

(No Model.)

R. HARTJE.
FURNACE.

No. 515,471.

Patented Feb. 27, 1894.

Fig. 1.

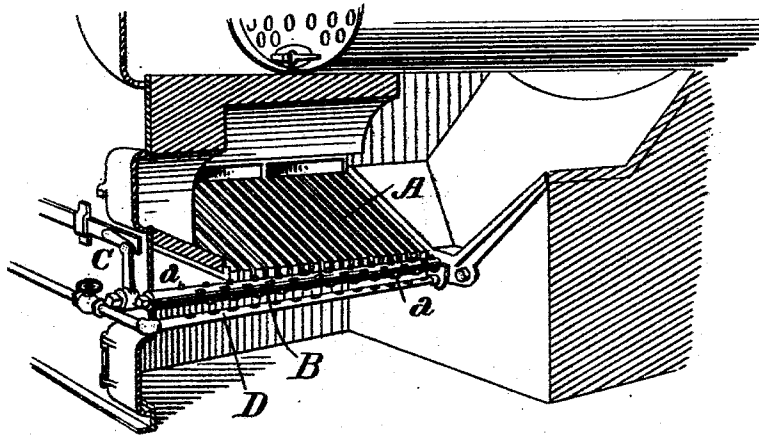
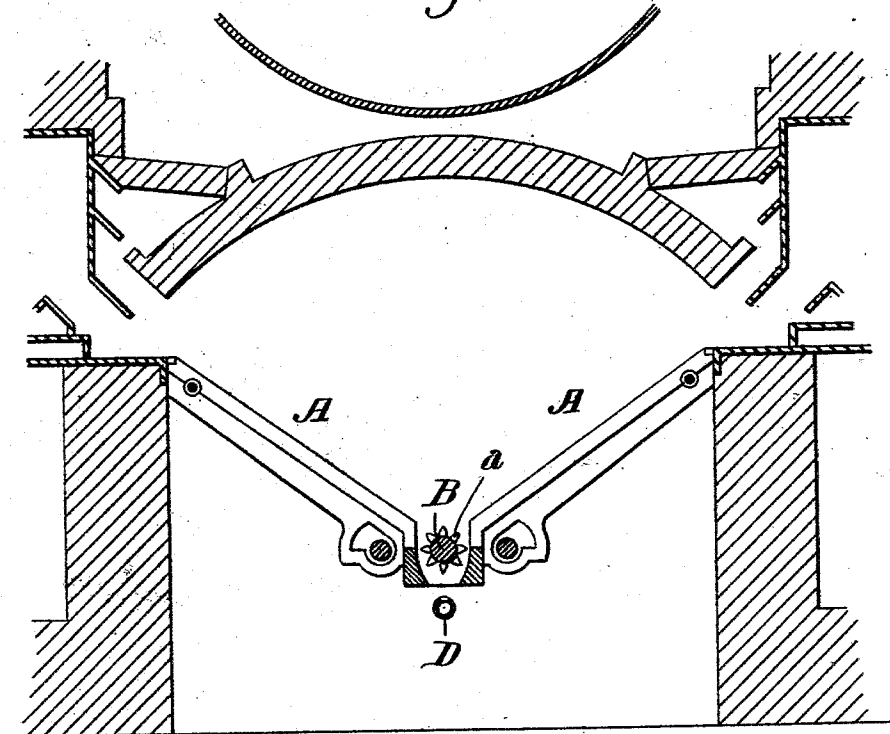


Fig. 2.



WITNESSES

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FURNACE.

SPECIFICATION forming part of Letters Patent No. 515,471, dated February 27, 1894.

Application filed December 14, 1893. Serial No. 493,699. (No model.)

To all whom it may concern:

Be it known that I, RICHARD HARTJE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Furnaces, of which the following is a specification.

In the accompanying drawings which make part of this specification, Figure 1, is a sectional side elevation and part front view of a furnace provided with my improvement. Fig. 2, is a transverse section of the same.

The purpose of my invention generally stated, is to construct apparatus which will prevent the formation of clinkers on a clinker bar. I also intend to keep the clinker bar cool and hard and therefore in fit condition for breaking up clinkers, by spraying the said bar with steam.

In the accompanying drawings, A, A, are banks of grate bars in V-form, from the sides to the central axis of the fire box from front to rear. Sufficient space is left between said banks of grate bars for a clinker bar B, which extends substantially from the front to the back of the fire chamber and is slowly rotated by suitable mechanism C, on the exterior of the furnace. Said clinker bar is usually constructed as a round bar with radially projecting teats, *a-a*. Thus far the construction is old and I make no claims thereto. As said clinker bar is located at the bottom of the V, and the burning fuel all centers and slides down toward it, it is inevitable that the clinkers will choke between the teats *a-a*, and the banks of grate bars on either side. The strain on the clinker bar is by this accumulation of tough material at this point so great that numerous bars are broken, and the operation of the furnace frequently interrupted, besides the expense of replacing the clinker bar. Furthermore since the heat is so intense in the vicinity of the clinker bar, the bar becomes soft with heat and when it grinds against a tough piece of clinker, the bar twists and the clinkering machinery must be stopped, and the engine unhooked, while the clinker bar is turned backward and forward by hand until the heat takes the twist

out of the bar. The repeated stoppages thus caused by the breaking, or twisting of bars, and by the falling in steam pressure through the fire becoming clogged with clinkers, are both annoying and expensive. By my invention these disadvantages are obviated. I support beneath the clinker bar a steam pipe D, having perforations or slots, or equivalent discharge openings therein. This pipe D may be connected with either live or exhaust steam. I have found in practice that the exhaust steam is adequate ordinarily to prevent the accumulation of large pieces of tough material, which snap the clinker bars. In actual use without my improvement, it is necessary almost once an hour, to break up and remove the clinkers by any means possible. But, by the application of steam at this point, the clinker is made hard, brittle and fragile, and readily crumbles to pieces and falls down without clogging up the apparatus. Incidentally also the application of steam at this point, affects the lower ends of both banks of grate bars and obviates the formation of clinkers there.

I have illustrated my improvement as applied to one type of furnace and that having a rotary clinker bar but obviously it is applicable to other types and to those having stationary clinker bars.

Having described my invention, I claim—
1. In furnaces the combination of a rotary clinker bar, a steam pipe beneath the same, having suitable discharge openings and means for supplying steam thereto, substantially as set forth.

2. In furnaces, the combination of a clinker bar, a steam pipe beneath the same, having suitable discharge openings and means for supplying steam thereto, substantially as set forth.

In testimony whereof I have hereunto set my hand this 8th day of December, A. D. 1893.

RICHARD HARTJE.

Witnesses:

WILLIAM BEAL,
WM. L. PIERCE.