No. 745,247. PATENTED NOV. 24, 1903.

N. E. SHONTZ.

AUTOMATIC STOKER.

APPLICATION FILED APR. 24, 1903.

NO MODEL.

Fig. 1.

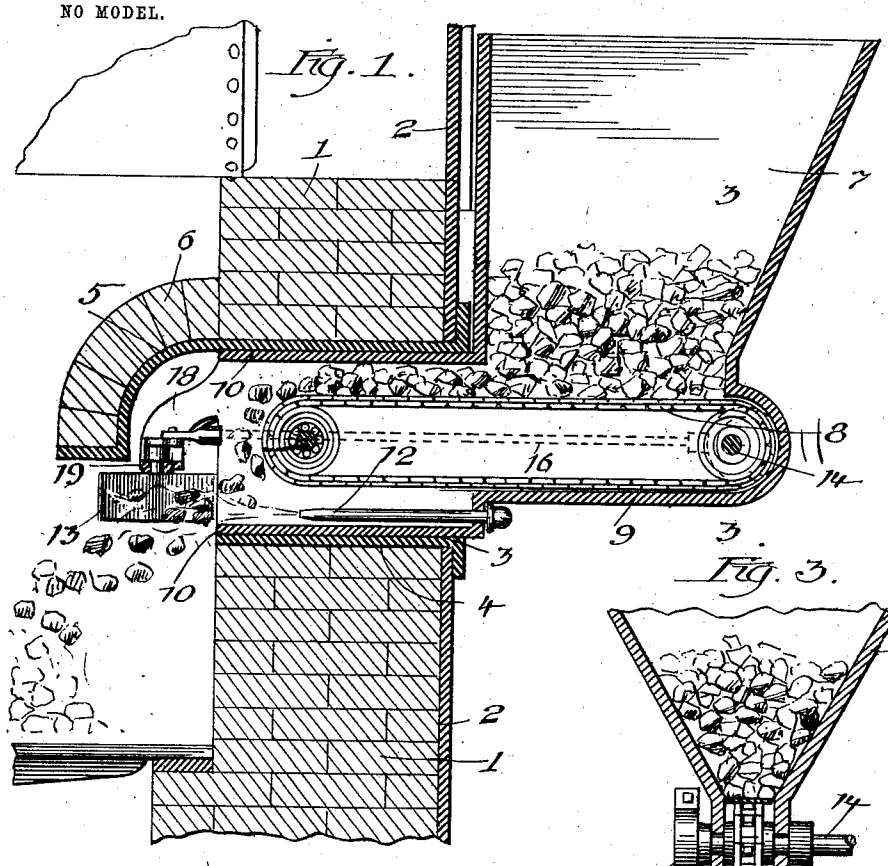
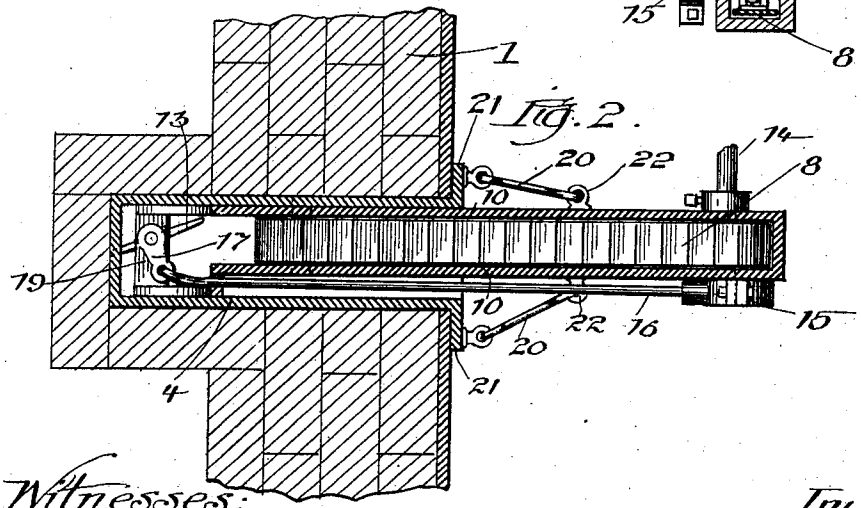


Fig. 3.

Fig. 2.



Witnesses:

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Fred G. Fischer

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 745,247. Patented November 24, 1903.

UNITED STATES PATENT OFFICE.

NERI E. SHONTZ, OF CHICAGO, ILLINOIS.

AUTOMATIC STOKER.

SPECIFICATION forming part of Letters Patent No. 745,247, dated November 24, 1903.

Application filed April 24, 1903. Serial No. 154,131. (No model.)

To all whom it may concern:

Be it known that I, NERI E. SHONTZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Automatic Stokers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is designed to be an improvement in automatic stokers for feeding fuel into furnaces.

It consists in the features of construction which are set out in the claims.

In the drawings, Figure 1 is a vertical fore-and-aft section through a portion of a furnace with my stoker attached thereto. Fig. 2 is a section of the same at the line 2 2 on Fig. 1. Fig. 3 is a section at the line 3 3 on Fig. 1.

My improved stoker is designed to be mounted detachably on the boiler-front, which is represented by the brick wall 1, having a metal facing 2, and through which there is formed an aperture leading into the fire-box. The lining 4 of this aperture is extended inwardly, forming a hood 5, overhanging the fire, opening downwardly, which hood is protected from the fire by a brick covering 6. The stoker proper comprises a hopper 7 for the fuel, which discharges downwardly upon an endless conveyer 8, which runs in a suitable case 9, formed continuously with the hopper and which is extended forwardly therefrom in a rectangular sleeve 10, fitting within the lining 4 of the aperture formed through the furnace-front, as described. The endless conveyer 8 extends from under the hopper forwardly within the sleeve 10 nearly to the inner surface of the furnace-front, the upper ply of said conveyer being distant from the lower wall of the sleeve far enough to permit the conveyer to carry an adequate quantity of fuel from the hopper toward the furnace, such fuel being delivered by gravity downward around the inner end of the conveyer. Into the outer or rear end of the sleeve 10, at a point at which said sleeve jogs downward from the bottom of the case 9 of the conveyer, there is protruded into the sleeve a steam pipe or nozzle 12, which terminates for discharge a little back of the point at which the fuel falls over the delivery end of the conveyer, so that said fuel there encounters a jet of steam delivered from the nozzle forward toward the furnace and is impelled thereby onward into the furnace, so that it is delivered upon the fire therein.

In order to spread the fuel evenly over the fire, I provide a deflector 13, which is vertically pivoted under the hood 5 inward from the point at which the fuel is encountered by the steam-jet, and said deflector is adapted to be oscillated about its vertical pivot, so that it may deflect the fuel more or less in either direction from a direct line forward from the conveyer. Preferably the pivot of this deflector is in a vertical plane bisecting the width of the conveyer, so that its oscillation through a few degrees will cause it to extend either obliquely from the right-hand side of the conveyer across the stream of fuel being discharged to the left-hand side or from the left-hand side obliquely across said stream to the right-hand side. The fuel impelled by the steam-jet striking the obliquely-situated deflector is deflected at an angle to the latter, causing it to be dispersed widely toward the side toward which the deflector trends onward from the conveyer. The conveyer is designed to be kept in constant action by a shaft 14, operating its driving sprocket-wheel, at the rear or outer end, and on this shaft there is an eccentric 15, which is connected by a rod 16 to a lever-arm 17 of the deflector, so that for each revolution of the shaft the deflector is oscillated back and forth between the two limits of position above described. The deflector is most conveniently provided with a support by extending from the side walls of the case 9 at the inner end lugs 18 18, on which is supported the plate 19, in which the stem or shaft of the deflector is journaled. The case 9 is enough narrower than the sleeve which forms the lining 4 for the aperture in the furnace-front to allow room for the rod 16 to extend in alongside the case to reach the lever-arm 17 of the deflector, as shown in Fig. 2.

For securing the entire device fixedly in position on the boiler-front hooks 20 20 may be employed, mounted on the flanges 21 of the lining-sleeve 4 and engaging eyes 22 on the opposite sides of the case 9, (see Fig. 2,) the hopper serving as a stop. (See Fig. 1.) The

shaft 14 may be rotated at any distance from the hopper by any convenient means, as by a chain over a sprocket-wheel 23. (See Fig. 3.)

I claim—

1. An automatic stoker comprising a conveyer for carrying the fuel positively to a point for delivery onto the fire; a steam pipe or nozzle terminating under and a little back of the discharge-point of such conveyer; a laterally-oscillating deflector mounted ahead of said delivery-point, and means for continuously operating the conveyer and the oscillating deflector to distribute the fuel laterally over the fire as it is brought to the discharge-point by the conveyer.

2. An automatic stoker comprising an endless conveyer; a case in which it operates, adapted to be extended through the furnace-front and open at the forward end; means for delivering fuel onto the conveyer and for operating the conveyer; a steam pipe or nozzle discharging forwardly under the conveyer; a deflector vertically pivoted in the path of the steam-jet; and means for continuously operating the conveyer and oscillating the deflector laterally.

3. In combination with a furnace having an aperture through the front leading into the fire-box, a sleeve forming a lining for such aperture and extending through the front, terminating in a hood overhanging the fire-bed; a fuel-feeding device comprising a hopper; a case into which the hopper discharges, extended forwardly from the hopper in the form of a sleeve adapted to telescope within the sleeve which lines the furnace-front aperture; an endless conveyer operating in said case in position to receive the discharge from the hopper and terminating for delivery of the fuel back of the hood; a steam-jet extending under the conveyer in the forwardly-extended sleeve of said case, and discharging back of the point of delivery of the fuel from the conveyer; a deflector mounted on the sleeve forwardly of said point of delivery, and means for oscillating the deflector about a vertical axis.

4. In combination with a furnace having an aperture leading into the fire-box, a fuel-feeding device comprising a hopper; a case into which the hopper discharges at the bottom; a sleeve extending forwardly therefrom and adapted to telescope within the aperture at the furnace-wall, and open at the inner end; an endless conveyer operating in the case under the hopper and extending into said sleeve; a shaft for operating the conveyer; a deflector pivotally supported for horizontal oscillation on the inner end of the sleeve beyond the delivery-conveyer; an eccentric on said shaft, and connections from the eccentric to the deflector for oscillating the latter horizontally as the shaft rotates.

5. An automatic stoker comprising a conveyer for continuously carrying the fuel positively to a point of discharge over the fire; a hopper which discharges onto such conveyer; a case in which the conveyer is mounted; a sleeve in the furnace-front in which the case telescopes; a steam pipe or nozzle mounted in such case and projecting under the conveyer, terminating back of the delivery end thereof; an oscillating deflector for distributing the fuel laterally also mounted on the case, the hopper having its forward side in position to stop the telescoping movement of the case into the sleeve, and hooks for connecting the sleeve to such case to prevent withdrawal.

6. An automatic stoker comprising an endless conveyer leading from outside the furnace-cavity and terminating within said cavity; means for delivering hard fuel onto such conveyer outside the furnace-cavity; a hood having a mouth opening in the furnace-cavity beyond the delivery end of the endless conveyer and in position to receive the fuel discharged by gravity from the latter; a steam-jet discharging into said mouth back of the fuel-discharge, and a deflector pivoted vertically in the mouth forward of the fuel-discharge, and extending both back and forward from its pivot, and adapted to oscillate horizontally thereabout; means for operating the conveyer, and means connected therewith for oscillating the deflector.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 17th day of April, A. D. 1903.

NERI E. SHONTZ.

In presence of—
FRED. G. FISCHER,
J. S. ABBOTT.