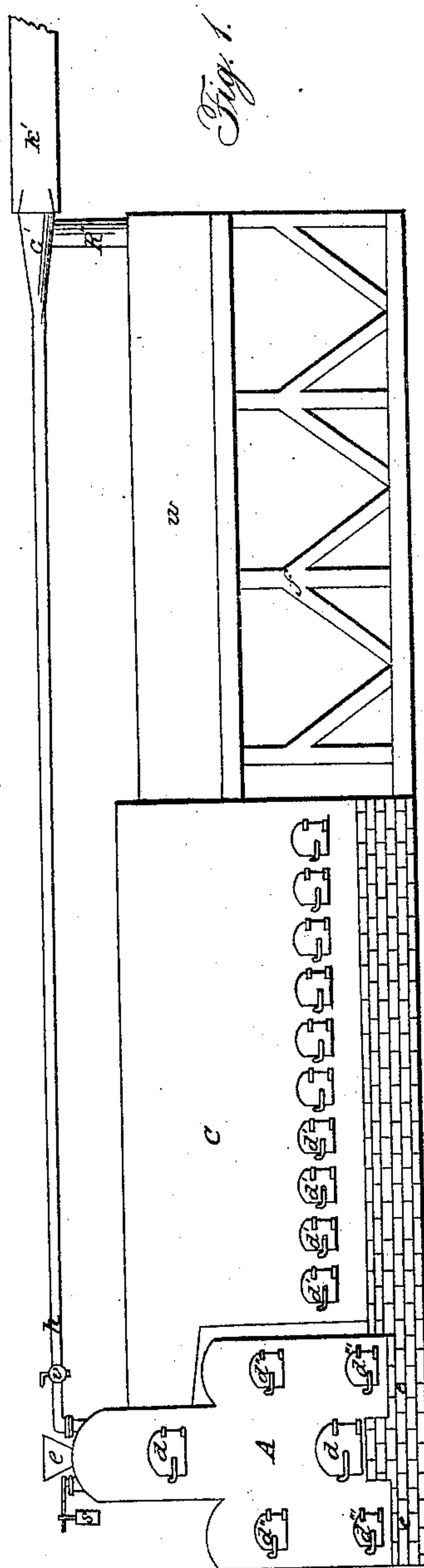
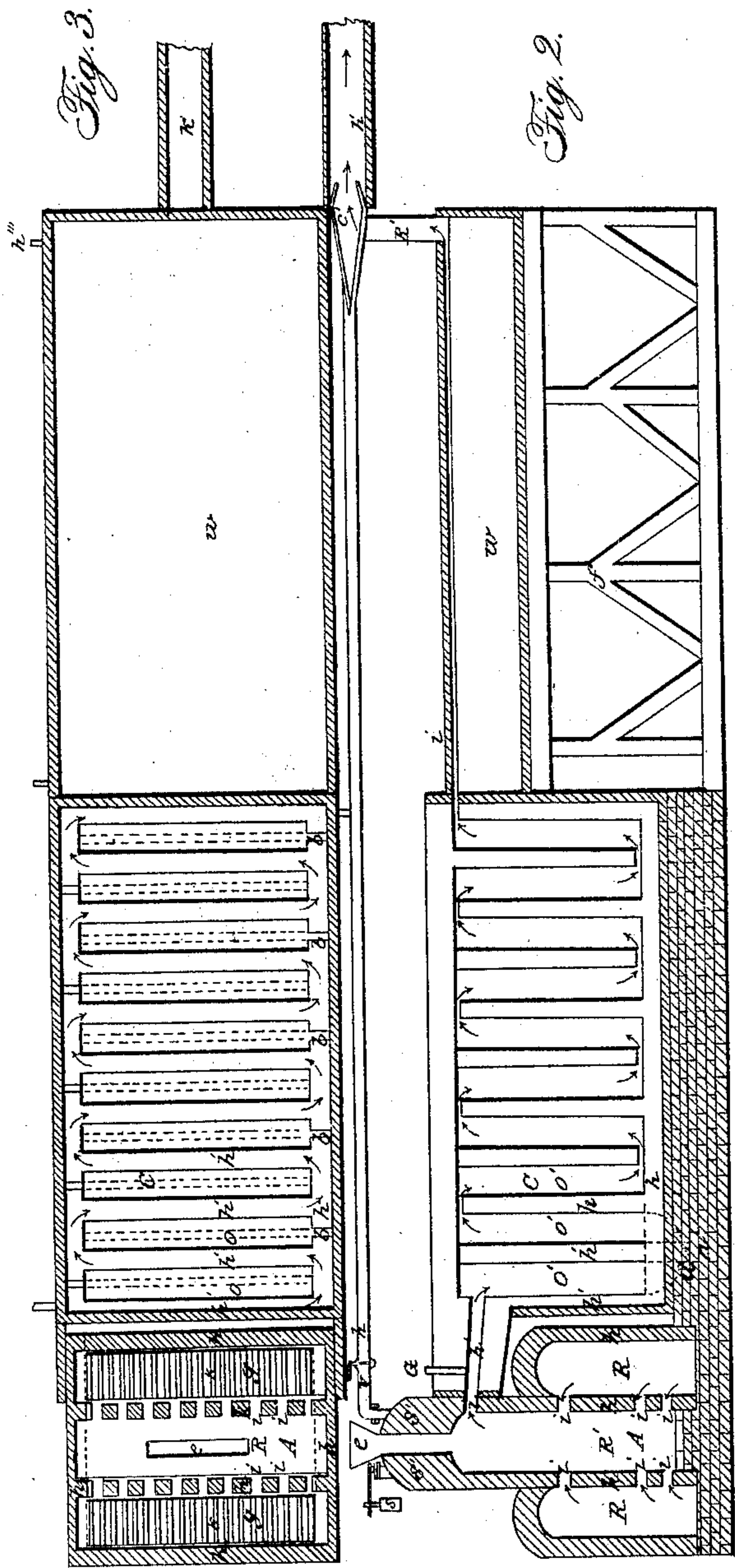


J. C. COULT.
Treating Quicksilver.

No. 63,365.

Patented Apr. 2, 1867.



Inventor:

Joseph C. Coult

United States Patent Office.

JOSEPH C. COULT, OF SAN FRANCISCO, CALIFORNIA

Letters Patent No. 63,365, dated April 2, 1867.

IMPROVED APPARATUS FOR CONCENTRATING AND CONDENSING VOLATILE METALLIC SUBSTANCES.

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, JOSEPH C. COULT, of the city and county of San Francisco, and State of California, have invented certain new and useful improvement upon the Coult and Roach Concentrater and Condenser, for Concentrating and Condensing Volatile Substances. I hereby declare that the following description, and the accompanying drawings, are sufficient to enable others skilled in the arts to which it most nearly appertains to make and use the said invention or improvement, without further improvement or invention.

The nature of my invention or improvement is explained by reference to the drawings.

Figure 1 represents side elevation of apparatus.

Figure 2 represents sectional elevation.

Figure 3 represents top view.

A represents a furnace for making steam and reducing volatile ores by the same fire; $h\ h\ h\ h$, water linings to the furnace, which is supplied with a steam-chamber, $S' S'$, safety-valve S , and gauge-cocks also, and steam pipe p , and stop-valve v , leading the steam to the double cone C , at the chimney k . The furnace is divided into three apartments $R\ R$, having grate-bars $g\ g$ in the fire openings $k\ k$; the doors $d' d'$, for wood, supply the doors below $d' d'$ to clean the fires, and draught openings underneath, $e' e'$, and also openings through the water linings $i\ i\ i\ i$ to centre apartment. R' are chambers, the funnel-shaped pipe e passing down through the steam-chamber $S' S'$, before described, through which the ore passes into the chamber R' to be roasted. This apartment is also supplied with two doors $d\ d$ at each end, the one above through which the ore is spread, and to see when the charge is finished; the one below is the discharge door; the opening i , under the steam-chamber, connecting with the pipe p' ; connected thereto is pipe G' , to let in cold air, which, with the hot fumes of the furnace, all being surrounded by water, pass into the soot and spark-chamber O , thence down to the rounded bottom m , having a deep trough, n , attached thereto. The fumes then pass up and down alternately under and over the water compartments $h' h' h'$, through the dry compartments $O' O'$, taking the direction of the darts in the condenser C' , which is surrounded by water at top, bottom, and sides. The fumes, after being relieved of all the mercurial contents by condensation in the dry chambers, as before stated, pass out over a large sheet or surface of water into water-tank W , and through the space between the cover or top i and the water, into the pipe R'' , then into the inner cone at C , before described, and then into the chimney or final escape at k . This condenser has doors on the side, $d' d' d' d'$, opening into and through the water lining $h' h'$ to each dry compartment $o\ o' o'$. This condenser is supplied by a constant stream of cold water let in at pipe p'' , passing through all the water compartments $h' h' h'$, separately taking the direction of the darts on plan, fig. 3, the current being changed from one to the other alternately by the partitions $b\ b\ b\ b\ b$, and out at the pipe y . The water in the tank W is constantly changed by water passing in at p''' and out at pipe p'''' , the steam made by the furnace passing through the pipe p to and around between the two cones C into the chimney, producing a constant draught, substantially and for the purposes set forth.

Operation.

Wood being placed in the two outside fire-chambers $R\ R$, through the doors $d' d'$, on the grate-bars $g\ g$, the draught let in below at the openings $e' e'$, the fire being kindled, and the steam raised and let into the pipe p through the stop-valve v ; all being ready, the ore is passed down into the chamber R' through the funnel shaped pipe e , passing down through the steam-chamber $S' S'$. The heat being drawn from the fire-chambers through the openings $i\ i\ i$ into and through the ore, from the fire on each side of the ore-chamber, the fumes and smoke pass up through the ore to the opening i' under the steam-chamber, connecting with pipe p' , having a cold-air pipe G connected thereto. The cold air and the hot fumes, being surrounded by water, all pass into the soot or spark-chamber O , drawn down to the bottom, then up O' and over into O' , taking the direction of the darts through all the dry compartments through condenser C' . All the fume compartments being water-lined at top, bottom, and sides, $h' h' h' h' h' h'$, the water being let in at pipe p' , taking the direction of the darts through each apartment separately by the partitions $b\ b\ b\ b\ b$, and finally out at pipe y , mercury being condensed while passing through the cold, dry compartments, and concentrated at the bottom, which is a little

higher on one side than the other; the mercury will pass from one apartment to the other, through a small opening on one side, and finally out through the trough at *n*, under the spark-chamber, or attached thereto. All the remaining fumes leaving condenser *C'* will be drawn over a wide sheet or surface of water in tank *W*, between the water and the cover *i*. All will be collected here desirable. The remaining fumes will be drawn through pipe *R'* into the inside cone *C* by the steam made by the furnace roasting the ores, and finally out into the waste pipe *k*. The small doors at the side of the condenser may be opened one at a time during the operation; and after the ore has given off all metallic contents, the debris is drawn at the large doors at the bottom of the ore-chamber.

Having described my invention so as to enable others skilled in the arts to make and use the same, without further invention or experiment, I now proceed to state what I claim, and desire to secure by Letters Patent:

1. I claim the arrangement of the furnace, having fire on two sides, and the openings leading to the ore-chamber, substantially as described, and for the purposes set forth.

2. I claim the soot and spark-chamber, and the dry compartments having a continuous supply of cold water surrounding them, to hasten condensation and concentration of volatile mineral substances, as described, substantially and for the purposes set forth.

3. I claim the combined arrangement, broadly, as an improvement upon the Coult and Roach Concentrator and Condenser, for the reduction of quicksilver ores, and the use of steam or water to produce draught to accomplish the same, all substantially as in the specification described, and for the purposes therein set forth.

Witness my hand this twenty-eighth day of November, A. D. 1866.

JOSEPH C. COULT.

Witnesses:

HENRY HAIGHT,

H. F. WILLIAMS.