No. 738,358. PATENTED SEPT. 8, 1903.

D. M. REEL.

FURNACE.

APPLICATION FILED SEPT. 22, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

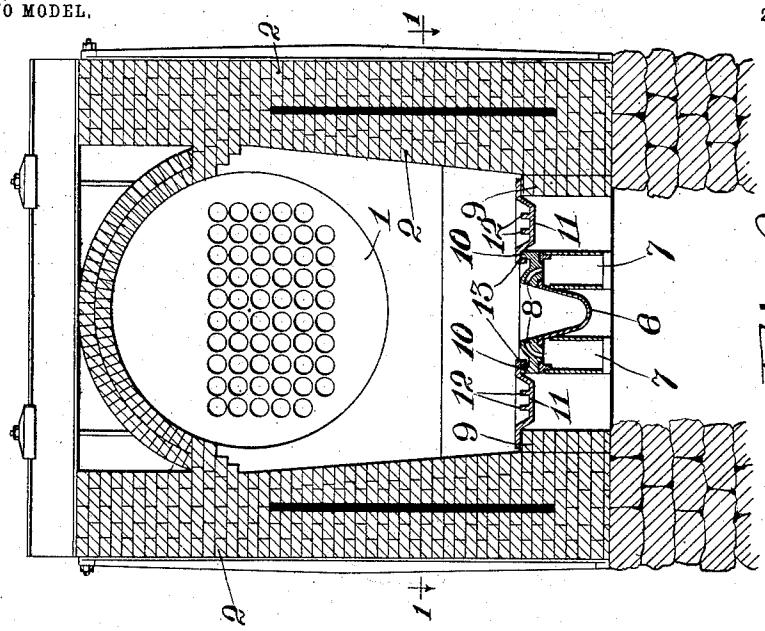

Fig. 2.

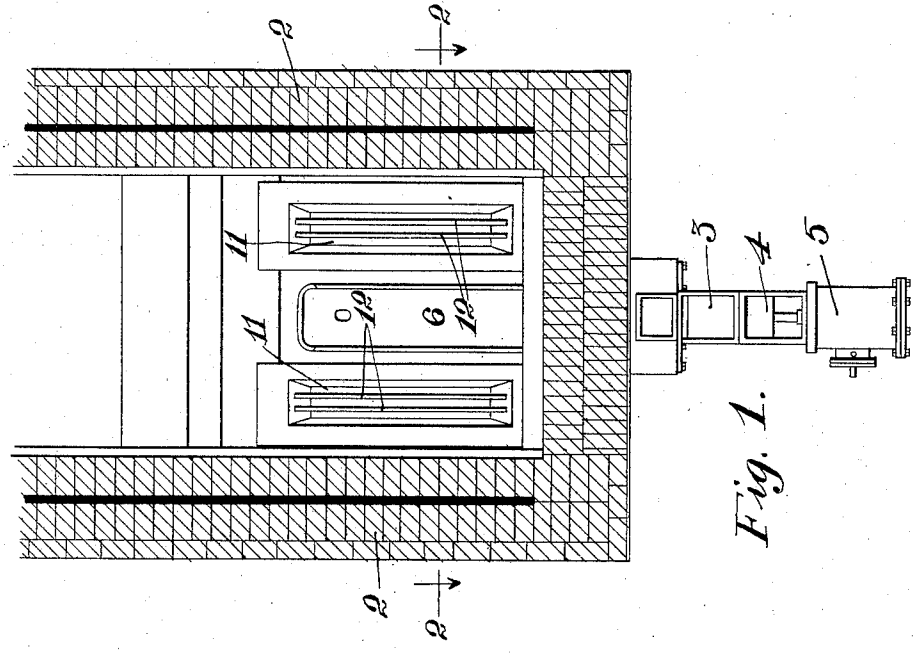

Fig. 1.

Witnesses:
Leonard W. Novander.
Lynn A. Williams.

Inventor
David M. Reel
By Charles A. Brown
Attorney

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

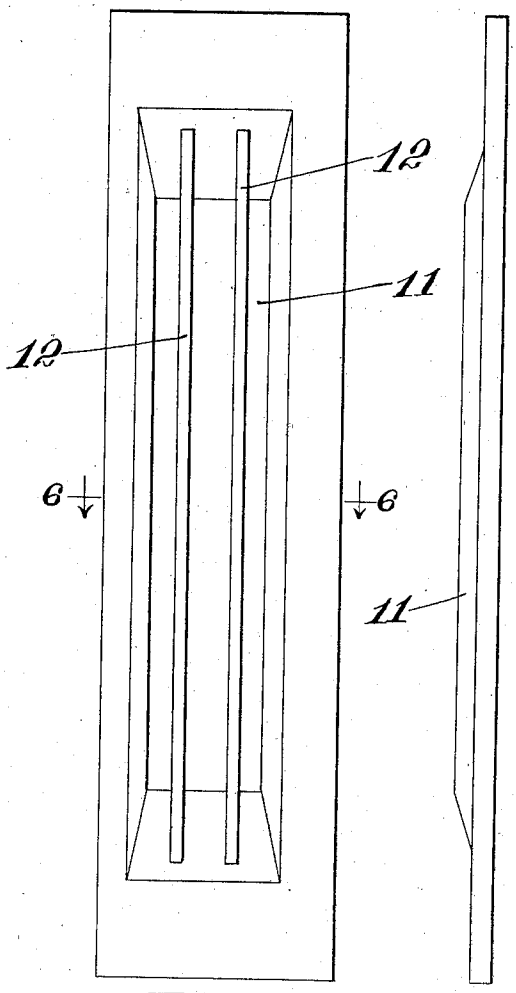

Fig. 3.

Fig. 5.

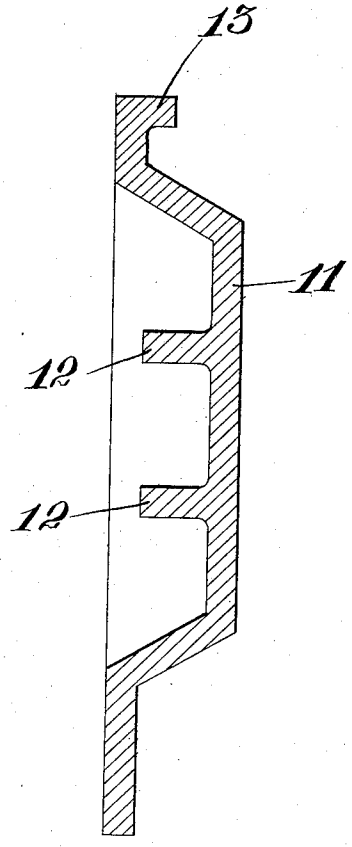

Fig. 6.

Witnesses:
Leonard W. Novander.
Lynn A. Williams.

Inventor
David M. Reel
By Charles A. Brown
Attorney

No. 738,358. Patented September 8, 1903.

UNITED STATES PATENT OFFICE.

DAVID M. REEL, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE UNDERFEED STOKER COMPANY OF AMERICA, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 738,358, dated September 8, 1903.

Application filed September 22, 1902. Serial No. 124,435. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. REEL, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Furnaces, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to furnaces, and has for its object the provision of furnace-walls constructed in such a manner as to prevent the heat of the furnace-fire from warping, cracking, or otherwise injuriously affecting the said walls.

More particularly my invention relates to furnaces in which so-called "underfeed-stokers" are employed. As heretofore constructed such furnaces have employed a so-called "dead-plate," which is subject to the extreme heat of the fire. When this dead-plate has been sufficiently covered with ash or soot, it has been sufficiently protected to prevent its warping or cracking; but as heretofore constructed the said dead-plates have been so easily cleaned that it has sometimes happened that the plates have been insufficiently covered and protected by ash and have therefore been warped or cracked by the heat.

My invention contemplates an improved dead-plate which on account of its peculiar construction, to be hereinafter more fully set forth, is not so directly subject to the heat of the fire as to cause it to warp or crack.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional view taken on line 1 1 of Fig. 2, showing my improved dead-plates in place in a furnace employing a so-called "underfeed-stoker." Fig. 2 is a sectional view taken on line 2 2 of Fig. 1. Fig. 3 is a plan view of one of my improved dead-plates. Fig. 4 is an end elevation of the same. Fig. 5 is a side elevation of the same. Fig. 6 is a cross-sectional view taken on line 6 6 of Fig. 3.

Like reference characters refer to like parts in all the drawings.

I have illustrated a boiler 1 supported in its masonry boiler-setting 2.

The furnace illustrated is one in which a well-known type of underfeed-stoker is employed. The stoker consists, essentially, of a hopper 3, into which coal or other fuel to be fired is thrown, and which fuel is forced into the furnace by the reciprocating action of a plunger 4, actuated by the fluid-cylinder and piston mechanism 5. The plunger forces coal into the lower part of the retort 6, and as more coal is forced into the lower part of the retort the fuel is gradually forced upward toward the top of the retort. Air-passages 7 7 convey air to the twyers 8 8, which supply air for the combustion of the fuel in the upper part of the retort.

The dead-plates, which are the subject of my present invention, occupy the spaces between the underfeed-stoking mechanism above described and the side walls of the furnace, ledges 9 9 being provided to sustain the outer sides of the dead-plates, while the inner sides of the same are supported on the rails 10 10. When certain fuels are employed, and where firemen do not properly operate the stokers, they have sometimes been warped and cracked, due to the intense heat developed. These dead-plates as hitherto constructed have been made substantially flat, or at least have been so constructed that any ash collecting on the upper surface of the dead-plates has been readily removable by the firemen, thereby removing from the dead-plates the protection against heat which such a coating of ash would afford. My present invention contemplates the corrugation or channeling of the upper surface of said dead-plates in such a way as to make it a difficult matter to remove any sediment collecting and accumulating thereon. While the corrugation of this upper surface might be accomplished in many different effective ways, I prefer to employ that herein shown and particularly described, in which the dead-plate as a whole is dished so as to provide a depressed portion 11, adapted to set into

the space between the side of the stoker mechanism and a ledge 9. The upper surface of this depressed portion, then, is provided with upwardly-extending projections, such as the rails 12 12. For the purpose of making a nice joint between the dead-plates and the sides of the stoker mechanism the dead-plates are provided with downwardly-projecting flanges 13, adapted to fit over the rails 10 10. It will be seen that with this improved construction of dead-plate any sediment or ash finding lodgment thereon is not readily removable, at least with the implements customarily employed in firing and cleaning furnaces. The result is that the fireman does not remove the ash from the dead-plates, and they are thereby afforded sufficient protection from the heat of the furnace to prevent their warping and cracking.

While I have herein shown and particularly described the preferred embodiment of my invention, it will be apparent to those skilled in the art that many changes and modifications therein may be made without departing from the spirit thereof. I do not, therefore, wish to be limited to the precise disclosure herein set forth; but,

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. In a furnace, the combination with an elongated fuel-retort, of twyer-boxes having twyer-openings along the sides of said retort, a ridge along the outer edge of said twyer-boxes, furnace side walls, ledges on said walls, and dead-plates bridging between said retort and said side walls, one side of said plates resting on said ledge, the other side of said plates being provided with a downwardly-extending flange adapted to fit over said ridges on said twyer-boxes, substantially as described.

2. In a furnace, the combination with an elongated fuel-retort, of twyer-boxes having twyer-openings along the sides of said retort, a ridge along the outer edge of said twyer-boxes, furnace side walls, ledges on said walls, and dead-plates bridging between said retort and said side walls, one side of said plates resting on said ledge, the other side of said plates being provided with a downwardly-extending flange adapted to fit over said ridges on said twyer-boxes, said plates being dished and provided with longitudinal ridges, substantially as described.

3. In a furnace, the combination with an elongated fuel-retort 6, of twyer-boxes having twyer-openings 8 extending along the sides of said retort, ridges 10 along the outer edge of said twyer-boxes, furnace side walls, ledges 9 on said walls, dead-plates bridging between said retort and said side walls, one side of said dead-plates resting upon said ledges, and a hooked flange 13 at the other side of said dead-plates adapted to engage the ridges 10, substantially as described.

In witness whereof I hereunto subscribe my name this 13th day of September, A. D. 1902.

DAVID M. REEL.

Witnesses:
JOHN F. RYMER,
MARCUS S. JOY.