(No Model.) 3 Sheets—Sheet 1.

F. BALDT.

ANNEALING FURNACE.

No. 250,702. Patented Dec. 13, 1881.

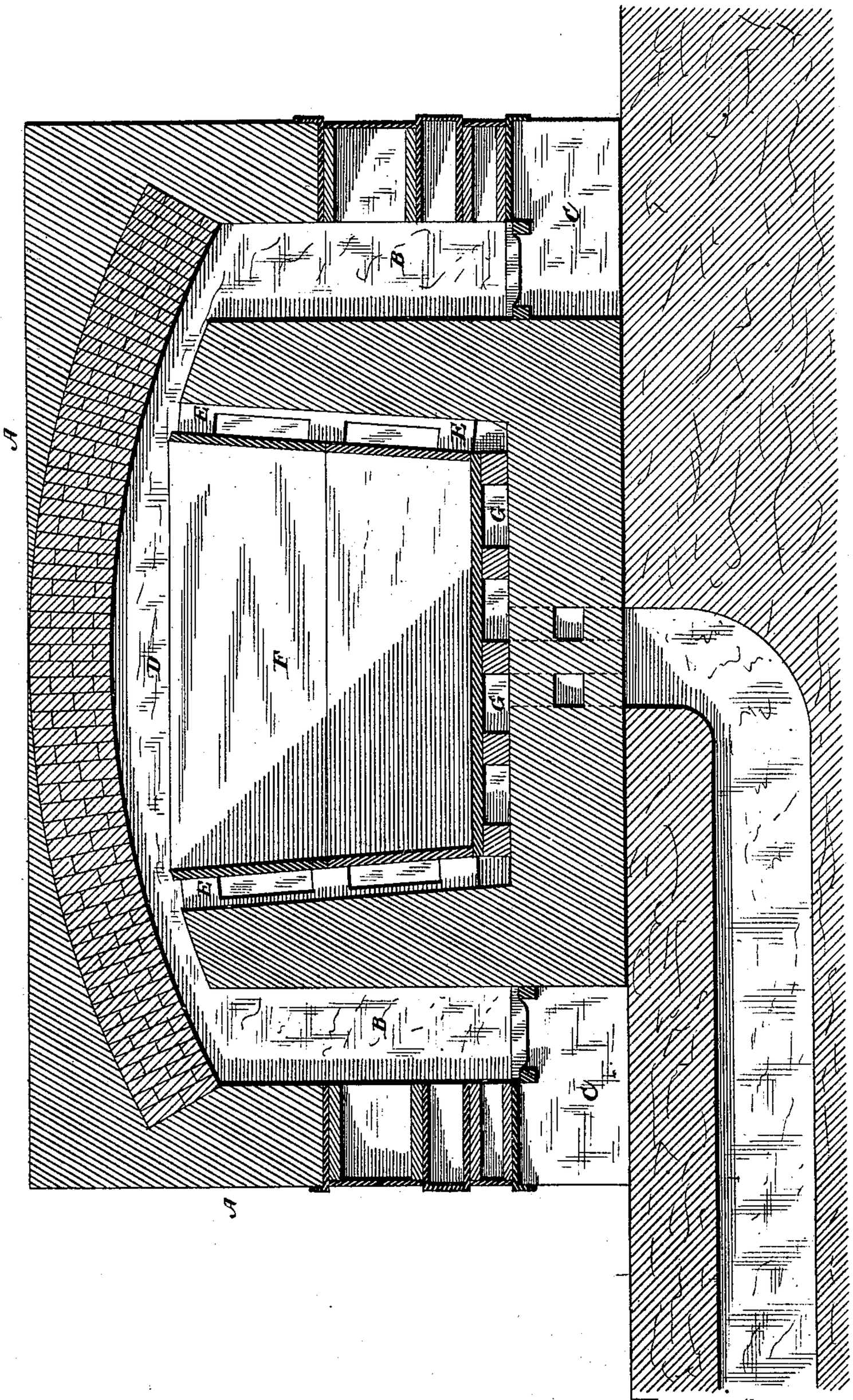

Fig. 1.

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(No Model.)

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Fig. 2.

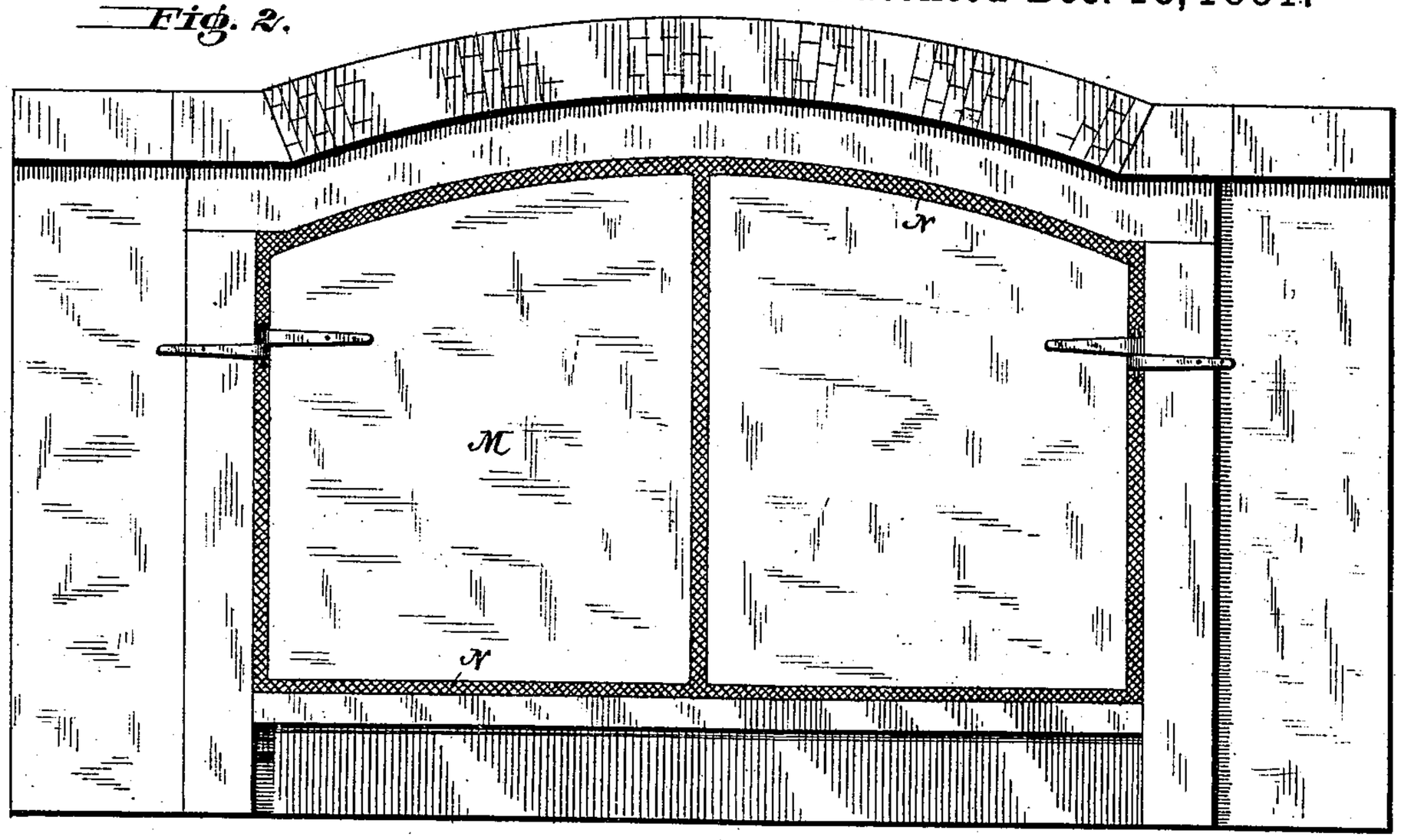
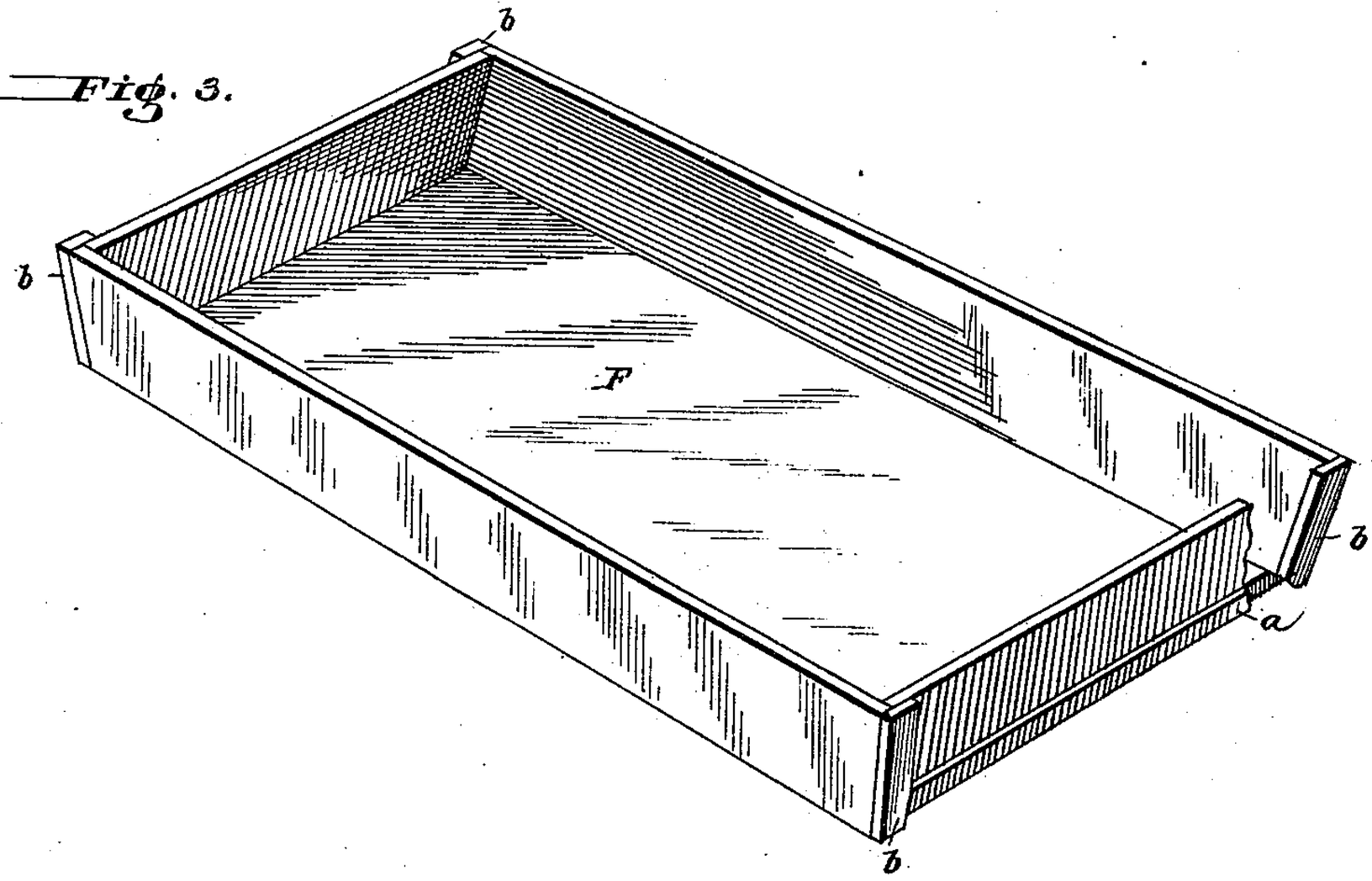


Fig. 3.



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3 Sheets—Sheet 3.

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ANNEALING FURNACE.

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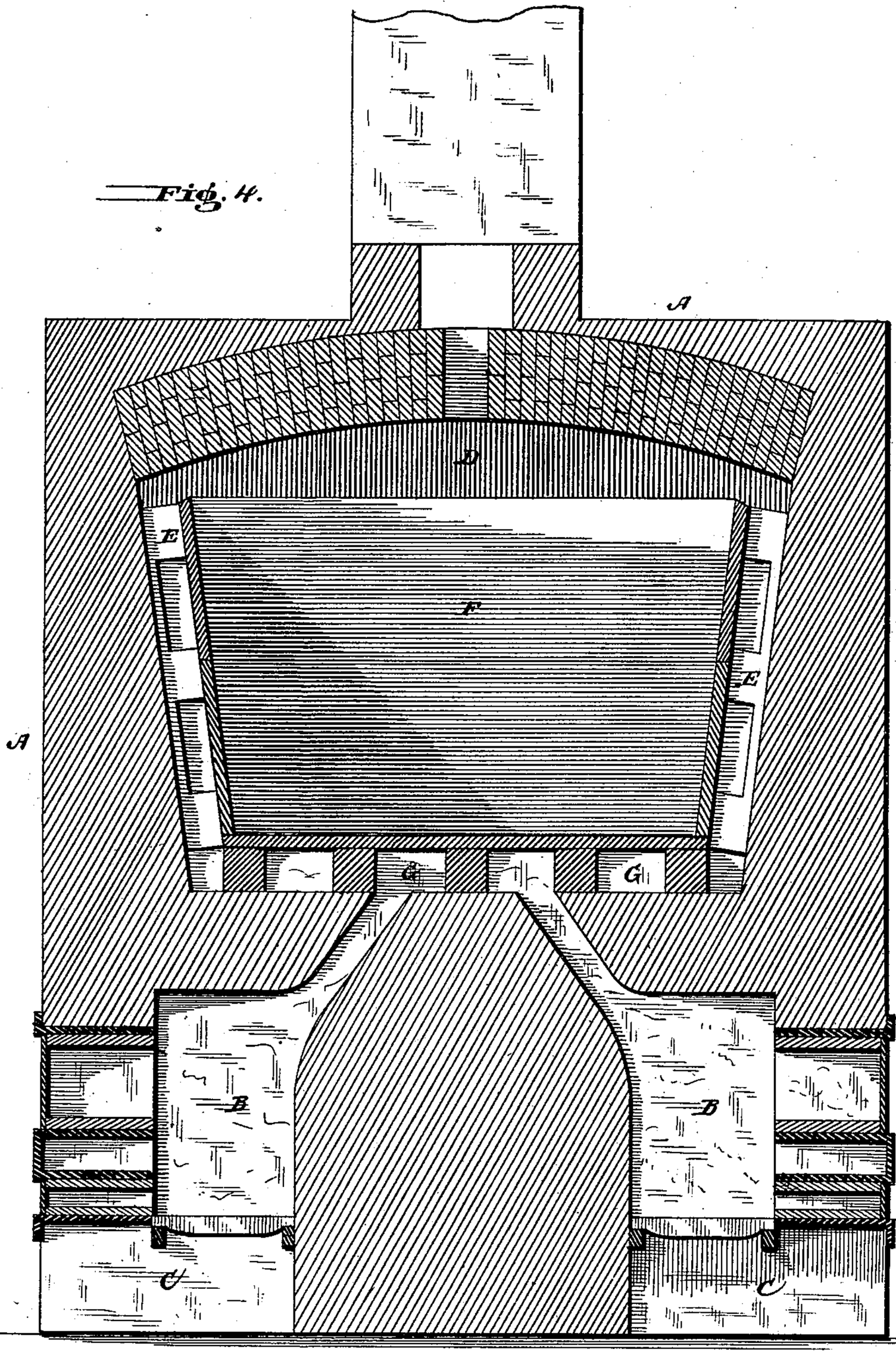
Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK BALDT, OF CHESTER, PENNSYLVANIA.

ANNEALING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 250,702, dated December 13, 1881.

Application filed May 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK BALDT, a citizen of the United States, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Annealing-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to furnaces for annealing steel or malleable-iron castings; and its object is to construct a furnace with sectional annealing-pans in such a manner that the sections of the pans will be self-sustaining when the furnace is unpacked, and also to construct and arrange said pans so that the whole interior space of the furnace can be utilized.

Another feature of the invention aims to secure tight joints around the doors by the use of a luting or mud joint around the sides and ends of the furnace-doors, said doors being made a little smaller than the openings and hung so as to extend inside of the door-casing.

The invention will first be fully described in connection with the drawings, and then clearly set forth in the claims.

In the drawings, Figure 1 is a vertical sectional elevation of a downward-draft annealing-furnace embodying my invention. Fig. 2 is a front elevation thereof, showing the manner of fitting and packing the doors of the annealing-chamber. Fig. 3 is a detail view of one of the pan-sections. Fig. 4 is a vertical sectional elevation of an upward-draft furnace embodying my invention.

The letter A designates the masonry-work of a square annealing-furnace, which has the customary fire-chambers B and ash-pits C located in its side walls. Flues made in the side walls convey the heat and products of combustion into the annealing-chamber D. The side walls of this chamber slope outward; or, in other words, the width of the annealing-chamber gradually increases from the floor to the crown. Notched or apertured piers E, forming part of the masonry-work of the walls, or otherwise permanently secured thereto, support the side sections of sectional annealing-pans F. These pans are constructed with detachable bottom, side, and end sections, whereby I obtain advantages not possessed by the ordinary boxes or rings generally employed. The bottom of the lower pan rests upon the short pillars or blocks G which rise from the furnace-floor, so as to form a space between it and the pan for the circulation of the products of combustion. The side panels of the sectional pans rest against the notched pillars of the sloping side walls, these pillars being so arranged that vertical spaces are left between said side walls and the sides of the annealing-pans for the free circulation of the products of combustion or heated gases from the furnaces.

The bottom section of the lower annealing-pan rests upon the blocks G, as already stated, and extends the full length of the furnace-chamber. This bottom is provided or formed with projecting end ledges or flanges, *a*, which, in connection with inwardly-projecting ledges or flanges *b*, formed on the ends of the side sections of the pans, serve to hold in position the loose or detachable end panels of the sectional pans. The lower ends of the ledges of the side sections also project below the end of the bottom section, so as to lock the various parts of the pans firmly together.

Instead of the ledges or flanges being both on the bottom and side sections, suitable stops or projections may be formed or applied either to the side or bottom sections, for the purpose of holding the end pieces in position while packing the castings in the pans.

It will readily be observed that by constructing the annealing-pans in sections, as shown, the whole interior space of the furnace-chamber is occupied thereby, which is not the case with the ordinary superposed pots or rings. The sloping side walls and notched piers effectually support the various pan-sections, and the latter being inclined outward cannot fall in when the furnace is unpacked.

The ends of the furnace or annealing-chamber are closed by doors M. These doors are hinged to the door jam or frame in such a manner, and are of such a size that a space is left between the adjacent edges of each pair of

doors, and also between all the edges adjoining the door-casing. The doors also are hinged so as to enter into the door-opening when they are closed. The spaces left between the adjacent edges of the doors and between the doors and furnace-walls are filled with clay or other luting, N, so as to make a perfect air-tight joint between said doors and furnace.

In the form of furnace illustrated in Figs. 1 and 2 the products of combustion pass to the top of the annealing-chamber, and then they circulate in a downward direction around the pan and pass out through openings in the floor of the annealing-chamber, which openings communicate with a flue leading to the chimney.

In the construction of furnace shown in Fig. 4 the fire-chambers are located below the annealing-chamber, and the products of combustion enter the latter through openings in the floor thereof. In the present instance an upward circulation or passage of the products of combustion takes place, and a chimney is arranged above the furnace, as is shown in the drawings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An annealing-furnace having outwardly-sloping interior side walls, or a chamber made wider at the top than at the bottom, in combination with sectional annealing-pans resting against said side walls, substantially as herein set forth.

2. An annealing-furnace having outwardly-inclined interior piers or supports, in combination with sectional annealing-pans resting against and supported by said piers or supports, substantially as and for the purpose set forth.

3. Sectional annealing-pans formed of detachable bottom, side, and end pieces, locked together by flanges or projections formed thereon, substantially as herein set forth.

4. An annealing-furnace having sloping interior side walls and notched pillars arranged thereon, in combination with sectional annealing-pans, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FREDK. BALDT.

Witnesses:
JOSEPH ENTWISLE,
J. B. ALLEN.