

R. W. CLARK.  
TWYER IRON.

No. 73,298.

Patented Jan. 14, 1868.

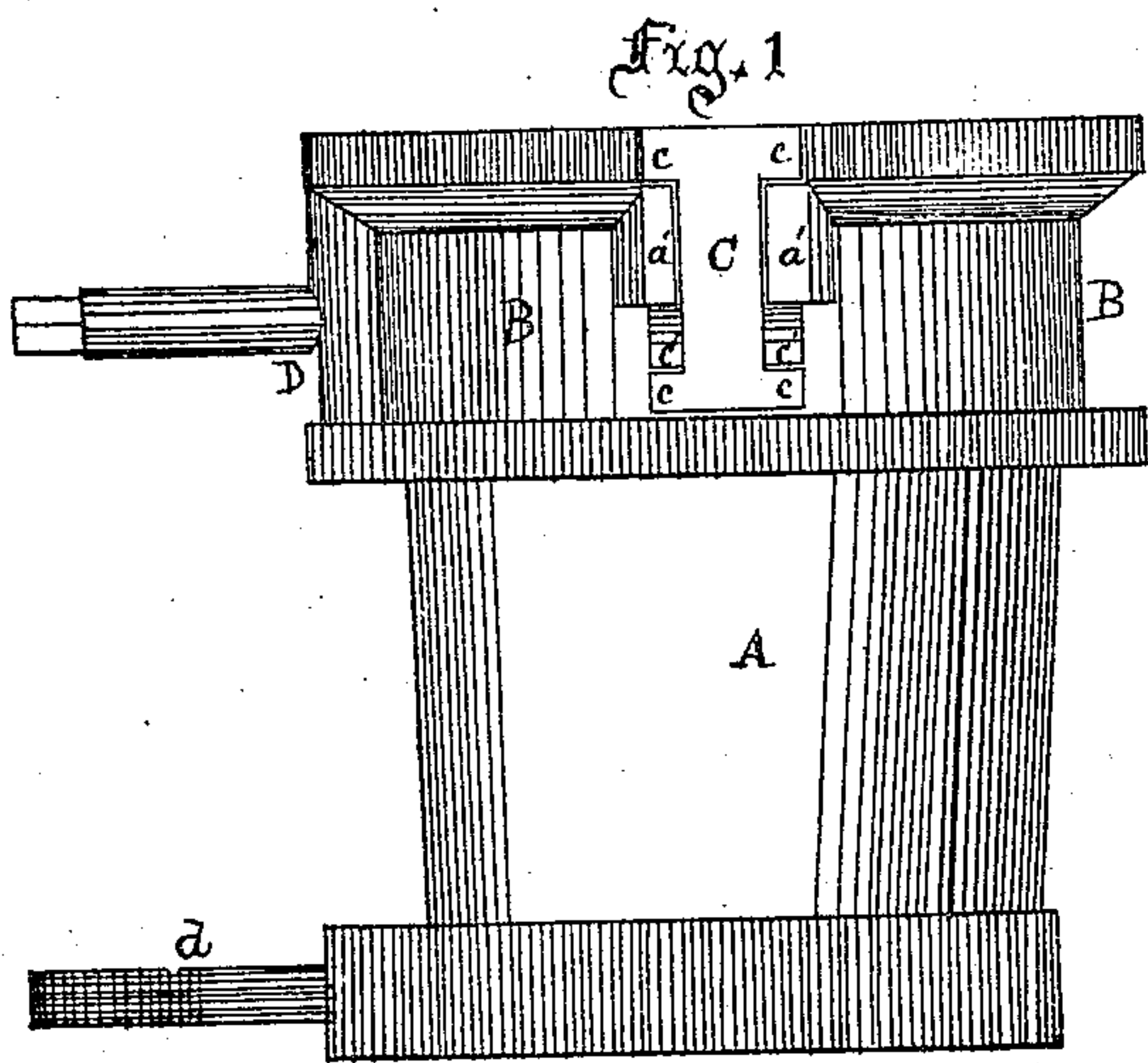


Fig. 5

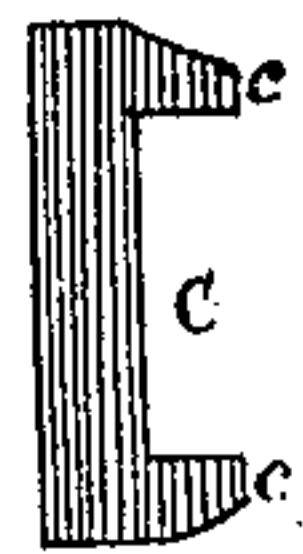


Fig. 2

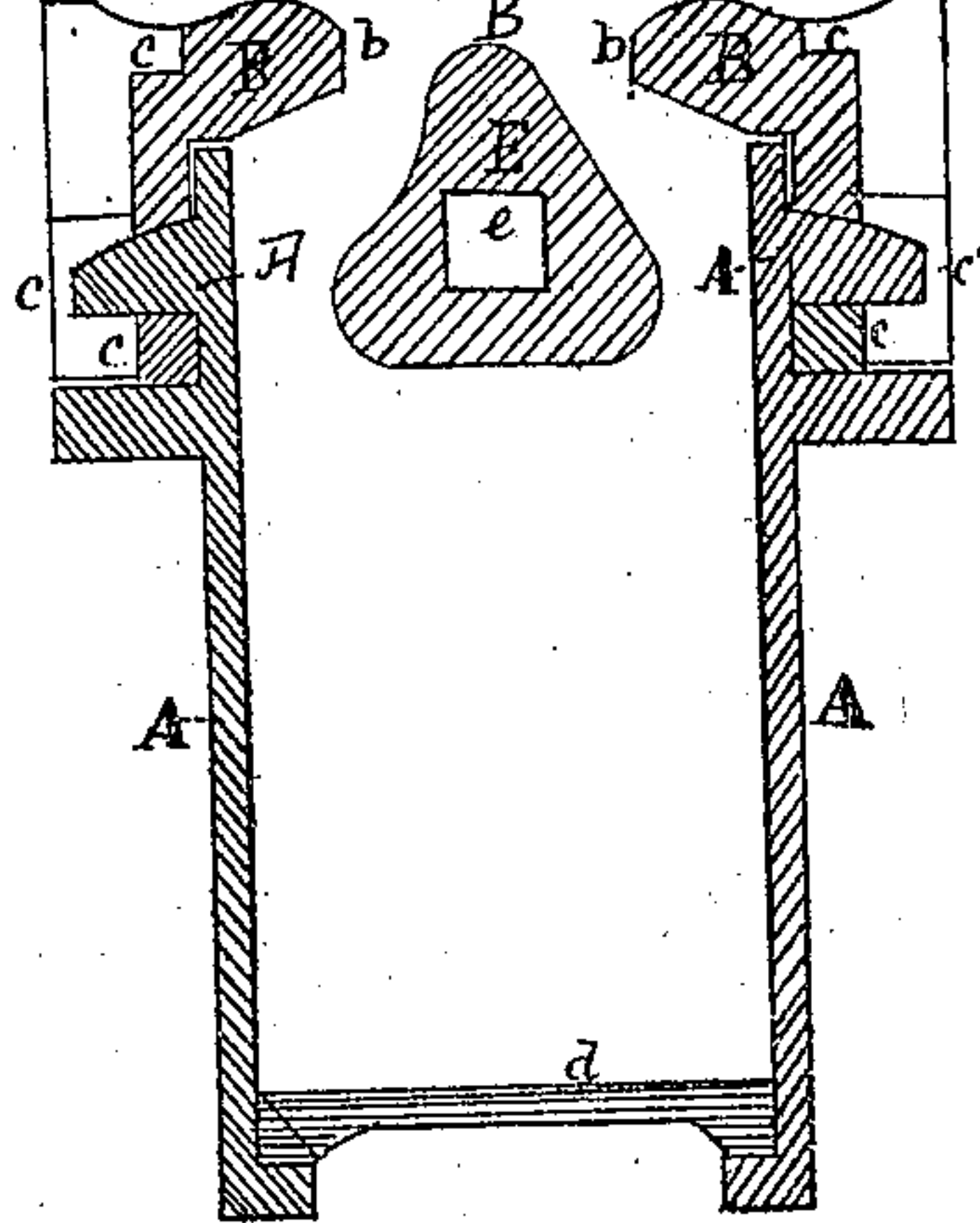


Fig. 3

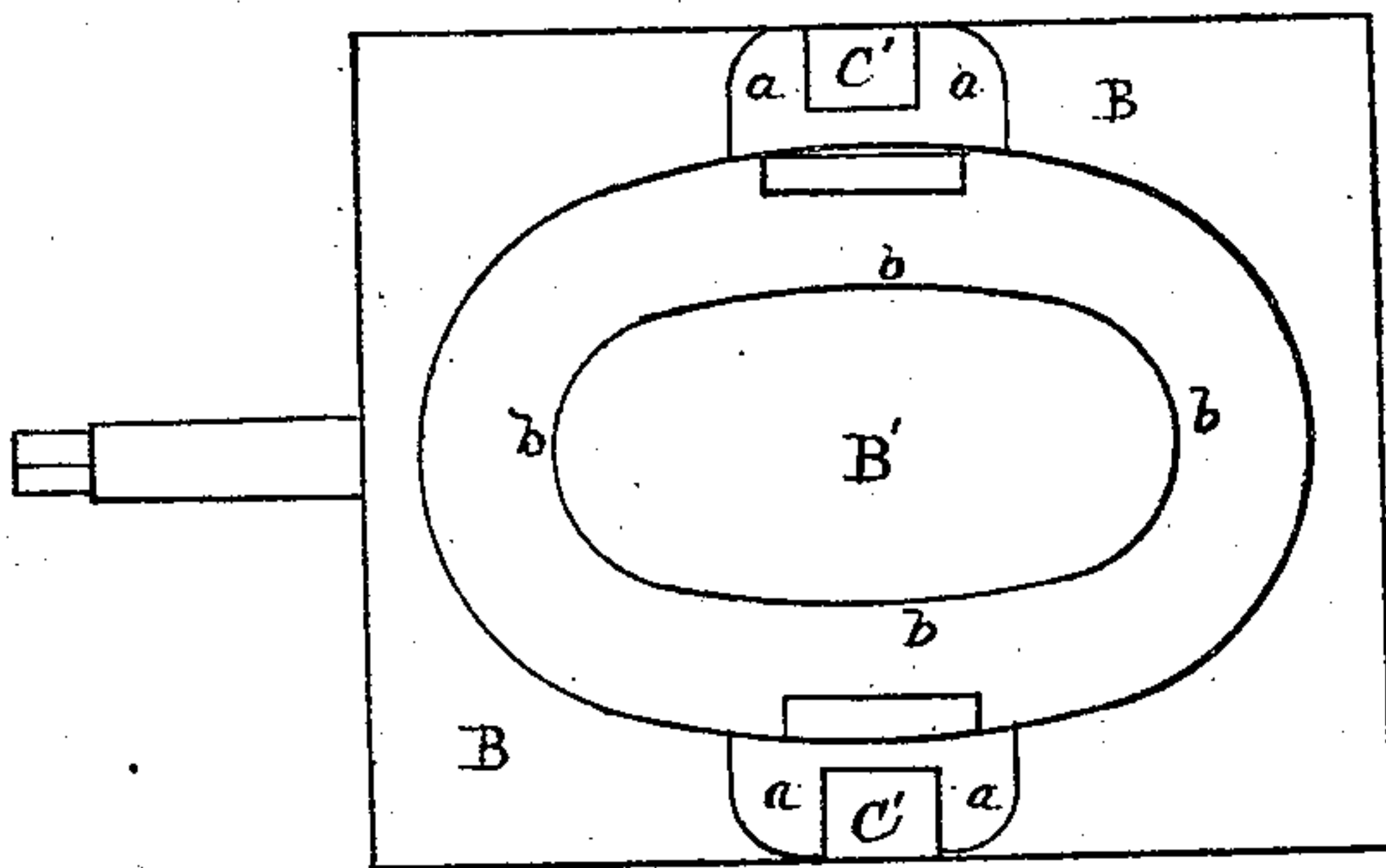


Fig. 4

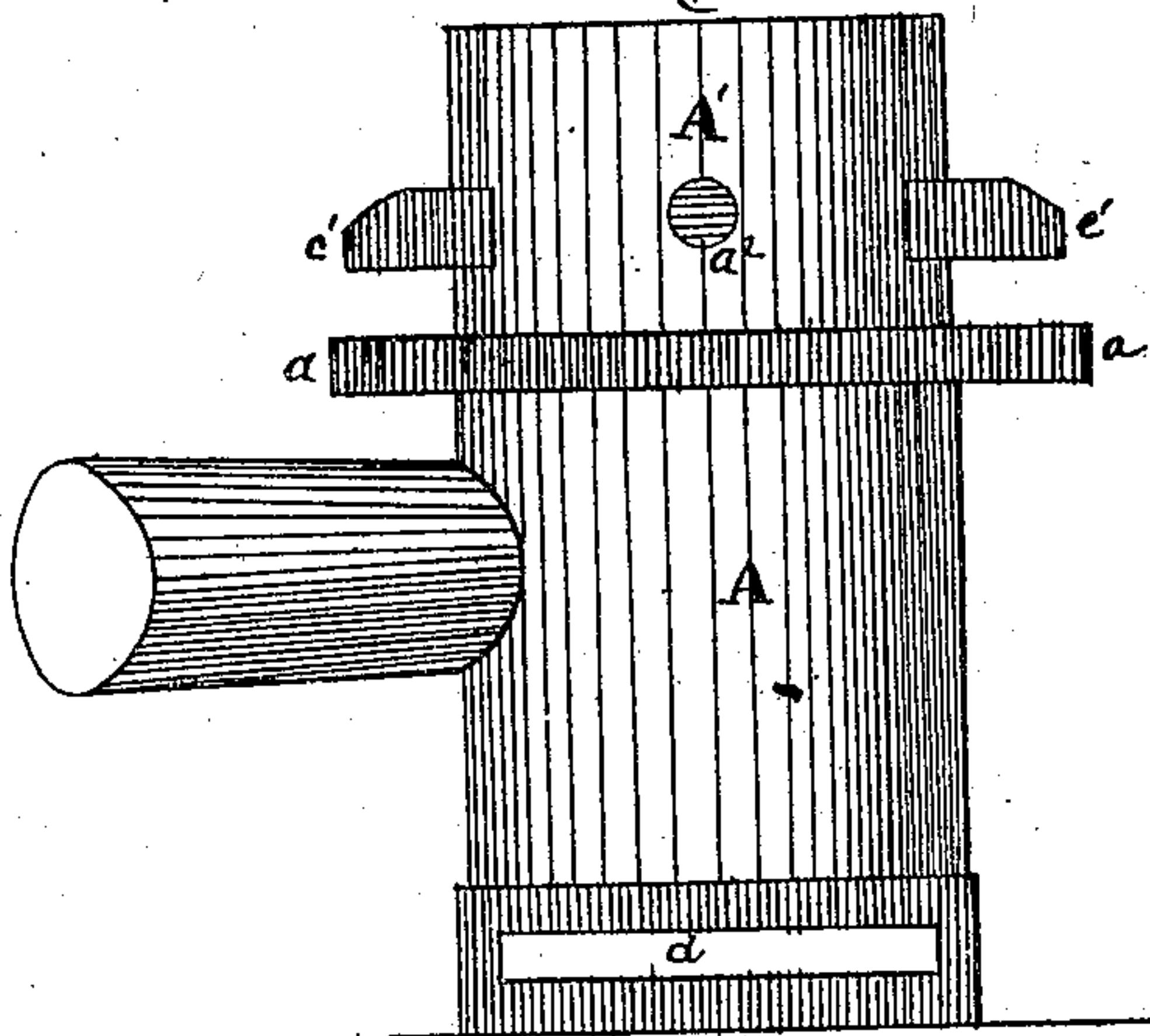


Fig. 6



Fig. 7

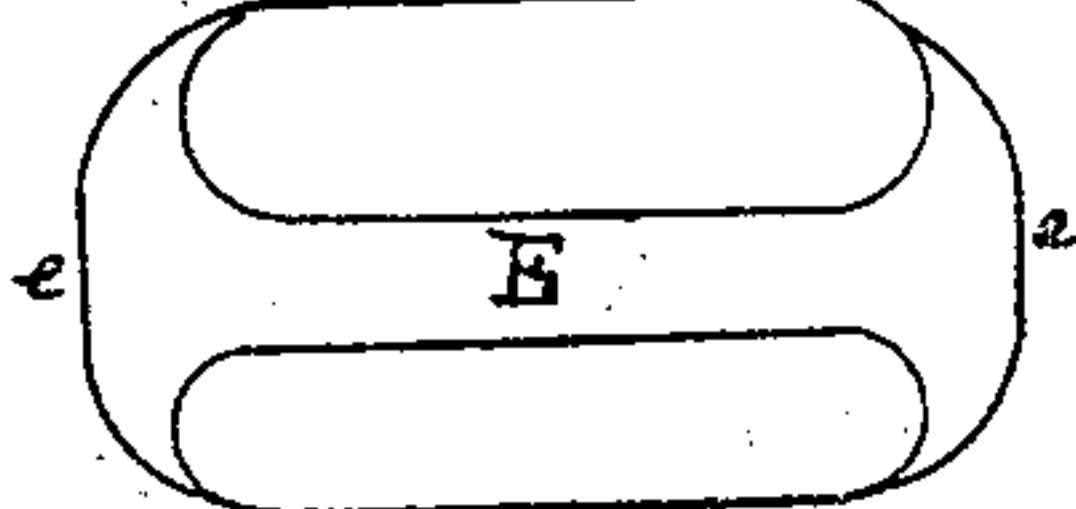
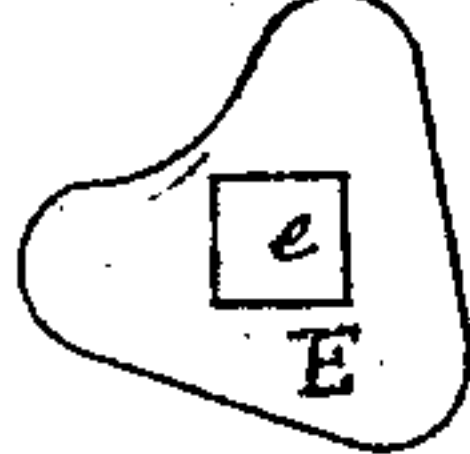


Fig. 8



Witnesses  
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# United States Patent Office.

ROBERT W. CLARK, OF PITTSBURG, PENNSYLVANIA.

*Letters Patent No. 73,298, dated January 14, 1868.*

## IMPROVEMENT IN TUYERE-IRONS.

*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, ROBERT W. CLARK, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Tuyere-Irons for smiths' forges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making part of these specifications, in which—

Figure 1 is a side elevation.

Figure 2 is a transverse section.

Figure 3 is a top view.

Figure 4 is an end view without the top piece.

Figure 5 is a section of a key.

Figure 6 is the hearth-valve shaft.

Figures 7 and 8, side and end views of the hearth-valve.

My invention consists in the use of a separate top piece to tuyere-iron boxes, so held on by two simple keys, or equivalent devices, fitted to it and the lower part, that it can easily be removed, when burned out, and a new casting can, in a few moments, be substituted without tearing up the hearth or delaying the operations of the forge.

In all the forms of tuyere-irons now in use, when the top becomes burned out, it is necessary to renew the whole iron, and also to tear up the hearth, thus causing delay and expense for a simple operation, which is made such by my invention, as in the construction of a forge, for this tuyere; or in altering an old forge, arrangements can be made to get at it without any trouble; and when the top piece is to be replaced, this can be done by backing off the two keys; the top can be instantly removed and a new one substituted, the keys returned, and the forge will be ready at once for operations.

In the drawings, A is the body of the tuyere-iron. A' is the upper part. B is the movable top piece. B' is an oval-shaped opening, which comes immediately under the fire-hearth. C C are the keys, which fasten the top piece to the bottom. C', the openings on each side of the top piece for the keys. D is a slot in the top piece to fit over the valve-shaft. E is the turning-valve, in the top piece under the fire-bed. F is the valve-shaft, fitted through it. a, the square projection separating the bottom part A of the tuyere-iron from the top part A', and on which the movable top piece B rests. a', the projections or lugs which confine the keys C C in their positions. a'', the holes for the shaft F. b, the sides of the oval opening B', curved on top and bevelled underneath, as represented in fig. 2. c, the projections at top and bottom of the keys, which catch above the movable top piece and under the lugs c' c', which are cast on the top A', and thus confine the movable top piece B to its seat on top of A', as seen in the section, fig. 2. d is a valve in the lower part of the tuyere-iron. e is the hole in the hearth-valve E, into which the square part f of the shaft F is fitted. f<sup>1</sup> and f<sup>2</sup>, the journals in which the shaft turns, and for which there are corresponding holes in the tuyere-iron at D and a'.

The operation of this device is very simple. The whole is to be made of cast iron, and requires no fitting after the castings are made, and by having several extra top pieces cast and always ready, as before observed, no time is lost in renewing the burnt iron piece, and the tuyere-iron, after the top piece is thus renewed, will be as good as new in every case.

Having thus fully described my invention, and the method of operating it, what I claim as new therein, and desire to secure by Letters Patent of the United States, is—

1. The combination of the air-chamber A, removable top B, and keys C C, when the same are constructed and arranged substantially as described.

2. The combination of the air-chamber A, turning-valve E, and removable top B, when the same are connected and arranged substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT W. CLARK.

Witnesses:

J. DONALDSON,

JOHN CUSSELLS.