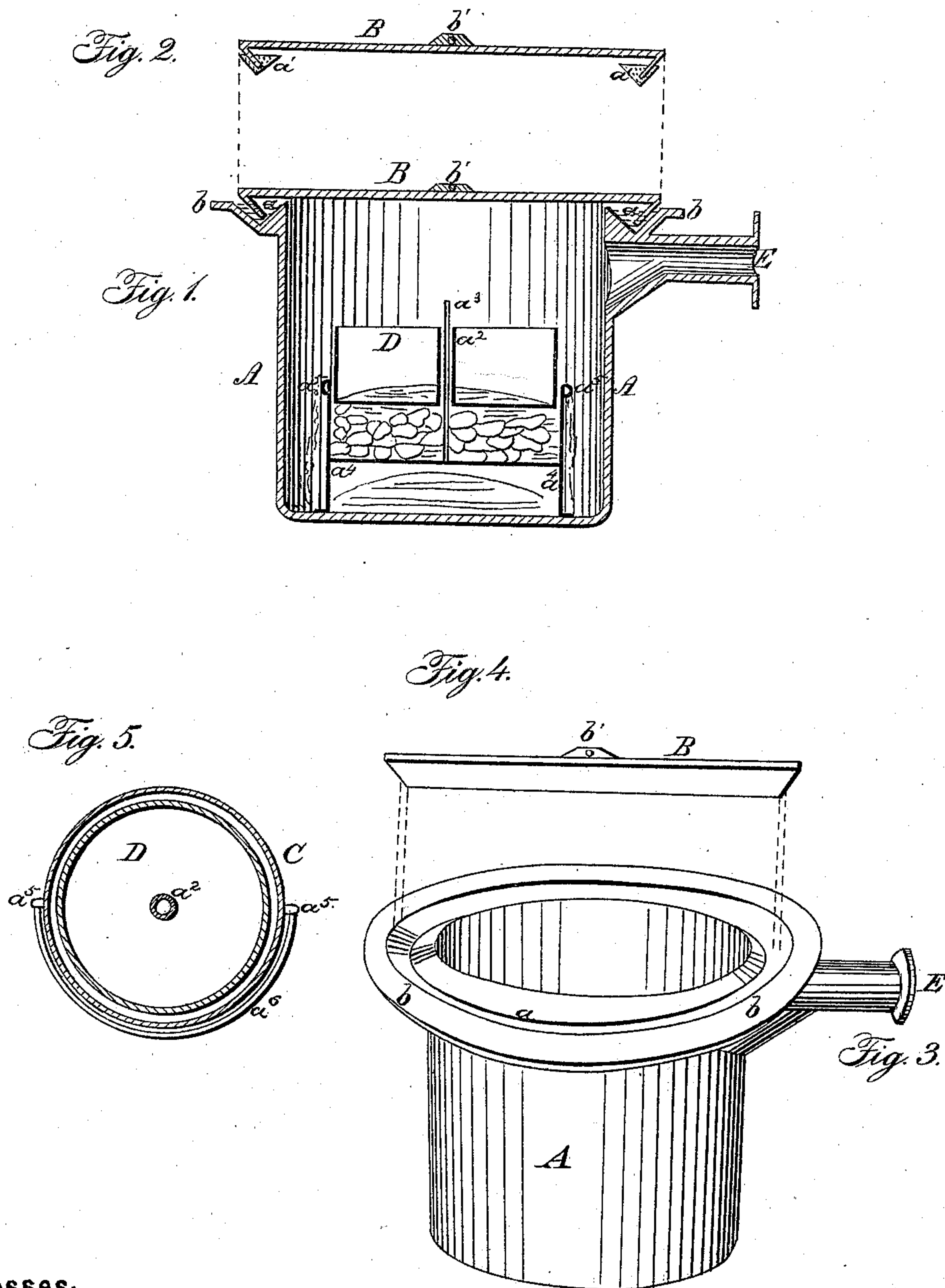


N. AUBIN.
Gas Retort.

No. 17,068.

Patented Apr. 21, 1857.



Witnesses:

John L. Smith
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UNITED STATES PATENT OFFICE.

N. AUBIN, OF ALBANY, NEW YORK.

CLOSING GAS-RETORTS.

Specification of Letters Patent No. 17,068, dated April 21, 1857.

To all whom it may concern:

Be it known that I, N, AUBIN, of Albany, in the county of Albany and State of New York, have invented new and useful Improvements in Apparatus for Generating Gas; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the drawings accompanying this specification, in which the same letters designate like parts in each of the figures.

The nature of my improvement consists in constructing retorts for generating gas, so that they can be opened or closed without luting—for the purpose of conveniently introducing the gas making materials and withdrawing the residuum; and at the same time to provide a new, sure and cheap safety valve to prevent explosions.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, referring to the drawing in which the same letters indicate like parts in each of the figures, to wit:

Figure 1, represents a perpendicular section of my apparatus. Fig. 2 is a section of the cover to the retort. Fig. 3 is a perspective view of the retort. Fig. 4 is a profile of the cover. Fig. 5 is a plan of the box for introducing the gas making materials.

A A is an upright retort open at the upper end and provided with a flange *b* to support it in a stove or masonry. In that flange is a circular groove *a* cast or formed around the edge of the open end of the retort.

E is an exit pipe for conducting off the gas.

B is a circular cover with a rim or flange inclining toward the center as represented.

b' is a handle to the cover for the purpose of raising it by means of a hook.

C is a separate movable circular box provided with legs *a*⁴, and a guide rod in the center *a*³. On opposite sides of the box C are cast two loops *a*⁵ for working on a handle.

D is a vessel of weight of a diameter smaller than the interior of box C. It is provided in the center with a pipe *a*².

The apparatus being constructed substantially as above, a fire is made under the retort A. When it is sufficiently heated, the cover B is removed, the box C is filled with rosin, grease or other such material, and the

vessel D placed over upon it. The box C so arranged is then introduced into the retort. The groove *a* is filled with a fusible alloy composed of bismuth, lead and tin, or such other alloy, or metal, as will meet at a comparatively low temperature and will not vaporize or oxidize. The cover B is then replaced so that its rim dips into the alloy or metal in said groove, thus forming an hermetic packing. The heat radiated from the retort melts the rosin contained in box C. As the rosin is so melted the vessel or weight D sinks into it and expels it over the edges of said box C—causing it to fall upon the heated bottom of the retort, where it is converted into gas. When the gas making material is exhausted, the cover B is lifted off, the box C and vessel D are removed by means of the handle *a*⁶, a box of similar construction filled with fresh gas making material with the vessel or weight arranged as before are introduced into the retort, the cover replaced and the operation goes on as before without further trouble.

If the retort is left to cool with the cover in its place, the alloy becomes solid and would fasten it there if the groove was in the ordinary form. To prevent this inconvenience I construct the groove in the form represented in the drawing, and the rim of the cover inclined toward the center, or otherwise so constructed, as to catch on and withdraw the alloy when the cover is removed. (To the rim of the cover there is then attached a ring of the fusible metal, a section of which is shown at *a'* *a'* Fig. 2.) With the groove constructed as above the fusible alloy can be readily withdrawn, as it does not form metallic connection with iron, the oxidized surface of which has not been removed by filing, planing, or otherwise.

I am aware that what is technically called the water joint is an old device, and that mercury and other liquids have been used for making joints; and that in some cases, where there is no pressure to overcome, (as for connecting parts of hot air furnaces) sand has also been used. But for the purpose for which my improvements are adapted, none of these devices will answer; both mercury and water soon evaporating when heated, and the latter being very expensive and injurious to health. Neither will certain solutions used for closing distilling apparatus answer, as although they do not volatilize easily, the heat acquired by

the retort where the joint is made, during certain periods in the process of gas making (being above 400 degrees F.) is sufficient to concentrate and desiccate the solution and thus seal the retort permanently. For these various reasons no one of the above devices is an equivalent for my arrangement, nor have they ever, to my knowledge, been used for the same purposes.

10 When compared with the methods in ordinary use for closing retorts, the advantages of my improvements are at once apparent. Those methods are by bolts or screws, or luting, or other like means, which require 15 time and care to manage them and more knowledge than ordinary servants possess. If therefore used in connection with my recent improvements in generating gas from rosin, grease, &c., at one operation and without previous melting, &c., they would greatly 20 lessen their value. As that process requires the frequent opening and closing of the retort while in continuous operation for introducing the material and removing the residuum; and therefore the old methods will 25 not answer. In addition to the above, retorts much used require frequent cleaning (oftentimes when heated) and if closed by the old methods, as frequent breaking and 30 making of joints, which causes great labor and inconvenience, and, if carelessly made, also leakage and offensive odors. With my arrangement all the above difficulties are avoided—the retort can be opened or closed 35 at pleasure by merely lifting the cover off or on—when heated to operate the apparatus and when cold to clean it. But there is a greater advantage still attending it.

Retorts for generating gas, if closed by permanent fastenings when in operation, are 40 highly dangerous and have caused the most serious accidents from explosions, which must be the case where no means are adopted to guard against the effects of stopping up the exit pipe by clogging or otherwise. 45 With my arrangement no such danger exists, as it forms a perfect safety valve without additional cost or liability to leakage or getting out of order—and as far as I know is the only advantageous way of effecting such 50 end, as safety valves used for other purposes cannot be adapted to gas retorts, as the tar baking would soon cause leakage and clog its operation.

For the above reasons I claim that my improvements not only facilitate and economize the operation of gas retorts where now used, but are calculated to greatly extend their use to private establishments where common laborers must be relied on and 60 economy, simplicity and the absence of danger are necessities.

In the above described apparatus, I do not claim the box for introducing the materials for generating gas, but 65

What I do claim as my invention and desire to secure by Letters Patent is—

The cover B with the compound rim *a'* fitting into the groove *a* for the purposes set forth in the above specification, substantially as described. 70

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Witnesses:

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