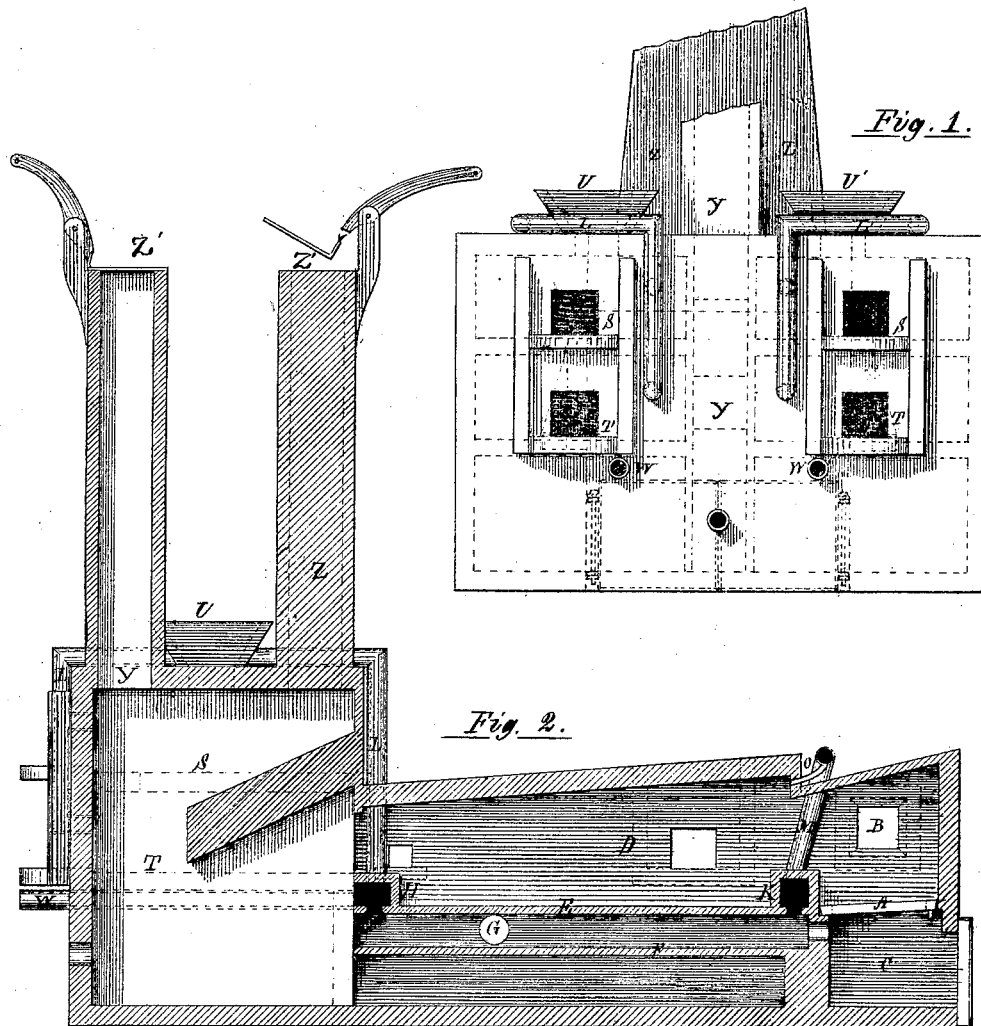


JOHN NEVILLE.

Improvement in Puddling-Furnaces.

No. 114,465.

Patented May 2, 1871.



Witness John Neville  
Lehmann Inventor

# United States Patent Office.

JOHN NEVILLE, OF BROOKLYN, NEW YORK.

Letters Patent No. 114,465, dated May 2, 1871.

## IMPROVEMENT IN PUDDLING-FURNACES.

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

I, JOHN NEVILLE, of the city of Brooklyn, county of Kings and State of New York, have invented certain Improvements in Puddling-Furnaces, of which the following is a specification.

### *Nature and Object.*

This invention relates to that class of furnaces used for the working of ores; and

The object of my improvement is—

First, in making a hollow bottom to the puddling-hearth through which the blast is driven, so that the air for the furnace preserves the puddling-hearth, and saves a great waste of heat that would otherwise be lost.

Second, to utilize the waste heat of the puddling-furnace in roasting the ore and preparing it in turn for the puddling-hearth.

### *Drawing:*

Figure 1 represents the end of the furnace, where the ore is introduced.

Figure 2 is a longitudinal section of the same through the center.

Like letters refer to like parts in the drawing.

A represents the grate where the fuel is introduced for heating purposes, being supplied through the door at B, fig. 2.

C is the ash-pit under the grates, and also serves as a reservoir for the air to supply the oxygen to the fuel upon the grates.

D is the puddling-chamber, the floor or hearth of which is formed of a cast-iron plate, E, and which is covered with any suitable substance for preserving it from the action of the heat.

Underneath said plate E is another plate, F, of the same size and shape as E, and so placed in the masonry a few inches below the plate E as to form a chamber between the two plates, into which chamber the blast of cold air is driven from the fan or blower through the pipe at G.

This air-chamber communicates with the two bridge-walls, H and K, which are hollow, by holes, as indicated in the drawing at fig. 2, and from the upper portion of said bridge-walls blast-pipes L and M are conducted to the puddling-hearth and the deoxidizing chambers.

The blast-pipe at M supplies air through holes in it to the puddling-hearth at O.

Just underneath the arch over the puddling-hearth

the blast-pipes L carry the heated air from the heating-chamber at G to the deoxidizing-hearths at S and T.

At W W other pipes may also be arranged to conduct the blast to a chamber between the deoxidizing-hearths, so as to give greater draught to the stacks in the starting of the fire at A; or when the charges of ore upon the hearths S and T are to be removed, in this case the blast is conducted to the single stack over the central chamber or flue, as indicated, and thereby prevents any deterioration of the heat in the puddling-chamber at D. But when the heat is to be fully utilized by passing it over the hearths S and T, the draught at Y is stopped, and the dampers at Z Z are opened, communicating with the double stacks Z Z, or with one of them, as desired.

The hearths S and T are for roasting the ore previous to its entering the puddling-furnace, and the first part of the process consists in introducing the ore through the hoppers U and U upon the first roasting-hearth S, and afterward drawing it or working it forward to openings in the hearths, when it falls to the next hearth, where the heat is greater and whence it is conveyed back to the puddling-hearth as each new charge is required.

From the construction it is evident that the operation of supplying fresh ore to the hearths may be carried on alternately, as there are two hoppers and two hearths and two stacks in connection therewith, all supplied with dampers; consequently the blast may be closed on one side so that the workmen can move the ore to the puddling-hearth while the other side is in full operation.

### *Claims.*

I claim, therefore—

1. The heating-chamber, formed by the two plates E and F in the bottom of a puddling-hearth, in combination with the double sets of roasting-hearths, as described.

2. The double sets of roasting-hearths, in combination with a puddling-furnace, when provided with stacks and dampers, as described, and for the purposes set forth.

JOHN NEVILLE.

Witnesses:

BOYD ELIOT,

W. G. HENDERSON.