

(No Model.)

M. D. GREENWOOD.
OVEN FOR ANNEALING METALS.

No. 376,740.

Patented Jan. 24, 1888.

Fig. 1

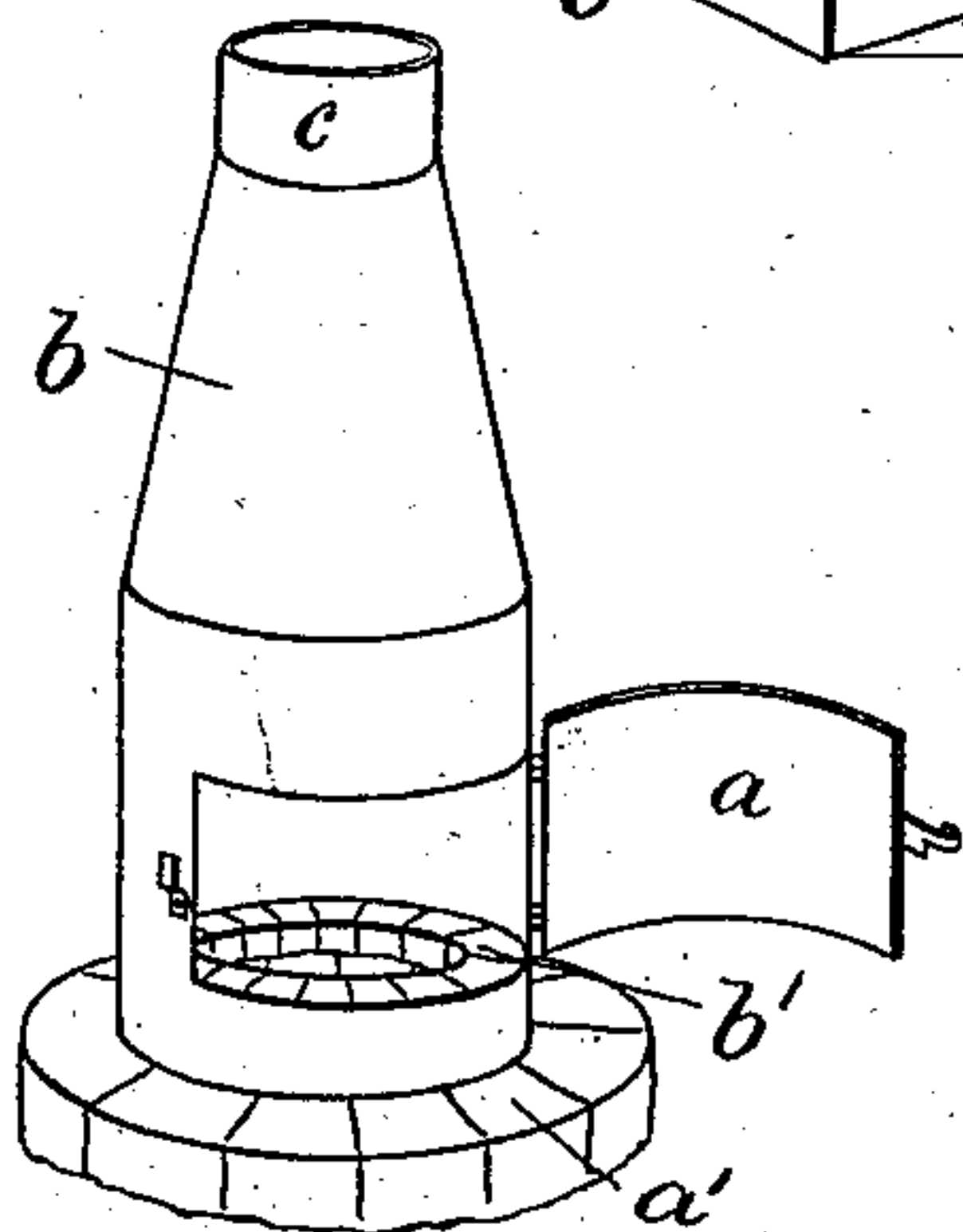
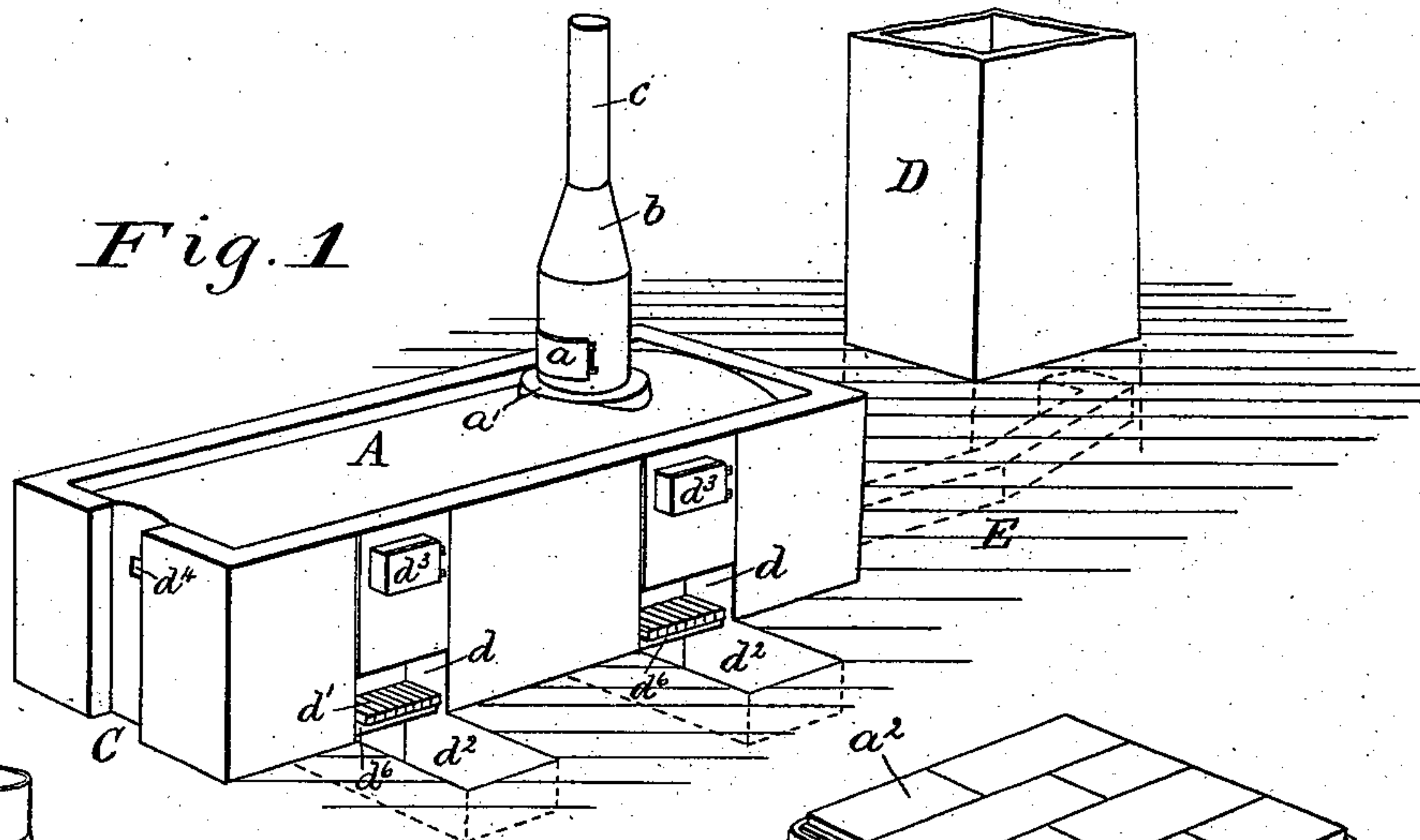


Fig. 2

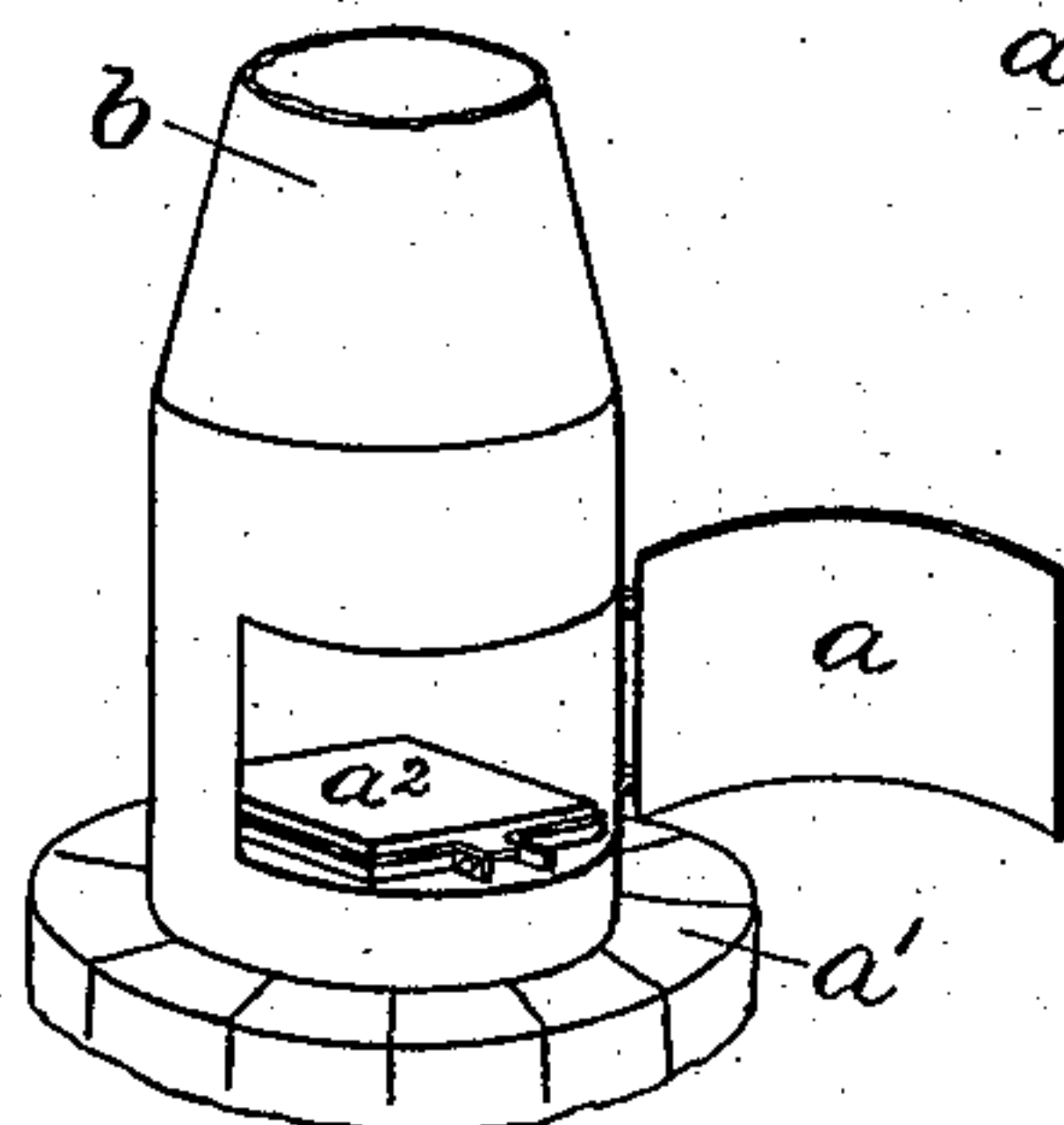


Fig. 5

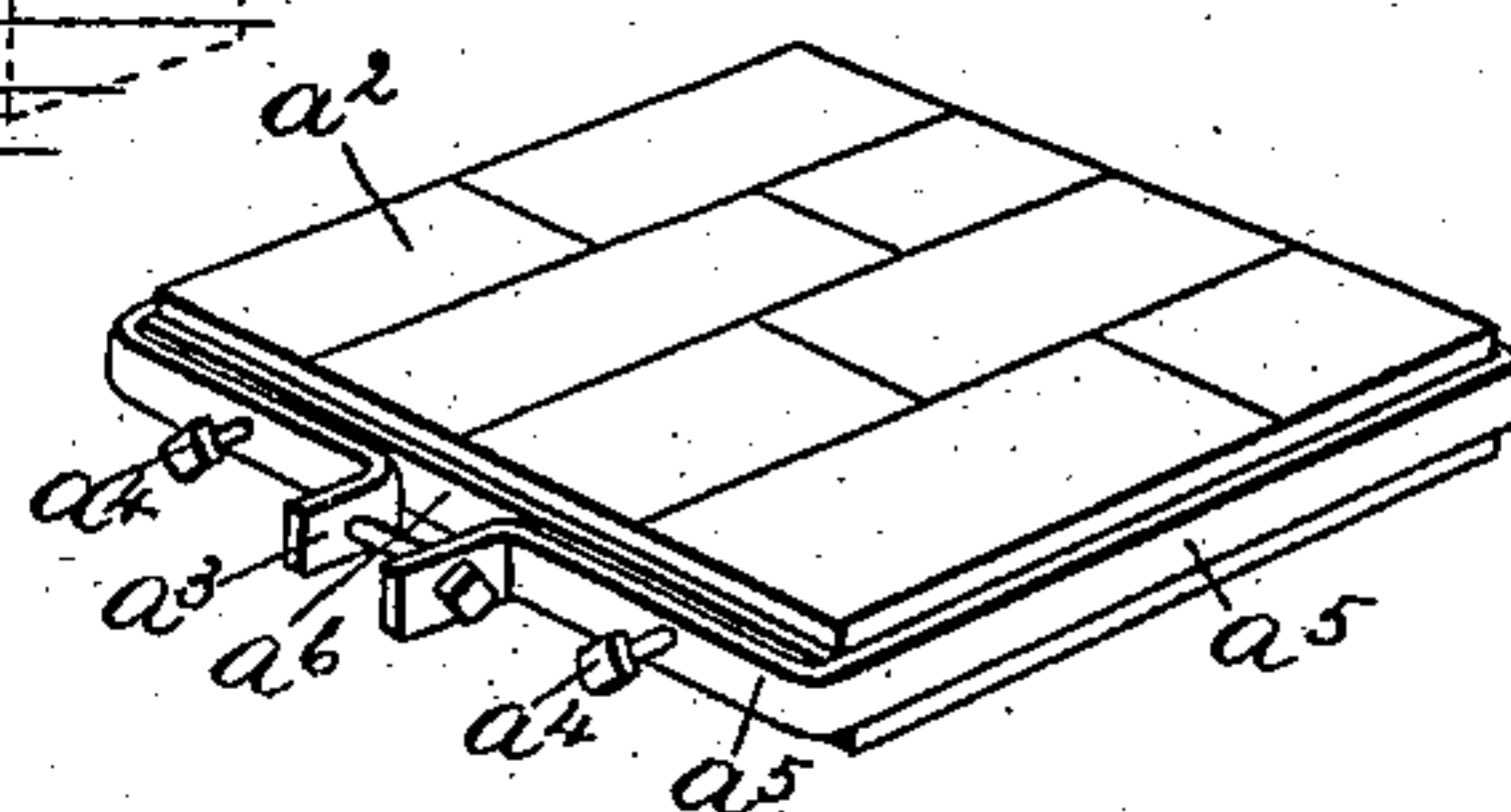


Fig. 3

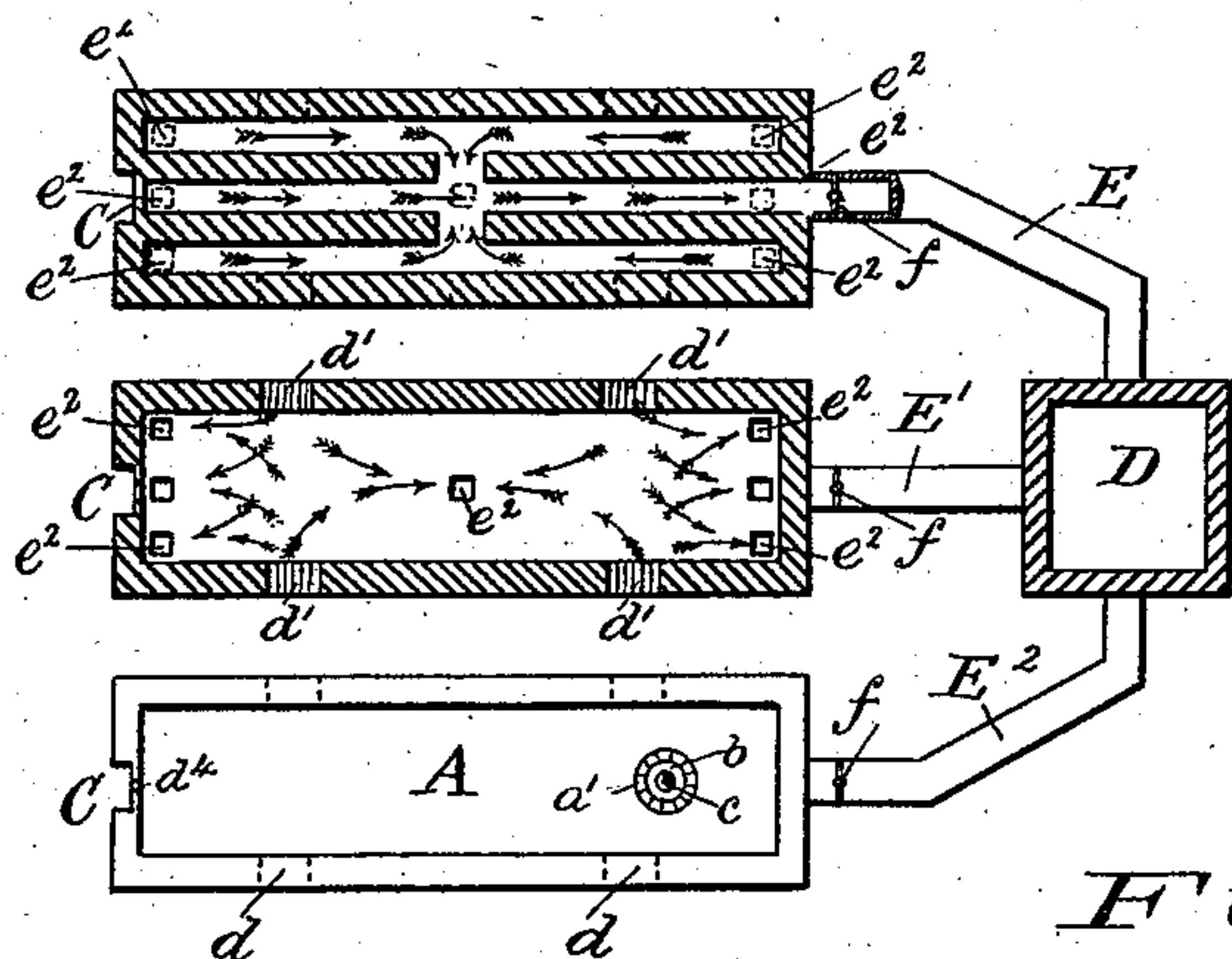


Fig. 4.

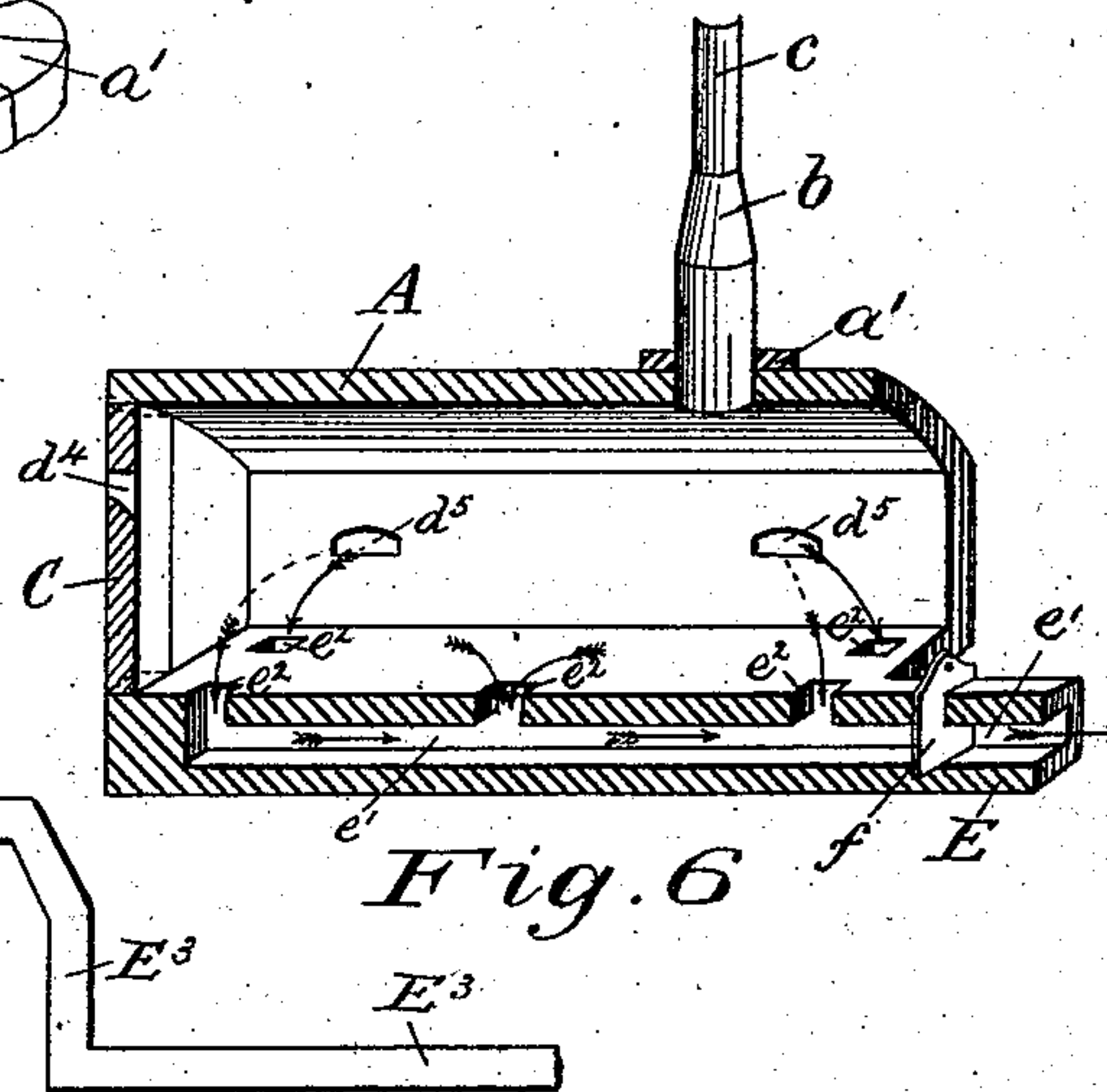


Fig. 6

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OVEN FOR ANNEALING METALS.

SPECIFICATION forming part of Letters Patent No. 376,740, dated January 24, 1888.

Application filed August 31, 1886. Serial No. 212,321. (No model.)

To all whom it may concern:

Be it known that I, MARSTIN DAVID GREENWOOD, a citizen of the United States, residing at Hoosick Falls, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in the Construction and Operation of Ovens for Annealing Metals; and I do declare the following to be a full, clear, and accurate description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a view in perspective of the oven complete and the lower portion of the smoke-stack or chimney. Fig. 2 is a view in perspective of the escape-pipe and its connection with the oven, with the door open, and the cover which closes the hole between the oven and the pipe. Fig. 3 is a view in perspective of the cover. Fig. 4 is a plan view of three ovens, one of which shows all the flues, the arrows indicating the direction which the air takes while passing through the flues, another showing the flues left out, with the arrows indicating the direction of the current, and the third showing the outside casing of the oven and the escape-pipe. This view also shows the connection between the ovens and the chimney. Fig. 5 is a view in perspective of the lower portion of the escape-pipe, with the door open and the cover closing the hole. Fig. 6 is a view partly in perspective and partly in longitudinal vertical section, showing the interior of the oven.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings, in which similar letters of reference designate like parts.

A is the oven, with an arched top and a cylindrical hole communicating with the lower end of the chimney or escape-pipe *b*. The bottom of this small chimney or escape-pipe is made larger than the top, and the upper portion, *c*, is connected with the larger or lower portion by a tapering joint, *b*, and the lower part of the pipe fits over a ring of fire-brick, *b'*, and its lower edge rests on the ring *a'*, which forms a portion of the arch or top of the oven.

a is a door at the bottom of the escape-pipe,

(shown in Fig. 1 as closed and in Figs. 2 and 5 as open,) which is for the purpose of allowing the cover *a*² to be inserted and removed.

C on the end of the oven is where the material to be annealed is put in and taken out.

On each side of the oven I provide one or more fires. I have shown two in the drawings at *d d*.

d' is the grate on which the coal is burned, and *d*³ the doors where the coal is put in the fire.

*d*² is the ash-pit extending under the grate.

The fire communicates with the oven, in which the pots containing the metal to be annealed are placed, by the openings *d*⁵, and the heated air from the fires, passing, together with the smoke, through these openings, circulates around the pots, and is drawn by the draft of the main chimney through the openings *e*² in the bottom of the floor of the oven into the channel or flue *E*², underlying the oven and communicating with the pipe *E*, which leads to the main stack or chimney *D*. The branch of this pipe *E* is provided with a damper or cut-off, *f*, which can be used to cut off the draft from the main chimney *D*, when desired, from either of the series of ovens.

Fig. 3 is a platen or cover composed of fire-brick fastened together by a clamp, *a*⁵, and secured tightly, by means of the set-screws *a*⁴, against the plate *a*⁶ and the clamp and bolt *a*⁴, and when in place and set with fire-clay serves to close the opening between the oven and the pipe *b* when the annealing process is going on. The door *a* at the bottom of the pipe can be opened in order to put in and take out the platen or cover, as well as to admit air for the ventilation of the room.

This specification is drawn with reference to the application of my invention to the annealing of castings to produce what is known as "malleable iron," and is most useful in foundries where more than one oven is used.

Heretofore ovens have been constructed with a direct connection between the oven and the tall chimney or stack, to give draft to the fire, and when the product has been sufficiently annealed, the fire withdrawn, and the receiving end opened the cold air will be drawn through the oven and cool the product. This operation is not objectionable where only one

oven is used; but when two or more ovens are used with a common stack the metal in one oven may be fully annealed before the process is either begun or completed in the other ovens.

5 It is plain that the cold air passing from one or more of these ovens into the chimney will cool the air in the chimney and reduce the amount of draft, and the fires must be kept up longer to anneal the product than when
10 each oven is allowed to cool by itself, as in my construction. I connect the main chimney or stack with each of the ovens separately, and when the fire is shut off by closing the damper *f* there is no air entering the main stack
15 through the oven. When the opening is closed by the platen, the draft of the main smoke-stack will keep up the heat by supplying air to the fire. At this time the door *a* is left open, which ventilates and serves to keep the
20 oven-room cool. When the metal is sufficiently annealed to be removed, the fire is withdrawn, the fire-box closed up, the platen removed, and the door *a* closed. The end of the oven being opened at *C*, the cold air will
25 be admitted into the oven and be drawn up through the pipe *b*, (which can be made of any desired height.) The flue *E* being closed by the damper *f*, no cold air will be admitted to the

main stack *D*, and the draft in the ovens in which the process of annealing is going on 30 will not be decreased by the cooling of the oven which is open.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

35 A series of annealing ovens, each oven provided with a separate pipe communicating directly with a stack common to all the ovens, a damper in each pipe adapted to open and close the communication between each oven 40 and the common stack, a separate chimney in each oven, also provided with a damper, and an opening in the lower portion of the oven, through which the cold air from the outside of the oven is adapted to be drawn through 45 the oven and through the separate chimney in the top of each oven, whereby the cooler air, passing from the oven in which the annealing process is completed, does not diminish the draft of the main stack common to the ovens, 50 substantially as and for the purpose specified.

MARSTIN DAVID GREENWOOD.

Witnesses:

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