J. MAILER.

Bridge-Wall for Furnaces.

No. 219,283. Patented Sept. 2, 1879.

Fig. 1

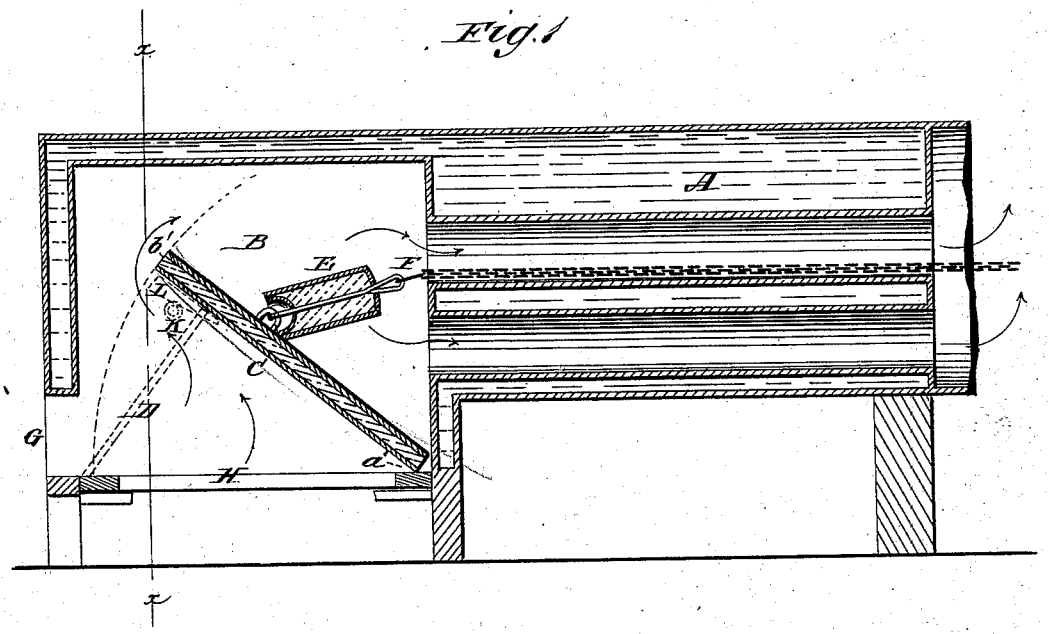
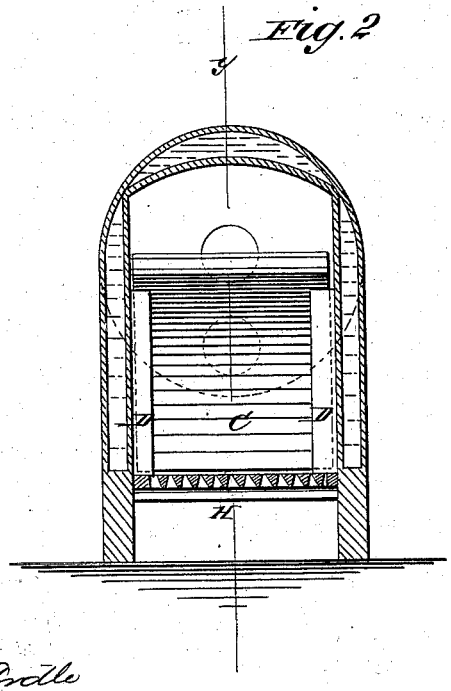


Fig. 2



WITNESSES:

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UNITED STATES PATENT OFFICE

JOHN MAILER, OF PACHECO, CALIFORNIA.

IMPROVEMENT IN BRIDGE-WALLS FOR FURNACES.

Specification forming part of Letters Patent No. **219,283**, dated September 2, 1879; application filed January 27, 1879.

To all whom it may concern:

Be it known that I, JOHN MAILER, of Pacheco, in the county of Contra Costa and State of California, have invented a new and Improved Bridge-Wall for Furnaces, of which the following is a specification.

Figure 1 is an upright sectional view showing boiler, bridge-wall, and attachments. Fig. 2 is a section on line *x x*.

Similar letters of reference indicate corresponding parts.

This invention has for its object the placing of a movable bridge-wall in a boiler-furnace, in order to contract the area of outlet from the fire-surface to the boiler-flues.

In the drawings, A is the boiler; B, the furnace; C, the adjustable bridge-wall resting upon support *a'* within the furnace; D D, the side props or supports; E, the sleeve protecting the chain F; G, the fire-door, and H the grate-surface.

The bridge-wall C is composed of two heavy iron plates, bolted together and having a space of two or three inches, more or less, left between them. This space is filled with clay, plaster, asbestus, or other refractory and non-conducting material, as shown at *b'*.

The bridge-wall, or "damper," as it may be called, is preferably made a few inches narrower and shorter than the fire-surface. The lower end is made to rest upon or is fulcrumed upon the grate-bars or the grate-bar bearings at *a'*. To the other end a chain, F, is attached and drawn through one of the boiler-flues, as shown. That part of the chain most exposed to the action of the fire is enveloped by a sleeve, E, which consists, preferably, of a metallic cylinder filled in with some good non-conducting substance.

Ordinarily this bridge-wall will be retained in position by resting (leaning) upon the supports D D, as shown in drawings, for when it is in this position a sufficient draft-area for the satisfactory combustion of most fuels is left around its upper end.

By removing the supports D D the bridge-wall can be adjusted in a lower position and held there by the chain F, and the chain also serves to adjust and retain it at any other elevation.

Another method of supporting and adjusting the bridge-wall is to insert thimbles or short pieces of tubing through the sides of the boiler-furnace, just opposite to each other, and to pass through these a bar or tube (shown at K) upon which the wall shall rest. A wedge, L, is in such case used for adjusting the bridge-wall in position. When a tube is used for this purpose I keep it from becoming too hot and yielding by passing air or water through it.

This arrangement is especially designed for application to boiler-furnaces wherein straw, tan-bark, or other substance is burned whose better combustion may be insured by a hotter furnace or by longer retention in the furnace.

It is obvious that so soon as the guard or bridge-wall becomes heated it will radiate heat upon the fuel on the grate as well as upon the escaping smoke and gases, and thus supply in most instances the small increment of heat that is required for their complete combustion.

The effect which the guard will have in retarding the escape of the smoke, gases, and particles of burning or unburned fuel from the fire-place, and in thus giving them a longer exposure to heat, is also very apparent.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The bridge-wall C, fulcrumed as shown, and adjustable at different angles of inclination in the furnace, between the grate and the boiler-flues, by means of the chain F, substantially as shown and described, and for the purpose set forth.

JOHN MAILER.

Witnesses:

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