N. W. PRATT.

Cleaning-Doors for Furnaces.

No. 214,951. Patented April 29, 1879.

Fig. 1

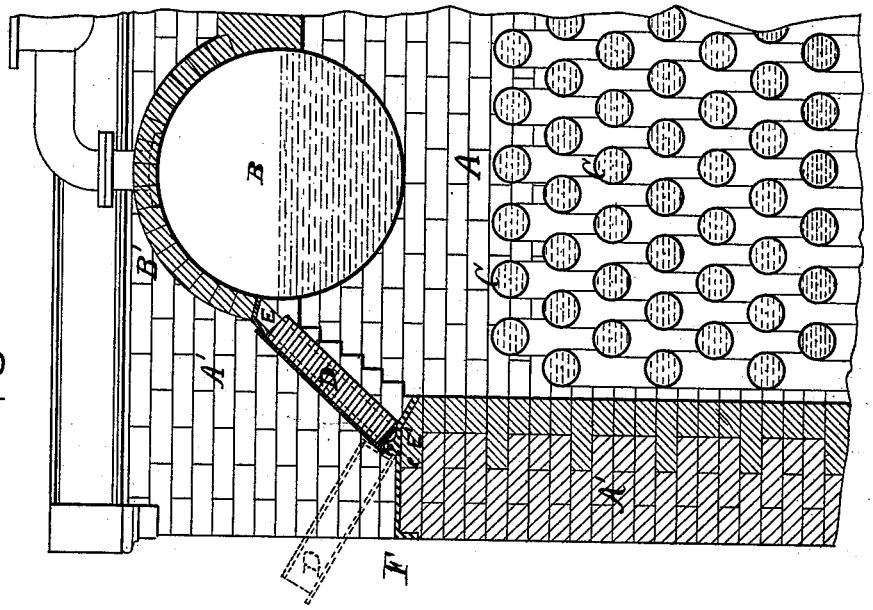


Fig. 2

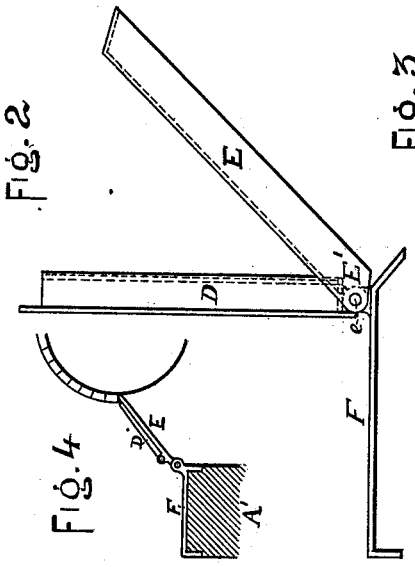
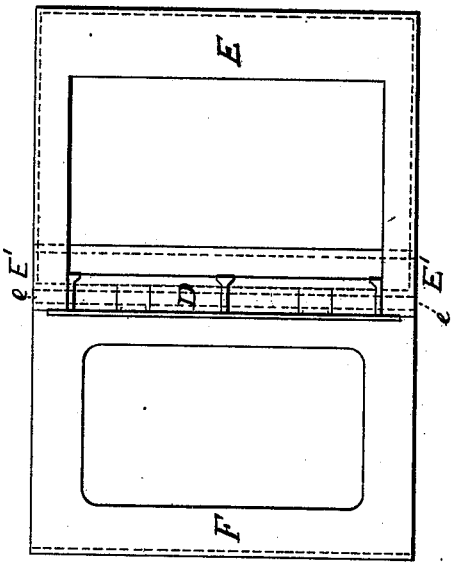


Fig. 4

Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

NATHANIEL W. PRATT, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE H. BABCOCK, OF PLAINFIELD, NEW JERSEY, AND STEPHEN WILCOX, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CLEANING DOORS FOR FURNACES.

Specification forming part of Letters Patent No. **214,951**, dated April 29, 1879; application filed August 2, 1878.

To all whom it may concern:

Be it known that I, NATHANIEL W. PRATT, of the city, county, and State of New York, have invented certain new and useful Improvements in Cleaning Doors or Entrances to Combustion-Chambers of Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in the cleaning doors or entrances to the combustion-chambers of boilers; and it consists in forming such doors or entrances with a frame, one end of which is pivoted or hinged to a wall or cap plate adapted to be applied to the top of the walls of the combustion-chamber, while the opposite end of the frame is free to swing against the drum and assume any angle necessary to accommodate itself to the position of the boiler or drum in relation to the walls.

The door and frame are pivoted or hinged on the same center on the cap or wall plate, in order that when in position they may assume the same, or as nearly as possible the same, angle.

The following is what I consider the best means of carrying out the invention.

The accompanying drawings form part of this specification.

Figure 1 represents a sectional view of so much of a boiler and parts connected therewith as will illustrate the application of my invention. Fig. 2 represents a side view, and Fig. 3 a plan, of my invention separately on a larger scale. Fig. 4 represents a sectional view of a modification of my invention.

Similar letters of reference indicate corresponding parts wherever they occur.

A represents the combustion-chamber, and A′ the walls thereof. B is the drum, and C C the water-tubes. D represents a door to the combustion-chamber A, of which there may be a series arranged in the walls A′, on one or both sides of the combustion-chamber. The door D is mounted in a frame, E, each which at its lower end is pivoted or hinged at E^1 to a cap or wall plate F, which is so formed as to sit securely on the top of the wall A.

When fitting a boiler in position, the walls A′ are built up to the height it is desired the openings for the doors shall be. The cap or wall plate F is then placed in position, as shown by Fig. 1. The frame E is then placed in position and hinged to the plate F, as shown by Figs. 2 and 3, and allowed to drop into the position shown by Fig. 1, after which the course of bricks B′ is applied to the drum B, the lowest brick of the course B′ resting on the inclined top E^2 of the frame E, by which it is supported in position.

In Fig. 1 the door D is shown in full lines closed, so as to complete the walls of the combustion-chamber A, while by dotted lines it is shown "open," so as to give access to the combustion-chamber.

The door D and frame E, in the arrangement shown by Figs. 1, 2, and 3, are pivoted at E^1, on the same rod *e*, by means of lugs affixed on the door D and on the frame E and plate F.

By applying doors D to the combustion-chamber A of boilers provided with frames E, pivoted on plates F, as described, great economy of construction is effected, combined with safety and non-liability of fracture of the brick-work, as the frames are free to move as the brick-work or boiler expands or contracts with the increase or decrease of the heat in the combustion-chamber, while at the same time I obtain easy access to the combustion-chamber A for the purpose of cleaning the tubes C, or for repairs or other purposes. In Fig. 4 I have shown a slight modification of my invention, in which the door D is pivoted or hinged to the frame E on a separate center, slightly above the center by which the frame E is pivoted to the plate F.

Modifications of my invention may be made within wide limits by any competent mechanic. I can employ any other suitable hinge in place of the hinge E^1; and I can construct the pivoting support or plate F of any suitable form to fit the wall A′, to which it is to be applied. I can also form the door D circular, polygonal, or of other suitable form, provided the frame E is constructed with a correspondingly-formed opening to receive it.

My invention affords a reliable support for

the brick-work B′, which covers the drum B, allowing it to either rest on the drum or to be supported independently on the frames, as circumstances may require. The changes in temperature to which the parts are exposed cause the brick-work, and particularly the iron work, to expand and contract, so as to change its position. The frames E being hinged at the bottom to the wall-plate F can change their inclinations to accommodate any such movements. If the drum B sinks, the brick-work B′ may remain supported archwise on the frames E. If it moves laterally to either side, the frames E may change their inclination to accommodate themselves to the conditions.

I claim as my invention—

1. The inclined frames E and doors D, arranged as shown relatively to the drum B, brick-work B′, and side walls A′, and adapted to serve therewith, as and for the purposes herein specified.

2. The hinge or hinges E¹, for both the frames E and door D, in combination with the drum B, arch B′, side walls A′, and cap-plates F, as herein specified.

In testimony whereof I have hereunto set my hand this 26th day of July, 1878, in the presence of two subscribing witnesses.

NAT. W. PRATT.

Witnesses:

CHAS. L. MOLLER,

CHAS. C. STETSON.