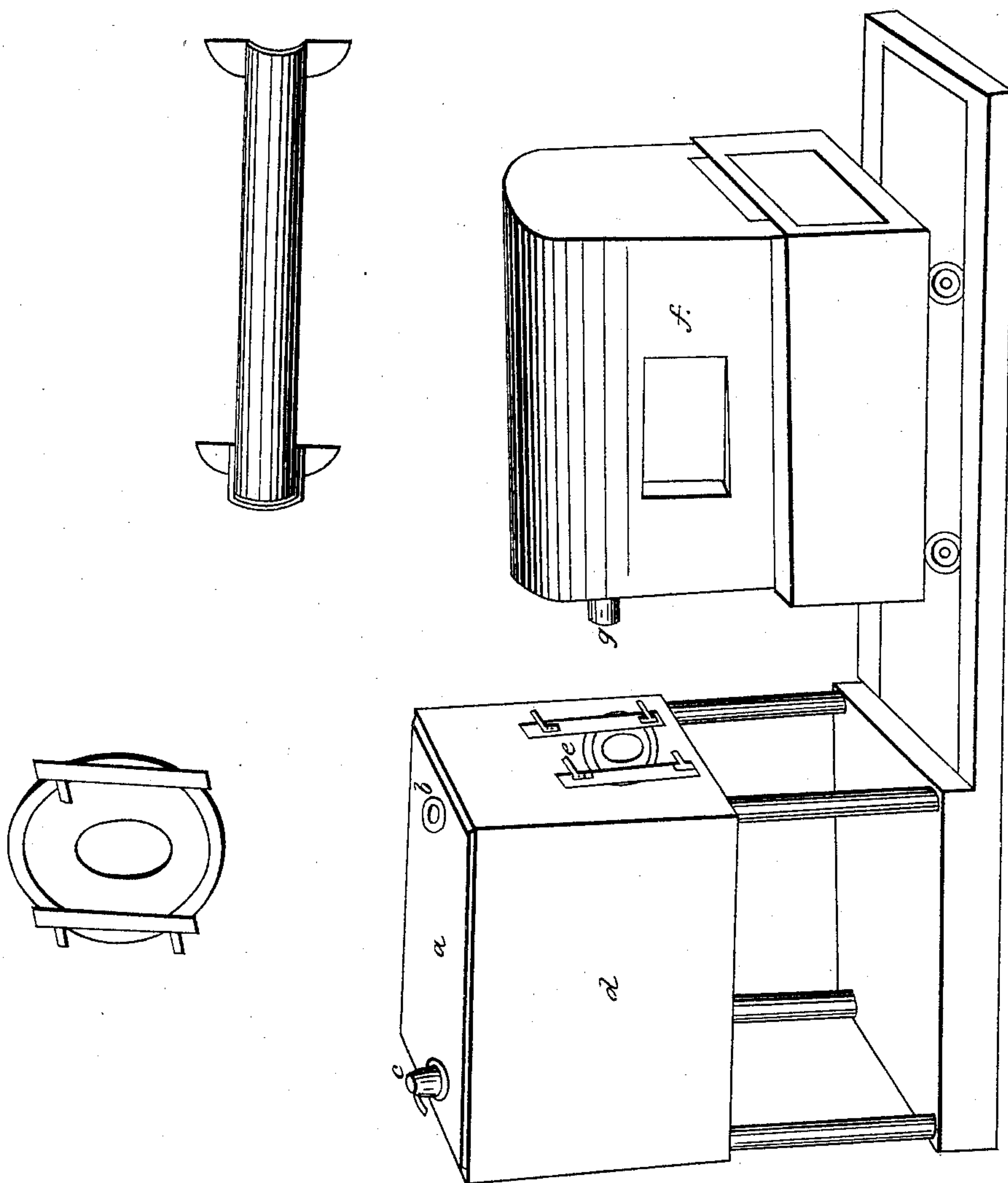


D. ALTER.
Making Chemicals.

No. 62,464.

Patented Feb. 26, 1867.



Witnesses:

Arthur H. Hadden
Samuel A. Hill

Inventor:

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United States Patent Office.

DAVID ALTER, OF BOROUGH OF FREEPORT, PENNSYLVANIA.

Letters Patent No. 62,464, dated February 26, 1867.

IMPROVED APPARATUS FOR THE MANUFACTURE OF BROMINE AND IODINE.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID ALTER, of the borough of Freeport, in the county of Armstrong, and State of Pennsylvania, have invented a new and improved Retort for the Manufacture of Bromine and Iodine; and I do hereby declare that the following is a full and exact description of it.

My retort is a rectangular box, cut out of solid sandstone, having a flat lid, also of stone, and a flue or pipe of lead passing through the retort from side to side. To admit this flue of lead there is a circular hole in each side of the box near the bottom, so that, when the leaden flue is inserted, it will lie horizontally near the bottom, but without touching it. The flue has a flange on one end, about four inches broad, which fits the outside flat surface of the stone or box around the hole, and is fastened to the box by means of a ring of iron, something less in diameter than the flange of the flue. This ring is drawn tight against the flange, pressing it against the box by screw-bolts. These screw-bolts have lead cast around their heads, and pass through holes made in the sides of the box on each side of the hole through which the flue passes. The leaded heads are on the inside of the box, and the screw-nuts act on the ends of iron bars, which are placed on the edge of the iron ring. The other end of the flue extends about five inches through the box, where a flange, having a short piece of tube or flue to it is slipped on it and fastened to the stone box or retort in the same manner as the other flange, its tube or short piece of flue surrounding the long one, and extending to the end of it, where they are pinched together and tamped, so as to prevent leakage. The lid of the box has a hole, through which the vapor passes, which is conveyed through leaden pipes passing through water, which condenses it. There is also another hole in the lid of the box or retort, through which a leaden tube passes down below the surface of the water or liquid in the box, the tube being furnished with a flange, which fits upon the lid, and is luted down with clay, made plastic with bittern. This tube is about two inches in diameter, and serves for introducing the materials into the box or retort. There is a hole drilled through the bottom of the retort or box. This hole is closed with a plug of wood, and is withdrawn when the contents of the retort are to be discharged. These retorts are cut out of solid blocks of common sandstone, of about grindstone grit, by stone-cutters, in the ordinary way, with chisels, picks, &c., and can be made of any capacity. The lid is made of the same material. And the whole retort will endure, without injury, a heat sufficient to melt the leaden flue; but the ordinary heat to which I have submitted them is about 220° of Fahrenheit's thermometer. The retort is heated by an oven-shaped furnace, built on a carriage, with wheels, for the convenience of removing it when the heat is not wanted. This furnace has a short horizontal flue, of cast iron, lined with fire-clay. This fits inside of the iron ring of the leaden flue. The heat of the furnace passes through the leaden flue; then through a sheet-iron flue into the chimney. The sheet-iron flue is small enough to enter the end of the leaden flue.

The advantages of the above construction of retort are, first, that sandstone is not so liable to crack or break, by alterations of temperature, as earthenware or any other material that would not be acted upon by the acid contents; secondly, that earthenware retorts could not be easily made of the size which I use without great expense, as the retorts which I have in use of the above construction will contain, the one sixty and the other three hundred gallons; thirdly, the leaden flue affords the best method that I know of for communicating heat sufficient for the purpose, with a small metallic surface; for, if the surface is large, the expense of metal consumed, and acid neutralized, is proportionably increased, as well as of gas disengaged; which gas, combining with the bromine, prevents the ordinary means from condensing its vapor, which is consequently lost.

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

The stone box and lid, with the leaden flue, as above described, to be employed as a retort for the manufacture of bromine and iodine.

DAVID ALTER.

Witnesses:

P. S. WEAVER,

J. B. FULLERTON.