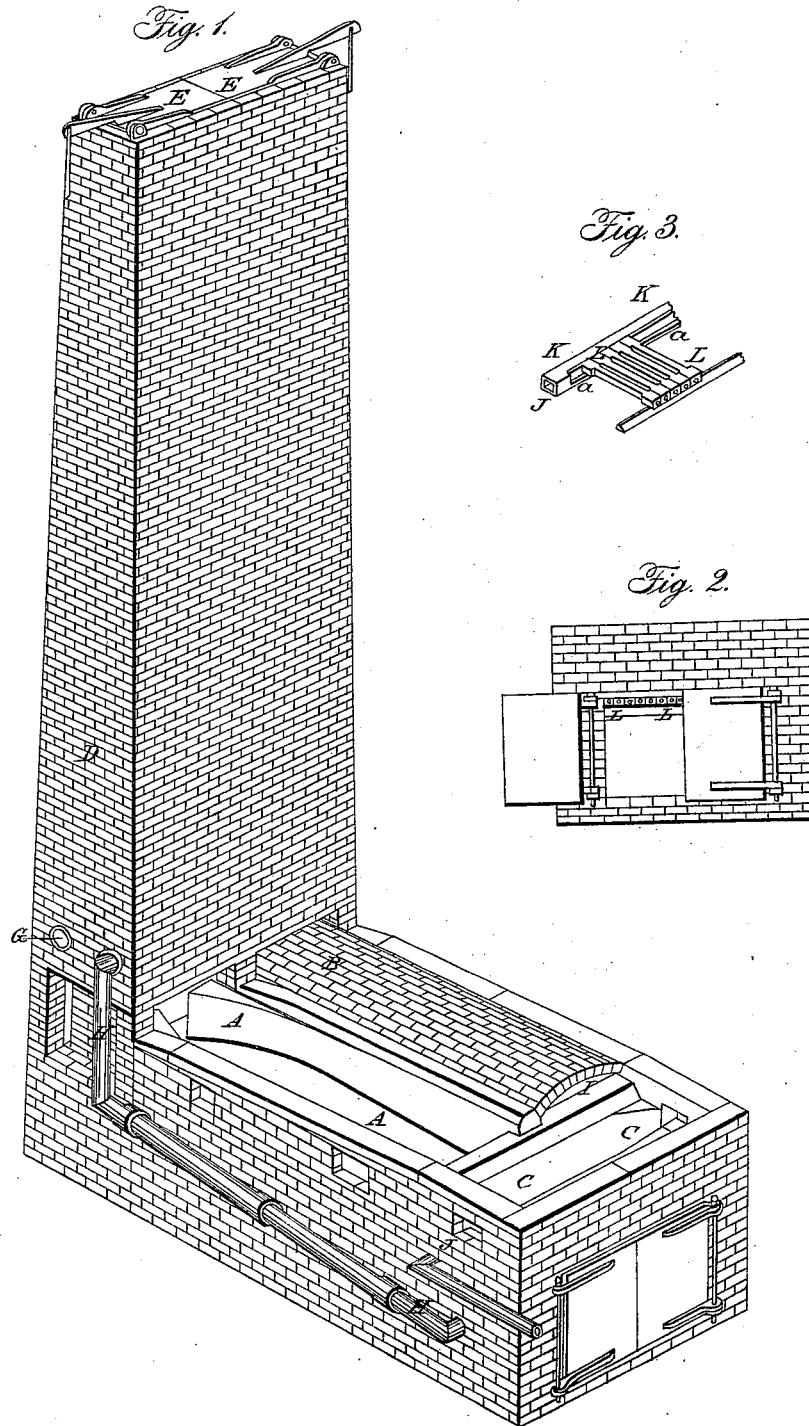


ELLICOTT & McCRONE.

Reverberating Furnace.

No. 4,515.

Patented May 16, 1846.



UNITED STATES PATENT OFFICE.

A. ELLICOTT AND J. McCRONE, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN REVERBERATORY FURNACES.

Specification forming part of Letters Patent No. 4,515, dated May 10, 1846.

To all whom it may concern:

Be it known that we, ANDREW ELLICOTT and JOHN McCRONE, of the city of Baltimore, in the State of Maryland, have made a new and useful improvement in the manner of arranging and combining two reverberatory furnaces and a single fire-chamber, to be used in the manufacture of iron and for other purposes, which combined furnace we denominate "the double hot-blast reversing furnace;" and we do hereby declare that the following is a full and exact description thereof.

In our manner of combining two reverberatory furnaces with a single fire-chamber, the two reverberatory chambers are placed side by side with a division-wall between them. Each of these chambers has its appropriate chimney, these chimneys running up together in one stack with a division-wall between them, and each being furnished with a shutter or damper, allowing one of them to be closed when the other is open, or both to be open together, as may be required. The fire-chamber extends along the front of both the reverberating chambers, and when the heated air is blown into the closed ash-pit, and the dampers on both the chimneys are open, the heating of the metal contained within the reverberating chambers will take place in each of them equally, the quantity of heated air blown in being the same as would be blown into the two furnaces were they separated from each other. The air is heated in recurved tubes contained within the respective chimneys, and is conducted into the ash-pit below the grate-bars in the ordinary manner. By this combination of two reverberating chambers with one fire-chamber the difficulty which has been heretofore experienced in bringing the iron or other material which is being operated upon up to the ultimate heat required, and which often occasions a great waste of time and material, is entirely obviated. During the general process of heating, the dampers on both the chimneys are left open, and the operation proceeds equally in each furnace; but when the ultimate heat is to be obtained in one of them the damper of the chimney appertaining to the other is to be closed. The whole of the blast will then be compelled to pass through one of the reverberating chambers, and the metal within it will, in the course of a very few minutes, attain the

ultimate heat required. During the short period in which this is taking place, that contained in the opposite chamber will not have suffered any sensible diminution of temperature, and by turning the whole force of the blast upon this in the like manner the same end will be attained. This manner of combining and arranging the two furnaces constitutes our first improvement.

Our second improvement consists in the manner in which we combine the hollow grate-bars of the fire-chamber with a hollow trunk at their inner ends, into which hollow trunk cold air is to be blown, which, passing through the hollow grate-bars, will itself become heated, thus protecting the bars from being burned out, and adding to the quantity of heated air which is forced into the ash-pit.

We are aware that cold air has been forced through hollow grate-bars for the purpose of protecting them from being burned out, and we do not intend, therefore, to claim this as in itself new; but in the methods heretofore adopted the hollow bars have been connected with the cold-air trunk in a complex manner by means of screws or other analogous devices, and they have consequently been very liable to be out of order, and have with difficulty been removed and replaced. In our manner of arranging them this difficulty is entirely obviated, as they are merely dropped into place like the common bars of an ordinary furnace.

In the accompanying drawings, Figure 1 is a perspective view of our combined furnaces, the arch being removed from the fire-chamber and from one of the reverberating chambers, for the purpose of showing the interior. Fig. 2 is a front elevation of the fire-chamber, and Fig. 3 a representation of the manner of forming and arranging the grate-bars and the trunk or tube by which they are supplied with air.

A A is the interior of one of the reverberating chambers; B B, the arch of the corresponding chamber, and C C the fire-chamber without its arch.

D is the chimney-stack, containing the separate flues or chimneys of the respective chambers.

E E are the dampers on said flues.

G is one of the holes through which cold air is to be forced into the recurved pipes contained in the chimney, and H H the pipe by which

the hot-blast is to be conveyed into the ash-pit of the fire-chamber. There is a like apparatus on the other side of the combined furnaces.

I is the space below the arch B, through which the heated air passes into the reverberating chamber. The openings for the supply of fuel, for balling, or for other operations to be performed in the furnace are similar to those in common use.

From what has been already said of the design of this manner of constructing the combined furnaces and single fire-chamber, its whole use and the manner of applying it will be perfectly understood.

J is a blow hole or opening leading into the hollow trunk or tube, through which the cold air is to enter the hollow grate-bars. This trunk or tube with some of the grate-bars placed thereon is shown in Fig. 3.

K K is the trunk, and L L the grate-bars. The trunk is shown as made square; but this is not absolutely necessary, as it may be round or otherwise, if preferred. This trunk is shown as having one of its angles removed at *a a*, along that part on which the rear ends of the hollow grate-bars are to rest. The ends of these bars are made square, and they are simply dropped into their places side by side, so as to fill the whole space in the trunk J that has been cut away to receive them. It will be

seen that under this arrangement they may be removed and replaced with the utmost facility, and that they are as little liable to injury as they can in any way be made.

Having thus fully described the manner in which we construct our double hot-blast reversing furnace and shown the design and operation thereof, what we claim therein as new, and desire to secure by Letters Patent, is—

1. The manner herein made known of combining two reverberating chambers with a single fire-chamber under an arrangement by which we are enabled, when necessary, to direct the whole of the double blast into either of the reverberating chambers at pleasure, for the purpose set forth.

2. The particular manner in which we form, arrange, and apply the hollow grate-bars, and the trunk or tube through which they are supplied with cold air, by which arrangement all that is necessary to insure their proper action is simply the dropping them in place side by side, as herein made known.

ANDW. ELLICOTT.
JOHN MCCRONE.

Witnesses:

JNO. SHAMAERS,
HENRY WM. ELLICOTT.