

J. WEINTZ.
FURNACE.

APPLICATION FILED SEPT. 15, 1909.

959,980.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

Fig. 1

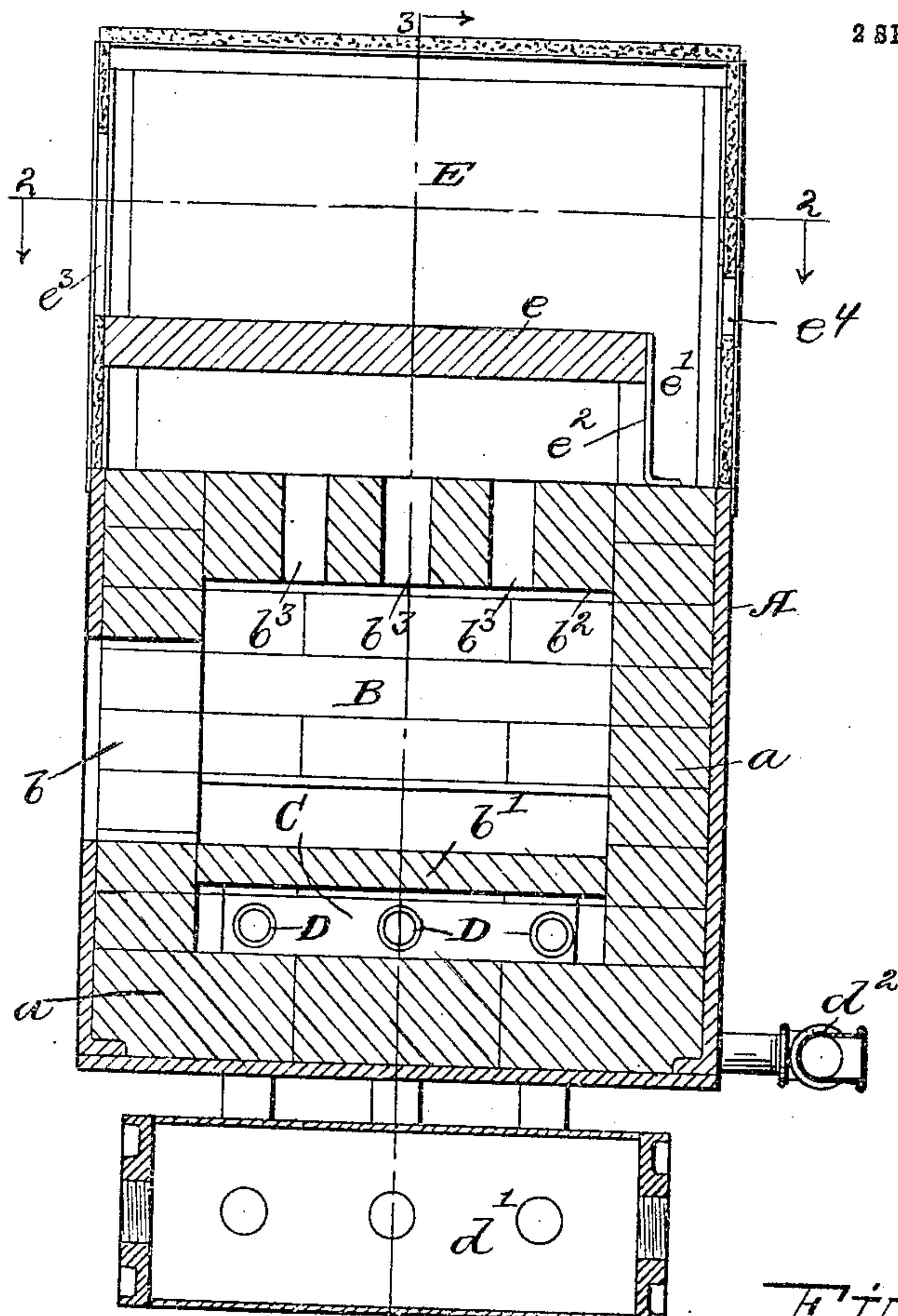
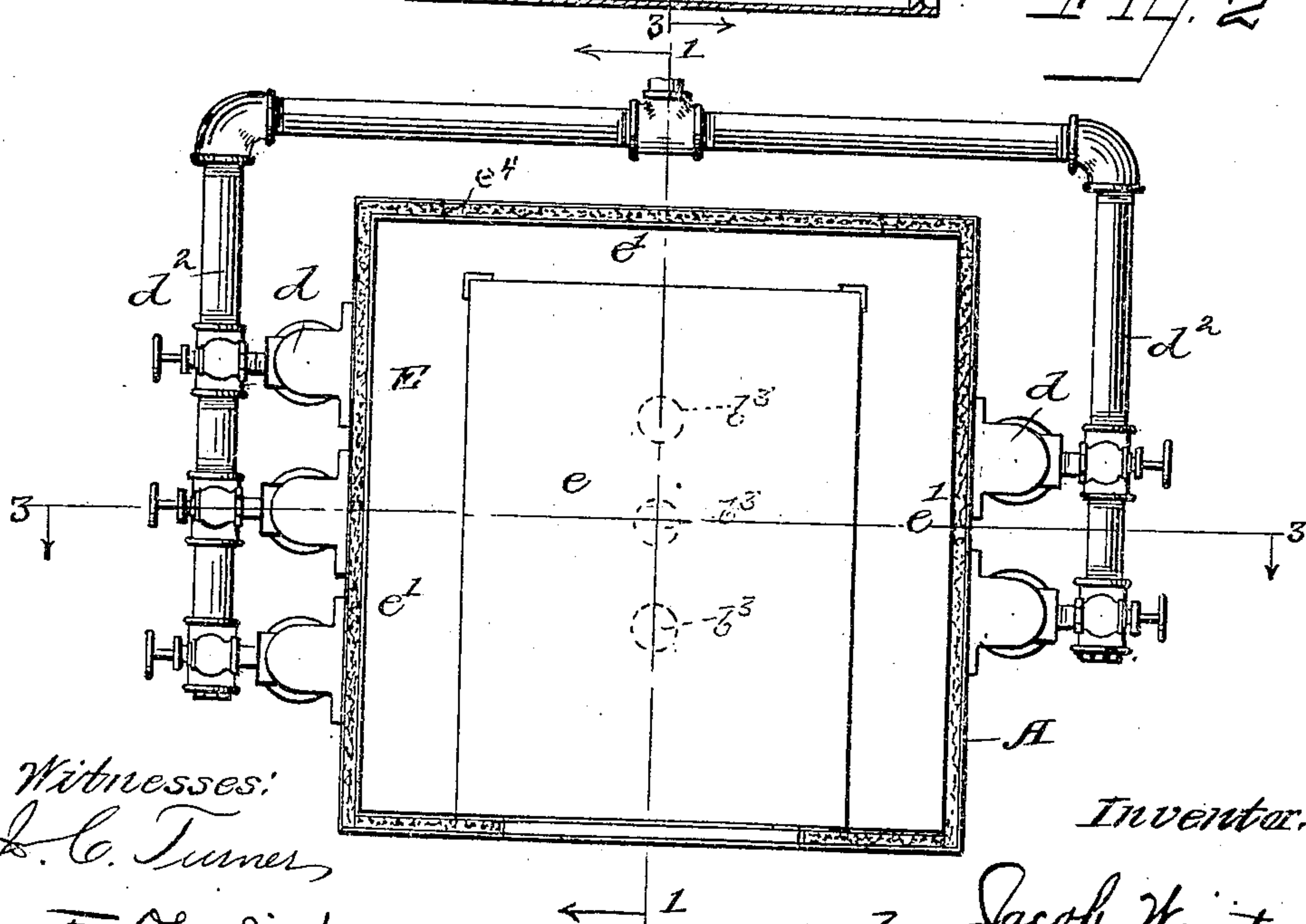


Fig. 2



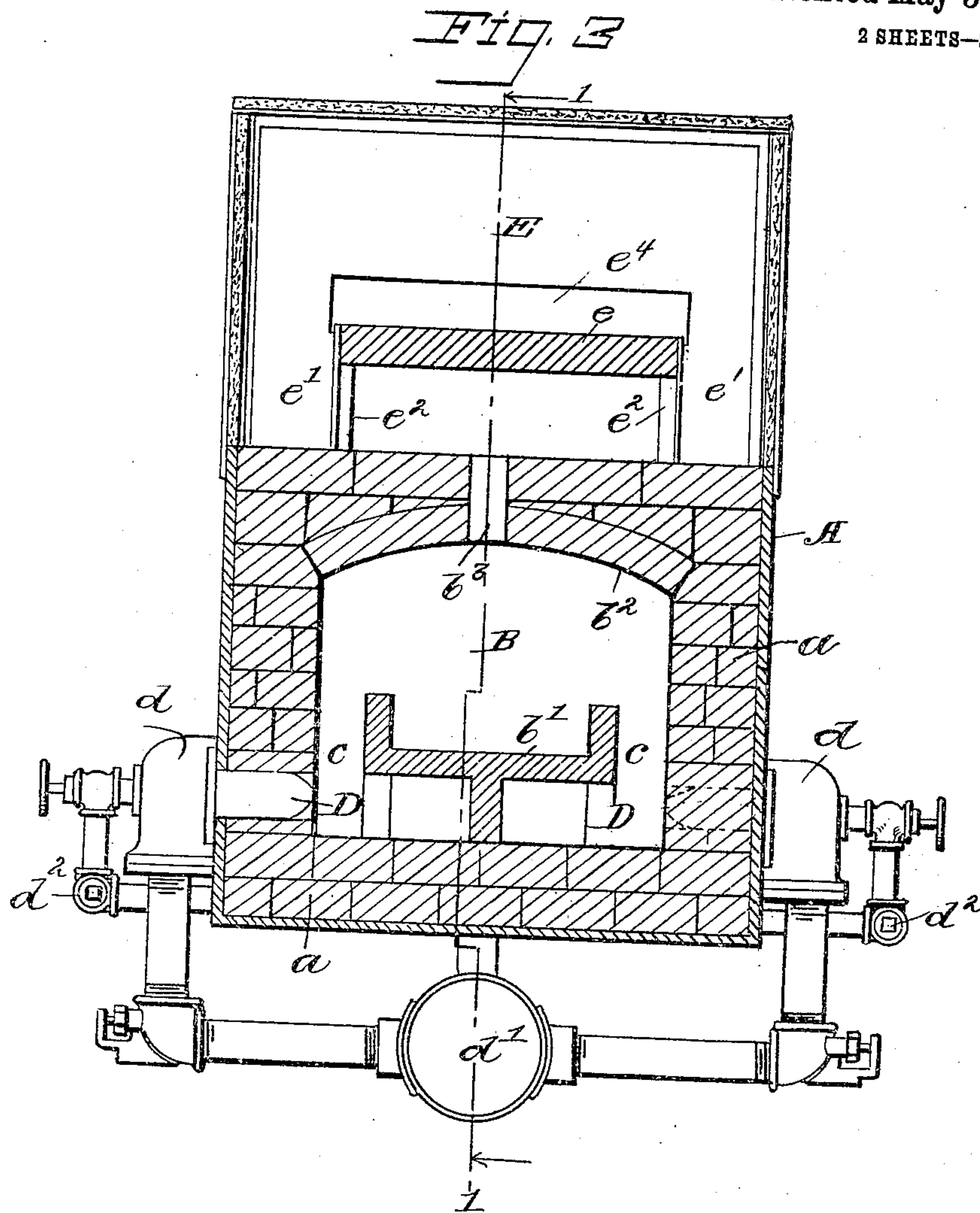
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Inventor:
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Jacob Weintz
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UNITED STATES PATENT OFFICE.

JACOB WEINTZ, OF CLEVELAND, OHIO, ASSIGNOR TO THE STRONG, CARLISLE & HAMMOND COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

FURNACE.

959,980.

Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, JACOB WEINTZ, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Furnaces, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to furnaces, and particularly to the type of furnaces used for annealing, case hardening, and other re-heating processes. In such processes, it will be understood, the material being operated upon must be preliminarily heated before being subjected to the re-heating process itself.

The object of the present invention is to provide a means for performing this pre-heating operation in connection with the re-heating furnace, so that it may be done effectively, economically and conveniently.

To the accomplishment of this and related ends, said invention consists of the means hereinafter described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a vertical section of a furnace embodying my invention; Fig. 2 is a cross section of the furnace on the line 2—2 in Fig. 1; and Fig. 3 is a vertical section on the line 3—3 in Figs. 1 and 2.

The furnace comprises in general, a rectangular box A of cast iron or other suitable material, lined with fire-brick, the whole to be mounted upon a suitable support. Within this box is located the heating oven B, the walls and floor of the oven being formed by fire-brick *a*. The oven is provided with a supplementary floor *b'* which is either built up of fire-brick or made as an integral article of fire-clay. The space between the supplementary floor and the floor proper of the oven forms a combustion chamber C. Extending upwardly from the combustion chamber C on either side of the supplementary floor *b'*, are flues *c* which

lead into the heating oven, such flues being formed between the lateral walls of the oven and the edges of the supplementary floor. The top *b²* of the heating oven is arched on its under side, so that the heated gases, as they ascend through the flues from the combustion chamber, are directed inwardly and in part downwardly on the top of the supplementary floor. The opening *b* into the heating oven B may be closed by any suitable door.

Entering the combustion chamber C, preferably alternately from opposite sides, are the burners D which are fed from the mixers *d*, the latter being suitably connected with an air supply *d'* and gas supply pipes *d²*.

Directly above the top of the heating oven is a supplementary chamber E, in which it is designed that the pre-heating operation shall take place. Supported upon suitable standards *e²* within the chamber E, is a shelf *e*, this shelf being formed preferably of cast iron or other material capable of absorbing and retaining heat. The shelf *e* is spaced laterally from the chamber walls, so that the portions of the chamber above and below the shelf are connected by the flue spaces *e'*. In the front wall of the box E, and adjacent to the shelf *e* is an opening *e³* permitting access to the shelf, as to introduce and remove material being operated upon; while another narrow transverse opening *e⁴* in the rear wall is provided to facilitate the introduction and removal of the plate *e* itself as becomes necessary on occasion. Extending through the top *b²* of the heating oven is a plurality of openings *b³* which serve as flues for the passage of gases from the heating oven into the chamber E; these flues are preferably disposed directly below the shelf as clearly shown in Fig. 2.

The operation of the furnace may be briefly described. The blast from the burners is directed into the combustion chamber, where the combustion is still more completely effected, and the heated gases then arise through the flues into the heating oven. They here perform the reheating operation upon the materials previously placed upon the supplementary floor; from the heating oven, the gases rise through the flues in the top of the oven into the supplementary chamber, entering the latter chamber directly beneath the shelf. Upon the shelf it

is designed the material which is to be preliminarily heated shall have been previously placed. The heated gases as they rise directly under the shelf and thence through the spaces formed at the side of the shelf until they fill the space over the material will effectively perform the pre-heating operation. It will readily be seen that this operation, by the use of my furnace, may be conveniently carried on within the same general structure, and at the same time that the reheating operation is being performed. The reduction of expense and the increase of convenience in thus conducting such pre-heating operation, because of the utilization of the escape gases from the heating oven proper, will be readily appreciated.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A furnace comprising, a heating oven; a combustion chamber below the heating oven; a flue leading from either side of the combustion chamber into the heating oven; a secondary chamber above the heating oven; a shelf supported in the secondary chamber; a flue extending from the heating oven through the top thereof into the secondary chamber; and burners directed into the combustion chamber; combined substantially as set forth.

2. A furnace comprising, a heating oven; a combustion chamber below the heating oven; a flue leading from either side of the combustion chamber into the heating oven; a secondary chamber above the heating oven; a shelf supported in the secondary chamber, said shelf being spaced from the walls of the chamber; a flue extending from the heating oven through the top thereof into the secondary chamber; and burners directed into the combustion chamber; combined substantially as set forth.

3. A furnace comprising, a heating oven; a combustion chamber below the heating oven; a flue leading from either side of the combustion chamber into the heating oven; a secondary chamber above the heating oven; a shelf supported in the secondary cham-

ber, said shelf being spaced from the walls of the chamber; a flue extending from the heating oven into the secondary chamber, said flue entering the secondary chamber directly beneath the shelf; and burners directed into the combustion chamber; combined substantially as set forth.

4. In a furnace, the combination with a heating oven, of a secondary chamber above the heating oven; a shelf supported in the secondary chamber; and a flue extending from the heating oven through the top thereof into the secondary chamber.

5. In a furnace, the combination with a heating oven, of a secondary chamber above the heating oven; a shelf supported in the secondary chamber, said shelf being spaced from the walls of the chamber; and a flue extending from the heating oven through the top thereof into the secondary chamber.

6. In a furnace, the combination with a heating oven, of a secondary chamber above the heating oven; a shelf supported in the secondary chamber, said shelf being spaced from the walls of the chamber; and a flue extending from the heating oven into the secondary chamber, said flue entering the secondary chamber directly beneath the shelf.

7. In a furnace, the combination with a heating oven, of a secondary chamber above the heating chamber, a shelf formed of heat absorbing material supported in the secondary chamber, and a flue extending from the heating oven through the top thereof into the secondary chamber.

8. In a furnace, the combination of a heating oven, a relatively thick shelf formed of heat absorbing material supported in the secondary chamber, and a flue extending from the heating oven through the top thereof into the secondary chamber.

9. In a furnace, the combination with a heating oven, of a secondary chamber above the heating oven, a cast iron shelf supported in the secondary chamber, and a flue extending from the heating oven through the top thereof into the secondary chamber.

Signed by me this 8th day of September, 1909.

JACOB WEINTZ.

Attested by—

ANNA L. GILL,
JNO. F. OBERLIN.