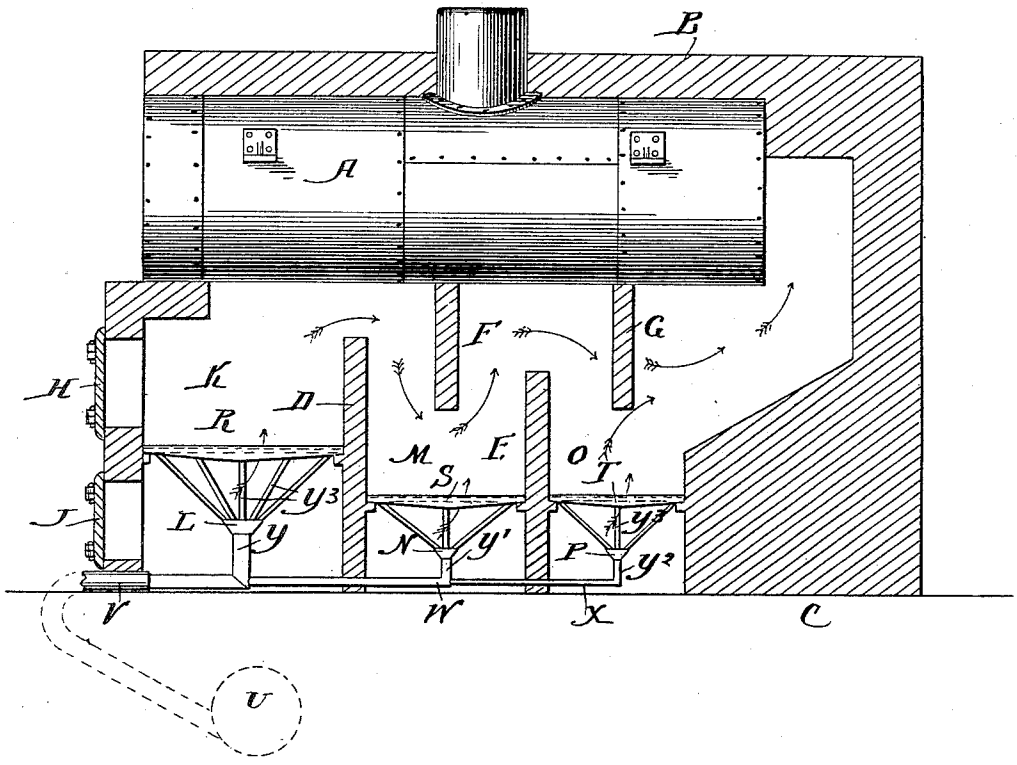
(No Model.)

C. E. MILES.

FURNACE FOR BOILERS.

No. 426,037. Patented Apr. 22, 1890.



Witnesses:

Celeste P. Chapman

Davida J. Johnson.

Inventor:

Carl E. Miles.

By James W. Parker

Attorney.

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

UNITED STATES PATENT OFFICE.

COIT E. MILES, OF CHICAGO, ILLINOIS.

FURNACE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 426,037, dated April 22, 1890.

Application filed November 14, 1889. Serial No. 330,343. (No model.)

To all whom it may concern:

Be it known that I, COIT E. MILES, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Furnaces for Boilers, of which the following is a specification.

My invention relates to furnaces for steam-boilers and the like, and has for its object to provide simple and convenient means whereby the screenings and the like, particularly of hard coal, may be successfully burned.

My invention is illustrated in the accompanying drawing, in which the figure is a side elevation, partly in section, wherein—

A is the boiler; B, the covering; C, the rear wall; D, the bridge-wall; E, the second bridge-wall. F is a sort of depending curtain-wall; G, a second curtain-wall; H, the firing-door; I, the ash-pit door; K, the furnace; L, the ash-pit.

M is the secondary furnace; N, its ash-pit; O, the third furnace, and P its ash-pit.

R, S, and T are suitable grate-bars.

U is a blast-fan opening into the pipe V, which traverses the ash-pit L, from which leads the smaller pipe W, which traverses the ash-pit N, from which leads the still smaller pipe X, which traverses the ash-pit P. Each of these ash-pits is substantially air-tight, and into each from its air-pipe opens the discharge-funnels Y, Y′, and Y^2, respectively.

It will be easily seen that my invention is capable of great modification without departing from its spirit, and that any sort of an air-supplying pipe can be used and any sort of grate-bar can be employed.

The grate-bars are preferably hollow bars with pipes Y^3 Y^3 connecting the same with the funnels Y, Y′, and Y^2. This structure is not elaborately shown here, as the general features thereof are already known in art and many modified forms could be employed.

The use and operation of my invention are as follows: It is found in attempting to burn hard-coal slack on hollow grate-bar furnaces—such as above suggested—that in the first ash-pit and furnace, in order that the slack may burn, a heavy draft is required, so heavy, in fact, that a considerable proportion of such slack, dust, or screenings is carried over the first bridge-wall unburned and eventually fills up the chamber back of such bridge-wall and even passes into and to a degree encumbers the boiler-flues. To prevent the disastrous consequence of this action of such furnaces, I have provided a series of furnaces and bridge-walls and curtain-walls, so that as such particles are carried over they are burned in the succeeding furnace, thus making great saving of fuel, while at the same time obviating the danger incident to the carrying of such quantities of unburned fuel. The draft, being supplied to the first furnace, causes the combustion of the slack therein, but carries a portion of it over the bridge-wall D, where it falls upon the grate-bar S. A current of air is now forced through this grate-bar, preferably with less velocity, though it might have the same or greater than that current forced through the grate-bar S. It may be supplied, as shown in the drawing, from the same source as that furnished to the grate-bar R, but might of course be supplied from an independent source. If the velocity of air through and out of the combustion-chamber M is such as to carry over some portion of unburned fuel, it will fall upon the grate-bar T, where a similar process goes on, and a sufficient number of these furnaces arranged in series are to be employed so as to burn substantially all of the dust or fine particles of hard-coal screenings or other similar substances. Fluids other than air could of course in like manner be used for the purpose of aiding the combustion—as, for instance, hydrocarbon oils or gases in proper quantities and in proper condition.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

In a furnace, the combination of a series of combustion-chambers, a grate in each of such chambers, elevated bridge-walls separating such chambers, a series of downwardly-depending curtain-walls, one following each bridge-wall and the lower ends of such curtains being lower than the upper ends of the bridge-walls, so that the particles of fuel and the products of combustion from the first chamber are deflected down upon the second chamber, and so on through the series, and a blast-fan and a series of pipes leading therefrom and discharging through such grates.

COIT E. MILES.

Witnesses:
OTTO DESSAUCK,
H. ROTHSCHILD.