

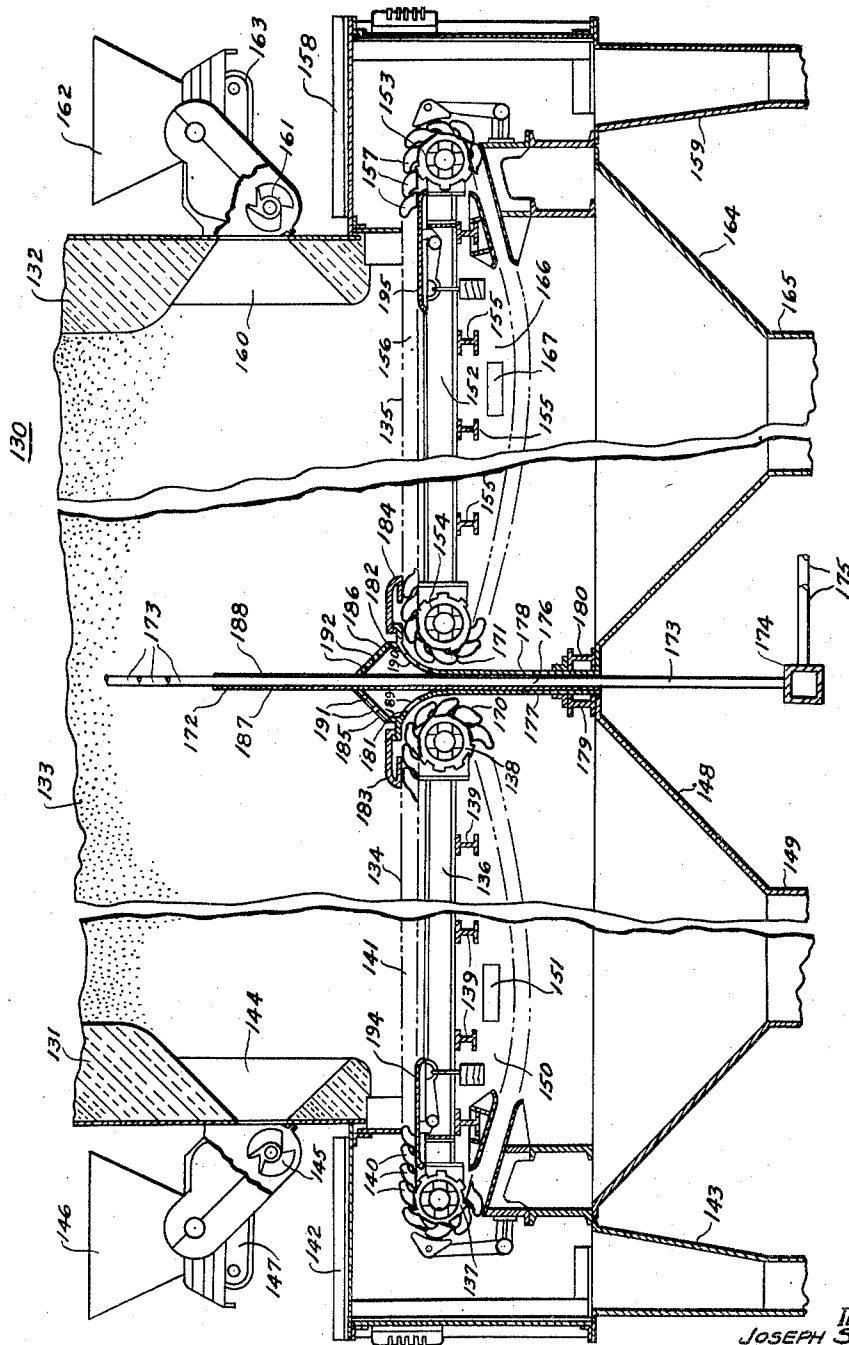
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STOKER

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STOKER

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This invention relates to stokers, and more particularly to stokers for use in the larger furnace installations.

One object of the present invention is to provide generally improved stokers, which are simple in construction and which assure maximum efficiencies.

Another object is to provide in a furnace a pair of stokers arranged in end to end relation, the adjacent ends thereof being disposed in spaced relation within the furnace with the outer ends terminating in enclosures mounted exteriorly of the furnace, and means for discharging the ashes from said enclosures to a place of disposal.

A still further object is to provide in a furnace a pair of stokers arranged in end to end relation, and a wall disposed between the adjacent ends of said stokers.

A still further object is to provide in a furnace a pair of traveling grate stokers arranged in end to end relation, and a wall consisting of a series of fluid conducting tubes disposed between the adjacent ends of said stokers.

Other and further objects will become apparent as the description of the invention progresses.

Of the drawing

The single figure is a sectional elevational view taken through a furnace showing a preferred arrangement of the stokers comprising the present invention.

Referring to the drawing the numeral 130 designates generally a furnace comprising front and rear walls 131 and 132, respectively, and side walls 133, only one of the latter of which being shown. The bottom of the furnace has provided therein a pair of stokers 134 and 135.

Inasmuch as the specific details of construction of stokers 134 and 135 form no part of the present invention, only so much of the structure thereof as is necessary to an understanding of the invention will be given herein. For a complete description of stokers of this type, reference may be had to the pending application of June E. Beck and Ernst L. Midgette, Serial No. 644,580, filed January 31, 1946, for improvements in stokers.

Stoker 134 comprises a supporting framework 136, having sprocket wheels 137 and 138 rotatably mounted at the opposite ends thereof. The framework 136 is supported upon transverse I-beams 139, which in turn are supported at the opposite ends thereof in side walls 133 of the furnace. A series of transverse grate members 140 disposed in overlapping relation constitute

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the grate 141 of the stoker. The grate members 140 are pivotally attached to chains (not shown), which in turn are trained over the sprocket wheels 137 and 138. Sprocket wheel 137 is connected to any suitable operating mechanism which functions to actuate the latter in such a manner as to cause the upper run of the grate 141 to travel from right to left as viewed in the figure of the accompanying drawing. The front end of the stoker 134 extends into an enclosure 142, mounted exteriorly of front wall 131. An ash pocket 143 is disposed beneath enclosure 142 and receives the ashes which are dumped over the left hand end of stoker 134.

Fuel is fed to stoker 134 through an opening 144 provided in front wall 131 by a feeding and distributing rotor 145. Fuel from a hopper 146 is conveyed to rotor 145 by conveyor 147. The siftings passing between the grates 140 of stoker 134 gravitate into a hopper 148, which in turn is connected to a spout 149 which conducts them to a place of disposal.

Air for combustion enters the chamber 150 disposed beneath stoker 134 through an opening 151, the air being supplied under pressure by any suitable fan or blower mechanism (not shown).

Stoker 135 is similar in construction to stoker 134 and also comprises a supporting framework 152, having sprocket wheels 153 and 154 rotatably mounted at the opposite ends thereof. Framework 152 is supported upon a series of transverse I-beams 155, which in turn are supported at their opposite ends in side walls 133 of the furnace.

The grate 156 of stoker 135 is comprised of a series of transverse grate bars 157 disposed in overlapping relation. Grate bars 157 are pivotally attached to chains (not shown), which in turn are trained over sprocket wheels 153 and 154. Sprocket wheel 154 is actuated by any suitable power mechanism (not shown), the operation thereof being such as to cause the upper run of grate 156 to travel from left to right of the furnace as viewed in the figure of the accompanying drawing. The right hand end of stoker 135 as viewed in said figure, extends into an enclosure 158 mounted exteriorly of rear wall 132. A hopper 159 is disposed beneath extension 158 and receives the ashes discharging over the right hand end of stoker 135.

Fuel is fed to stoker 135 through an opening 160 provided in rear wall 132 by a feeding and distributing rotor 161. Fuel from a hopper 162 is conducted to the rotor 161 by a conveyor 163. Siftings passing between the grates 157 of stoker

135 gravitate into a hopper 164 disposed beneath stoker 135, which in turn is connected to a spout 165 which conducts them to a place of disposal.

Air for combustion is introduced into a chamber 166 disposed beneath stoker 135 through an opening 167 provided in the side wall 133 of the furnace, the air being supplied thereto under pressure by any suitable fan or blower mechanism (not shown).

The inner ends 170 and 171 of stokers 134 and 135, respectively, are spaced slightly apart. A central wall 172 extends vertically between the inner ends 170 and 171 of stokers 134 and 135, respectively. Wall 172 extends transversely between the side walls 133 of the furnace and comprises a series of vertically disposed fluid conducting tubes 173. The lower ends of tubes 173 are connected to a transverse header 174, which in turn is connected to a boiler (not shown) by downtake connections 175. The intermediate portions 176 of the tubes 173 extend between the end walls 177 and 178 of the chambers 150 and 166, respectively, which chambers are disposed beneath the stokers 134 and 135, respectively. The end walls 177 and 178 are supported upon and secured to transverse beams 179 and 180, and the upper ends thereof are curved as shown at 181 and 182, so as to extend around a portion of the inner ends 170 and 171 of the stokers 134 and 135, respectively. The curved portions 181 and 182 have removably attached to the upper ends thereof sealing plates 183 and 184, which engage the upper ends of the grate bars 140 and 157 of stokers 134 and 135, as they pass over the inwardly disposed sprocket wheels 138 and 154, respectively. Curved portions 181 and 182 have extending inwardly and upwardly from the upper ends thereof extensions 185 and 186, the upper ends of which respectively engage the protective blocks 187 and 188 provided at the opposite sides of tubes 173. Curved portions 181 and 182 are provided with air openings 189 and 190 through which air from the chambers 150 and 166 disposed beneath the stokers may enter the chambers defined by the said curved portions 181 and 182 and the upwardly inclined extensions 185 and 186. The air entering said chambers is discharged therefrom through openings 191 and 192 provided in inclined extensions 185 and 186, respectively. The air thus not only cools the inclined extensions 185 and 186 but enters the combustion chamber of the furnace as secondary air to effect burning of the fuel and gas contained therein. The upper ends of the tubes 173 may be connected to the boiler (not shown).

Sealing plates 194 and 195 are provided near the front ends of stokers 134 and 135, respectively, whereby the flow of combustion air is confined between the grate members disposed between the inner ends of sealing plates 183, 194 and 184, 195, respectively.

From the foregoing description it is seen that the construction shown in the drawing is especially adapted for large furnace installations, a wall comprising fluid conducting tubes being disposed between the stokers. Inasmuch as the fluid cooled wall 172 is connected to the boiler, the presence thereof in the furnace adds to the capacity of the boiler and also causes a more complete absorption of the heat generated in the furnace. The construction is also of a simplified nature and is capable of operating at the highest efficiencies.

While the embodiment herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to limit the invention thereto, since it may be embodied in other forms, all coming within the scope of the claims which follow.

What is claimed is:

1. In a device of the class described, the combination of a furnace comprising front, rear and side walls, a traveling grate stoker extending into said furnace from said front wall, a second stoker extending into said furnace from said rear wall, an air chamber beneath each of the stokers, said chambers having inner confronting, relatively spaced walls, a series of upright fluid conducting tubes extending upwardly between the said confronting walls of the air chambers and forming elements of a wall structure between and in close proximity to the inner ends of the stokers, and a fluid supply header connected to the ends of said tubes.

2. A device according to claim 1 wherein the said inner confronting walls of the air chamber are extended upwardly above the inner ends of the stokers to form chambers at the respective sides of the tubular wall having ports communicating with the respective air chambers beneath the stokers and also with the combustion spaces above the stokers.

3. A device according to claim 2 wherein a sealing plate for the inner end of the adjacent stoker is anchored on each of the upward extensions of the said inner confronting walls of the air chambers.

4. In a device of the class described, the combination of a furnace comprising front, rear and side walls, a substantially horizontally disposed endless traveling grate stoker extending into said furnace from said front wall, a second substantially horizontally disposed endless traveling grate stoker extending into said furnace from said rear wall, a wall comprising a series of upright fluid conducting tubes extending upwardly between and in close proximity to the inner ends of said stokers, means for sealing the spaces between the inner ends of the stokers and said wall so as to prevent escape of fuel at the said inner ends, ash pockets at the outer ends of said stokers, and means at said front and rear furnace walls respectively for feeding and distributing fuel over the adjoining stokers.

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