

E. BALBACH, Jr.

Retort Furnaces for Separating Zinc from Gold,
Silver, &c.

No. 139,449.

Patented June 3, 1873.

Fig. 1

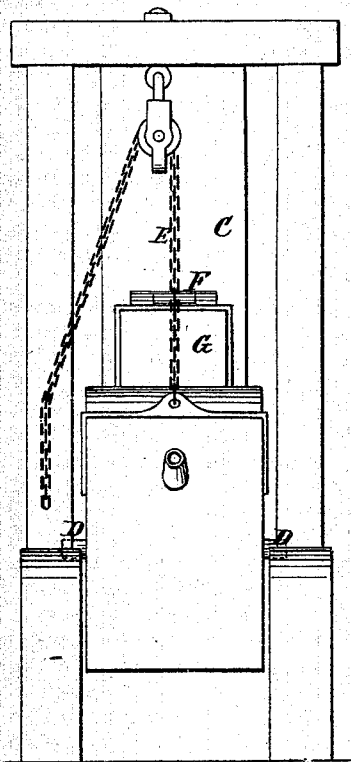
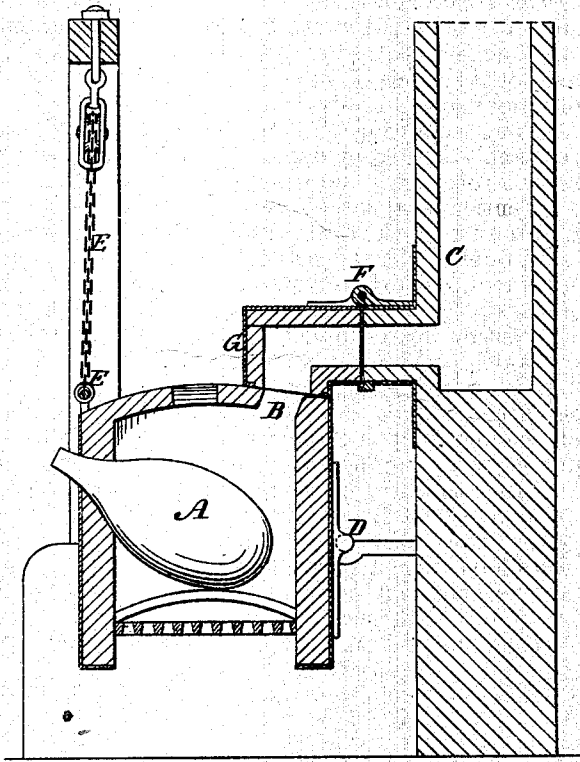


Fig. 2



Witnesses.
Oliver Drake
David Collins

Inventor.
Edward Balbach
By Oliver Drake
His att'y

UNITED STATES PATENT OFFICE.

EDWARD BALBACH, JR., OF NEWARK, NEW JERSEY.

IMPROVEMENT IN RETORT-FURNACES FOR SEPARATING ZINC FROM GOLD, SILVER, &c.

Specification forming part of Letters Patent No. **139,449**, dated June 3, 1873; application filed May 3, 1873.

To all whom it may concern:

Be it known that I, EDWARD BALBACH, Jr., of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Retort-Furnaces for Separating Zinc from Gold, Silver, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings which form part of this specification.

This invention relates to that class of retort-furnaces which oscillate upon trunnions, and its object is so to construct a furnace that it may be turned upon a hinge at its rear end in such manner that the retorts confined in the furnace shall be thereby inclined downward, in order that the contents thereof may be poured out in a liquid state without removing the retorts from the furnace. When the retorts have been discharged of their contents the furnace can be turned again to an upright or horizontal position, and the retorts recharged for the melting of the fresh charge.

Furnaces for accomplishing the above-mentioned objects have heretofore been hung and balanced upon trunnions at their sides, and caused to oscillate thereon, as circumstances required, and their vents for discharging the gases of combustion have been placed in the side or rear end of the furnace, abutting against a rigid or stationary pipe fitted into the chimney of the furnace. In my invention the furnace is hinged at its rear end instead of being balanced upon trunnions in the center of its sides. By this construction it will incline downward by its own weight whenever released from the horizontal position in which it is held by whatever means that may be adopted to maintain it in that position. The vent for the discharge of the products of combustion from the furnace, instead of being in the side or end thereof, is situated in the top of the furnace, and opens into a hinged pipe secured to a chimney, so that the furnace may be lowered and withdrawn from contact with this hinged pipe or flue and again be raised, and form a close joint with it without requiring any skill or

particular care in making the joint tight, and without danger of breaking the pipe in attempting to bring the furnace into contact with it.

This invention is an improvement upon the invention set forth in the patent granted to me on the 21st day of May, 1867, for improvements in separating zinc from gold and silver, and also upon the invention set forth in the patent granted to A. F. Du Faur, assignor, on the 25th day of October, 1870, for improvements in retort-furnaces.

In the drawing forming part of this specification, Figure 1 is a front elevation, and Fig. 2 a section, of a hinged furnace containing a retort, as constructed by me in this invention.

In these figures, A is the retort within the furnace. B is the vent in the top of the furnace opening into the chimney for the discharge of the products of combustion. C is the chimney of the furnace. D is a hinge at the rear end of the furnace. One portion of this hinge may be formed upon a ribbed plate secured to the back of the furnace and joined by a pin to the other portion thereof, which may be attached to any suitable support. The particular construction of this hinge, however, constitutes no part of this invention. E is a line passing over a pulley attached to any convenient support, the line E being attached to the furnace. When it is slacked up the furnace will turn upon the hinge D downward by its own weight. When it is desired to raise the furnace, hauling on the line E will elevate it to a horizontal position. F is a hinge of ordinary construction upon the pipe G, which pipe G covers the discharge-vent B of the furnace when the furnace is in a horizontal position.

It will be observed that if balanced upon trunnions this furnace, when turned down to an inclined position, would right itself with considerable force, if allowed to do so, by its own weight, and thus injure any stationary pipe with which it might come in contact. In this invention not only is the furnace raised against the action of gravity, but it is brought in contact, in the act of raising it, with a movable pipe. This furnace is also lowered with a full retort and raised with an empty retort or retorts, the leverage of the furnace

alone requiring to be overcome without the additional weight of the charge of metal in the act of raising the furnace.

The object of using the hinge F is to allow the pipe G to rise or "give" when the furnace is brought back into a horizontal position after the contents of the retorts have been discharged. Any sudden or violent movement by careless workmen in elevating the furnace would lift this pipe or flue at the hinge F, and thereby prevent any damage to it by forcible contact with it. This hinged pipe, may, therefore, be used to advantage with any oscillating furnace. It is made of iron and lined with fire-brick, fire-clay, or other suitable refractory material. The vent B being in the top of the furnace instead of in the side or rear end thereof, thereby allows a better circulation of the heat in the furnace around and over the tops of the retorts before it escapes up the chimney.

As my invention, I claim—

1. An oscillating retort-furnace, provided with a hinge, D, at its rear end, upon which it oscillates, and a vent, B, in its top for discharging the products of combustion into the chimney of the furnace, substantially as described, for the purposes set forth.

2. The combination of a hinged discharge-pipe or flue, G, with an oscillating retort-furnace, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of April, 1873.

EDWARD BALBACH, JR. [L. S.]

Witnesses:

OLIVER DRAKE,
DAVID COLLINS.