No. 735,264. PATENTED AUG. 4, 1903.

S. HUXLEY.

ANNEALING FURNACE.

APPLICATION FILED DEC. 31, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

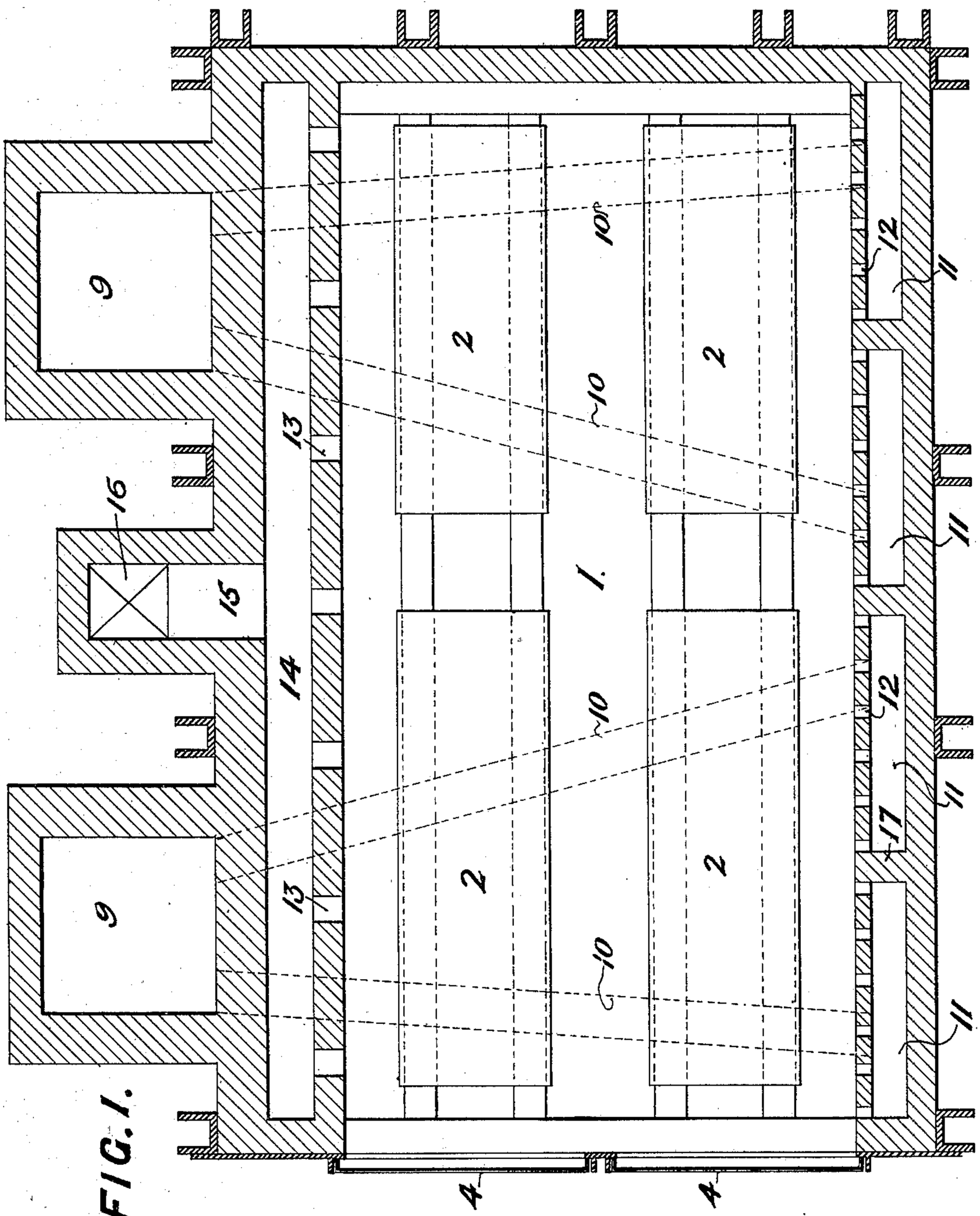

FIG. 1.

Witnesses.
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J. T. Walker.

Inventor:
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by his attorney
P. L. Lewis.

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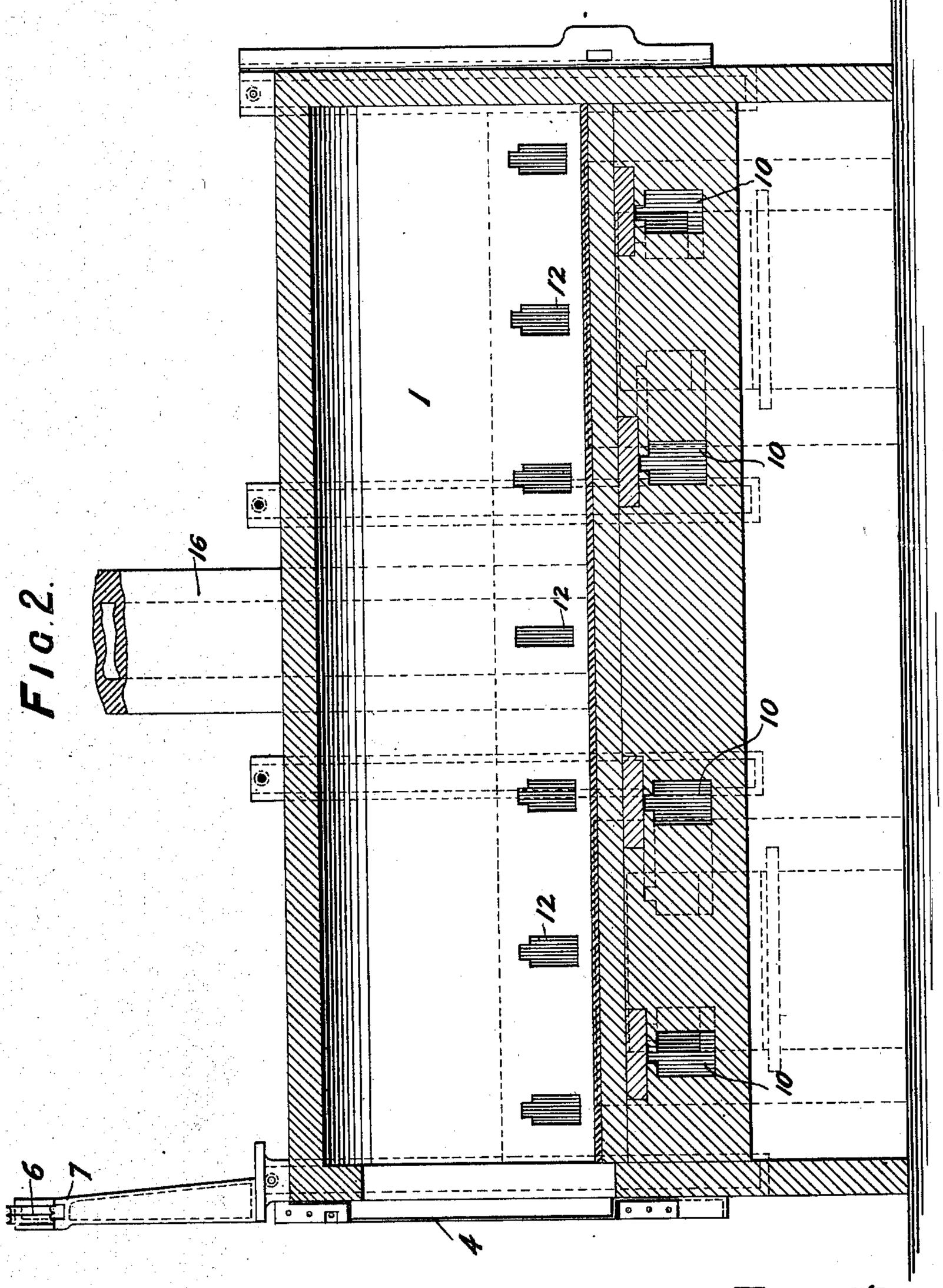
NO MODEL. 4 SHEETS—SHEET 2.

FIG. 2.



Witnesses.
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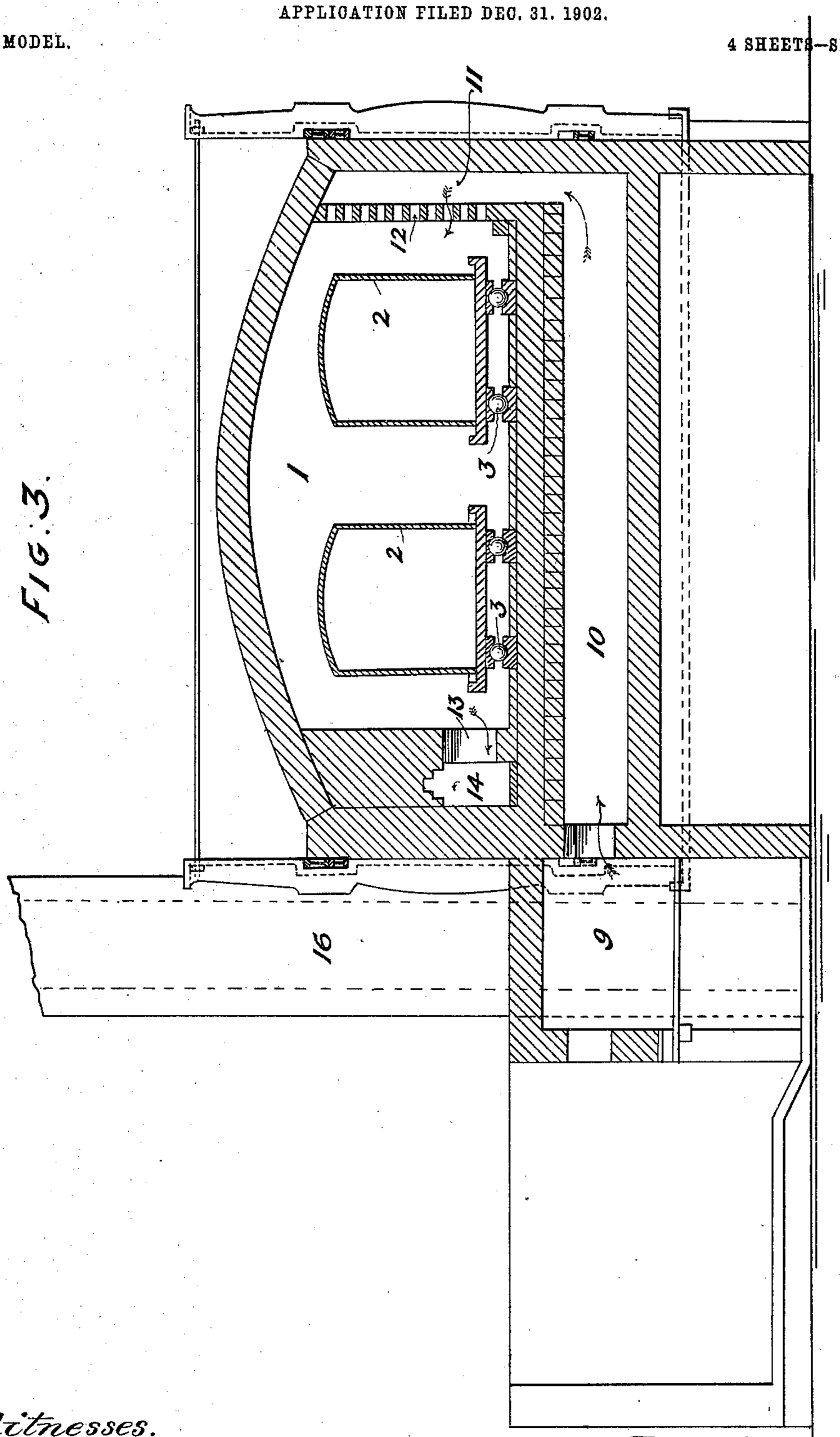
NO MODEL. 4 SHEETS—SHEET 3.

FIG. 3.



Witnesses.
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APPLICATION FILED DEC. 31, 1902.

NO MODEL. 4 SHEETS—SHEET 4.

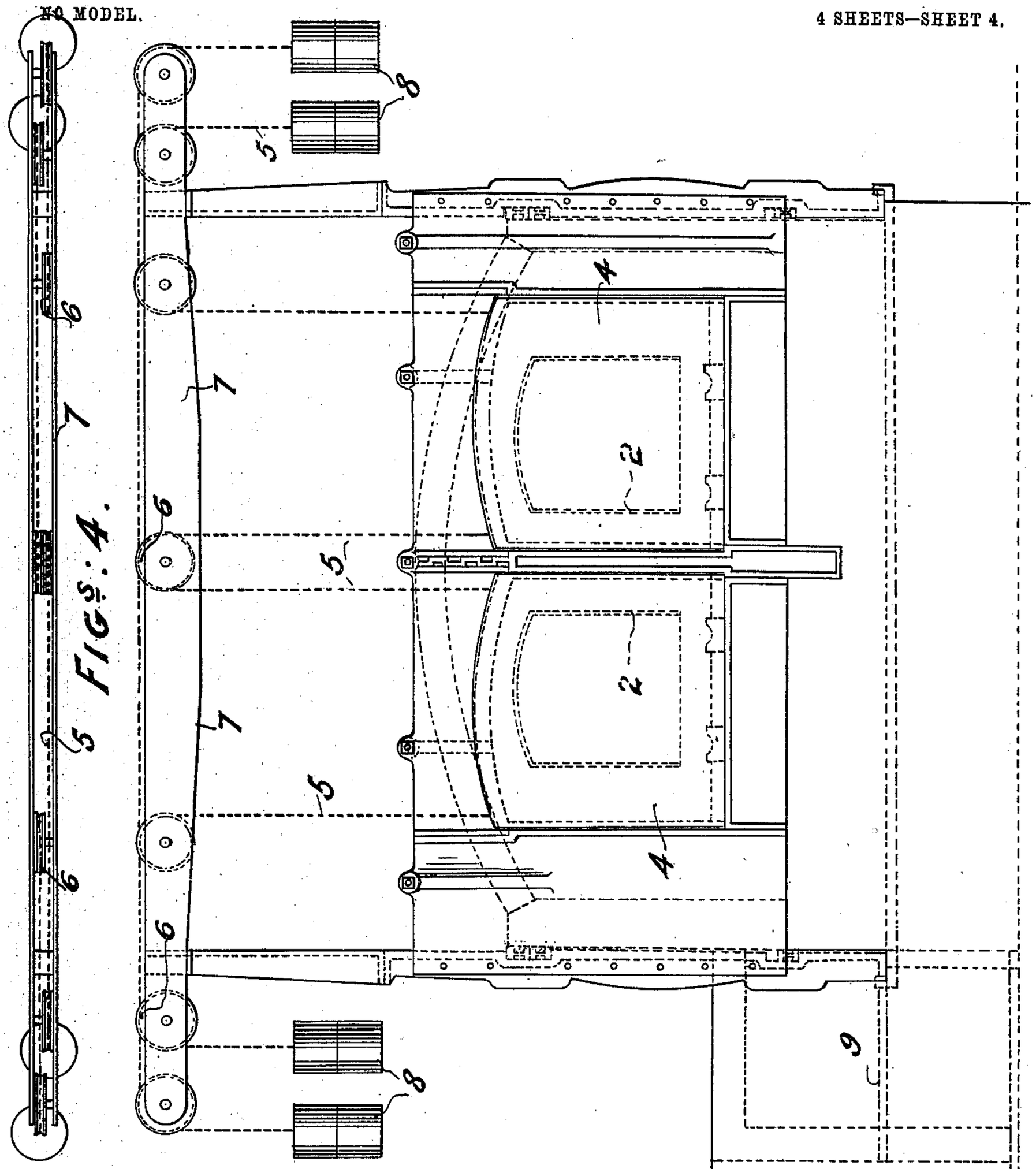

FIG. 4.

Witnesses
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Inventor.
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by his attorney,
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No. 735,264. Patented August 4, 1903.

UNITED STATES PATENT OFFICE.

SAMUEL HUXLEY, OF PONTYPOOL, ENGLAND.

ANNEALING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 735,264, dated August 4, 1903.

Application filed December 31, 1902. Serial No. 137,246. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HUXLEY, a subject of the King of Great Britain, and a resident of Pontnewynydd, Pontypool, county of Monmouth, England, have invented certain new and useful Improvements in Furnaces for Annealing Metal and other Articles, of which the following is a specification.

This invention consists in the construction and arrangement of annealing-furnaces as hereinafter described and claimed, such furnaces being particularly applicable for annealing iron and steel sheets, the improved furnace being so designed that a single annealing-chamber is adapted to contain and to effectually act upon two or more rows of annealing pots, boxes, or muffles instead of, as is usual, acting upon one row only of the containers.

A furnace constructed according to this invention is hereinafter described with reference to the accompanying drawings.

Figure 1 is a sectional plan view of my improved annealing-furnace, showing a double row of annealing-pots in position. Fig. 2 is a longitudinal sectional elevation of the furnace. Fig. 3 is a cross-sectional elevation, and Fig. 4 shows a front elevation of the same furnace and a plan view of the arrangement for balancing the doors of the annealing-chamber.

The annealing-chamber 1 of the furnace is constructed specially wide and shorter than usual to contain the required number of rows of pots or receptacles 2, within which the articles to be annealed, such as iron or steel sheets, are placed. In the example shown the chamber 1 is adapted to contain two parallel rows of annealing-pots 2, and these pots are constructed to be carried by "balls" 3, running upon "ball-tracks," Fig. 3, upon the base of the annealing-chamber 1.

In the front of the chamber 1 doorways are formed for the entrance of the pots 2, and these doorways are conveniently closed, as shown in the drawings, Fig. 4, by means of sliding doors 4, which are balanced by means of chains 5, passing over pulleys 6 on a framework 7, which is erected high above the main structure to remove any likelihood of its being twisted or otherwise affected by the heat of the furnace. The free end of the chains carry suitable weights 8, and thus the doors may be slid up and down with little labor.

The fire-grates 9 are arranged at one side of the annealing-chamber 1 and built entirely exterior to the main structure, thus facilitating the rebuilding or the repairing of the same. The caloric gases pass from each fire-grating by two or more flues 10, passing angularly underneath the floor of the annealing-chamber 1 to the opposite side of the said chamber, where they enter a narrow longitudinal passage (or passages) 11, which extends the whole length of the side of the chamber 1, this passage 11 in the construction shown being divided into four sections by partitions 17. By this means the heat is conducted from each fire-grate and equally distributed under the whole of the floor of the annealing-chamber, while at the same time by this construction not only are the conduits from the two furnaces wholly separated and back drafts prevented, but each flue beneath the oven is separated from the next flue or flues. From these passages 11 the caloric gases pass through a number of ports 12, which are formed in the inner side wall of the chamber 1, and thus enter one side of the latter chamber. The gases pass through this annealing-chamber 1, having already heated the floor of the chamber and having lost much of their violent action, act within the chamber upon the first row of pots, and the heated gases then pass over and around the second row of pots 2 and then pass through ports 13 in the opposite side of the chamber to that at which they entered.

The gases pass through ports 13, enter a longitudinal flue 14 in the wall of the chamber 1, and from thence, by a passage 15, to the uptake smoke-stack 16, which is conveniently situated in the center of the length of the structure, tending to induce a strong natural draft.

By thus constructing and arranging my improved annealing-furnace I am enabled, as aforesaid, to contain and effectually act upon two or more rows of annealing pots, boxes, or muffles at one time, and thereby economize fuel and labor and lessen the cost of production.

It will be understood that I do not limit myself to the number of rows of annealing-pots, as obviously there may be more than two rows included in one annealing-chamber so constructed. In some cases I may provide doors at each end of the chamber, one for the entrance and the other for the exit of the pots.

I would also have it understood that the fire-grates can be worked with coal, natural gas, or manufactured gas.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an annealing-furnace for annealing metal and other articles requiring treatment in closed vessels, the combination with a single undivided chamber adapted to receive two or more parallel rows of annealing-pots extending lengthwise of the chamber, and doors at the end of the chamber through which the said pots are inserted and withdrawn; of two fire-grates built at one side of and wholly exterior to said chamber, two flues from each of said fire-grates extending angularly beneath the floor of the annealing-chamber to conduct the caloric gases, a narrow longitudinal passage in one longitudinal wall of the annealing-chamber, with which passage the angularly-extending flues aforesaid communicate, dividing-walls in said longitudinal passage to form the latter into four chambers, one for each flue, apertures in the inner wall of said passage through which the gases pass into the annealing-chamber, and ports in the opposite longitudinal wall of the annealing-chamber and near the base thereof by which the gases find their exit, so that the current of said gases flows transversely over the row of annealing-pots for heating the same, a longitudinal flue in the side wall of the annealing-chamber with which the exit-ports aforesaid communicate, a central passage from the longitudinal flue last named, and a smoke-stack located between the furnaces with which said central passage communicates, substantially as set forth.

2. In an annealing-furnace for annealing metal and other articles requiring treatment in closed vessels, in combination with a single undivided chamber 1, two rows of annealing-pots 2 within the chamber arranged parallel to each other and to the length of the said chamber 1, ball-tracks upon which the annealing-pots 2 are slid into the chamber 1, vertically-sliding counterbalanced doors 4 for opening and closing the entrance of the chamber 1, vertical guides to carry the sliding doors, chains 5 connected to said doors, a framework 7 above said doors, pulleys 6 carried high above the main structure by the framework over which said chains 5 pass, counterweights 8 attached to the free ends of said chains in order to balance the doors, two fire-grates 9 built wholly upon the outside and at one side of said chamber 1, two flues 10, from each furnace passing angularly beneath the floor of said chamber 1, a narrow longitudinal passage 11 in one side wall of said chamber 1, dividing-walls in said longitudinal passage to form the passage into four chambers one for each flue, a number of ports 12 in the wall of the chamber to permit the passage of the gases from the divided passage 11 to said chamber 1, the gases passing transversely over the pots 2 and through said chamber, exit-ports in the opposite wall of said chamber and near the floor thereof, a longitudinal exit-flue 14 in the wall of the chamber with which the ports 13 communicate, a central passage 15 from the flue 14 to conduct the gases, and a smoke-stack located between the fire-grates with which the passage 15 communicates, substantially as described.

SAMUEL HUXLEY.

Witnesses:
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