G. T. Sawyer, W. Howland, Jr. & T. C. Hatch.

Oil Still.

Patented Dec. 10, 1861.

33,905.

Fig 1.

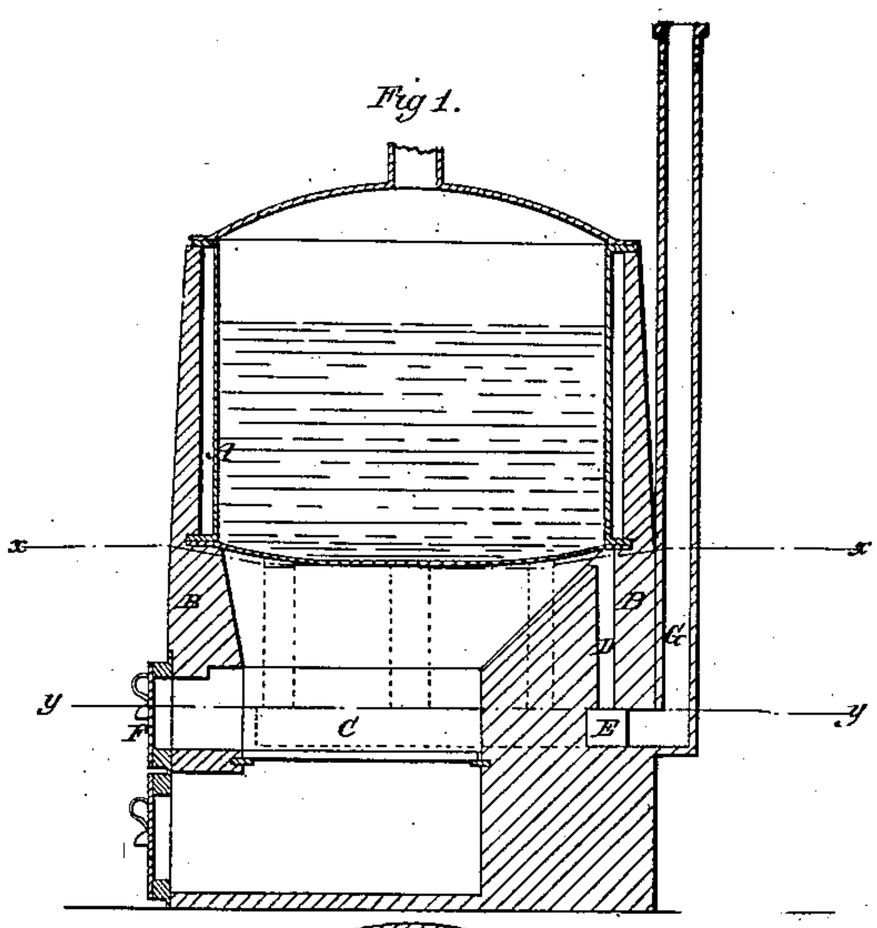


Fig 2.

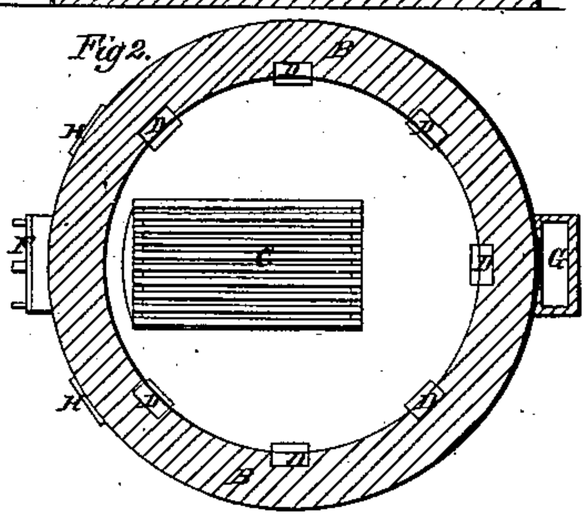
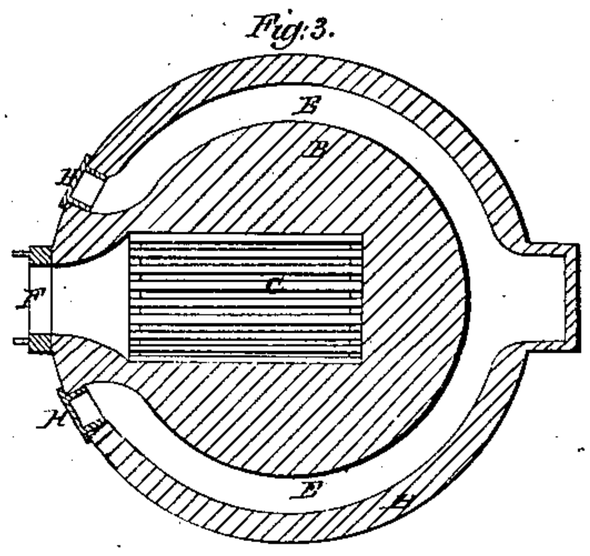


Fig 3.



Witnesses.
J. W. Coombs
C. S. Spencer.

Inventors.
G. T. Sawyer
W. Howland Jr
T. C. Hatch
per Munn & Co

UNITED STATES PATENT OFFICE.

G. T. SAWYER, W. HOWLAND, JR., AND T. C. HATCH, OF NEW BEDFORD, MASSACHUSETTS.

IMPROVEMENT IN SETTING STILLS.

Specification forming part of Letters Patent No. **33,905**, dated December 10, 1861.

To all whom it may concern:

Be it known that we, GIDEON T. SAWYER, WESTON HOWLAND, Jr., and THATCHER C. HATCH, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in the Setting of Stills, Retorts, and Kettles; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a still set according to our invention. Fig. 2 is a horizontal section in the line *x x* of Fig. 1. Fig. 3 is a horizontal section in the line *y y* of Fig. 1.

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

The object of our invention is to obtain a uniform heat under all parts of the bottom of a still, retort, or kettle; and our invention consists in the arrangement near the outer edge of the bottom of the still, retort, or kettle of a series of diving-flues communicating with a flue which runs all round the setting at, below, or near the level of the lower part of the fire-chamber, and connects with the main flue or chimney, substantially as hereinafter specified.

To enable others to make and use our invention, we will proceed to describe its construction and operation.

A is the still. B is the setting. C is the fire-chamber under the bottom of the still. D D are the drop-flues, of which there may be any number descending vertically, or nearly so, from the upper part of the fire-chamber near the outer edge of the bottom of the still. The flues D must be all of equal dimensions: and E is the connecting-flue running round the setting B on a level with the lower part of the fire-chamber from a short distance from one side of the fire-door F to within a corresponding distance from the outer side of the fire-door, as shown in Fig. 3. This flue connects in rear of the still with the main flue or chimney G, and in front of the still it has two doors, H—one on each side of the fire-door—for regulating, cleaning out, and cooling off the still.

By the above arrangement of flues the following effect is produced: When the fire is burning under the center of the still, the draft is produced in every direction from the center toward the outer edges of the fire-chamber, thus distributing the heat over the whole of the bottom of the still. Now, notwithstanding that the tendency of the natural draft of the chimney is to produce a uniform draft in all of the flues D D, it will sometimes happen that the fire burns better on one side of the fire-chamber, or that, from some other cause, the fire-chamber gets hotter on one side, and consequently the heat of the flues D D and of the gases within them will be greater on that side than on the opposite side; but as the tendency of the hottest gases is always greater to rise, the air in the least-heated flues D D will fall the quickest, thus causing a larger quantity of heated air and gases to be be drawn off from the cooler side of the fire-chamber and through the cooler flues, and in that way the heat is caused to be equalized on every part of the bottom of the still.

The above action is precisely the reverse of what takes place when two or more flues lead upward from a fire, for whenever one or more flues become more heated than another or the others the upward draft will become stronger in that or those flues, and more heated air will pass, thus causing the heat and draft to be further increased until there will be little or no draft in the cooler flue or flues.

What we claim as our invention, and desire to secure by Letters Patent, is—

The arrangement of the equal drop-flues D with the vessel A, connecting-flue E, and chimney G, as herein shown and described.

GIDEON T. SAWYER.
WESTON HOWLAND, Jr.
THATCHER C. HATCH.

Witnesses:
WILMOT LEWIS,
DANIEL SULLIVAN.