

No. 779,790.

PATENTED JAN. 10, 1905.

T. LENNON.
STEAM BOILER FURNACE.
APPLICATION FILED APR. 13, 1904.

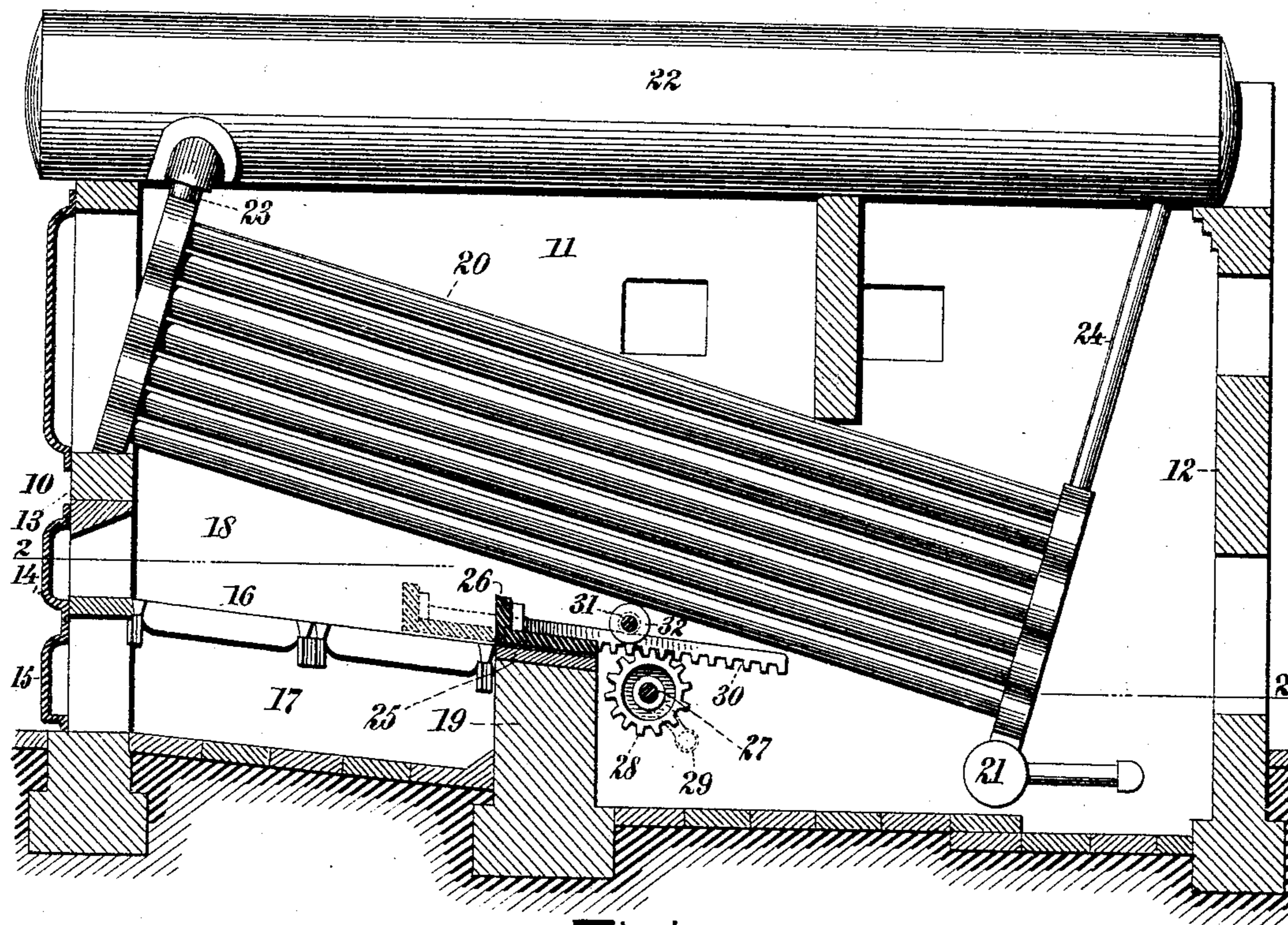


Fig. 1.

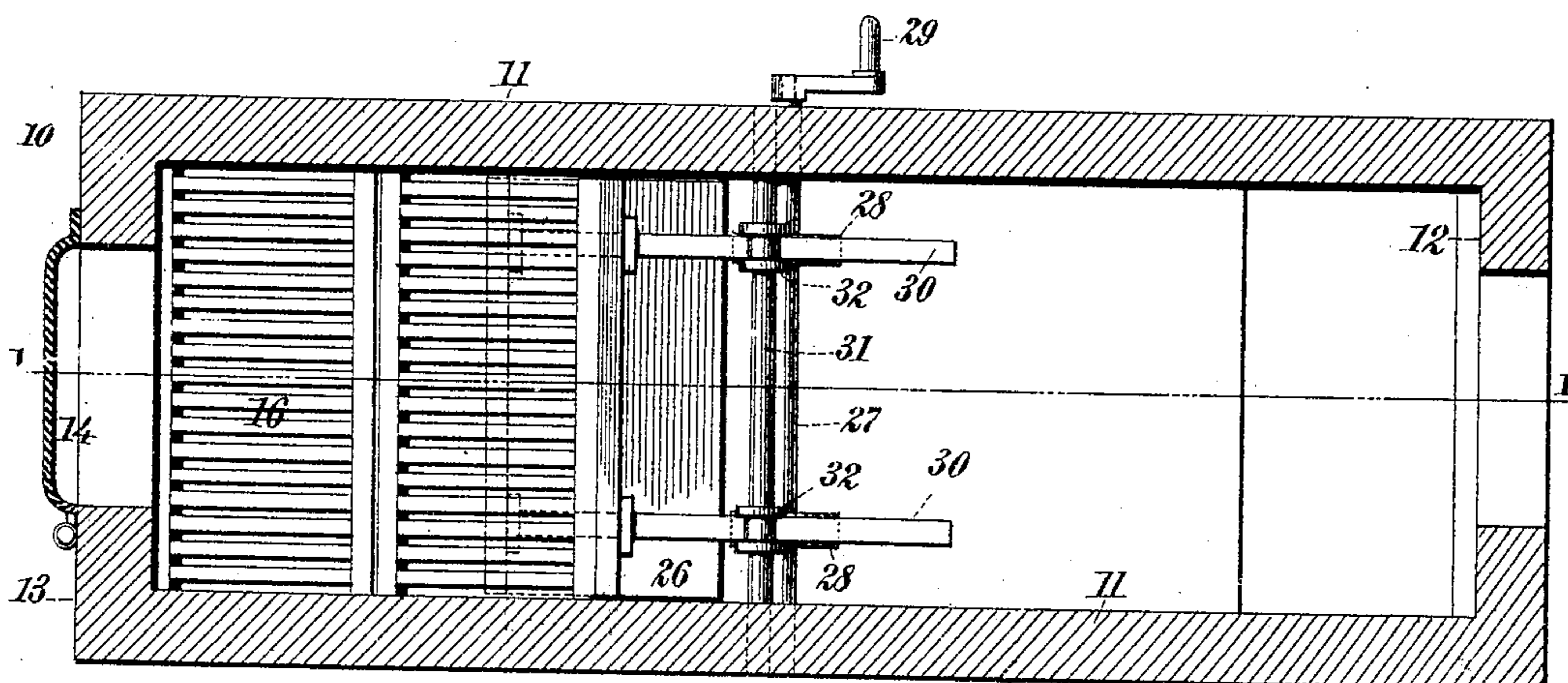


Fig. 2.

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STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 779,790, dated January 10, 1905.

Application filed April 13, 1904. Serial No. 202,903.

To all whom it may concern:

Be it known that I, THOMAS LENNON, a citizen of the United States, residing at the city of New York, borough of Manhattan, in the county and State of New York, have invented certain new and useful Improvements in Steam-Boiler Furnaces, of which the following is a full, clear, and exact specification.

My invention relates to improvements in heating apparatus; and the same has for its object more particularly to provide a furnace for steam-boilers and analogous apparatus wherein the grate area may be materially reduced when it is desired to reduce the amount of fuel consumed or to operate the boiler at low pressure. These objects above set forth I am enabled to attain by means of my invention, which consists in the novel details of construction and in the combination, connection, and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like numerals of reference indicate like parts, Figure 1 is a longitudinal section taken on the line 1 1 of Fig. 2, showing a steam-boiler and furnace constructed according to and embodying my invention; and Fig. 2 is a vertical section taken on the line 2 2 of Fig. 1.

In said drawings, 10 designates a steam-boiler of the usual general construction, in which 11 denotes the side walls, 12 the back, and 13 the front, which is provided with the usual fire-door 14 and ash-pit door 15.

16 denotes the grate; 17, the ash-pit; 18, the fire-space, and 19 the bridge-wall. Above the grate is arranged a set of inclined boiler-tubes 20, which are provided with the customary baffle-plates. (Not shown.)

21 denotes the mud-drum, which communicates with the set of boiler-tubes 20 at the lower rear end thereof, and 22 denotes the steam-drum, which is arranged above the set of boiler-tubes 20 and connected thereto near its forward and rear ends by risers 23 24.

Upon the upper surface of bridge-wall 19 on a line with the upper part of the grate is secured a plate 25, upon which is slidably disposed a substantially L-shaped movable section or extension 26, which may be made of

any suitable material, and when desirable or necessary provided upon its exposed portions or faces with a covering of fireproof or heat-insulating material. To the rear of the bridge-wall is arranged a transverse shaft 27, which is supported at its ends in the walls 11 of the boiler, which shaft is provided with pinions 28 28, which are fixed thereon adjacent to its ends, but inside of the walls 11, and 29 denotes a crank engaging one of the ends of the shaft 27, projecting beyond the outer surface of the wall 11.

30 30 denotes rack-bars, which are secured at their forward ends to the rear side of the vertical portion of the movable section or extension 26, resting upon the plate 25, while the rearwardly-projecting portions of said rack-bars 30 30 are held in engagement with the pinions 28 28 on the shaft 27, and above said rack-bars 30 30 at a point intermediate the shaft 27 and the bridge wall 19 is arranged a transverse shaft 31, which is supported at its ends in the walls 11 of the boiler and carries the grooved rollers or guides 32 32, which are arranged upon said shaft 31 directly above the upper smooth surfaces of the rack-bars 30 30 and contact therewith, whereby the said rack-bars 30 30 are properly guided and the base portion of the movable section or extension 26 maintained duly in position upon the surface of the plate 25 and the upper surface of the grate 16.

The operation of the apparatus is as follows: If the boiler is to be operated in the usual manner and coal spread over the entire grate 16, the movable section or extension 26 is secured in position upon the bridge-wall 19, as indicated in full lines at Fig. 1. To reduce the area of the grate 16, when it is desired to operate the boiler at low pressure or simply to economize in the use of fuel it simply becomes necessary to turn the crank 29 on the projecting end of the shaft 27 to the right, and thereby rotate the pinions 28 28 on said shaft, which being in engagement with the rack-bars 30 30 will cause the same to be moved forward and the movable section or extension 26 correspondingly moved and its base portion caused to cover the rear portion of the grate adjacent to the bridge-wall 19 and prevent the passage

of air through said covered portions, as indicated by dotted lines at Fig. 1. By turning the crank 29 in the opposite direction the movable section or extension 26 may be restored
5 to its former position.

It is to be noted that by means of my invention I am enabled to quickly and effectually decrease the area of the grate-surface and hold the parts duly secured to their adjusted position.
10 tion.

Without limiting myself to the details of construction, which may be varied within the scope of the invention, what I claim, and desire to secure by Letters Patent, is—

15 1. In a steam-boiler furnace or analogous structure, a bridge-wall comprising a rigid section and a movable section arranged upon said rigid section, rack-bars secured to said rigid
20 section and extending rearwardly therefrom, guides for said rack-bars, a shaft arranged to the rear of said wall, pinions on said shaft in mesh with said rack-bars, means for actuating said bar whereby to reciprocate the movable
25 bridge-wall section, and means for holding said movable section duly against vertical movement, but free to be moved longitudinally upon said rigid section and the grate, substantially as specified.

2. In a steam-boiler furnace or analogous
30 structure, a bridge-wall comprising a rigid section, and a movable section arranged thereon, a plate secured upon the upper surface of said rigid section, rack-bars secured to said movable section and extending rearwardly there-
35 from, means for holding said movable section duly in position upon and in contact with said

rigid section and the grate, said means consisting of a shaft supported above said rack-bars, guide-rolls arranged thereon and bearing upon said rack-bars, a shaft supported to
40 the rear of the rigid bridge-wall section, pinions fixed on said shaft in mesh with the rack-bars, and means for rotating said shaft whereby to reciprocate said movable bridge-wall section, substantially as specified. 45

3. In a steam-boiler furnace or analogous structure, a bridge-wall comprising a rigid section and a movable section arranged upon said rigid section consisting of a base and vertical
50 portion extending upwardly from one edge of said base, rack-bars secured to the rear of the vertical portion of said movable section, and extending rearwardly therefrom, means for holding said movable section duly in position
55 upon and in contact with said rigid section and the grate, said means consisting of a shaft supported at its ends in the walls above said rack-bars, guide-rolls thereon contacting with the upper surface of said rack-bars, a shaft arranged to the rear of the bridge-wall and jour-
60 naled at its ends in the walls; one end of said shaft extending through the wall, and adapted to receive an operating-handle, and pinions fixed on said shaft in mesh with said rack-bars
65 aforesaid, substantially as specified.

Signed in the city of New York, in the county and State of New York, this 9th day of April, 1904.

THOMAS LENNON.

Witnesses:

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