No. 640,228. Patented Jan. 2, 1900.

J. W. RUMPF.

FURNACE.

(Application filed Aug. 18, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

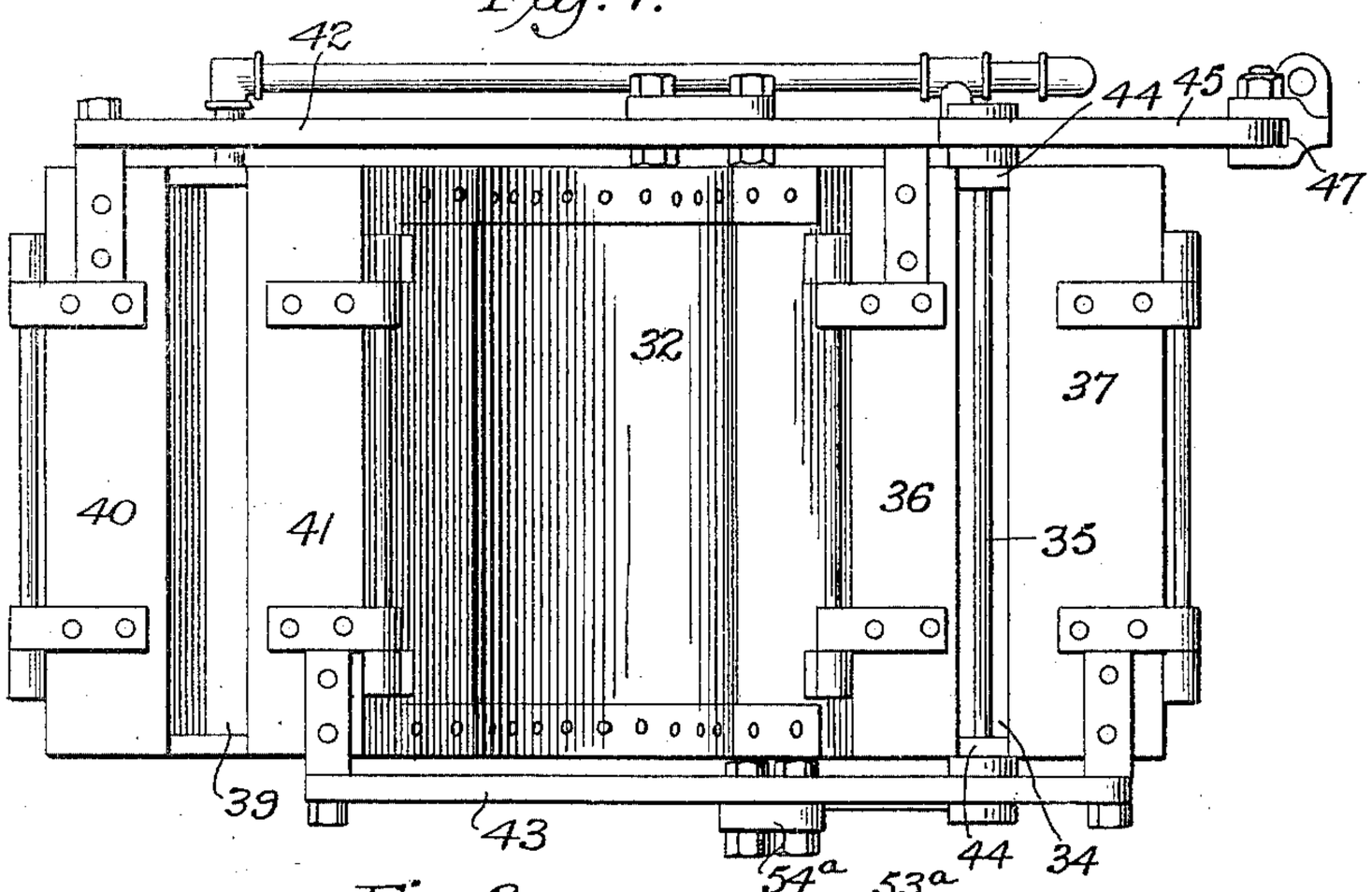
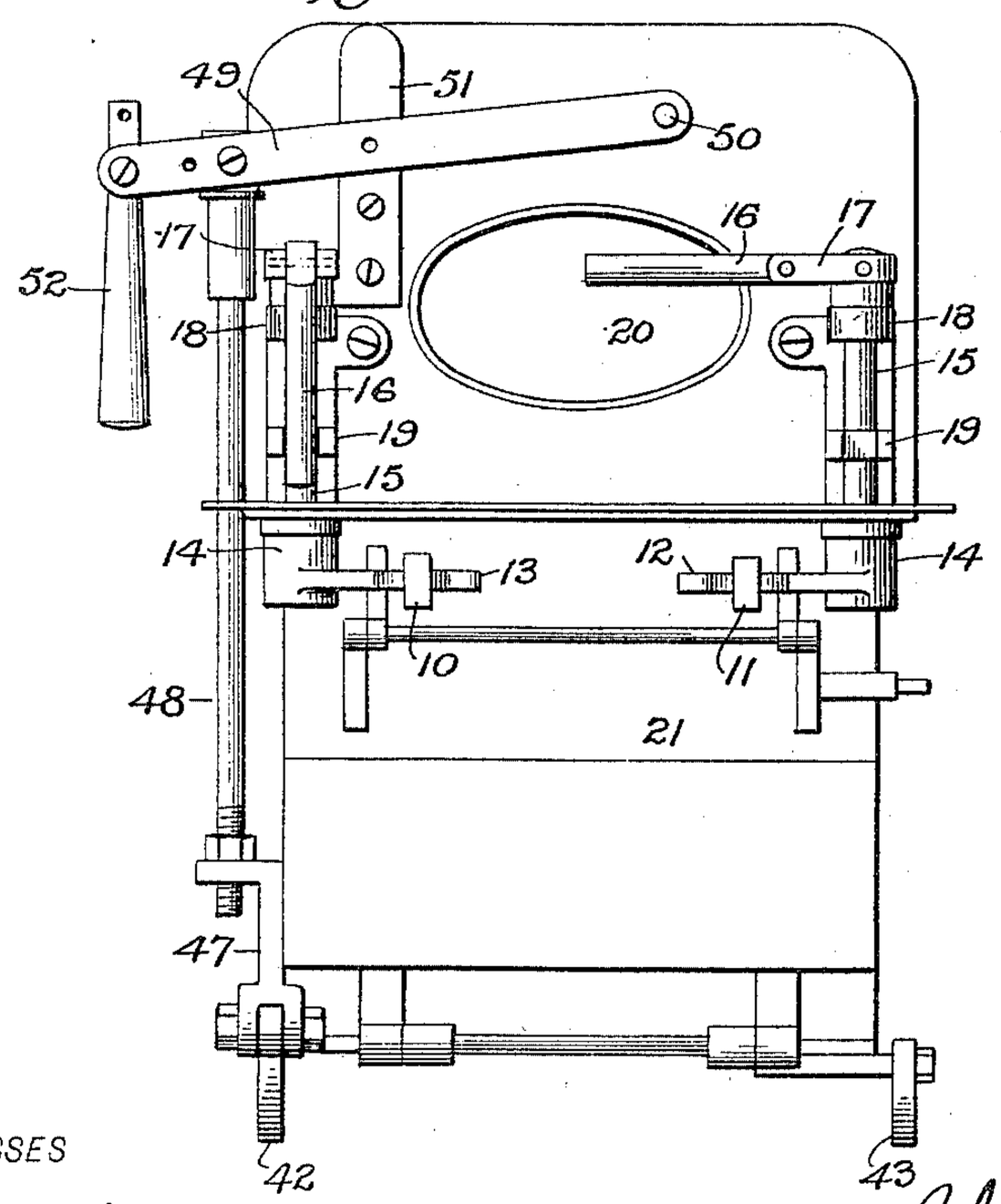


Fig. 2.



WITNESSES

James F. Duhamel

A. W. Stockbridge.

INVENTOR

John W. Rumpf

BY

Fred. G. Fisher,

ATTORNEY

No. 640,228. Patented Jan. 2, 1900.

J. W. RUMPF.

FURNACE.

(Application filed Aug. 18, 1898.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 3.

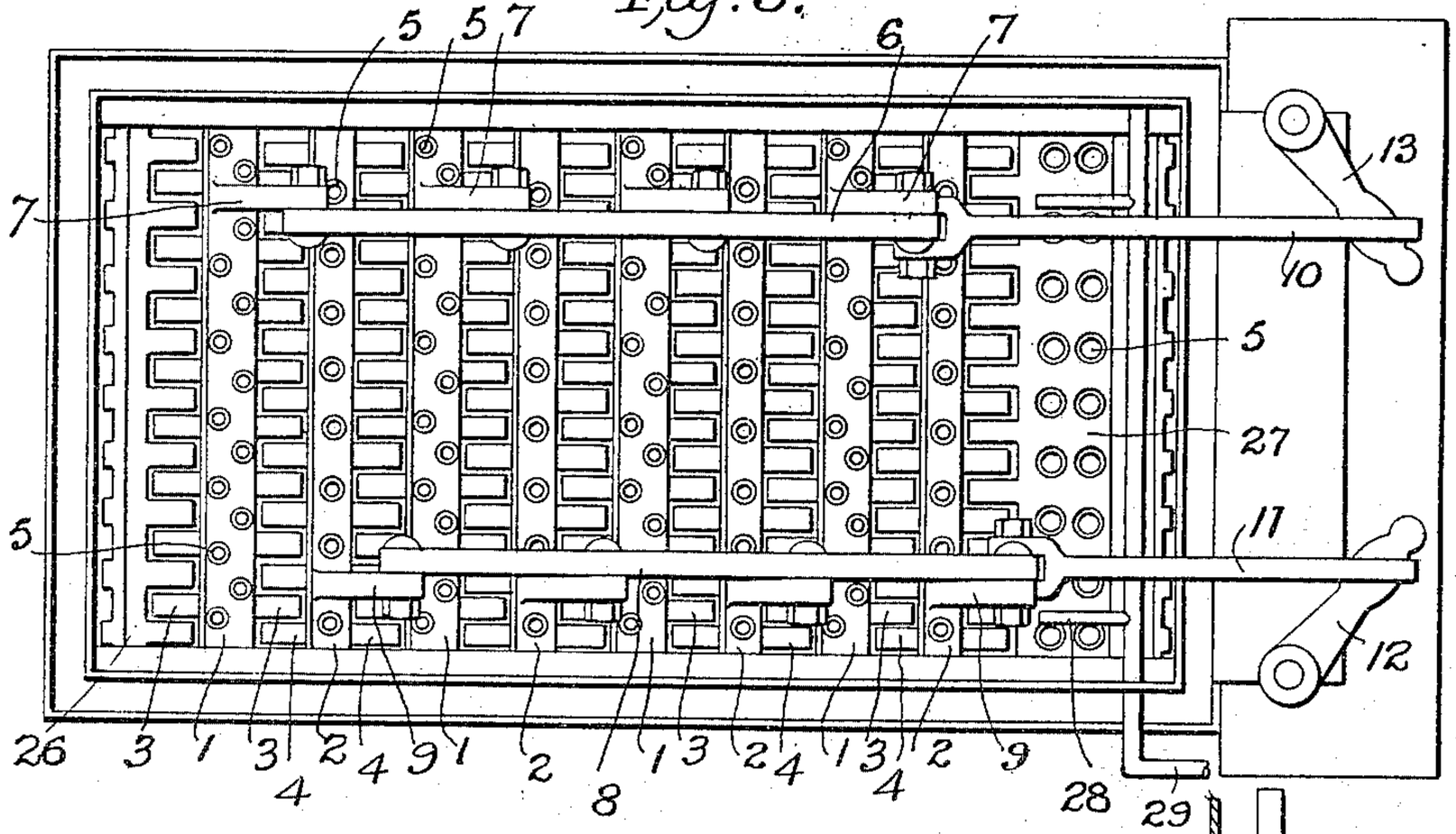


Fig. 4.

WITNESSES

James F. Dunham

A. L. Stoutenburgh.

INVENTOR

John W. Rumpf

BY

Fred G. Baker.

ATTORNEY

No. 640,228. Patented Jan. 2, 1900.

J. W. RUMPF.

FURNACE.

(Application filed Aug. 18, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

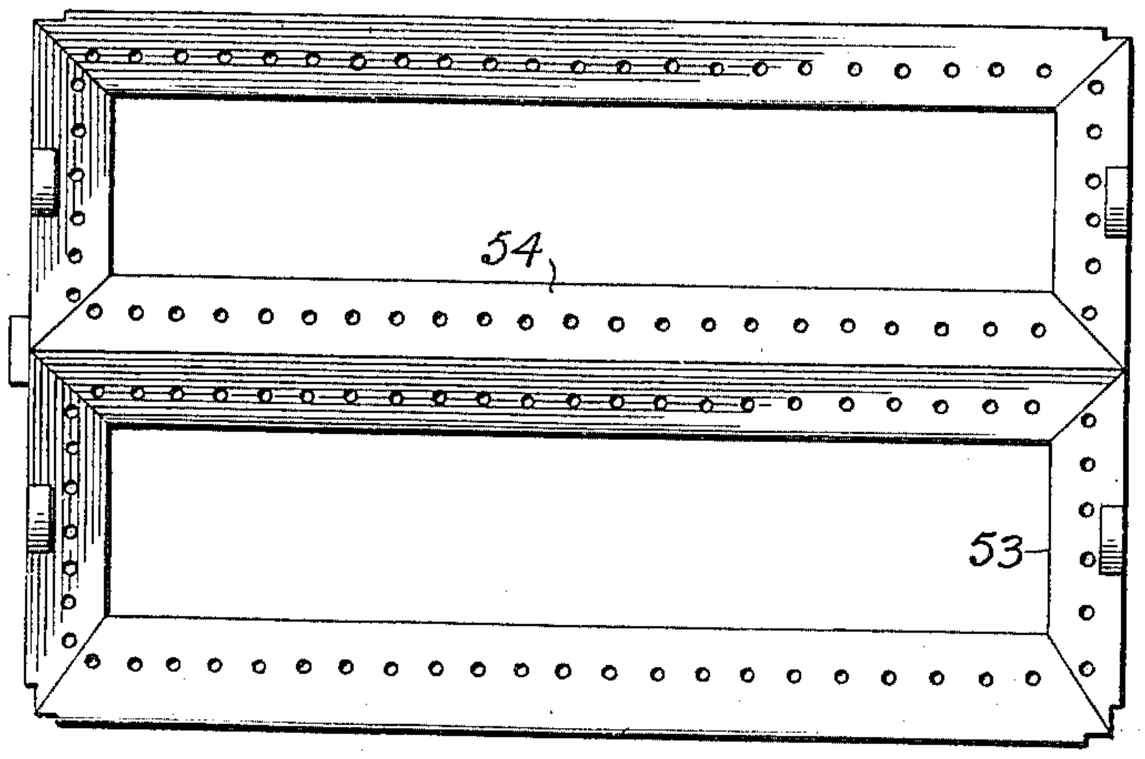
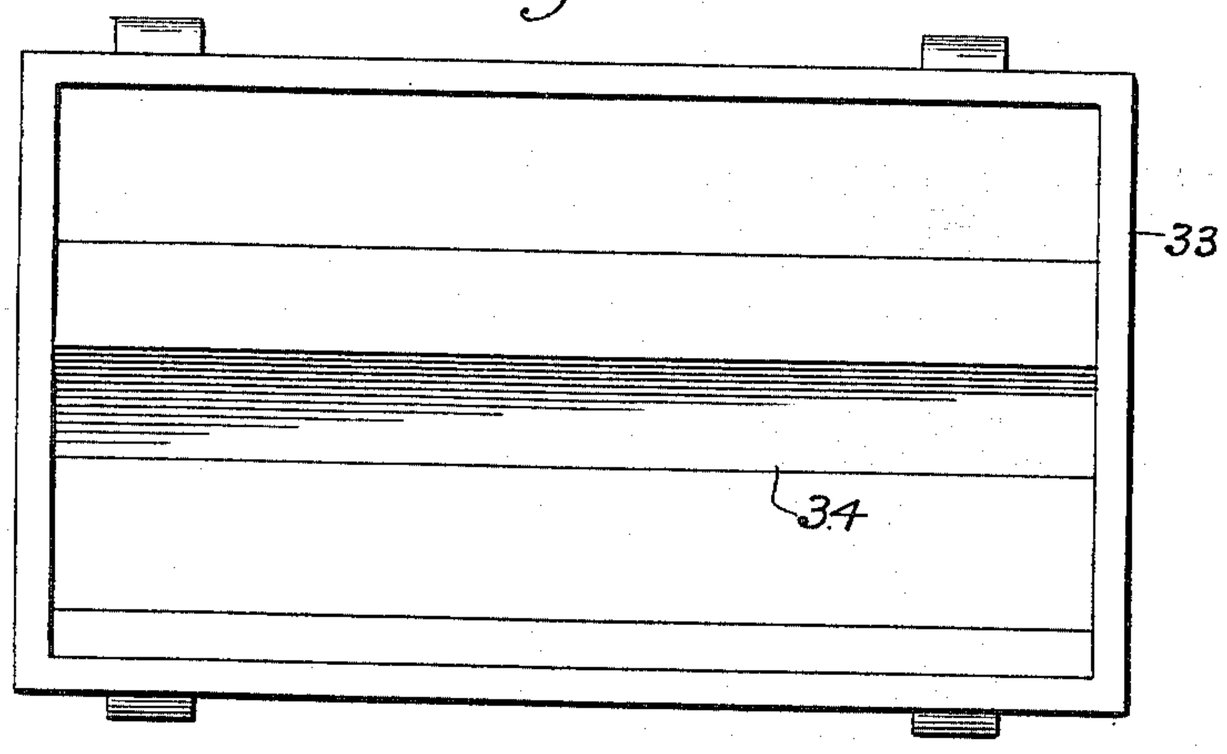


Fig. 6.



WITNESSES

James F. Duhamel

H. C. Stoutenburgh

INVENTOR

John W. Rumpf

BY

Fred. G. Fisher

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN W. RUMPF, OF CHILLICOTHE, OHIO.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 640,228, dated January 2, 1900.

Application filed August 18, 1898. Serial No. 688,866. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. RUMPF, a citizen of the United States, residing at Chillicothe, in the county of Ross and State of Ohio, have invented certain new and useful Improvements in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has reference to an improvement in furnaces, and more particularly to the ash-pans or ash-pits associated with the same and the means for spraying the contents of said pans and for manipulating the doors or covers arranged to close and unclose the lower sides of the said pan, the object being to simplify and greatly improve the details of the construction of ash-recivers of this character; and the invention therefore consists, essentially, in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a bottom plan view of my improved furnace. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view of the under side of the grate, showing the grate-bars. Fig. 4 is a longitudinal sectional elevation. Fig. 5 is an enlarged detail plan view of the water-coil for the front half of the ash-pan. Fig. 6 is a plan view of the lower frame for the front half of ash-pan.

Similar numerals of reference designate corresponding parts throughout all the different figures of the drawings.

Although in the present application I have illustrated in the drawings an arrangement of grate-bars, yet it is not my intention to claim the same herein, as the grate has been made the subject of a separate application for Letters Patent filed as a division of the present application and having the filing date of December 30, 1898, and the Serial No. 700,774.

The grate consists of two sizes of grate-bars, the larger size indicated by 1, which have projections 3 on each edge, and a smaller size 2 having lateral projections 4 on each edge, the projections 4 interlocking with the projections 3, and all of said bars supported at their ends in the main frame of the furnace. The bars 1 and 2 are perforated with conical holes 5, small at top and large at bottom, their function being to create a strong draft.

Although nearly all of the grate-bars are of the kind indicated at 1 or that indicated at 2, yet at the extreme rear of the grate I may have one, 26, of a somewhat modified pattern and at the extreme front another, 27, of a still further modified form, this latter bar being upheld and also dumped by means of a vibrating leaf or series of arms 28, carried on a rocker-shaft 29.

The grate is arranged in a fire-box 25, at the front of which is a fire-door 20.

24 indicates the water-space of the contiguous boiler, the numeral 23 denoting the mud-rim.

Below the fire-box and grate is the ash-pit, constructed in two parts 30 and 31, the part 30 being the rear half and the part 31 being the front half of said ash-pan, while between the two parts is the separating and intervening arch 32. The front wall of the ash-pan has a damper 21 and the rear a damper 22.

On each of the bars 1 of the grate is an integral downwardly-projecting arm 7, and the arms 7 are pivotally connected at their lower ends to the longitudinal rod 6, whose forward end is pivoted to a link 10, extending in front of the forward face of the furnace and having a slotted end, in which end vibrates the free end of a lever 13, whose opposite end has a sleeve 14 securely fastened on the lower end of a vertical rock-shaft 15, supported in bearings 18 on the front of the furnace. The upper end of shaft 15 is provided with a rigid arm 17, within whose cleft is pivoted the drop-arm 16, which is adapted to drop into a vertical position parallel to shaft 15 and engage a socket 19 to keep it temporarily in such position or to be raised into a horizontal position and oscillated by hand to and fro for the purpose of rocking shaft 15. The other grate-bars 2 are provided with integral downwardly-projecting arms or lugs 9, whose lower ends are pivoted to the longitudinal rod 8, whose forward end is pivotally connected with a link 11, extending in front of the furnace in like manner to link 10 and having a slotted end in which vibrates the

free end of a lever 12, whose opposite end has a sleeve 14 on the lower end of a second vertical shaft 15, said shaft being provided with a handle 16.

I will now describe the details of construction of my improved ash-pan, the liquid spraying or sprinkling device therein, and the mechanism for operating the outlet or discharge doors at the bottom.

33 denotes the lower frame for the front half 31 of the ash-pan, the same being of rectangular form and provided with a central inverted-V-shaped rib 34, within which is contained the horizontal shaft 35 belonging to the ash-pan-door-operating mechanism, (see Fig. 1,) and at the sides of the rib 34 are openings provided with hinged doors 36 and 37. A frame 38, similar to frame 33, is situated in the bottom of the rear half 30 of the ash-pan, said frame 38 having a central inverted-V-shaped rib 39, at the sides of which are openings provided with the hinged doors 40 and 41. (See Fig. 1.)

The doors 40 and 36 are connected together by means of a horizontal bar 42, whose ends curve upwardly to a small extent and are pivoted to the ends of said doors, as shown. The doors 41 and 37 are connected together by means of a similar horizontal bar 43, placed at the opposite side of the furnace from where bar 42 is located and pivoted to the ends of said doors 41 and 37. The shaft 35, already spoken of above as reposing in the V-shaped rib 34, is journaled in bearings 44 44 at each end of the rib 34, and on one end of this shaft 35 is secured a two-armed rock-lever 45, one end of which connects by a link 46 with the bar 42, while to the other is pivoted a block 47, carried by the lower end of a vertical rod 48, suitably journaled on the front of the furnace and to the upper end of which is pivoted a lever 49, that is fulcrumed at 50 on the front wall of the furnace. The lever 49 is slotted and is engaged by the upright 51 and adapted to be locked by a pin passing through the upright and the lever. The outer end of lever 49 is provided with a drop-handle 52 for operating it. Said handle may be allowed to drop into its idle position, as indicated in Fig. 2, or it may be locked to the lever 49 in alinement therewith and used to vibrate the lever. The opposite end of shaft 35 to that which carries the rock-lever 45 is provided with an arm or rigid crank 53^a, which connects by a link 54^a with the bar 43. By the connections just described it will be evident that the manipulation of the lever-handle 52 will result in opening all the doors of the ash-pan for the purpose of discharging the ashes.

In the ash-pan I arrange a water-spraying device. The water-coil for the front half of the pan is depicted in Fig. 5. It consists of a rectangular frame 53, whose ends and sides are hollow and perforated, said frame having preferably one (or more) longitudinal rib 54, which is hollow and perforated like the rest of the frame 53. The spraying device is supported in the ash-pan at a suitable distance above the bottom discharge-doors before described. It is supplied with water by a pipe 55, running from a suitable source of supply, as the boiler, for instance. Inside of the pipe 55, as also inside of the water-coil, is a steam-pipe 56, through which steam is conducted to warm the surrounding water or to thaw it when frozen. I am not to be restricted, however, to any precise form or arrangement of the spraying device, its water-supply pipe, or its heating-pipe. The effect of spraying water upon the ashes within the ash-pan will be to thoroughly dampen them, and thus obviate the causing of conflagrations, and will also prevent dust from blowing through the machinery. Many other advantageous results might also be mentioned. The perforations in the water-coil are preferably bushed with copper or brass pipe or other bushing. I preferably connect the supply-pipe with the boiler and employ two valves, one being low in boiler for the purpose of using water alone and the other being high in boiler, so as to use steam.

It will be observed that I provide in my invention for a drop-grate which is under the fire-door. In this way the fire can be kept alive and bright up to the flue-sheet, and hence the flues will give better results. 27 indicates this drop-grate. It is supported on arms 28, hereinabove described. The removal of arms 28 allows grate 27 to drop into perpendicular position.

My invention will be seen to be of inestimable importance in the event of low water in the boiler or when from any other cause it becomes necessary to draw the fire. This may be done instantly without any injury to the boiler or furnace, for the fire can be dumped into the ash-pan, and there it can be readily dampened without any danger to any one operating the furnace.

What I claim is—

1. In a device of the character described, an ash-receiver having hinged doors at its front and rear, bars located beneath the ash-pans, said bars having upturned ends pivotally connected with the doors, a horizontal shaft journaled in one of the ash-pan frames, a rock-shaft secured on one end of said shaft and a crank on the other, links connecting said rock-shaft and crank with the door-operating bars, and a lever journaled in the front of the furnace for rotating the horizontal shaft.

2. In a device of the character described, a duplex ash-receiver having an intervening arch, ash-receiving frames at the front and rear of said arch, an inverted-V-shaped arch formed in the front frame, a shaft journaled in the same, a rock-shaft secured to one end of said shaft and a crank to the other, doors

hinged to the front and rear frames, horizontal bars extending below said doors, said bars having angular upturned ends pivotally connected with the same, links connecting the crank and rock-shaft with the horizontal bars, and a lever for rotating the shaft in the front frame to operate the doors.

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

JOHN W. RUMPF.

Witnesses:
HUSTON T. ROBINS,
ALICE M. THOMAS.