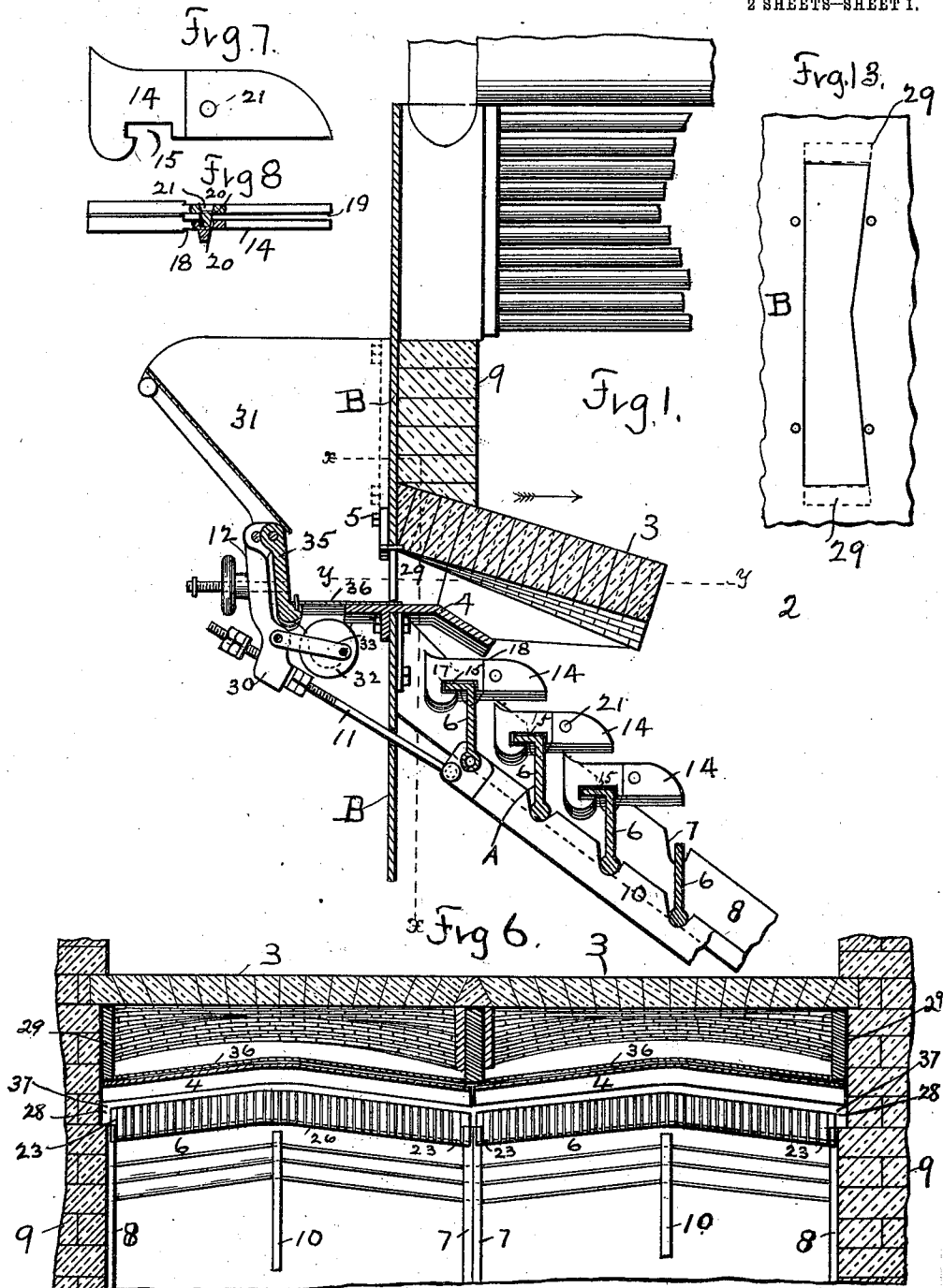


P. L. CROWE.
FURNACE STOKER.
APPLICATION FILED JAN. 23, 1909.

1,000,587.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 1.



Witnesses:
G. Barrett
James Gordon

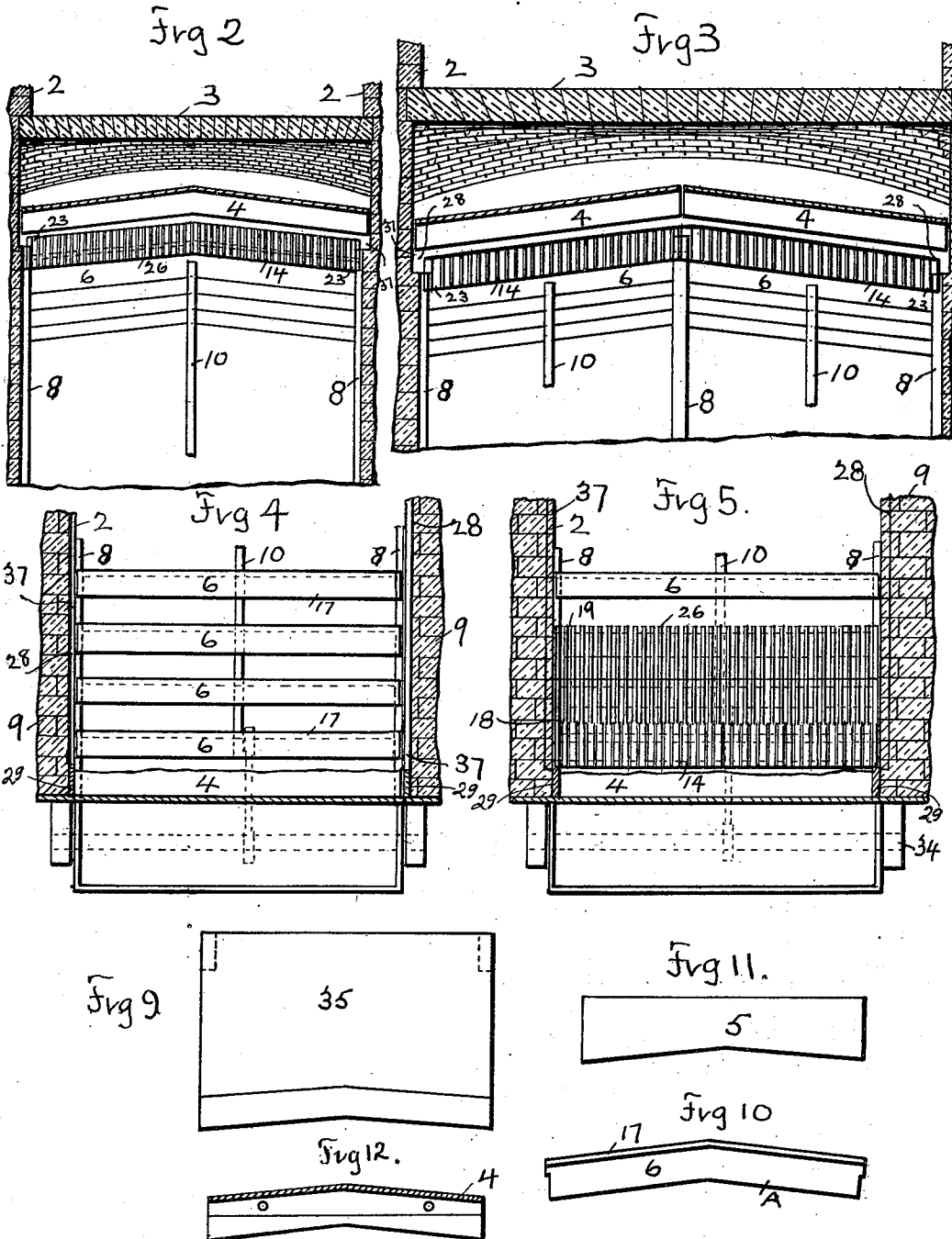
Inventor
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UNITED STATES PATENT OFFICE.

PAUL L. CROWE, OF JERSEY CITY, NEW JERSEY.

FURNACE-STOKER.

1,000,587.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed January 23, 1909. Serial No. 473,894.

To all whom it may concern:

Be it known that I, PAUL L. CROWE, citizen of the United States, and resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Furnace-Stokers, of which the following is a specification.

My invention relates to furnace stokers, and the object is to provide stokers of this class with certain new and useful means which will increase the combustion of fuel and smokelessness, raise the fuel surfaces in their central portions and augment the efficiency of the furnace.

Referring to the drawing: Figure 1 is a sectional elevation of a part of a furnace stoker showing my improvements applied thereto. Fig. 2 is a sectional elevation on line $x-x$ Fig. 1, showing my improvements applied to a single arch looking in direction of arrow. Fig. 3 is another sectional elevation showing my improvements applied to a single arch of larger radius. Fig. 4 is a plan sectional view on line $y-y$, Fig. 2, showing only the top of the angle grate supports and the offsets in the side walls. Fig. 5 is another plan sectional view showing in addition the top of the grate sections. Fig. 6 is another cross sectional elevation showing my improvements applied to a furnace stoker having a double arch. Fig. 7 is a detached side view of one of the grate sections. Fig. 8 is a plan view of the grate sections partly in section. Fig. 9 is an inside view of the pusher plate, detached. Fig. 10, is a front view of one of the grate bars detached. Fig. 11 is a detached front view of the fuel regulating plate. Fig. 12 is a cross sectional view of the delivery plate detached. Fig. 13 is a view of a part of the furnace front showing fuel port and clinker blocks in dotted lines.

2 is the furnace, 3 the arch. This arch is preferably made with a straight or flat front portion and is made more crown shaped toward the rear portion. The arch is mounted within the furnace preferably at an incline toward the center of the combustion chamber. Below this arch at the front part of the furnace is located the distributing plate 4; said plate is formed as shown in Figs. 2 and 12, higher at the center than at the ends. Above this distributing plate 4 is positioned the fuel regulating plate 5 with a concave surface. These coacting plates

form a sufficient opening for the passage of the fuel required. Below the distributing plate 4 are pivotally mounted the rocking grate bars 6, each having its central portion higher than the ends (see Fig. 10). These grate bars rest at their outer ends in the sockets 7 formed in the supporting plates 8 which are fastened on the inside of the front plate B of the furnace. 10 is the operating bar, suitably supported and provided with a plurality of rests for the stems A of the grate bars to oscillate in. The upper end of this bar is pivotally connected to the stem A of the first of the series of grate bars, and also pivotally connected to the rod 11 of the operating mechanism 12 to be hereinafter described.

Upon the rocking grate bars are mounted the grate sections 14, each of which is provided with a shouldered groove 15 which permits the sections to be slid upon the flange 17 of the supports. The groove 15 is further extended inward where it is offset to shoulder against the downward projection of the supporting flange. When the sections are positioned they are first set over the flange, and drawn forward until they drop into their normal position as seen in Fig. 1. The sections are also provided with an offset 18, on each side, which is so arranged that when the sections are laid side by side spaces 19 will be formed between the outer ends of the sections serving as air passages (see Figs. 5-8).

The groove 15 may be of any suitable form so as to cooperate with any shape that may be given the supporting bar 6. The grate sections are also provided with projections 20 formed on one side and a recess 21 formed on the other side. When the grate sections are united the projections will enter the recesses (see Figs. 7-8), thereby keeping the sections in a uniform position. When all the sections are positioned together on the angle supports they will form a single grate bar 26. The outer ends 23 of the sections of the bars project above the supporting plate 8, thereby forming along with the offsets on the side walls 37 pockets 28.

The object of arranging the grate bars higher in the central portion than at their ends is to thicken the layers of fuel at the outer ends of the bars for the reason that the radiation of the side walls is greater when contiguous thereto which tends to consume the fuel more rapidly.

At the ends of fuel port between the distributing plate 4 and the regulating plate 5, are located the clinker blocks 29 made of metal and positioned back of the front plate B in the offsets 37 of the side walls 9 (see Fig. 13) and set above and upon the said distributing plate.

Fig. 2 shows a single arch and a view of a single set of bars.

Fig. 3 shows a single arch, and two sets of grate bars with but little curve meeting each other in the central portion of the furnace in a raised condition for complying with the requirements of a wide furnace having a single arch.

Fig. 6 shows how the longitudinal beveled grate bars are arranged in a duplex furnace having duplex arches. There may be any number of grate supports 6 placed in a furnace as shown.

The connecting rod 11 is pivotally connected to the rocking arm 30 which is pivoted to the hopper 31. This rocking arm is connected to an eccentric 32 by the rod or arm 33, said eccentric mounted on the driving shaft 34, which is suitably mounted and operated. As the rocking arm 30 vibrates it will move the pusher plate 35, and the delivery plate 36, which is connected to said pusher. The lower portion of said pusher is longitudinally beveled or curved, and the distributing plate 4 is also longitudinally beveled (see Fig. 6).

The grate sections 14 of the bars 6 are easily removed and replaced at any point between the walls of the furnace. The parts can be made of cast iron, but wrought iron is preferable.

The walls 9 of the furnace are at the ends of the grate surfaces. 37 are the offsets. These offsets are preferably below the grate surfaces. In conjunction with the grate sections these offsets present pockets 28 which will fill with the ashes and refuse and prevent clinkers forming on the side walls, and keep the heat from the supporting plates. This construction of the side walls in practice is adapted to the conditions of smoke prevention and tends to insure the life of the walls.

What I claim is:

1. In a stoker mechanism a furnace similarly positioned, inclined supporting plates mounted at opposite sides of and within said furnace, rocking grate bars transversely arranged with respect to and mounted on said inclined supporting plates, each of said rocking bars having its upper supporting portion inclined toward its ends from a point intermediate its ends and grate sections mounted on said grate bars.

2. In a stoker mechanism, a furnace, similarly positioned inclined supporting plates with socket rests mounted at opposite sides of and within said furnace, rocking grate bars having flanges, and transversely arranged with respect to and mounted on said inclined supporting plates within the socket rests thereof, each of said rocking bars having its upper supporting portion inclined toward its ends from a point intermediate the latter, and grate sections having shouldered grooves, and mounted on said grate bars, the flanges thereof resting in the grooves of said grate sections, an operating bar located beneath said grate bars, one of said grate bars pivoted to said operating bar, the others loosely resting upon said bar and means for actuating the operating bar.

3. In a stoker mechanism, the combination of a furnace, the side walls of said furnace being provided with ash receiving pockets, of a stoker grate mounted in said furnace, said grate comprising transversely arranged rocking bars, the fuel-supporting surfaces of said bars being inclined toward the ends, from a point intermediate the ends, and means for rocking said bars whereby ashes are moved outwardly along the fuel-supporting surfaces of said grate bars into the ash receiving pockets formed in the side walls of the said furnace.

Signed at Jersey City, in the county of Hudson and State of New Jersey, this 20th day of January A. D. 1909.

PAUL L. CROWE.

Witnesses:

F. BARRITT,
M. F. CARROLL.