

No. 732,866.

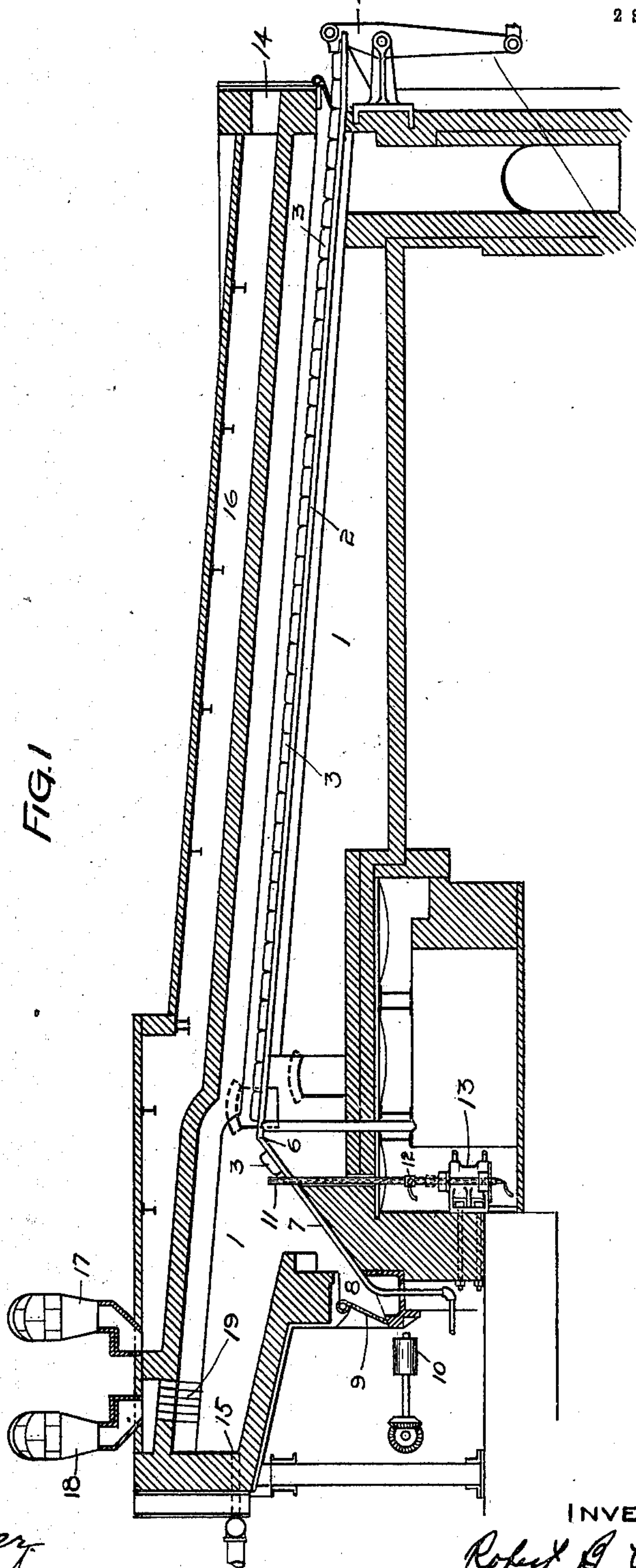
PATENTED JULY 7, 1903.

R. B. KERNOHAN.  
CONTINUOUS HEATING FURNACE.

APPLICATION FILED MAY 23, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

*J. R. Keller*  
*M. Hughes*

INVENTOR.

*Robert B. Kernohan*  
*by W. G. Doolittle*  
*Attorney.*

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2 SHEETS—SHEET 2.

FIG. 2

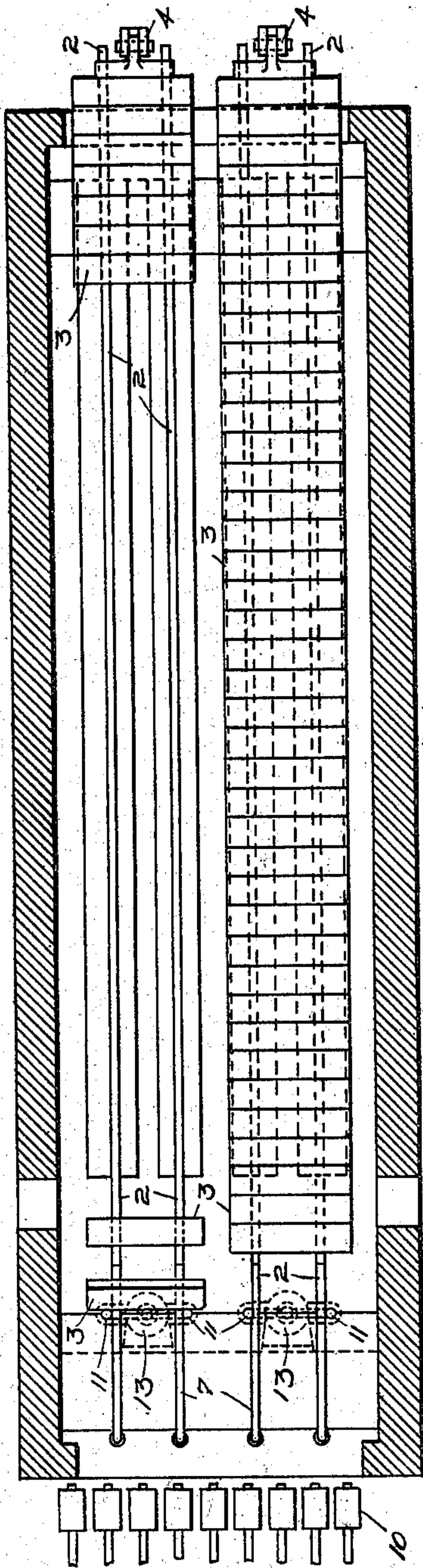
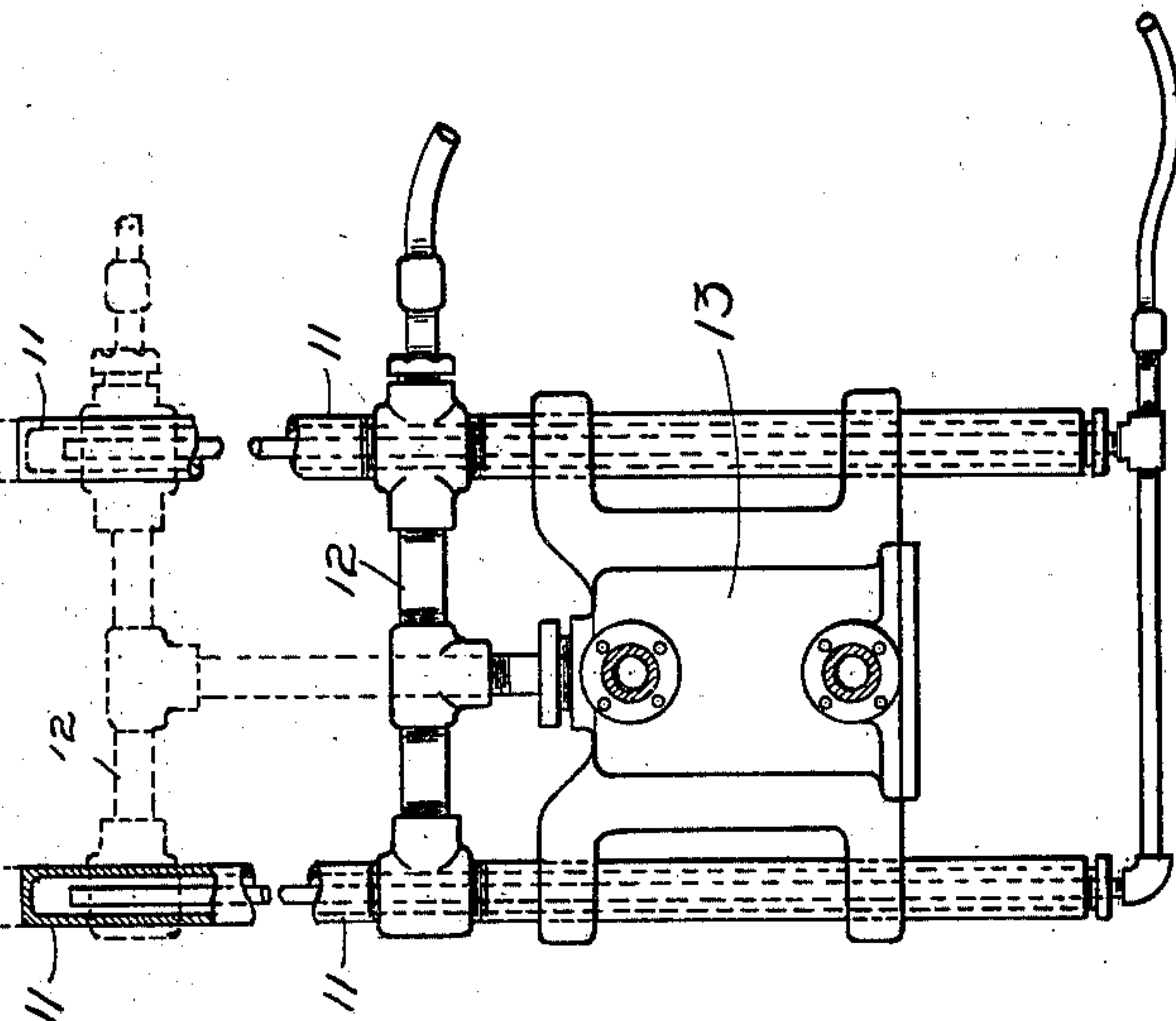


FIG. 3



WITNESSES:

*J. R. Keller*  
*M. Hughes*

INVENTOR

*Robert B. Kernohan*  
by *W. G. Doolittle*  
Attorney.



# UNITED STATES PATENT OFFICE.

ROBERT B. KERNOHAN, OF PITTSBURG, PENNSYLVANIA.

## CONTINUOUS HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 732,866, dated July 7, 1903.

Application filed May 23, 1903. Serial No. 158,438. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT B. KERNOHAN, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Continuous Heating-Furnaces, of which the following is a specification.

My invention relates to a new and improved continuous heating-furnace of that class in which billets, blooms, bars, &c., to be heated are charged at one end of the furnace, forced through the same in rows on tracks, and discharged from the furnace at or near its opposite end.

Among the objects of the present invention are to provide means whereby the leading billet or other article of the advancing row is separated from the other billets in the row for the purpose of uniformly heating said billet and each succeeding billet separately and to heat the billet to a higher temperature than it would be possible to heat it while in contact with the succeeding billet of the row without causing the billet to adhere to the second or succeeding billet, also to provide apparatus of such a nature that the same will not be prevented from doing efficient work by reason of the slag or cinder which accumulates in considerable quantities at or near the point the leading billet is discharged from the track.

In the accompanying drawings, which illustrate an application of my invention, Figure 1 is a central vertical sectional view of my continuous heating-furnace, showing a row of billets located on a slightly-inclined track with the leading billet separated from the other billets and in position to be uniformly and separately heated; Fig. 2, a sectional plan, and Fig. 3 an enlarged broken elevational view of the means for maintaining the separated billet in the desired position.

Referring to the drawings, the furnace as illustrated comprises the heating-chamber 1, having two longitudinal tracks 2, suitably supported therein. These tracks 2 are preferably inclined, as shown, and have their highest points near the front or discharge end of the furnace. The billets 3 are supported on the tracks 2 and forced along said tracks from the rear to the front of the furnace by

means of a pushing device 4, the latter being operated by any suitable means. The main tracks 2 terminate on a line 6 and on this line are connected with supplemental tracks 7. These latter tracks are placed at an angle of about forty-five degrees to the main tracks and lead from the main tracks to a discharge-opening 8, in this instance located in the front wall of the furnace. Swinging doors 9 are provided at the discharge-opening, and 10 represents a conveyer for receiving and conveying the billets, &c., after their discharge from the heating-furnace. When the first billet, &c., of the advancing row of billets reaches the end of the main tracks, it slides by gravity down one of the supplemental tracks 7. For the purpose of arresting the movement of the billet on track 7 in order to separately and uniformly heat said billet I provide a movable stop comprising two tubes 11 and a cross-piece 12. This stop mechanism is shown on an enlarged scale in Fig. 3 and is actuated by any suitable means—such, for example, as a hydraulic cylinder 13. As illustrated, the stop mechanism is moved vertically by means of the hydraulic cylinder and its connections, and and when raised in order to stop and maintain a billet in the desired position the tubes 11 project slightly above the tracks 7 and into the path of the descending billet, stopping the same and maintaining it in the desired position until sufficiently heated. After the billet is heated the tubes are lowered, and the billet will continue its downward movement on the track 7 and be discharged through opening 8 onto the conveyer 10.

In the operation of furnaces of this class a considerable quantity of slag or cinder will be deposited in the space between the ends of the main track and the front wall of the furnace, and consequently if means are employed in this space for separately heating a billet the means must be of such a character that its operation will not be affected by the collection of the slag or cinder. It is also important that after the billet has been heated, as above set forth, it will be discharged from the furnace without the aid of ejecting means, said means being either operated by hand labor or by mechanical means. In the form of my invention as shown the billet after it



has been stopped and heated is ejected from the furnace by gravity, thereby doing away with any ejecting means for discharging the billet from the furnace to the conveyer, and  
5 the stop mechanism will not be interfered with by the collection of slag or cinder in the space mentioned.

The tracks 6 and 7 and the stop mechanism preferably comprise tubes, through which a  
10 cooling fluid may be passed.

In the form of heating-furnace shown air is introduced thereto through openings 14, located in the rear wall, and gas by pipe 15 through the front wall. The air is drawn  
15 through flue 16 into pipe 17, thence into pipe 18, (the connection between pipes 17 and 18 is not shown,) and then through flues 19, mixing with the gas at the front of the heating-chamber.

20 Attention is called to the fact that the separated billet on each supplemental track 7 is stopped at the hottest part of the heating-chamber.

What I claim is—

25 1. In a continuous heating-furnace the combination with a charging-opening and a discharging-opening, of a main track for supporting a row of billets thereon, means for moving the billets on the main track, a supple-

mental track in communication with the main 30 track and at an angle thereto over which the leading billet of said row is caused to travel by gravity, a movable stop arranged to be moved into and out of the path of travel of the billet on the supplemental track, and 35 means for operating the movable stop, substantially as set forth.

2. In a continuous heating-furnace, the combination with a charging-opening and a discharging-opening, of a main track for support- 40 ing a row of billets thereon, means for moving the billets on the main track, a supplemental track at an angle to the main track over which the leading billet of the advancing row of billets is caused to travel by grav- 45 ity, a vertically-movable stop arranged to be moved above the supplemental track and adapted to stop a billet as it travels from the main track to the discharge-opening, and means for raising and lowering the movable 50 stop, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT B. KERNOHAN.

Witnesses:

MARGARET HUGHES,  
W. G. DOOLITTLE.