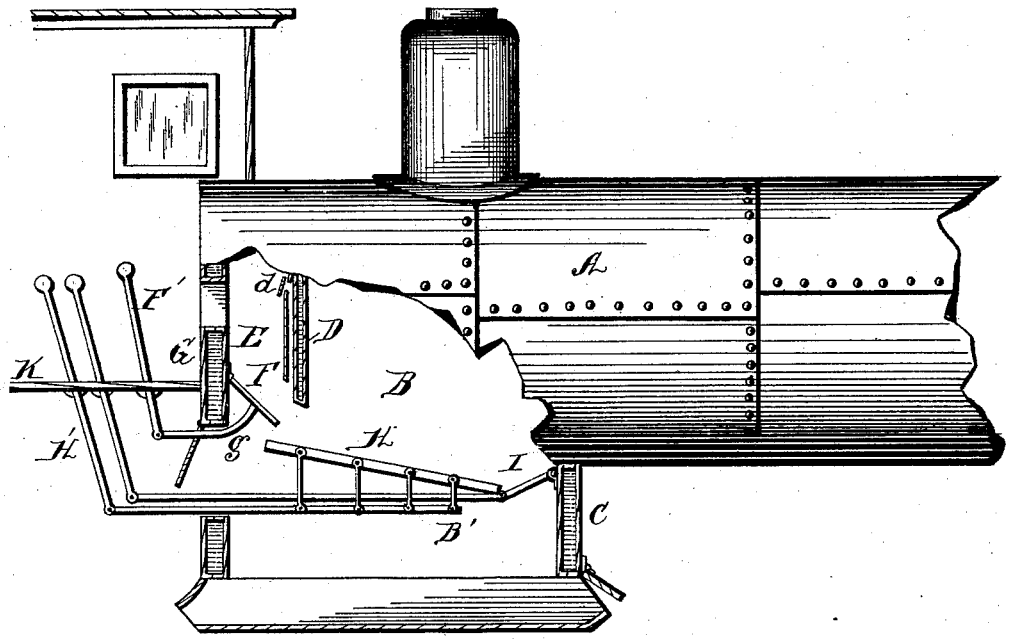
(No Model.)

A. BACKUS, Jr.

BOILER FURNACE.

No. 307,373. Patented Oct. 28, 1884.



WITNESSES

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BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 307,373, dated October 28, 1884.

Application filed June 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, ABSALOM BACKUS, Jr., of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Boiler-Furnaces; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawing, which forms a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawing the figure is a vertical longitudinal section of a device embodying my invention.

My invention relates to improvements in boiler-furnaces, and has for its object, first, to regulate the supply of fuel to the combustion-chamber; second, the location of the depending water-front between the combustion-chamber and the fuel-chamber; third, the general construction and arrangement of the device.

I accomplish these objects as follows: A represents the boiler; B, the combustion-chamber. B′ is the ash-pit; C, the bridge-wall in the rear of the combustion-chamber. D is the depending water-front, formed by imperforate walls located in front of the combustion-chamber and between it and the fuel-chamber, said water-front receiving its water from the boiler. E is the fuel-chamber.

Located at the base of the fuel-chamber is my improved valve, F, for regulating the supply of fuel to the combustion-chamber. This valve is hinged at its upper end to the wall G in any suitable manner, and is provided between its extremities with an operating-arm, *g*, extending through the wall, and is preferably provided with an operating-lever, F′, the construction being such that said valve may be given the desired inclination, so that its lower end may be elevated or depressed, as may be desired, to open or close the fuel-chamber. By locating the valve in this manner at the base of the fuel-chamber, and providing it with an operating-lever, F′, connected therewith, I am enabled absolutely to control the supply of fuel as preferred. The depending water-front D may be provided with an air-duct, which may conveniently be made by securing a metallic plate in front of said water-back, leaving an air-space between said plate and the water-back. The admission of air to said duct may be controlled by a valve, *d*, located at any suitable point, preferably at the upper portion thereof, and which may be provided with an operating lever or arm within the reach of the operator.

H is the grate, and H′ a lever for operating the grate.

I represents a dumping-grate. I prefer to provide both of these grates with a separate lever extending within reach of the operator, whereby he may operate either portion thereof independently of the other, or both simultaneously.

K represents the cab-floor.

This device is illustrated in the drawing as applied to locomotive fire-boxes, and has special adaptation for use in connection therewith; but I would have it understood that I do not limit myself to its application. Attention is called to the fact that these features may be applied to any locomotive fire-box now in use in an economical manner.

What I claim is—

1. The combination, with a boiler-furnace, of a depending water-front located between the fuel-chamber and the combustion-chamber, an air duct or ducts arranged adjacent to the forward side of the water-front, and a valve for controlling the admission of air to the duct or ducts, substantially as described.

2. The combination, with a boiler-furnace having a depending water-front between the fuel-chamber and the combustion-chamber, of the fuel-chamber E, communicating with the combustion-chamber, and a valve located at the base of the fuel-chamber, adapted to open and close the passage from the fuel-chamber to the combustion-chamber, substantially as and for the purpose described.

3. The combination, with a boiler-furnace, of the front fuel-chamber and the rear combustion-chamber, adapted to communicate at their lower portions and both within the fur-

nace, and a valve arranged at the base of the fuel-chamber, for supporting the fuel in the latter and controlling the passage-way from the fuel-chamber to the combustion-chamber, substantially as described.

4. The combination, in a furnace, of a boiler, a front fuel-chamber and a rear combustion-chamber, both within the furnace, a depending water-front interposed between the fuel and combustion chambers, a valve arranged in the base of the fuel-chamber in advance of the water-front, for supporting the fuel and controlling the passage-way between the fuel and combustion chambers beneath the water-front, the grates H and I, arranged under the combustion-chamber, and independent levers for actuating the grates separately or simultaneously, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

ABSALOM BACKUS, JR.

Witnesses:

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