILMINGTON, NORTH CAROLINA.

Letters Patent No. 102,774, dated May 10, 1870.

IMPROVEMENT IN DISTILLING TURPENTINE.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, DAVID CASHWELL, of Wilmington, in the county of New Hanover and State of North Carolina, have invented certain Improvements in Stills for Distilling Crude Turpentine, and producing therefrom spirits of turpentine and rosin, of which the following is a specification.

In the drawings—

Figure 1 is a view of the top of the still;

Figure 2 is an upright view of the same;

Figure 3 is an upright sectional view of the still and flues;

Figure 4 is a horizontal section, showing the flues and dampers; and

Figure 5 is an upright section, showing the direction of the products of combustion.

The object of this invention is to construct a still and manipulate and control the operation of distilling turpentine in a more thorough and complete manner, and obtain a better quality of spirit and rosin from the crude material than has been done by the process heretofore used; and

It consists in the construction of the flues that conduct the products of combustion and heat from the furnace in contact with the still, the means used for controlling the heat and prolonging its path in contact with the still, and in the means of ascertaining the precise condition and of keeping under perfect control the material in the still.

A represents the brick-work that surrounds and supports the still B.

B is the usual sheet-metal still, having the bottom B' made convex in form, with the discharge-pipe and nozzle F through the side at the top of the bottom plate of the still, and has the equal aperture B'' at the crown, for the escape of the spirits, when in a volatile or gaseous state, into the ordinary receiving-tube or pipe, terminating in the usual or any condensing apparatus.

A metal cylinder, *e*, is inserted in the breast of the still, extending down to within about three inches of a level with top of flue D, in which is the float *f*, which works freely up and down in said cylinder *e*, to which float *f* is attached a graduated stem or rod, *f*, extending upward and above the casing of the still.

C is the usual grate-space underneath the still. From this grate-space the flame or products of combustion come directly in contact with the bottom B' of the still, and are then deflected through the small apertures *c c c* into a horizontal flame-flue, D, which encircles the still, and is led off into flue E of chimney E.

a is a sliding damper in flue D, where the flame turns to enter chimney E, and, if damper *a* is forced inward and closes the flue D, the flame and products of combustion pass upward through an upright flue, H, in the casing A, into an upper horizontal flue, D', which is directly over and is separated from flue D by partition *o*.

b is a sliding damper in flue D', and is used to regulate the draught through said flue D' when damper *a* is closed in flue D.

G is a funnel, through which water is fed into the still.

The still B is charged in the usual way with crude turpentine or "yellow dip," and the condensing apparatus attached to the cap as usual. Damper *a* is withdrawn, giving a direct draught through flue D into flue E, when the fire is applied in the grate or furnace; as the fire burns and the flame heats the bottom of the still, and thereby the contents of the still, up to the point of ebullition, the spirits are evolved and separated from the crude material, and, being in a volatile state, pass up through aperture B'' into the conducting-pipe of the condensing apparatus.

When the turpentine rises in the still above the top of the upper flame-flue D', as will be indicated by the graduated stem of float *f*, then the damper *b* is opened and the damper *a* closed, causing all of the products of combustion to pass twice around the still before making exit into the flue E'' of chimney E.

By causing the flame to encircle the still in the upper flue D', the crude turpentine in the still becomes liquidized, by reason of the heat in flue D' being applied directly at that point on the outside of the still, which facilitates the evolving of the spirits, and, by having a constant flow of a sufficient supply of water through the funnel G, the turpentine or rosin is kept at a uniform height in the still, and above the top of the upper flue D', and is thus secured from the liability to become scorched or discolored by too much heat, as can be known by the graduated stem *f* of the float *f*, for, when the damper *a* is closed and damper *b* opens the material, turpentine or rosin, must be kept above the top of the upper flue D' by a sufficiency of water to prevent excess of heat, so that there will be no danger of discoloring either the spirits or the rosin.

In order to keep the flame in flue D' supplied with the necessary amount of oxygen, small openings, *d d d*, are made through the brick casing into the flue D, through which openings the outside air can freely pass into the flue, and supply the demand.

When it is ascertained that all the spirits have been extracted from the crude material, and the rosin is properly formed, the damper *a* is opened or withdrawn and damper *b* closed, cutting off the flame from flue D', causing it to go direct to the chimney from flue D, the water-feed is stopped, and the rosin precipitated, the fire kept up only to evaporate the water from the rosin. When complete, the cap and conducting-pipe are removed from the aperture B'', the rosin drawn off through pipe F in the usual way, and the still is ready for another charge.

By the application of the upper return flue D' and damper *b* in the manner described, much more crude turpentine can be worked in the same-sized still than has heretofore been done without such additional flue;

the spirits thus obtained are colorless and the rosin much lighter in color; the operation is so controlled as to keep the contents of the still at just the temperature to produce the best results and prevent the danger of overheating.

My improvement can be applied to any still having the single flue, with very little expense, compared to the advantage in results.

Having thus described my invention,

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

1. The method herein described of controlling the heat of the contents of the still, by admitting a constant and sufficient supply of water therein during distillation, thereby keeping the turpentine, while in ac-

tive ebullition, above the upper flame-flue D', in the manner and for the purpose set forth.

2. The combination of the flame-flue D, damper *a*, upper flue D', and damper *b*, with the still B, in the manner and for the purpose described.

3. The combination of the flue D' and damper *b* with the air-openings *d d*, in the manner and for the purpose described.

4. The combination of the float *f'* and graduated rod *f* with the still B, when the float is constructed to operate in the manner and for the purposes described.

DAVID CASHWELL.

Witnesses:

WM. LARKINS,
A. GILBERT.