

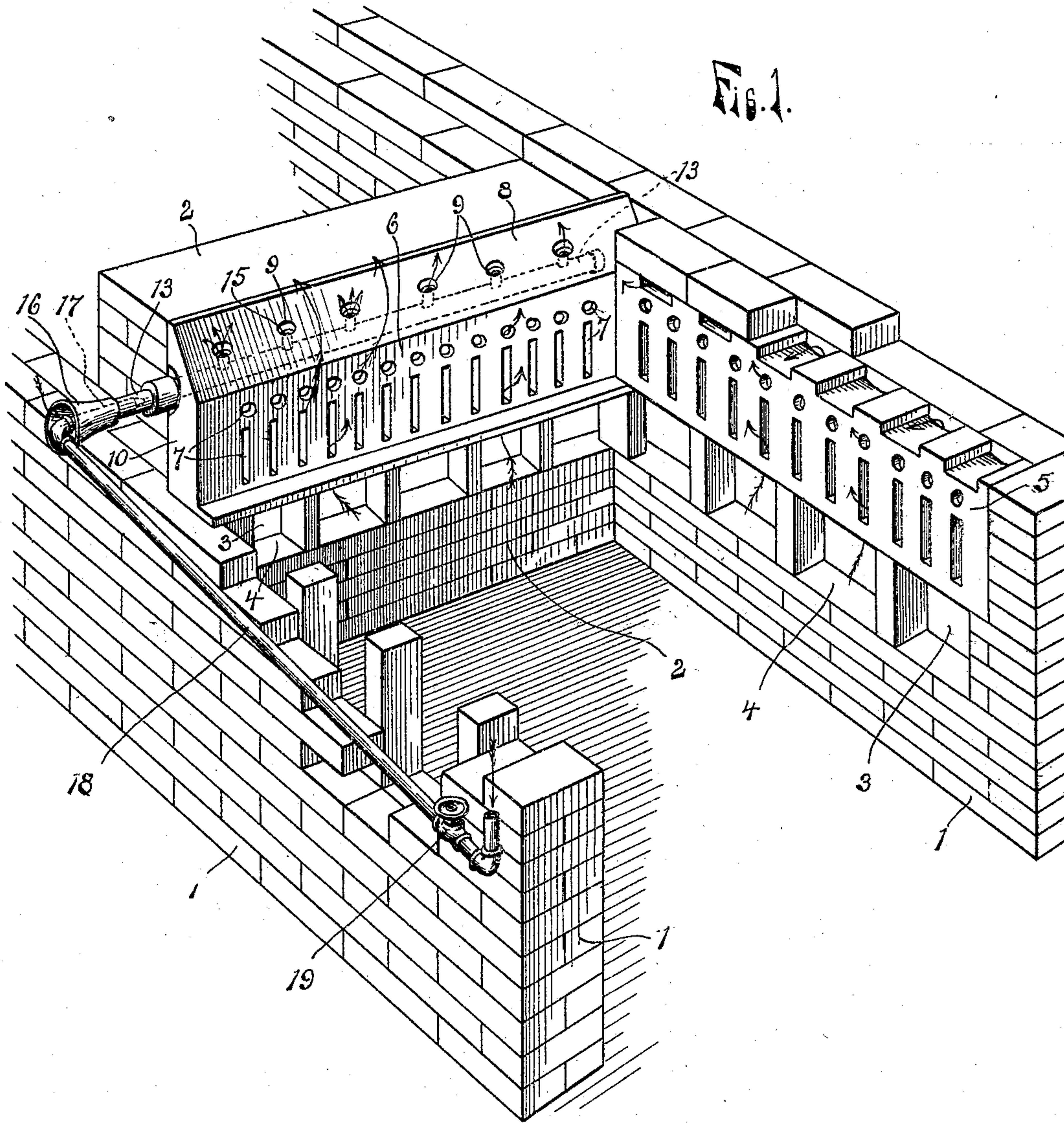
No. 788,417.

PATENTED APR. 25, 1905.

A. J. F. MILLER.
FURNACE.

APPLICATION FILED OCT. 27, 1904.

2 SHEETS—SHEET 1.



WITNESSES.

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Thomas E. Longstaff

INVENTOR.

August J. F. Miller
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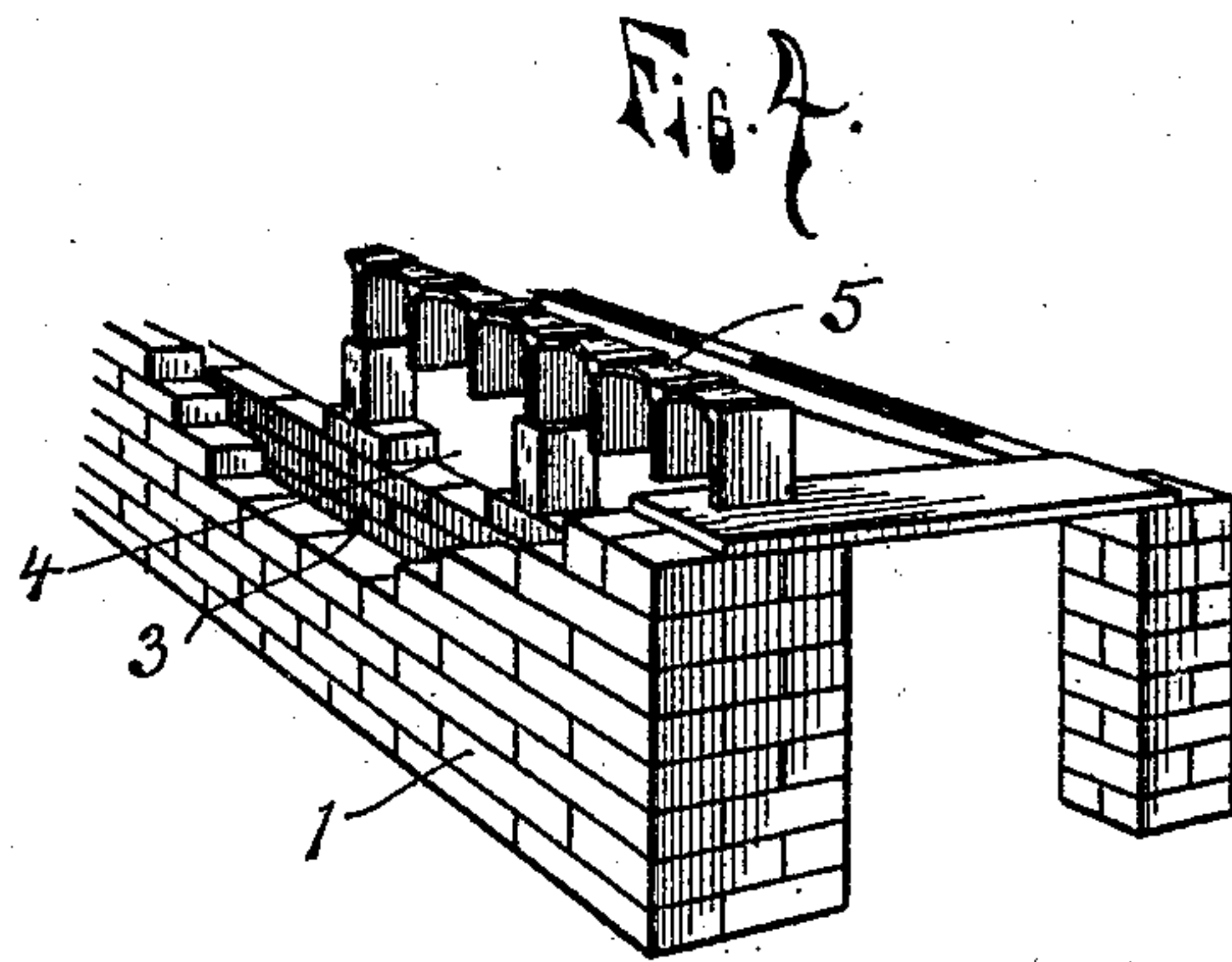
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UNITED STATES PATENT OFFICE.

AUGUST J. F. MILLER, OF CENTRALIA, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES P. MARSHALL, OF CENTRALIA, ILLINOIS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 788,417, dated April 25, 1905.

Application filed October 27, 1904. Serial No. 230,216.

To all whom it may concern:

Be it known that I, AUGUST J. F. MILLER, a citizen of the United States of America, residing at Centralia, in the county of Marion and State of Illinois, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in furnaces; and its object is to provide means for introducing into the furnaces a mixture of air and steam in such a manner as to effectually combine the same with the gases and other products of combustion to consume the smoke and to increase the draft.

To this end the invention consists in providing a hollow bridge-wall having openings in its upper side, directly over which the products of combustion pass, and introducing through these openings a mixture of steam and air, which is supplied through a mixing-pipe located within the bridge-wall, steam being injected into the open end of said pipe through a nozzle, and thus drawing in air, which mixes therewith.

The invention also consists in certain other new and useful features and the particular construction, arrangement and combination of parts, all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a furnace embodying the invention with parts removed to show the construction. Fig. 2 is a perspective view of the hollow bridge; Fig. 3, a perspective view of the mixing-pipe and the steam-supply pipe, and Fig. 4 a detail perspective view showing the rear side of a portion of one of the furnace-linings supported in place upon the wall.

As shown in the drawings, 1 1 are the side walls of the furnace, and 2 the end wall, each formed with a chamber 3, communicating with the ash-pit through openings 4, located just below the grate-bars. Set in each side wall just above the openings 4 is a grated lining 5, similar to those shown in my Patent

No. 695,750, of March 18, 1902, and in the end wall above said openings is set a casting forming a hollow bridge 6, which is also grated or formed with slots and openings 7 to serve the purpose of the end lining shown in said patent. This hollow bridge is extended upward the desired height above the grate and formed with a slanting upper end or top 8, having the openings 9, and its back side is closed by setting the same against the solid portion of the brick end or bridge wall 2. The end 10 and strengthening-ribs 11 of the hollow bridge-wall are cut away or notched at 12 near the top 8 to receive a mixing-pipe 13, having a closed inner end 14 and provided with a series of short laterally and upwardly extending pipes or jet-nozzles 15, one opposite each opening 9 in the top of the bridge-wall, forming jet-openings.

The outer end of the mixing-pipe extends through the side wall of the furnace and is provided with a funnel-shaped end 16, into which extends a nozzle 17 on the end of a steam-pipe 18, which is connected to the boiler or other source of steam under pressure. A valve 19 in said pipe controls the flow of steam therethrough, and the steam being injected into the mixing-pipe through the nozzle draws air into the open end of said pipe around the nozzle, which air mixes with the steam, and the mixture is expelled in jets from the nozzles 15 through the openings in the top of the bridge directly into the body of gases and other products of combustion passing over the wall directly from the fire. This injecting of mixed steam and air directly into the hot products of combustion as they leave the fire not only greatly aids combustion, causing the gases and smoke to be consumed, but also greatly aids the draft, and by placing the mixing-pipe in the hollow bridge said pipe and its jet-nozzles are protected from the heat and the mixture is injected at the point where it is most effective.

The bridge being formed as described performs a double service, operating as a lining to permit the air to circulate around the rear end of the grate to prevent the accretion of

clinkers and aid combustion and also as a hollow bridge-wall to hold and protect the mixing-pipe.

Having thus fully described my invention,
5 what I claim is—

1. In a furnace, the combination with the side walls thereof, of a bridge-wall having a chamber communicating with the ash-pit below the grates, a casting forming a hollow
10 bridge supported on the bridge-wall at the end of the grates and forming the front side of the chamber above the grates, said casting being formed with a grated front wall and an inclined top having a series of openings, a
15 mixing-pipe supported within the hollow bridge and extended through the side wall of the furnace at one end, a funnel-shaped end on the outer end of the mixing-pipe, a series of jet-nozzles on the mixing-pipe opposite the
20 openings in the top of the bridge, a steam-supply pipe and a nozzle on the steam-pipe projecting into the open end of the mixing-pipe.

2. In a furnace, the combination of side
25 walls provided with chambers; grated linings in said chambers above the grate-bars; a

bridge-wall having a chamber communicating with the ash-pit below the grates; a casting having an open side and bottom supported upon the bridge-wall with its open side against 30 the wall and its open bottom communicating with the chamber and having a grated front wall above the grate-bars, an inclined top provided with a series of openings and end walls and strengthening-ribs formed integral with 35 the front wall and top and having notches in their rear edges; a mixing-pipe supported within said notches and closed at one end and extended outward through the wall at its opposite end; a series of nozzles on said mixing- 40 pipe opposite the openings in the top; a funnel-shaped end on the outer end of said pipe; a steam-supply pipe and a nozzle on said steam-supply pipe extending into the open funnel-shaped end. 45

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST J. F. MILLER.

Witnesses:

W. G. WELDEN,
COONIE MEYERS.