

No. 615,465.

Patented Dec. 6. 1898.

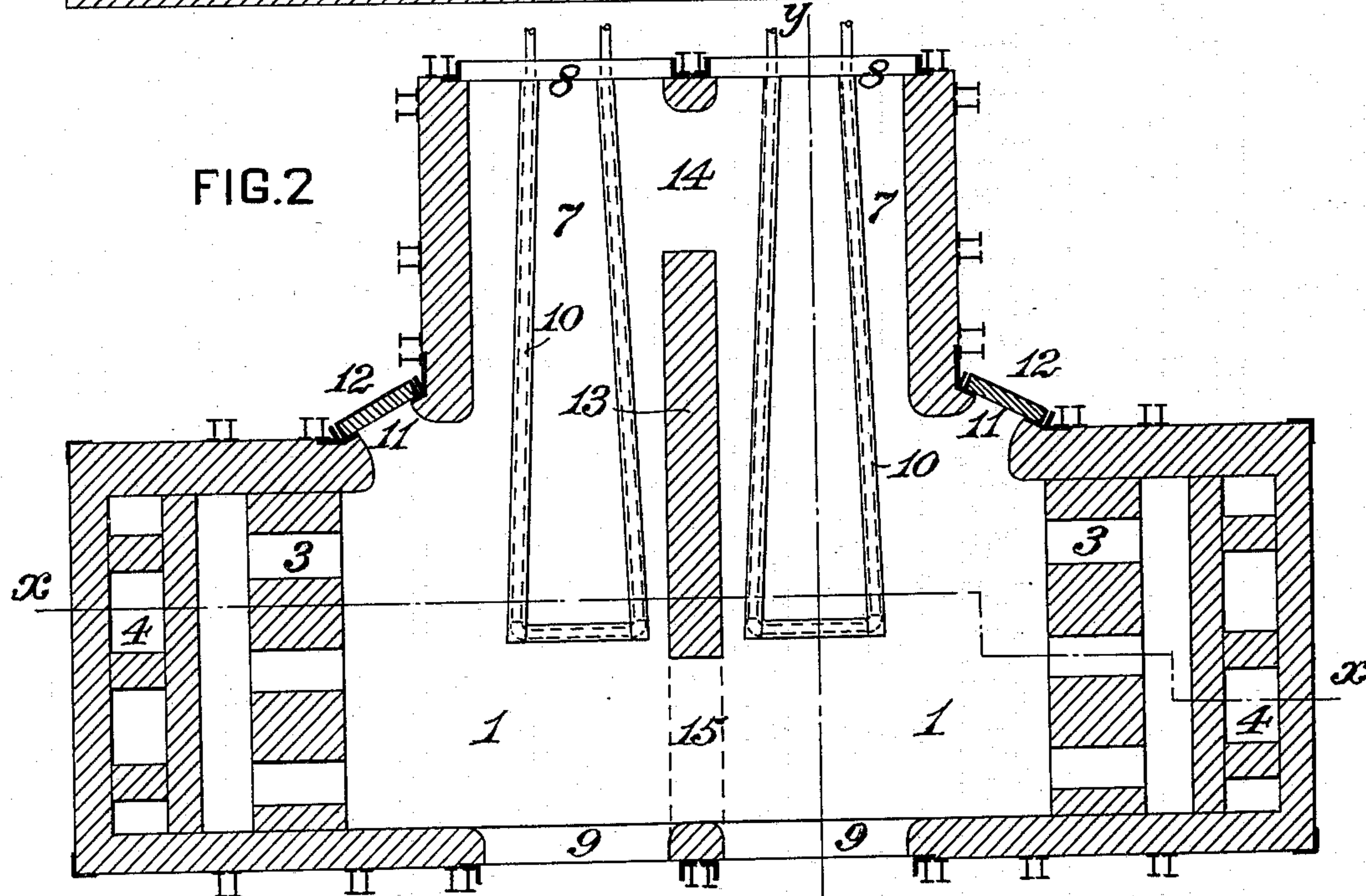
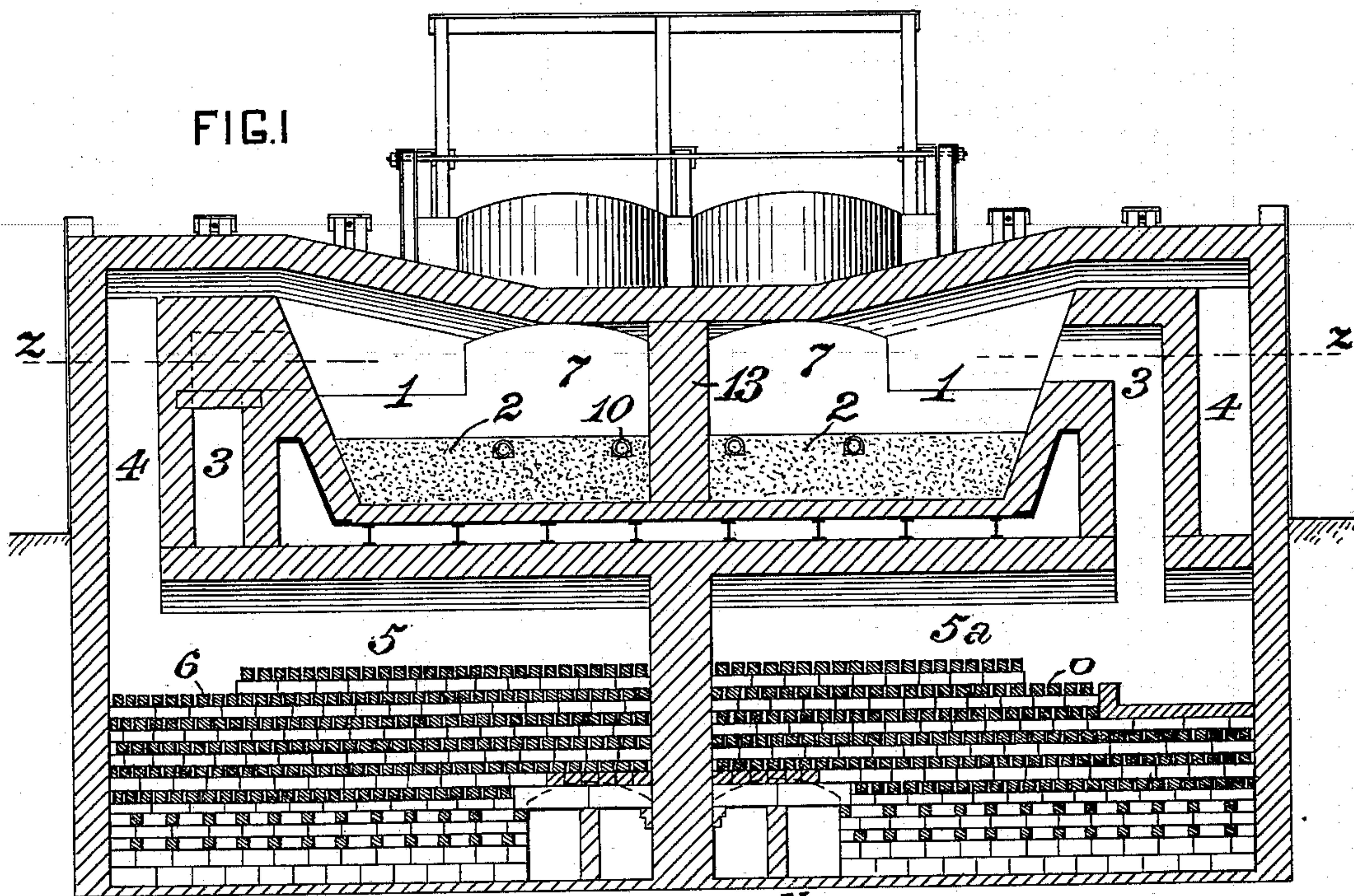
W. SWINDELL.

FURNACE FOR HEATING BILLETS, BLOOMS, &c.

(Application filed June 14, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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S. R. Bell.

INVENTOR,

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Att'y.

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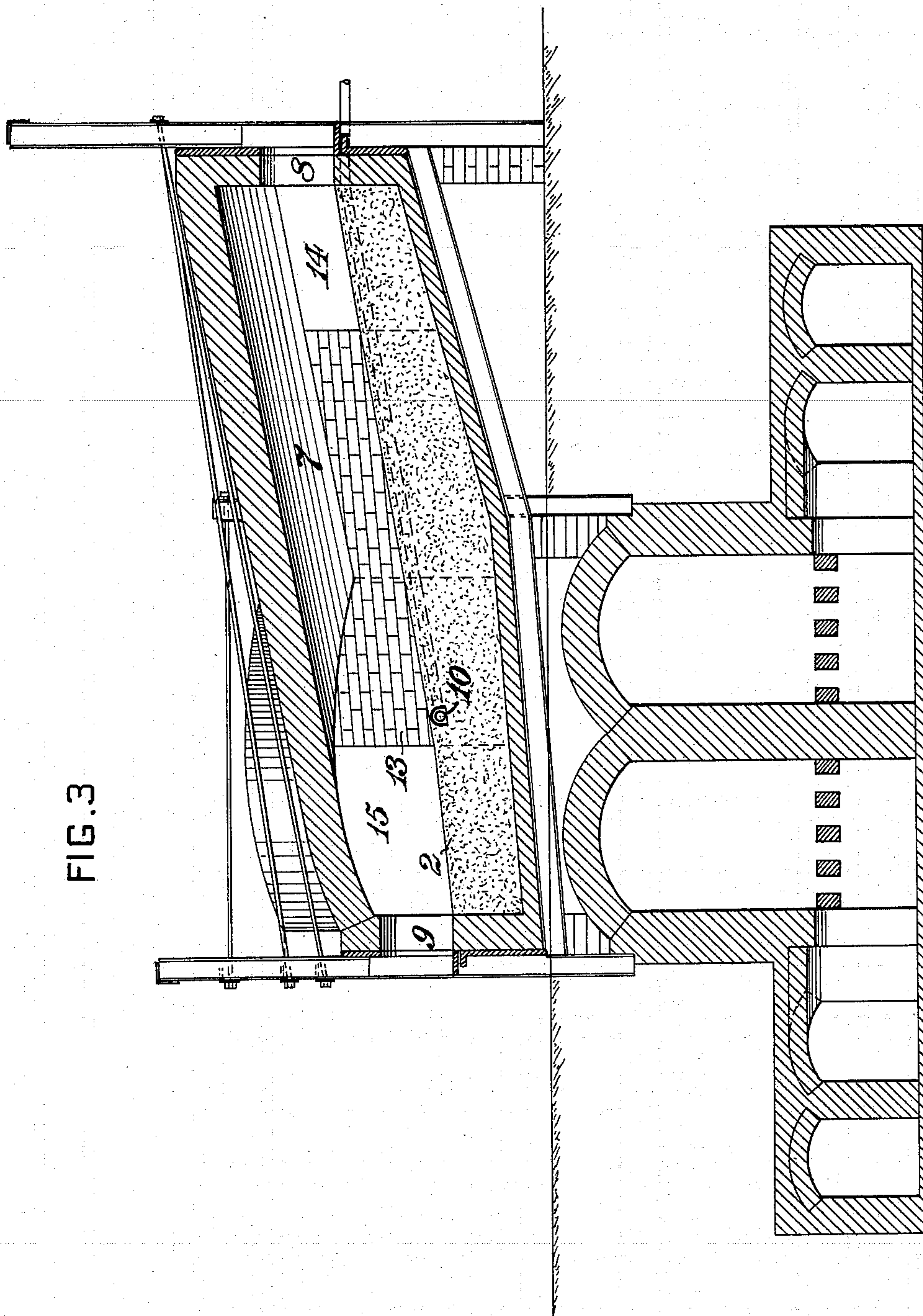
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FIG. 3



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UNITED STATES PATENT OFFICE.

WILLIAM SWINDELL, OF PITTSBURG, PENNSYLVANIA.

FURNACE FOR HEATING BILLETS, BLOOMS, &c.

SPECIFICATION forming part of Letters Patent No. 615,465, dated December 6, 1898.

Application filed June 14, 1898. Serial No. 683,433. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SWINDELL, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Furnaces for Heating Billets, Blooms, &c., of which improvement the following is a specification.

The object of my invention is to provide a heating-furnace which shall be specially and desirably adapted to use as a continuous furnace and in the operation of which as such a comparatively low degree of heat may be first imparted to the billets which are passed through the furnace and thereafter the heat may be increased to any desired and determined degree in their traverse, which is effected transversely to that of the products of combustion.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a heating-furnace illustrating an embodiment of my invention at the line *x x* of Fig. 2; Fig. 2, a horizontal section through the same at the line *z z* of Fig. 1, and Fig. 3 a transverse section at the line *y y* of Fig. 2.

The leading and essential features of my invention consist in combining with a heating-furnace a lateral extension or passage-way having one or more charging openings or passages at its outer end and leading therefrom to the combustion-chamber transversely to the direction of traverse of the products of combustion through the same, said passage-way not being provided with heating appliances, a discharge passage or passages on the side of the furnace opposite the lateral passage-way, and a transverse partition or division wall in line with the passage-way adapted to deflect the products of combustion thereinto and toward the opposite walls of the combustion-chamber.

My invention is herein exemplified as applied in connection with a heating-furnace of the regenerative type, with which type it may be advantageously employed, although it is not in any wise limited in application thereto.

The combustion-chamber 1 is of rectangular form and provided with a suitable hearth 2 and communicates at its ends by gas-flues

3 and air-flues 4 with regenerator-chambers 5 5^a, provided with checker-work or fire-brick filling 6, the passage of the currents of gas and air in alternately opposite directions longitudinally through the combustion-chamber being effected by means of reversing-valves, which are not shown, in the ordinary manner.

In the practice of my invention I provide a lateral extension or passage-way 7 for the traverse, under a comparatively low initial and gradually-increasing degree of heat, of billets, blooms, or other articles which are to be continuously heated in their passage through the furnace. The passage-way 7 has no grates, gas and air flues, or other direct-heating appliances, and consequently, as designed, it receives no heat other than that which is diverted into its inner end from the furnace. The billets traverse from a charging opening or openings 8 at the outer end of the lateral passage-way 7, at which opening or openings they are introduced, through said passage-way and across the combustion-chamber of the furnace transversely to the direction of the passage of the hot products of combustion in said chamber and are removed through a discharge opening or openings 9, each controlled by a suitable door in the wall of the furnace opposite that from which the lateral passage-way 7 outwardly extends. The floor of the lateral passage-way is preferably inclined downwardly from its supply end to the hearth of the furnace, so as to facilitate the movement of the billets, which may be effected by means of a fluid-pressure cylinder and piston in the ordinary manner, and the usual supporting water-tubes 10 may be laid in the floor of the passage. Openings 11, closed by suitable doors 12, may be provided at or near the junction of the side walls of the lateral passage-way with the adjacent wall of the combustion-chamber in order to enable ready access to be had to the billets for any desired manipulation while in the furnace.

A vertical partition or division wall 13 extends longitudinally through a portion of the length of the lateral passage-way 7 at and adjoining the inner end thereof and continues so as to extend transversely through a portion of the width of the combustion-chamber, or,

if preferred, may extend entirely across the combustion-chamber, as indicated by dotted lines in Fig. 2. The open space between the outer end of the partition 13 and the supply end of the lateral passage 7 forms a passage 14 for the traverse of products of combustion from one side of the partition to the other, and in cases in which the partition extends only partly across the combustion-chamber a passage 15 is provided at the inner end of the partition. The partition 13 performs the function of a deflector or distributor, by which the hot gases and products of combustion are diverted from their ordinary longitudinal traverse through the combustion-chamber, and a portion or the whole of said hot products, accordingly as the partition extends either partially or entirely across the combustion-chamber, is diverted into the lateral passage-way 7 to act upon the billets therein. By suitably proportioning the passages 14 and 15 a greater or less degree of heat may be exerted upon the billets while traversing through the passage-way 7 and before their entrance into the combustion-chamber, so that a comparatively low heat may be applied to the billets as they enter the passage-way and the heat be thereafter progressively increased to any desired and determined degree as they are moved through the passage-way and through the furnace to the point of discharge.

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

1. The combination, in a heating-furnace, of a combustion-chamber, a lateral passage-way opening thereinto, transversely to the direction of traverse of products of combustion through the same, and having no direct-heating appliances, and a partition-wall extending transversely to the combustion-chamber, and located partly therein and partly in the passage-way, for deflecting products of combustion from the combustion-chamber into the

passage-way.

2. The combination, in a heating-furnace, of a combustion-chamber, a lateral passage-way opening thereinto, a partition-wall extending transversely to the combustion-chamber, for deflecting products of combustion therefrom into the passage-way, and working openings, controlled by doors, adjacent to the junction of the passage-way and combustion-chamber.

3. The combination, in a heating-furnace, of a combustion-chamber, a lateral passage-way opening thereinto, transversely to the direction of traverse of products of combustion through the same, and having no direct-heating appliances, a charging-opening and door at the outer end of said passage-way, a discharge-opening and door in the wall of the combustion-chamber opposite said lateral passage-way, and a partition-wall extending transversely to the combustion-chamber, and located partly therein and partly in the passage-way, for deflecting products of combustion from the combustion-chamber into the passage-way.

4. The combination, in a heating-furnace, of a combustion-chamber, a lateral passage-way opening thereinto, a partition-wall, extending transversely to the combustion-chamber for deflecting products of combustion therefrom into the passage-way, and openings or passages adjacent to the ends of said partition-wall, for the traverse of products of combustion from one side thereof to the other, through the lateral passage-way and through the combustion-chamber, respectively.

WILLIAM SWINDELL.

Witnesses:

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