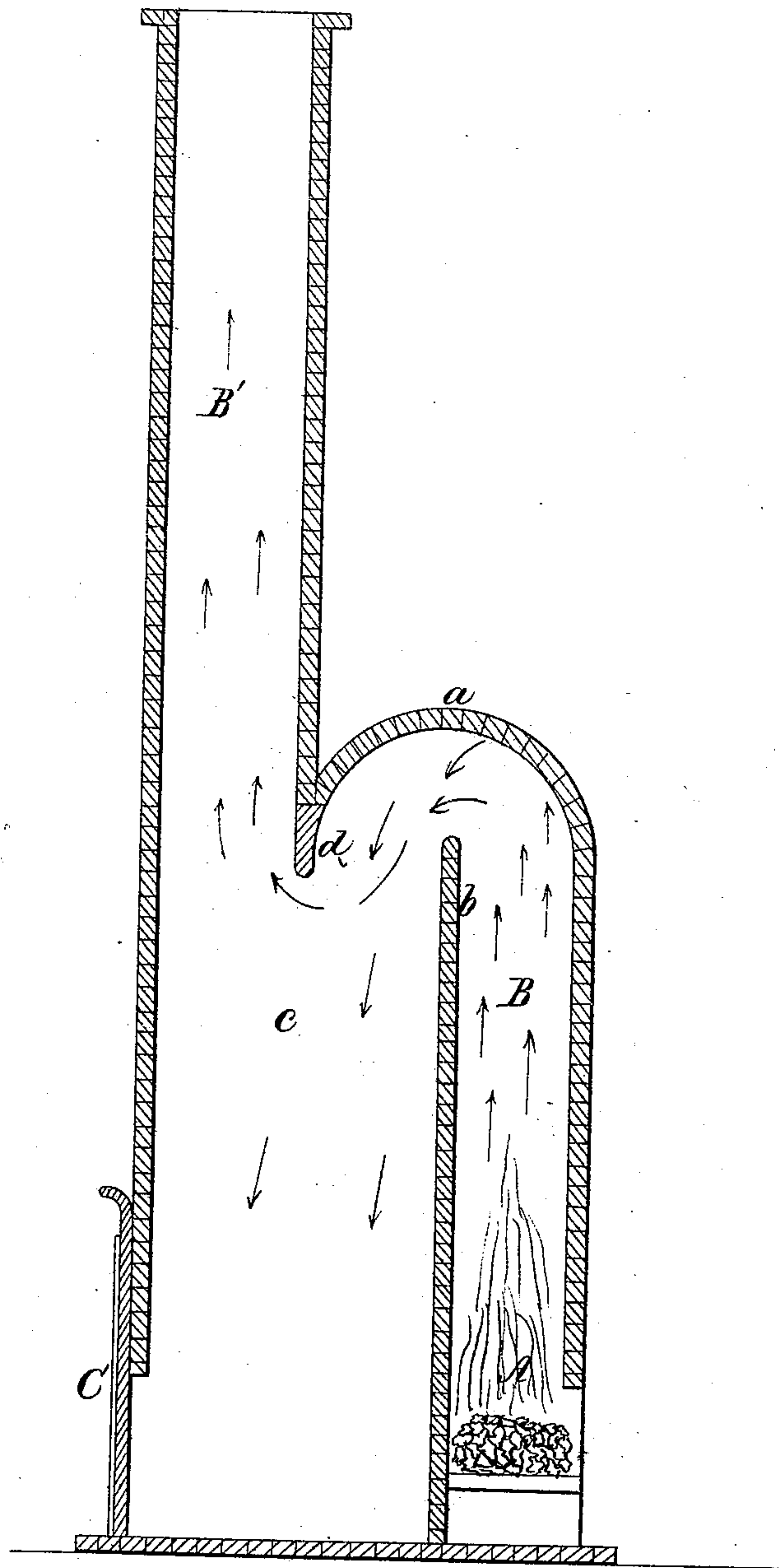


A. G. Bevin.

Metallurgic Furnace.

N^o 89,620.

Patented May 4, 1869.



Witnesses
James Baird
Al Sawley

Inventor
Abner G. Bevin

United States Patent Office.

ABNER G. BEVIN, OF EAST HAMPTON, CONNECTICUT.

Letters Patent No. 89,620, dated May 4, 1869.

IMPROVEMENT IN METALLURGIC FURNACES.

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, ABNER G. BEVIN, of East Hampton, in the county of Middlesex, and State of Connecticut, have invented a new and useful Improvement in Flues for Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, said drawing being a vertical central section of my invention.

This invention consists in constructing the flue with a deflecting-arch, and a chamber or receptacle, arranged in such a manner, that all sparks, or unconsumed particles of the fuel, in its passage up the chimney, will be arrested, and precipitated into the chamber or receptacle, while the smoke and gases are allowed to pass freely up through the flue.

The invention is more especially designed for the flues of furnaces used for smelting the filings, trimmings, and refuse of machine-shops, for the casting of sleigh-bells, and other articles, a considerable portion of the stock of which becomes, in the process of smelting, incorporated with the light cinders of the fuel, and is carried up, by the draught of the flue, and lost.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the furnace, which may be constructed in the ordinary way, and

B is the lower part of the flue, which extends vertically some distance above the furnace, and has its top formed of an arch, *a*, about one-half of which is over the flue B, the other part extending over a partition *b*, which forms the back of B.

Directly back of the partition *b* there is a chamber or receptacle *c*, which is of the same height as B, but considerably wider, and

B' is the upper part of the flue, which extends up vertically from the back part of *c*.

B and B' may be about of the same dimensions in their transverse section, and the space between the top of the partition *b*, and the top of the arch *a* may be equal to the width of B and B'.

The back end of the arch *a* may be supported by a horizontal metal bar, *d*, or a stone slab, fitted or laid horizontally in the upper part of the chamber or receptacle *c*, with its ends in the masonry.

This bar or slab forms the back end or terminus of the arch, and it is a trifle below the top of the partition *b*, as shown in the drawing.

The bar or slab also serves as a support for the front side of the upper part B' of the flue.

At the lower part of the chamber or receptacle *c*, at its back side, there is a door, C.

The operation is as follows:

When the furnace A is charged with fuel, and the stock to be melted, and the process of smelting commences, the cinders or sparks, in passing up the lower part B of the flue, will strike the arch *a*, and be deflected down into the chamber or receptacle *c*.

The smoke and gases, (indicated by red arrows,) owing to their rarity and lightness, will be carried around, within the curve of the arch, over the top of the partition *b*, and will pass up the part B' of the flue, and the strength of the draught will not be appreciably diminished by the sinuosity given it by the arch, and partition *b*; but the sparks or cinders, (indicated by black arrows,) owing to their superior gravity, will strike the arch with some force, and, in rebounding, will pass below the current or draught in the upper part of *c*, and consequently, will fall to the bottom thereof; for, if the sparks or cinders be deflected out of the draught, they will instantly fall, and the arch or deflector *a*, placed in relation with the two parts B B' of the flue, and the partition *b*, as shown, effects that result.

It is important that the supporting-bar or slab *d* of the arch, extend down a trifle below the top of the partition *b*, in order to insure the downward direction of the lighter sparks or cinders.

If this bar or slab *d* were not thus disposed or arranged, the draught would be too direct, and some particles of stock might escape up the part B'.

By this arrangement, much fuel, as well as stock is saved, as quite large particles of charcoal are carried up the ordinary flues, and are lost.

The flue constructed in this manner does not involve much additional expense, and it possesses the advantage of safety respecting fires, obviating the objection urged against the use of furnaces in villages or cities, on account of the sparks igniting the roofs of dwellings in their vicinity.

I do not claim, broadly, the employment or use of a chamber or receptacle in a flue, for retaining or holding particles or substances which would otherwise escape with the draught, for that has been used, but, so far as I am aware, without any deflecting-arch, gravity alone being depended upon to check the escape of the particles, and hence not fully effecting the desired result.

I claim, therefore, as new, and desire to secure by Letters Patent—

Constructing the flue of two parts, B B', connected by a deflecting-arch, *a*, arranged relatively with the partition *b*, and the chamber or spark-receptacle *c*, substantially as and for the purpose herein set forth.

ABNER G. BEVIN.

Witnesses:

JAMES LAIRD,
RICHARDSON GAWLEY.