No. 793,665. PATENTED JULY 4, 1905.

E. LANE.

FURNACE.

APPLICATION FILED JULY 5, 1904.

Fig. 1.

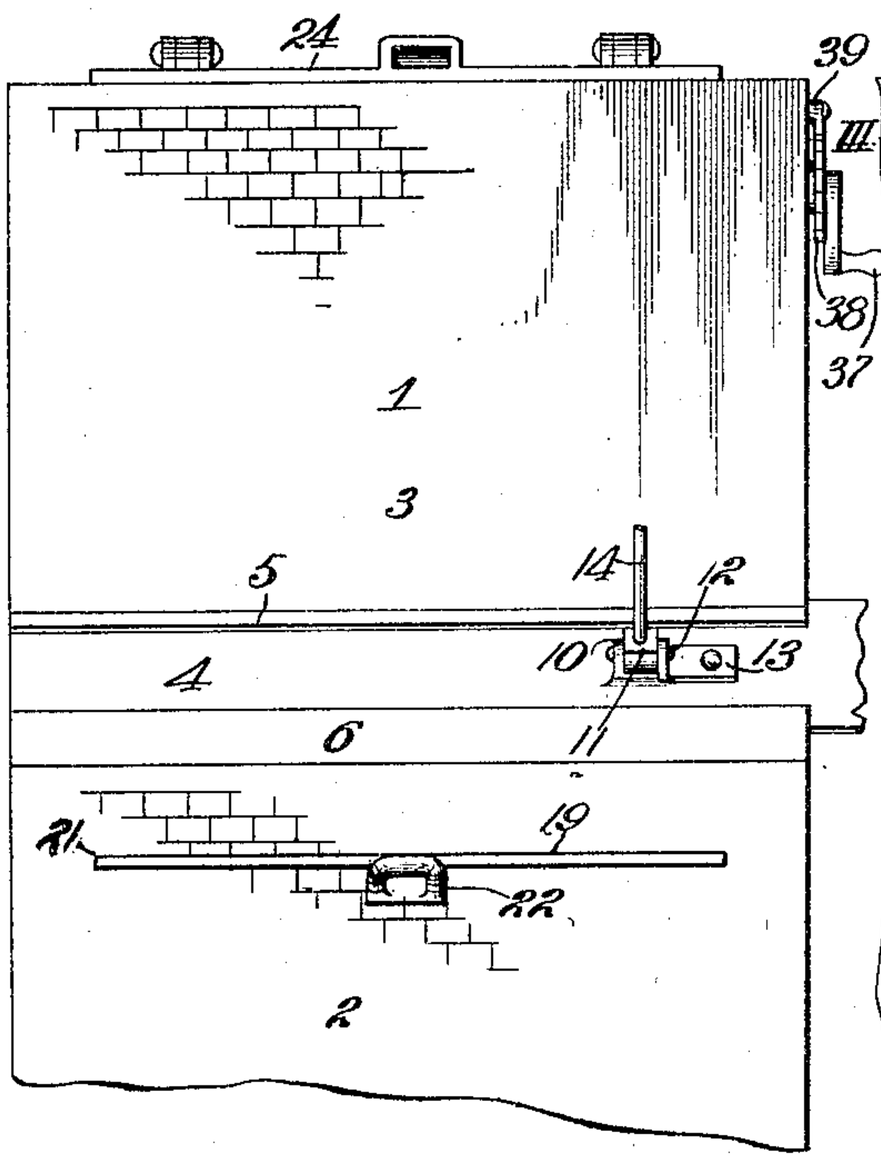


Fig. 2.

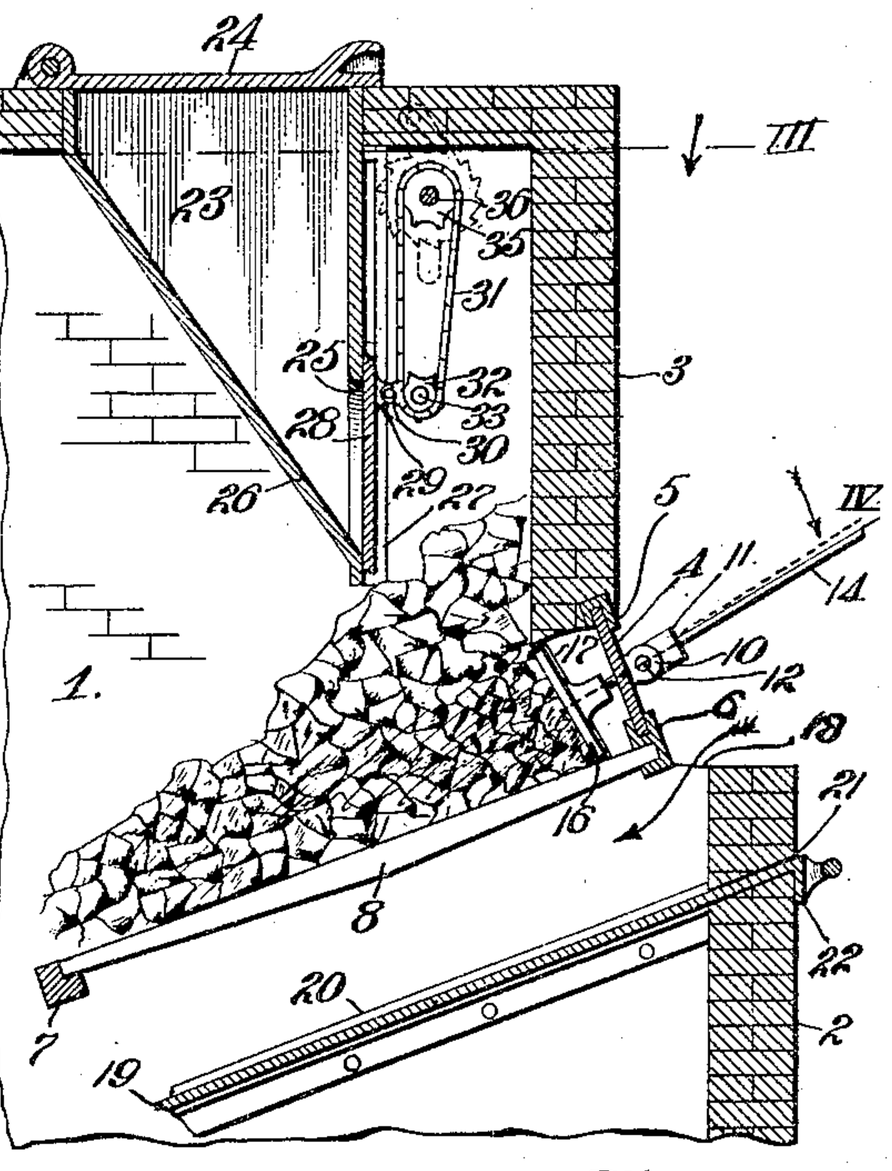


Fig. 3

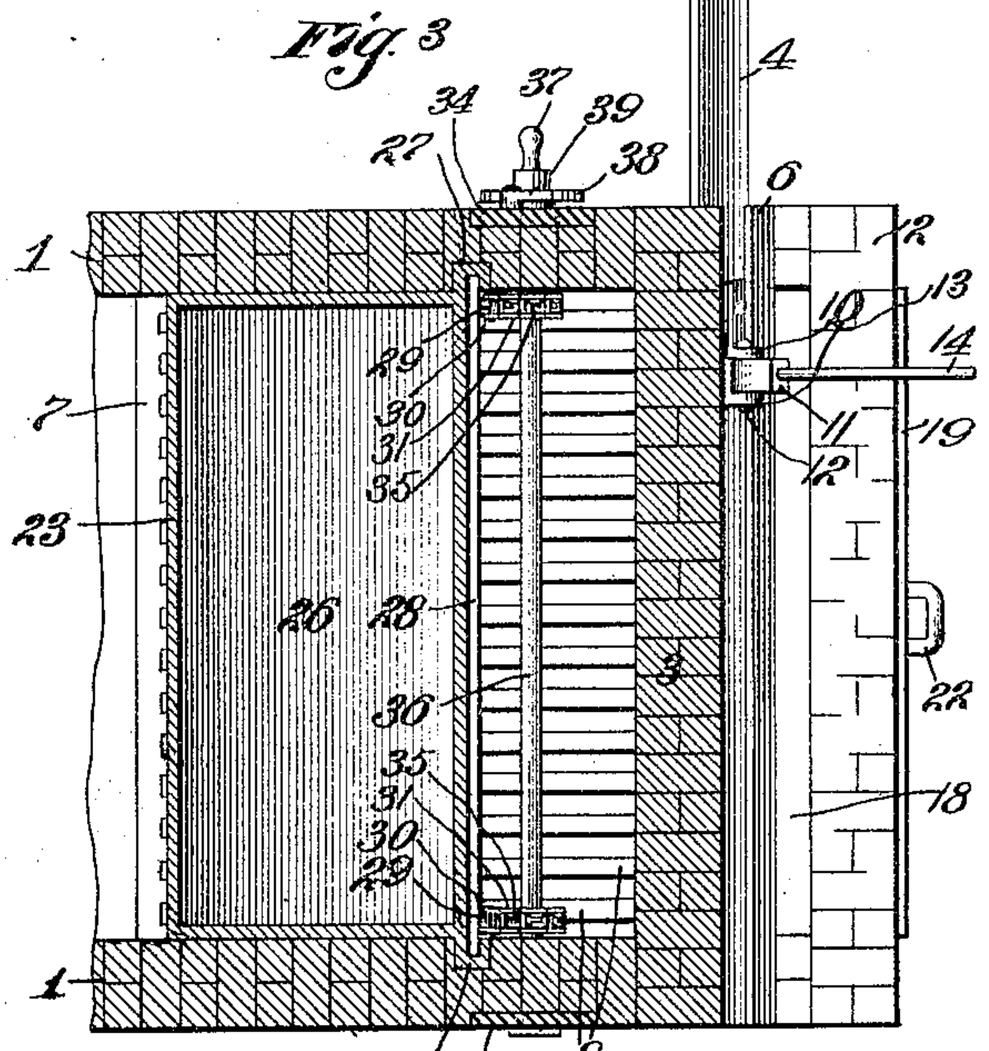
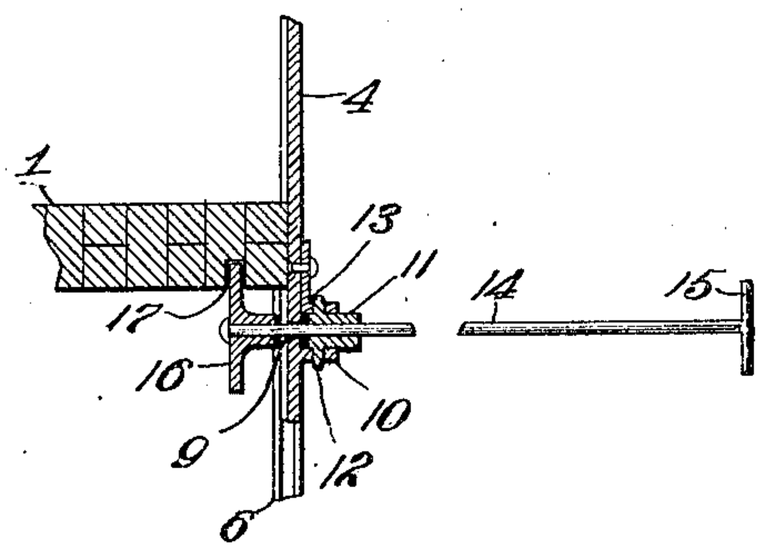


Fig. 4



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UNITED STATES PATENT OFFICE.

EDWARD LANE, OF KANSAS CITY, MISSOURI.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 793,665, dated July 4, 1905.

Application filed July 5, 1904. Serial No. 215,228.

To all whom it may concern:

Be it known that I, EDWARD LANE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to furnaces, and more especially to the fuel-feeding features thereof; and my object is to produce means for easily and conveniently forcing the fuel to that portion of the combustion-chamber where the fire is hottest and for initially depositing the fuel upon the grate and against the front wall of the furnace, so as to render the latter substantially air-tight above the grate where the fuel pushing or dislodging mechanism is located.

With this general object in view the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 represents a front view of the furnace. Fig. 2 is a central vertical section of the same. Fig. 3 is a horizontal section on the line III III, Fig. 2. Fig. 4 is a section taken on the dotted line IV of Fig. 2 with the push-rod and slide-plate broken away and but a part of one side wall appearing.

In the said drawings, 1 designates a furnace having its front wall composed of the lower portion 2 and the upper portion 3, the latter being set back farther than the former, so as to provide an opening between them, and bridging a portion of said opening is a slide-plate 4, having its upper edge fitting in a grooved bar 5, set in the lower edge of wall portion 3, and its lower edge fitting in a grooved bar 6, suitably secured to the side walls of the furnace rearward of the wall portion 2. Rearward and preferably below the plane of bar 6 is a cross-bar 7 within the furnace, which bar, in conjunction with bar 6, provides a support for the grate-bars 8 of any suitable or preferred type and arrangement.

9 designates an opening in the slide-plate at about its middle, and 10 a perforated lug projecting from the front face of said plate at one side of said opening, said perforated lug forming a journal for one of the trunnions 12 of a sleeve 11, the opposite trunnion of said sleeve being journaled in the perforated angle-lug 13, bolted, as shown, or otherwise secured to the slide-plate.

14 designates a push-rod extending slidingly through sleeve 11 and loosely through hole 9 of the plate 4, so as to be capable of longitudinal and vertical movement through said hole, the front end of the said rod being provided with a handle 15 and its rear end with a head or plate 16, which at times may fit in the recess 17 of either side wall, these recesses providing means to hold the push-bar against accidental movement.

18 designates an air-inlet passage between the wall portion 2 and bar 6, said passage communicating with the space below grate 8, the lower side of said space being formed by a slide-plate 19, mounted in suitable guide-bars 20, secured to the side walls of the furnace. Said plate extends through a slot 21 in wall portion 2 and has a handle portion at its front end by which it can be pushed into or withdrawn from the furnace. Said handle portion is of such proportion, as shown in Fig. 1, that it strikes the front wall of the furnace to limit the inward movement of said slide-plate.

23 designates a fuel-magazine depending vertically into the combustion-chamber through the top of the furnace, and 24 is a hinged cover therefor. The front wall of this magazine is vertical and terminates, as at 25, short of the lower ends of the side walls and of the back wall 26, which slopes downwardly and forwardly to the lower extremity of the side walls in order that the fuel may pass from the magazine through the opening formed below its front wall onto the grate contiguous to its front end, and therefore pile up against the front wall of the furnace and in the path of the push-bar, so as to cut off the entrance of air into the furnace above and at the front end of the grate. The magazine is formed with vertically-grooved offsetting portions 27, and fitting slidingly in said

grooves is a slide plate or door 28 for controlling the passage of fuel through the discharge-opening of the magazine. Projecting from the front side of said door are lugs 29, pivotally connected to ears 30 of endless sprocket-chains 31, engaging at their lower ends the sprocket-wheels 32, journaled on stub-shafts 33, projecting inwardly through the side walls of the furnace from plates 34, secured externally thereto. The upper portions of said chains engage sprocket-wheels 35, rigidly mounted on a transverse shaft 36, extending through the side walls of the furnace and journaled in plates 34. For the purpose of turning said shaft, and thereby raising or lowering door 28, through the instrumentality of said chains, the shaft is provided with a crank-handle 37, and to prevent accidental gravitative movement of the door, the shaft 36 is provided with a ratchet-wheel 38, engaged by a gravity-pawl 39, pivoted to the contiguous plate 34.

Assuming that the magazine is charged with fuel deposited therein through its upper end and that it is desired to discharge such fuel or a portion thereof on the grate, the person in charge grasps the crank-handle and operates the same to raise door 28, holding the pawl out of engagement with the ratchet-wheel when such rotative action is reversed, for the purpose of closing the door, this action being made easier because of the gravitative tendency of the latter. With the fuel thus discharged upon the grate it will be seen that the passage of air to the combustion-chamber through or around plate 4 is prevented and that such fuel or a portion thereof may be forced downward on the grate to the point where the fuel is incandescent by grasping handle 15 of the push-bar and pushing the same rearwardly, it being understood, of course, that the slide-plate, through the medium of the push-bar, must first be slid endwise a sufficient distance to withdraw head 16 from the engaged recess 17. It will also be noted in this connection that the length of slide-plate 4 exceeds the width of the furnace, so that the disposition of the push-bar contiguous to a side wall shall not leave the opening between the grooved bars 5 and 6 unobstructed. It will thus be seen that the provision of a slide-plate adjustable transversely of the furnace and covering an opening in the front wall thereof and equipped with a push or stoking rod which is movable longitudinally of the furnace enables the operator, by sliding said plate as described, to apply pressure through the instrumentality of said rod on the mass of fuel at any point within the outline of said opening, and this result is attained without uncovering the opening, because the length of the plate is substantially double the width of the furnace.

From the above description it will be apparent that I have produced a furnace embodying the features of advantage enumerated as desirable in the statement of the object of the invention and that, while I have illustrated and described its preferred embodiment, it is susceptible of modification in various particulars without departing from the principle of construction involved.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A furnace having a transverse opening in its front wall above the grate, a plate closing said opening and of length exceeding the width of the furnace and arranged to slide transversely thereof, and a push-rod movable with the slide-plate and movable longitudinally of the furnace.

2. A furnace having an opening in its front wall above the grate, a plate closing said opening and of length exceeding the width of the furnace and arranged to slide transversely thereof, and a push-rod extending through the plate and pivoted for movement in a vertical plane and movable longitudinally of the furnace.

3. A furnace having a transverse opening in its front wall above the grate, a plate closing said opening and of length exceeding the width of the furnace and arranged to slide transversely thereof, a sleeve pivoted to said plate for movement in a vertical plane, and a push-rod extending through said sleeve and plate and movable longitudinally of the furnace.

4. A furnace, having its front wall provided with an opening above the plane of the grate; a plate closing said opening and in length exceeding the width of the furnace and arranged to slide transversely thereof, and provided with a hole or opening; lugs projecting from said plate at opposite sides of the hole or opening therein, a sleeve pivoted to said lugs for movement in a vertical plane; and a push-rod extending through said sleeve and the hole or opening of said plate, and movable longitudinally of the furnace, and provided at its inner end with a head.

5. A furnace, having an opening in its front wall, a plate closing said opening, a push-rod extending slidingly through said plate and movable longitudinally of the furnace above the grate, in combination with a magazine above the grate, comprising substantially vertical front and side walls and an inclined rear wall, the front wall being spaced apart from the corresponding furnace-wall, and terminating at its lower end above the corresponding ends of the side walls; the rear wall of the magazine sloping downward and forward to the lower ends of the side walls to discharge the fuel upon the grate and against the front wall of the furnace; said magazine also having grooved portions extending parallel with and at the front side of its front wall, a slid-

ing door fitting in said grooved portions and controlling the discharge of fuel from the magazine, means located mainly in the space between the front walls of the furnace and magazine, for vertically adjusting said door, and means for securing it at the desired point of adjustment.

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

EDWARD LANE.

Witnesses:
ANNA M. STRAIGHT,
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