

F. C. ARMSTEAD.
FURNACE.
APPLICATION FILED MAY 17, 1909.

1,037,715.

Patented Sept. 3, 1912.

Fig. 1.

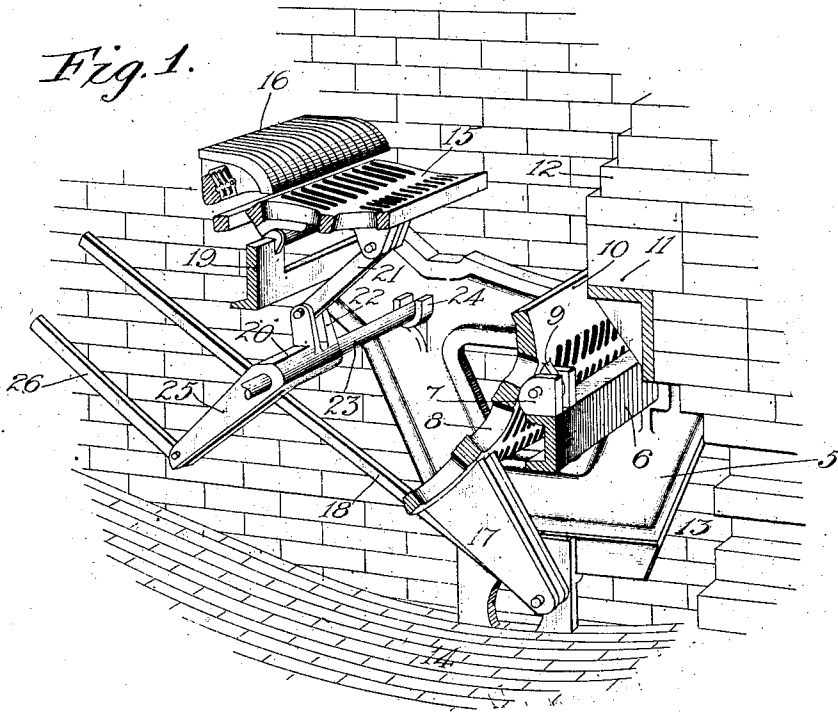
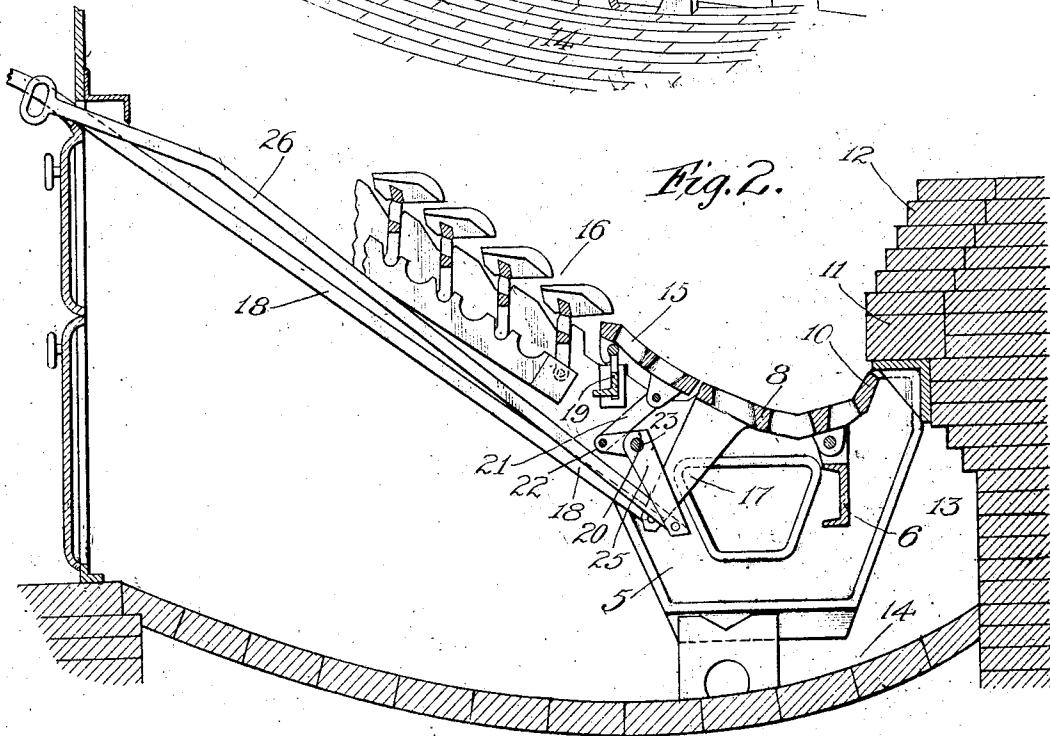


Fig. 2.



WITNESSES:

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FRANK C. ARMSTEAD, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE COLONIAL TRUST COMPANY, TRUSTEE, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FURNACE.

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To all whom it may concern:

Be it known that I, FRANK C. ARMSTEAD, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have made a new and useful Invention in Furnaces, of which the following is a specification.

This invention relates to grates of the inclined type, in which the fuel is fed down an inclined series of grate bars so that the products of combustion may be dumped at the bottom of the fire bed.

The part of my invention shown herein consists in providing means for eliminating the liability of clinkers or the like, being allowed to accumulate on the bridge wall above the dumping grate to the detriment of a proper manipulation of the fire. To this end I have provided means whereby the dumping grate may be pivoted between its front and rear end to provide a rearwardly extended portion projecting beyond the hinge so that any accumulations of clinkers or products of combustion which may accumulate on the bridge wall adjacent to the entrance of the ash pit may be pried off each time the dumping grate is moved into dumping position. If the dumping grate is hinged at the extreme rear end, clinkers and other obstructions accumulate above the grate and difficulty is experienced in removing them even when suitable tools, such as slice bars are employed.

With my invention, each time the grate is dumped the clinkers, etc., are pried off the wall adjacent to the dumping grate and allowed to drop into the ash pit in the rear of the grate, while the ashes may drop off the front portion of the grate into the ash pit. Means is provided for holding up the fire or hot coals while the dumping grate is being moved into dumping position.

In the drawing Figure 1 is a view partly in perspective and partly in section, of a furnace to which my invention is applied, and Fig. 2 is a sectional view through a furnace to which my invention is applied, the dumping grate being in non-dumping position and the hinged door for holding back the fuel being in its non-active position.

Referring now to the drawings by numerals of reference; 5 designates a casting, of which there may be one on each side of the furnace, said casting supporting a chan-

nel 6, on the top of which are a plurality of bearings 7, to support a dumping grate 8. This grate is pivoted between its front and rear portions as at 9 in the bearing 7, the rear portion of the grate 8 terminates in an upwardly curved lip 10, which projects beneath an overhang 11, of the bridge wall 12 of the furnace. The overhang provides a recess 13, in the bridge wall so that the clinkers and other foreign substances which are broken off by the lip 10 may readily drop behind the grate into the ash pit 14. The forward portion of the grate 8, together with the swinging grate 15, closes the gap at the bottom of the grate bars 16, which grate bars may be of any preferred form. Depending from the forward portion of the grate is an arm 17 connected to a bar 18 and leading to the front of the furnace, whereby the grate 8 may be moved into dumping position or retracted to fuel supporting position as occasion may demand. The swinging grate 15, for holding back the fire while the grate 8 is being moved into a dumping position is pivoted to a suitable support, as for example, an angle 19, extending transversely across the furnace and beneath the grate bars. The swinging grate 15 is connected to a rock shaft 20 by a link 21, which engages the crank arm 22 of said shaft. The rock shaft 20 may be hollow, in which event it can be conveniently supported upon a rod 23 or held in bearings 24 in a casting 5. The shaft 20 is provided with a depending crank arm 25, which is connected to a bar 26, leading to the front of the furnace, whereby the grate 15, may be tilted upwardly to hold back the fire while grate 8 is dumped, and as soon as the grate is moved back into the fuel supporting position the grate 15 may be moved into the position shown in Fig. 2, so that the fire may be permitted to spread over it and over the dumping grate 8.

In actual practice I have found that when a dumping grate is hinged against the bridge wall the clinkers form above it and considerable difficulty is experienced in removing them. On the other hand, if a rearwardly projecting lip is provided to detach the clinkers the clinkers are liable to and frequently do drop behind the grate when it is moved into its dumping position. Unless some means is provided for getting rid of the clinkers which drop behind the grate

they clog the space in rear thereof and prevent the grate being swung back into non-dumping position. It is obvious that should the clinkers accumulate or drop behind the grate, great difficulty would be experienced in removing them, and another serious disadvantage would be that the grate would be held open so as to admit an intruding current of air through the fire box, through the ash pit and over the fire, thereby decreasing the efficiency of the furnace.

With a construction of furnace and grate made in accordance with my invention the disadvantages above enumerated are avoided, for a space is provided on the rear as well as the front sides of the dumping grate when it is dumped, for free passage of the products of combustion. Furthermore, the upwardly curved and rearwardly extended lip gives an efficient prying action against the clinkers or other matter which may accumulate on the bridge wall.

From the above description it will be apparent that the dumping grate will free the bridge wall of clinkers and other foreign matter and permit them to drop in behind the grate so that any liability of clogging at the dumping portion of the grate will be avoided.

Having described my invention what I claim is:

1. A furnace having a bridge wall with an overhanging portion, a series of grate bars forming an inclined grate and terminating in front of the overhanging portion, a dumping grate at the foot of the inclined grate and having a rearwardly extending

lip terminating at the angle of intersection of the inner and horizontal faces of the overhanging portion, said dumping grate being pivoted between its front and rear ends whereby the lip on the grate in rear of its pivoted portion will swing above and away from the intersection of the inner and horizontal faces to free the front face of the bridge wall of clinkers and permit them to drop down between the dumping grate and the overhanging portion.

2. A furnace having a bridge wall with an overhanging portion, a series of grate bars forming an inclined grate terminating in front of the overhanging portion, a dumping grate at the foot of the inclined grate and having a rearwardly extending upwardly curved lip terminating at the angle of intersection of the inner and horizontal faces of the overhanging portion, said dumping grate being pivoted between its front and rear ends whereby the lip on the grate in rear of its pivoted portion will swing above and away from the intersection of the inner and horizontal faces to free the front face of the bridge wall of clinkers and permit them to drop down between the dumping grate and the overhanging portion.

In testimony whereof, I have hereunto subscribed my name this 15th day of May, 1909.

FRANK C. ARMSTEAD.

Witnesses:

B. F. FUNK,

J. G. WORKER.