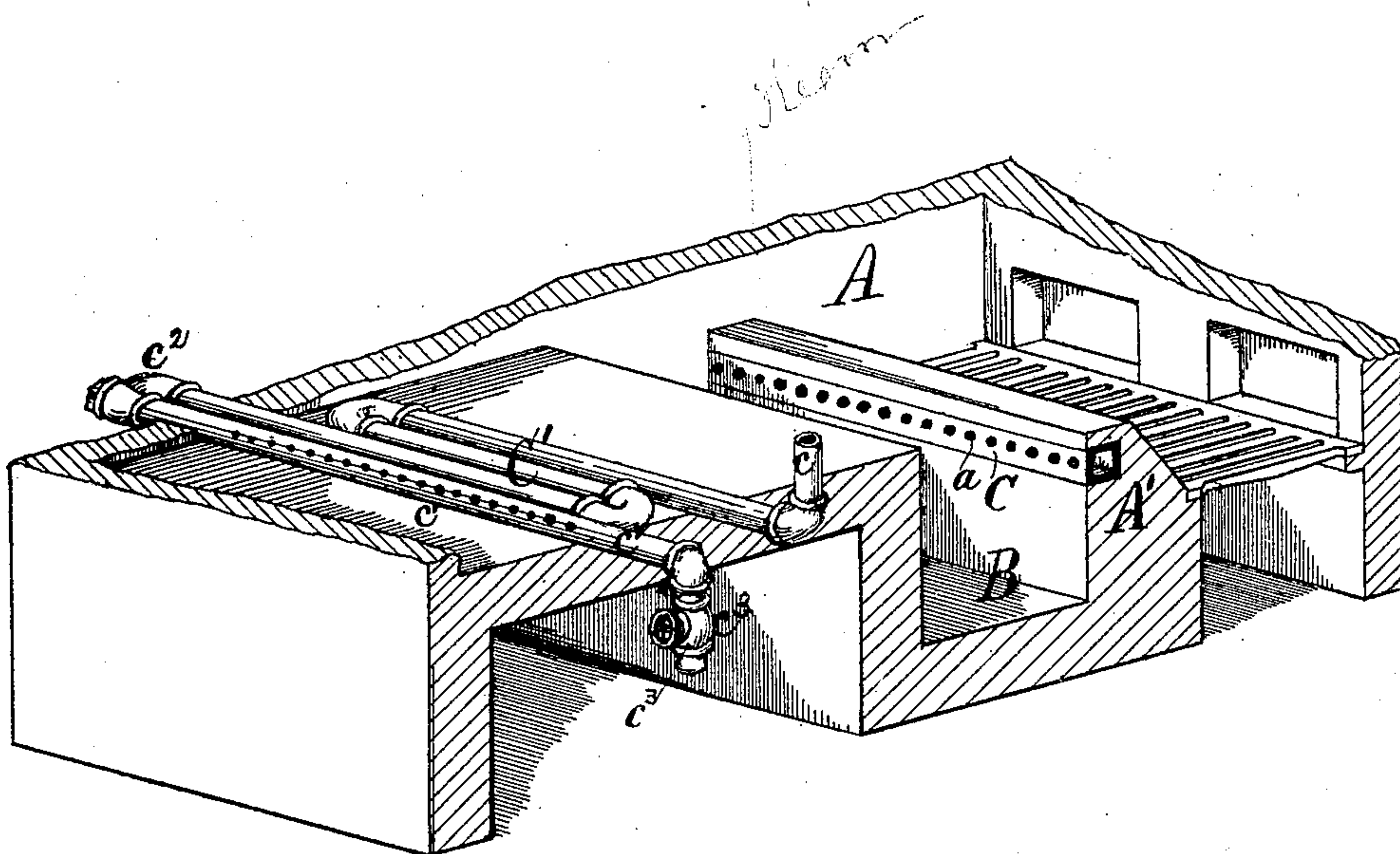


M. A. FOSTER.

Improvement in Steam-Boiler Furnaces.

No. 132,151.

Patented Oct. 15, 1872.



WITNESSES:

*Robert Burns*  
*J. W. Fitch*

INVENTOR:

*Michael A. Foster*  
*per Fitch & Co*  
*Attys.*

# UNITED STATES PATENT OFFICE

MICHAEL A. FOSTER, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **132,151**, dated October 15, 1872.

*To all whom it may concern:*

Be it known that I, MICHAEL A. FOSTER, of St. Louis, in the county of St. Louis and State of Missouri, have made certain new and useful Improvements in Steam-Boiler Furnaces; and I do hereby declare the following to be a full and true description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention is an improvement in steam-boiler furnaces described in Letters Patent granted me for steam-boiler furnaces bearing date of May 21, 1872, and being numbered ~~126,194~~ <sup>126,194</sup>. The nature of this invention relates, first, to the arrangement, in combination with improved parts hereinafter to appear, of a square or round perforated pipe, built into the bridge-wall of the furnace and opening into the smoke-pit of the fire-bed; secondly, to the arrangement of steam-coil for promoting the draft and combustion, the perforated branch of which is connected to main part of coil by a "union" or T-coupling, so as to enable the operator to direct the steam-jets in any desired direction against the bottom of the boiler; thirdly, to the arrangement of a valve on the end of the perforated branch of the steam-coil, so as to prevent all liability to bursting of the coil when steam is first "let into" said coil.

To enable those herein skilled to make and use my said improvements, I will now more fully describe the same, referring to the annexed drawing, which represents a perspective view of the furnace with boiler, top part, and one side wall of furnace removed.

The furnace A will be of the usual construction, having bridge-wall A' and smoke-pit B. A pipe, C, of any suitable form, preferably square, is arranged transversely in the bridge-wall A' of the furnace, so as to protect it from the direct heat of the fire, and is provided with a series of holes, a, opening into the smoke-pit B. The said pipe C may be built transversely in the opposite wall of the smoke-pit; or longitudinally in the side walls of the furnace; and may be further-

more provided with longitudinal branches, running across the smoke-pit B; the object being to introduce a supply of air into said smoke-pit and cause a perfect combustion therein of the smoke and carbonaceous matter escaping from the fire unconsumed. The fire-bed of the furnace may be furthermore provided with transverse perforated pipes, as described in my former patent; also with steam-coil C', having branch pipe c, communicating with steam-drum and provided with proper stop-valve. The perforated branch pipe c<sup>1</sup> is connected to main coil by a "union" or T-coupling, c<sup>2</sup>, so as to allow the turning of said perforated branch pipe, and thus the steam escaping in jets from the perforations may be made to discharge in any desired direction. The perforated branch pipe c<sup>1</sup> is furthermore provided with a valve, c<sup>3</sup>, which is opened when steam is first "let into" the coil, so as to prevent the bursting of the coil from the quick expansion of the steam in same.

The steam escaping in jets from perforated branch-pipe c<sup>1</sup> will cause an increased draft, thereby introducing a greater quantity of air through pipe E into smoke-pit B and cause a more perfect combustion of the volatile portions of the fuel.

Having thus fully described my invention, what I claim is—

1. The combination and arrangement of steam-coil C', perforated branch pipe c<sup>1</sup>, and union or T-coupling c<sup>2</sup>, as and for the purpose set forth.

2. The perforated branch pipe c<sup>1</sup> when provided with valve c<sup>3</sup>, as and for the purpose set forth.

3. The combination and arrangement of pipe C, smoke-pit B, coil C', branch c, perforated branch c<sup>1</sup>, coupling c<sup>2</sup>, and valve c<sup>3</sup>, as and for the purpose set forth.

In testimony of said invention I have hereunto set my hand.

MICHAEL A. FOSTER.

Witnesses:

ROBERT BURNS,

WILLIAM W. HERTHEL.