

(No Model.)

2 Sheets—Sheet 1.

L. G. LAUREAU & F. W. GORDON.
STEEL FURNACE.

No. 407,600.

Patented July 23, 1889.

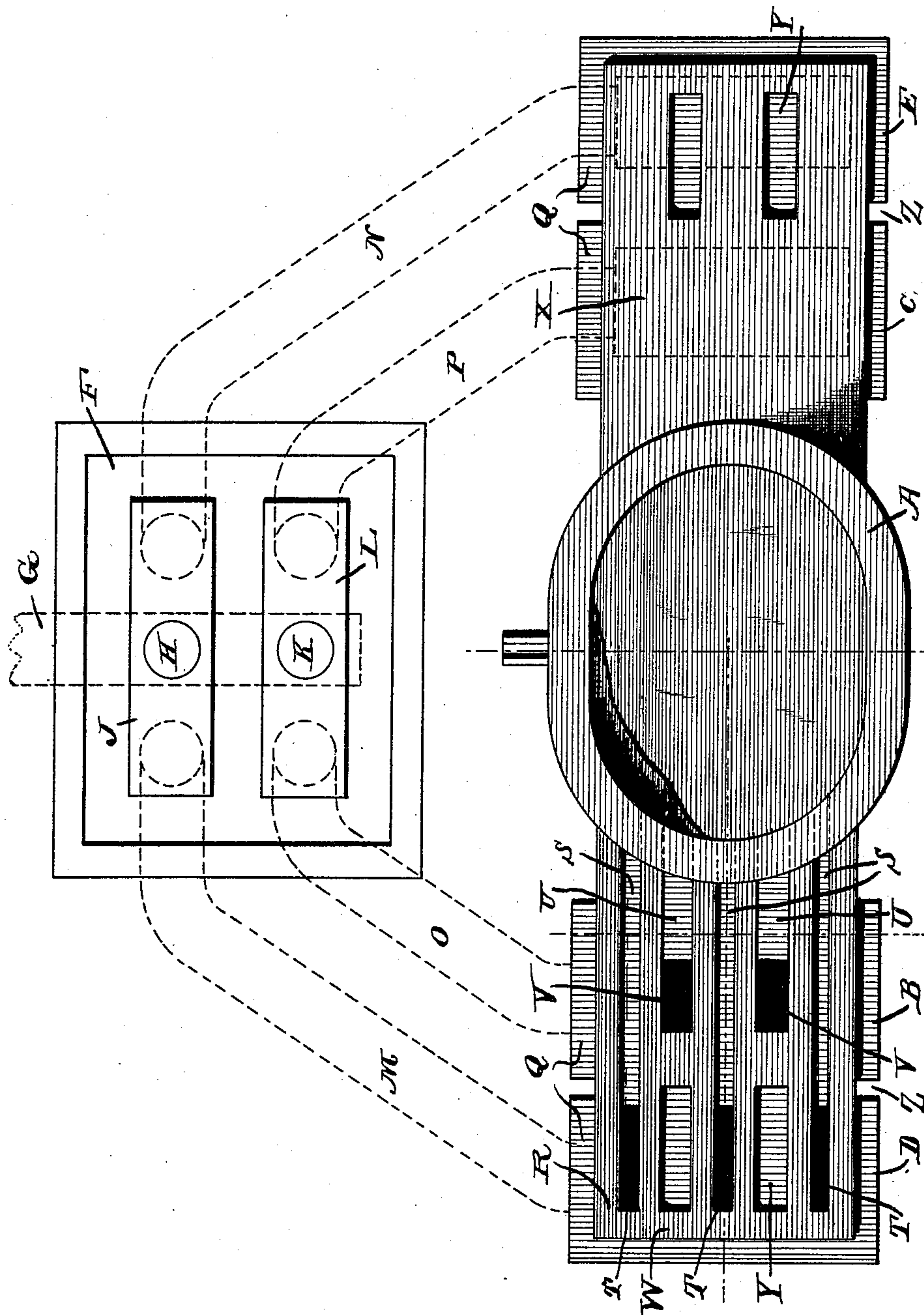


Fig. 1.

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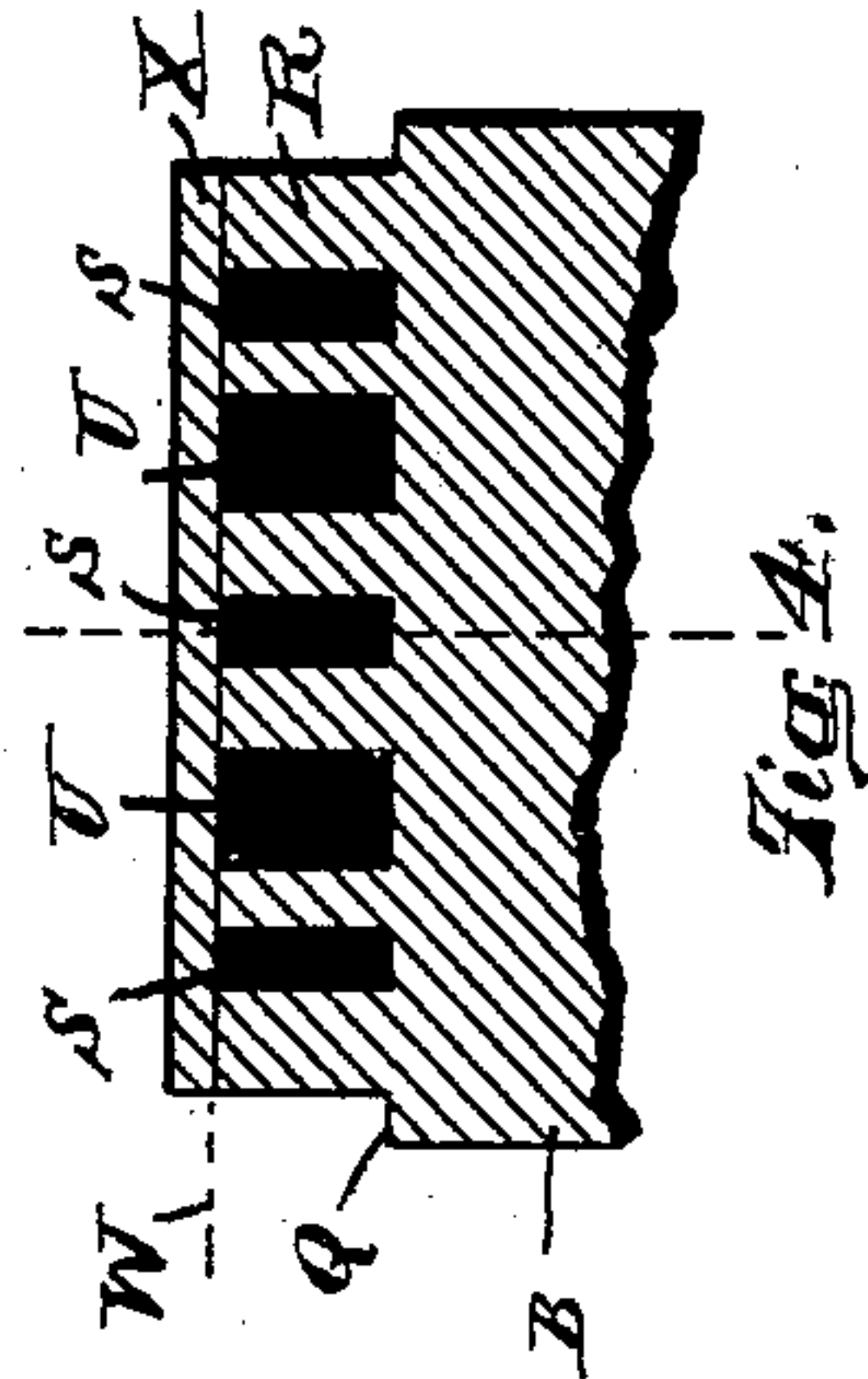
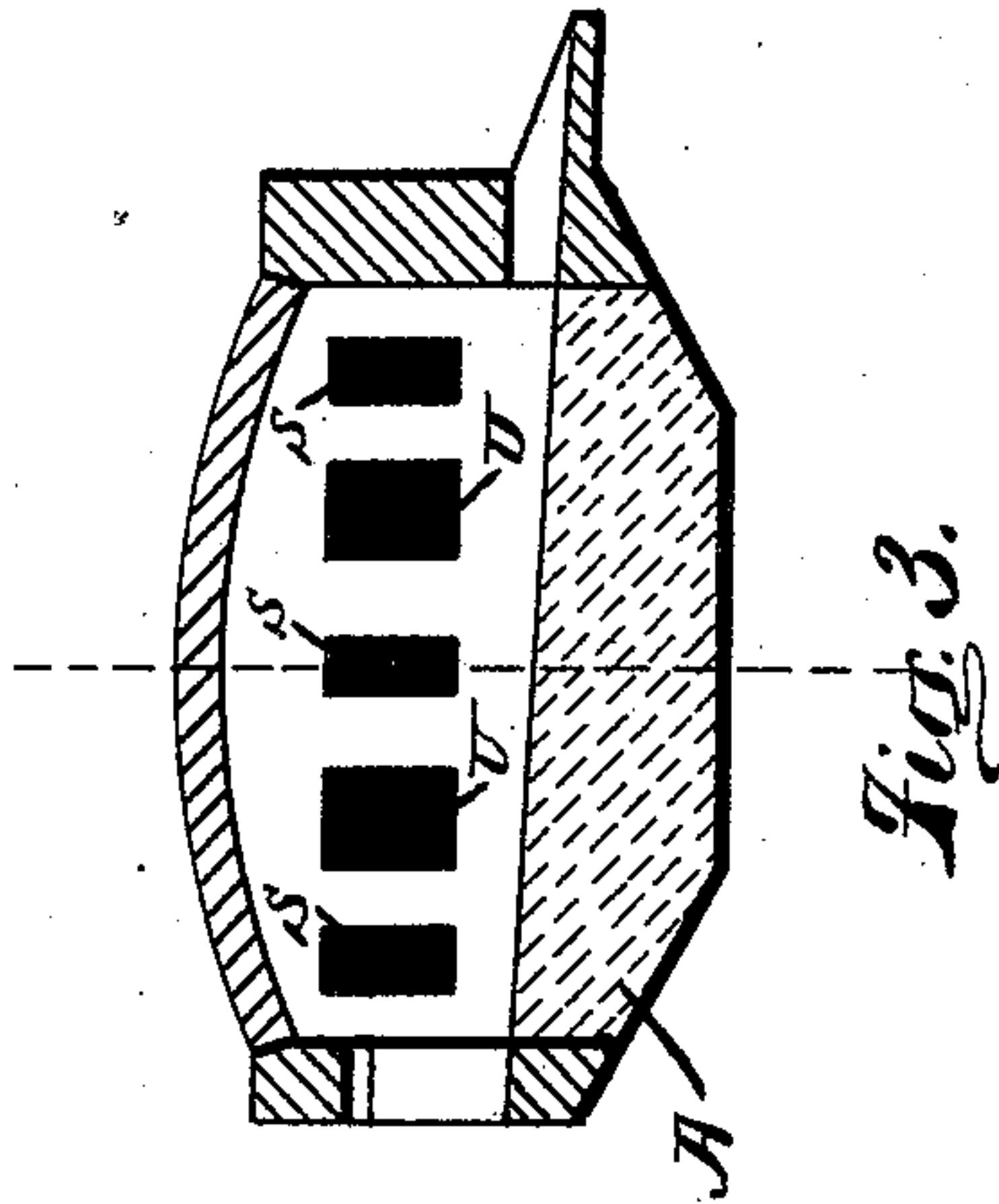
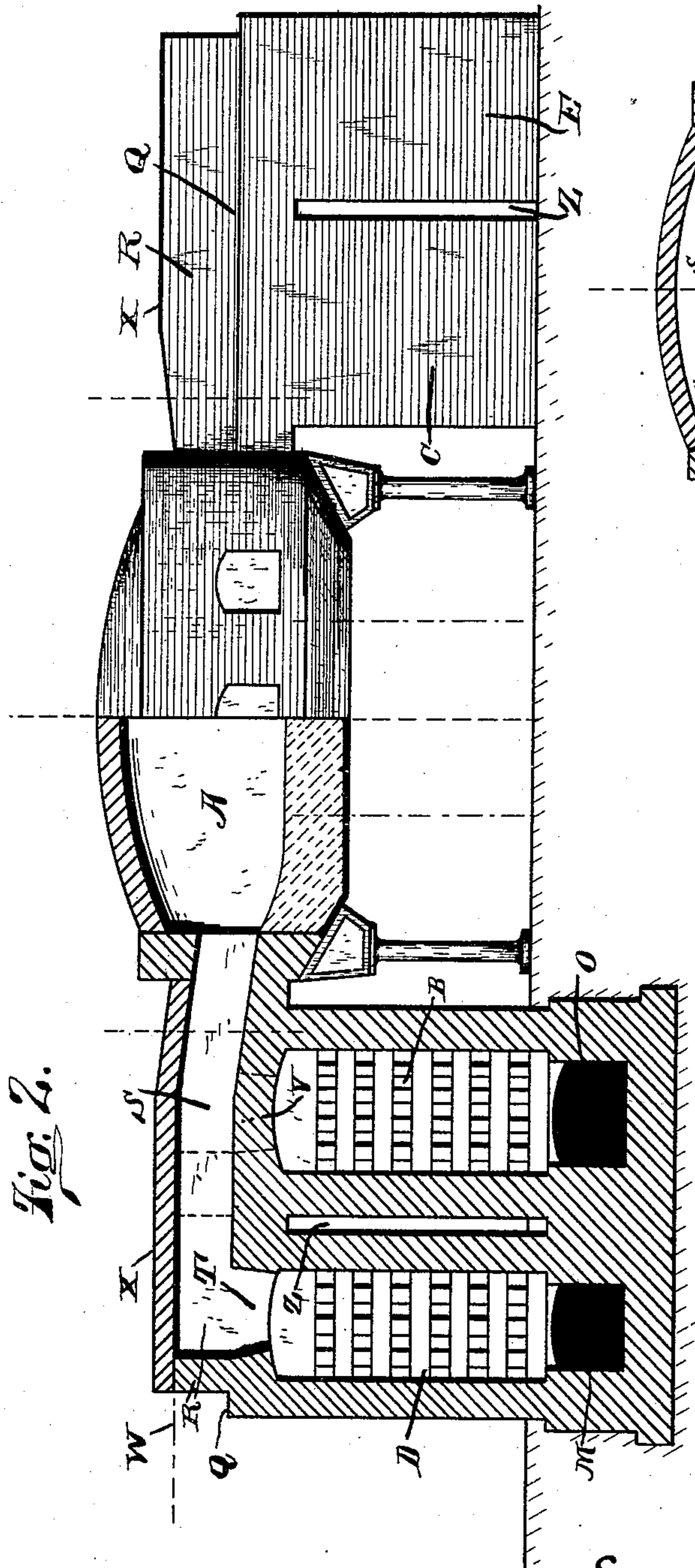
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UNITED STATES PATENT OFFICE.

LOUIS G. LAUREAU AND FRED. W. GORDON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO GORDON, STROBEL & LAUREAU, (LIMITED,) OF SAME PLACE.

STEEL-FURNACE.

SPECIFICATION forming part of Letters Patent No. 407,600, dated July 23, 1889.

Application filed July 13, 1888. Serial No. 279,878. (No model.)

To all whom it may concern:

Be it known that we, LOUIS G. LAUREAU and FRED. W. GORDON, of Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Steel-Furnaces, of which the following is a specification.

This invention relates to regenerative gas-furnaces for use in steel-works and the like.

Our improvements relate to the constructions of the connections between the regenerators and the heating or melting chamber.

Our improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan of a furnace illustrating our improvements this view illustrating the covering as being removed from the ducts connecting the heating or melting chamber with the left-hand pair of regenerators, so as to expose the decks and regenerator parts connected with them; Fig. 2, a front elevation of the same, the portion of the left, however, appearing in vertical longitudinal section; Fig. 3, a vertical transverse section through the heating or melting chamber; and Fig. 4, a vertical transverse section through a portion of one of the air-regenerators, showing the ducts communicating with the heating or melting chamber. We have chosen, for illustration, an oval heating or melting chamber and regenerators of rectangular plan.

Our invention is applicable to chambers and to regenerators having plans other than oval or rectangular, and the entire structure may be at various heights above ground.

In the drawings, A indicates the heating or melting chamber; B, the left-hand air-regenerator disposed to the left of the heating or melting chamber, but separate and distinct therefrom; C, the right-hand air-regenerator, of similar construction and correspondingly arranged; D, the left-hand gas-regenerator disposed close alongside the left-hand air-regenerator, but beyond the same relatively to the heating or melting chamber; E, a similar right-hand gas-regenerator; F, the usual valve-pit; G, the usual chimney-

flue therefrom; H, the gas-inlet to the gas-reversing valve; J, the usual gas-reversing valve; K, the air-inlet to the air-reversing valve; L, the usual air-reversing valve; M, gas-flue from base of left-hand gas-regenerator to the gas-reversing valve; N, a similar right-hand gas-flue; O, air-flue from base of left-hand air-regenerator to the air-reversing valve; P, a similar right-hand air-flue; Q, the top levels of the regenerators, this level corresponding with the upper surface of the regenerator-roofs, and to be hereinafter referred to as the regenerator-decks; R, parallel vertical walls built upon the regenerator-decks and reaching to the walls of the heating or melting chamber; S, gas-ducts formed between certain of these walls, these ducts extending from within the heating or melting chamber over the regenerators, three of these ducts being shown, one disposed at the center and one near each face of the heating or melting chamber; T, ports through the regenerator-decks, placing the gas-ducts in communication with the interior of the gas-regenerators; U, air-ducts formed by certain of the walls R, these ducts extending parallel with the gas-ducts S from within the heating or melting chamber over the air-regenerators, these air-ducts alternating with the gas-ducts S, all of the ducts being, preferably, of greater depth than width; V, air-ports through the regenerator-decks, placing the air-ducts in communication with the air-regenerators; W, the top level of the walls R, this level being hereinafter designated as the "cover-seat;" X, the cover-work of brick, laid upon the cover-seat and roofing the air and gas ducts; Y, mere idle spaces between certain of the walls R, resulting from the fact that the ducts U are shorter than the ducts S, no cover-work being placed over these spaces, the spaces thus being left open down to the regenerator-decks, and Z the spaces intervening between the contiguous air-regenerators and gas-regenerators.

The regenerators are to have the usual regenerator-filling of checker-work. The gas-reversing valve J may be of the ordinary construction and used in the ordinary way to put

gas-flue M in communication with a gas-inlet H, while it puts gas-flue N in communication with the chimney-flue G, the reversing of the valve simply reversing the flue-connections, and the air-reversing valve L may be of similar usual construction and arrangement with reference to the air-flues O and P and chimney-flue G.

The construction of the ducts and the advantages thereof will be readily appreciated. The ducts S and U are continuous and direct from furnace to regenerators, the longer ones passing over the regenerator nearest the furnace. Simple wall-work rests upon the regenerator-decks, producing parallel open-top passages, and the tops of these passages are closed by the simplest forms of brick-work, and any given portion of any given duct is easily inspected and repaired. By these very important changes in construction we are enabled to secure correspondingly important results in the working of the furnace.

The pairs of regenerators are practically at the ends of the heating or melting chamber;

and we wish it understood that when referring herein to the "sides" of the heating or melting chamber or the "ends" of the heating or melting chamber we use the terms synonymously.

We claim as our invention—

In a regenerative furnace, the combination, substantially as set forth, of a heating or melting chamber, regenerators alongside thereof and near thereto and provided with decks having ports, vertically-parallel walls on said decks extending from said chamber to said ports and forming direct open-top ducts from chamber to ports, the longer ducts thus formed extending across the nearer regenerators, and cover-work disposed on said walls from chamber to ports and closing the tops of the ducts.

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