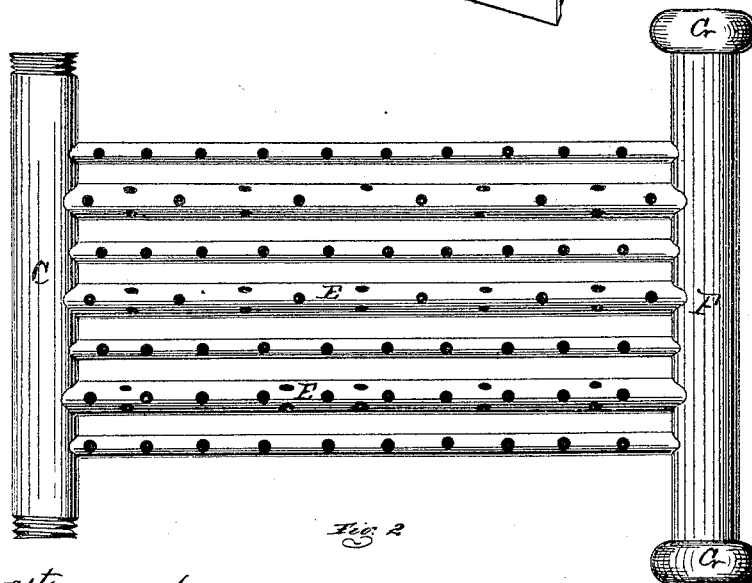
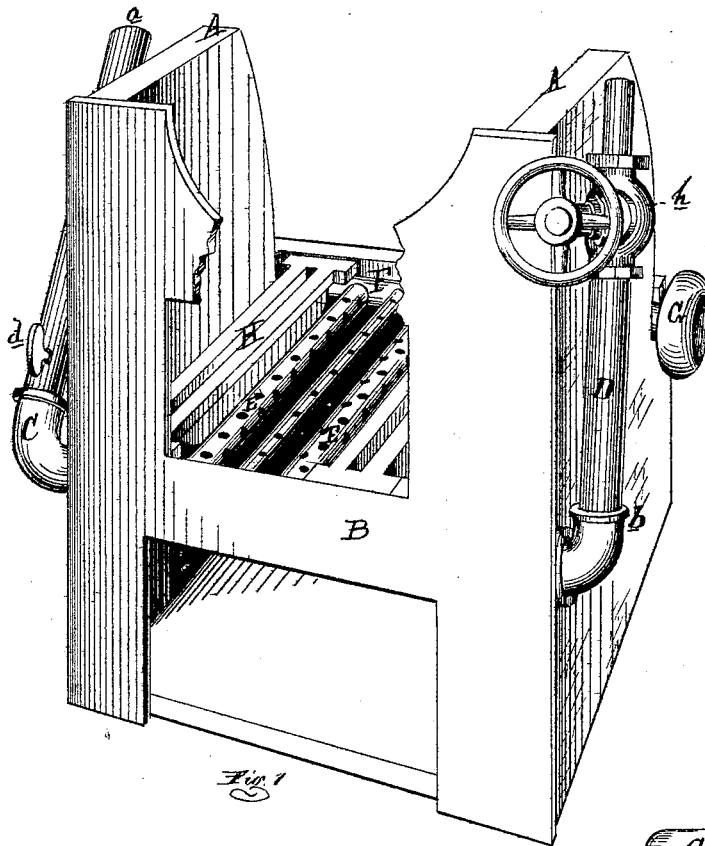


THOMAS F. MORRISON.

Improvement in Furnaces for Steam-Boilers.

No. 114,024.

Patented April 25, 1871.



ATTEST

Wm. Stewart

Frederick E. Hunt

Fig. 2

INVENTOR

T. F. Morrison
per Atty
Thos. H. Sprague

United States Patent Office.

THOMAS F. MORRISON, OF BRYAN, OHIO, ASSIGNOR TO MORRISON & FAY,
OF SAME PLACE.

Letters Patent No. 114,024, dated April 25, 1871.

IMPROVEMENT IN FURNACES FOR STEAM-BOILERS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern :

Be it known that I, THOMAS F. MORRISON, of Bryan, in the county of Williams and State of Ohio, have invented a new and useful Improvement in Furnaces for Steam-Boilers; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a perspective of a furnace with my improvements, with one of the grate-bars removed to show the perforated pipes.

Figure 2 is a plan view of the air-pipes.

Like letters indicate like parts in each figure.

The nature of this invention relates to an improvement in the construction of furnaces for steam-boilers, by means of which the draught may be materially increased, and by which the fire may be readily extinguished when desired.

The invention consists in a series of perforated pipes, connected at each end with pipes not perforated, so arranged that the former may be employed as grate-bars, if desired, in combination with any suitable blower, to force a current of air through the pipes and perforations to increase the draught.

Also, in a steam-pipe connecting the steam-space in the boiler with said pipes, first described, for the purpose of extinguishing the fire in the furnace when desired by smothering the same with steam.

Also, in combination with said first-described pipes, any suitable grate-bars, to be employed if deemed preferable, all arranged and operating as more fully hereinafter described.

In the accompanying drawing—

A represents the side walls of a furnace, and

B the fire front.

A pipe, C, to be connected at *a* with any suitable fan or blower, extends across the front of the furnace, and at *b* it connects with a steam-pipe, D, the upper end of which should connect with the steam-space of the boiler.

Connected with this pipe C is a series of perforated

pipes, E, whose other ends are connected with another pipe, F, which extends across the rear of the furnace.

The ends of this latter pipe should project through the side walls and be provided with caps G, so arranged that they may be readily removed when necessary.

The pipes C E F should be so connected as to have a free and uninterrupted interior communication with each other.

H are grate-bars of any desired pattern, the front and rear ends of which rest upon the pipes C and F and above the perforated pipes E.

The pipe C is provided with a proper valve, *d*, as is also the steam-pipe D with valve H, for the purposes hereinafter described.

The valve *h* in the steam-pipe being closed, and the valve *d* in the air-pipe being open, and the blower in operation, a current of air is forced through the pipe C into the perforated pipes E, whence it escapes, to increase the draught, through the perforations, while any ashes that may fall through the perforations are blown into the pipe F, whence they may be removed by taking off the caps G.

To extinguish the fire close the valve *d* and open the valve *h*, when a current of steam will be driven through the pipes and perforations for that purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The pipes C, E, and F, provided with caps G, when constructed and arranged, for the purposes described, in combination with any suitable fan or blower, as set forth.

2. In combination with said pipes C, E, and F, provided with caps G, the steam-pipe D, for the purposes set forth.

3. In combination with pipes C, E, and F, provided with caps G, the grate-bars H, when arranged as described.

THOMAS F. MORRISON.

Witnesses:

R. J. GIBBONS,

ERWIN ANDREWS.