

(No Model.)

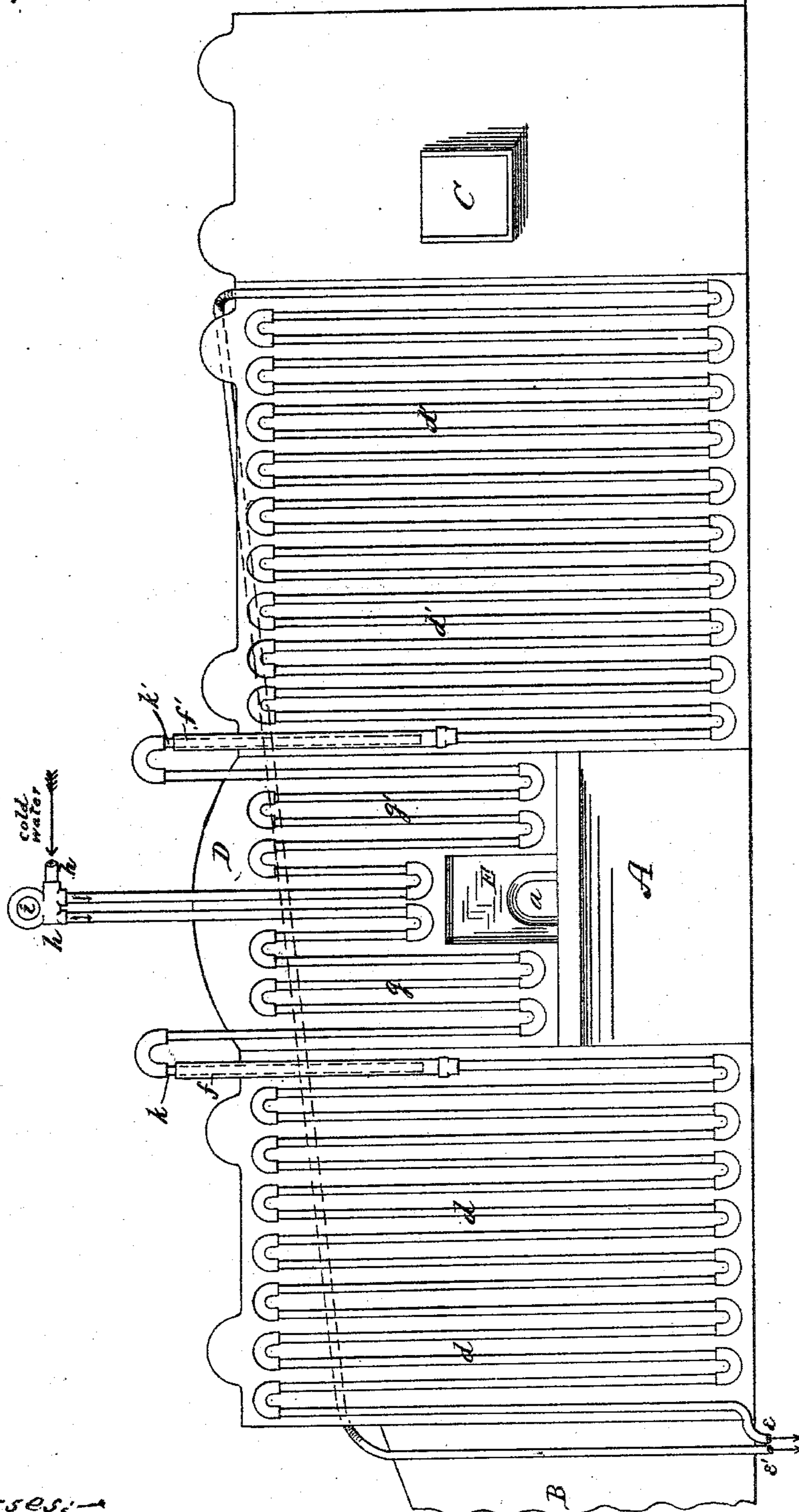
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DEVICE FOR COOLING FURNACE FRONTS.

No. 281,098.

Patented July 10, 1883.

Fig. 1.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM S. McKENNA, OF PITTSBURG, PENNSYLVANIA.

## DEVICE FOR COOLING FURNACE-FRONTS.

SPECIFICATION forming part of Letters Patent No. 281,098, dated July 10, 1883.

Application filed May 14, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. McKENNA, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Cooling Furnace-Fronts; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification, in which the figure is a front elevation of a puddling-furnace with my attachments.

This invention relates to devices for application to furnaces for the purpose of cooling or preventing excessive radiation of heat from that side of the furnace at which the workman stands while operating, and thus rendering his task less trying and uncomfortable.

The invention consists in arranging across the working face of the furnace, outside its wall, a zigzag series of pipes or tubing adapted to receive cold water at an elevated point and discharge the heated water at a low point, and thus have a continuous circulation of cool water in the pipes, in order to cool the atmosphere near the furnace; and, further, in the combination and arrangement of devices, as hereinafter fully described and claimed.

The invention is applicable to various kinds of furnaces, as will be readily understood; but I shall merely describe and illustrate one form—*i. e.*, a puddling-furnace.

In the drawing, A is the working side of the furnace or front; B, the neck or flue; C, the stoke-hole; D, the vertically-movable door, having bit E and tool-hole *a*; all of any of the usual forms or construction. To the front wall, A, I attach in any suitable manner the series of pipes or tubing *d* and *d'*, respectively arranged on the portions beside the door D and crossing the face of the furnace either vertically or horizontally in zigzag arrangement, as shown. Series *d* has the outlet or discharge *e*, and series *d'* the discharge *e'*, which preferably crosses along the roof of the furnace to discharge alongside series *d*. The series of pipes *d* begins beside door D in the vertical pipe *f*, and, similarly, the series *d'* begins at the opposite side of the door in the vertical pipe *f'*, whether the series *d* and *d'* are arranged vertically or horizontally.

On the front of door D are attached two

smaller similar series, *g* and *g'*, of pipes, having a common inlet, *h*, (where also may be arranged the lifting-ring *i* of the door,) and terminating in the respective downward extensions *k* *k'*, arranged to fit into and slide in the corresponding pipes, *f* *f'*, as shown, the fitting being adapted to permit a telescoping of the pipes *k* *f* and *k'* *f'* without leakage. At inlet *h* water under pressure sufficient to compel its continuous movement through the pipes is introduced, passes downwardly, circulating across the door D, whence it passes off to both sides through series *d* *d'* by joints *f* *k* and *f'* *k'*, no matter what the position of the door D may be. I thus obtain an uninterrupted circulation of cold water in the traversing pipes and prevent the intolerable heat from prostrating the workman.

A special advantage obtained is that the water circulates first across the door, thus insuring a moderation of the temperature just where most desirable—that is, in the vicinity of the workman's head and face, when he is working at the charge in the furnace. If desired, the pipes may be overlaid or protected by a suitable jacket. To accommodate the opening and closing of the door, the general inlet *h* may be either a flexible or jointed pipe or a telescoping connection.

I claim as my invention—

1. The combination, with a furnace-front, of a series of pipes arranged zigzag across said front and outside the same, and having a constant stream of water circulating therethrough, substantially as described.

2. A furnace-door provided on its outside with a series of zigzag circulating pipes for cold water, substantially as described.

3. In combination with the furnace and its movable door, a series of pipes, *g* or *g'*, zigzagging across the door and terminating in the downward extension *k* or *k'*, and a series of zigzag pipes, *d* or *d'*, across the furnace-front, and beginning at the vertical pipe *f* or *f'* and discharging at a suitable point, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM S. McKENNA.

Witnesses:

THOMAS J. PATTERSON,  
D. E. DAVIS.