G. B. N. TOWER.

FEEDING AIR TO FURNACES.

No. 257,905. Patented May 16, 1882.

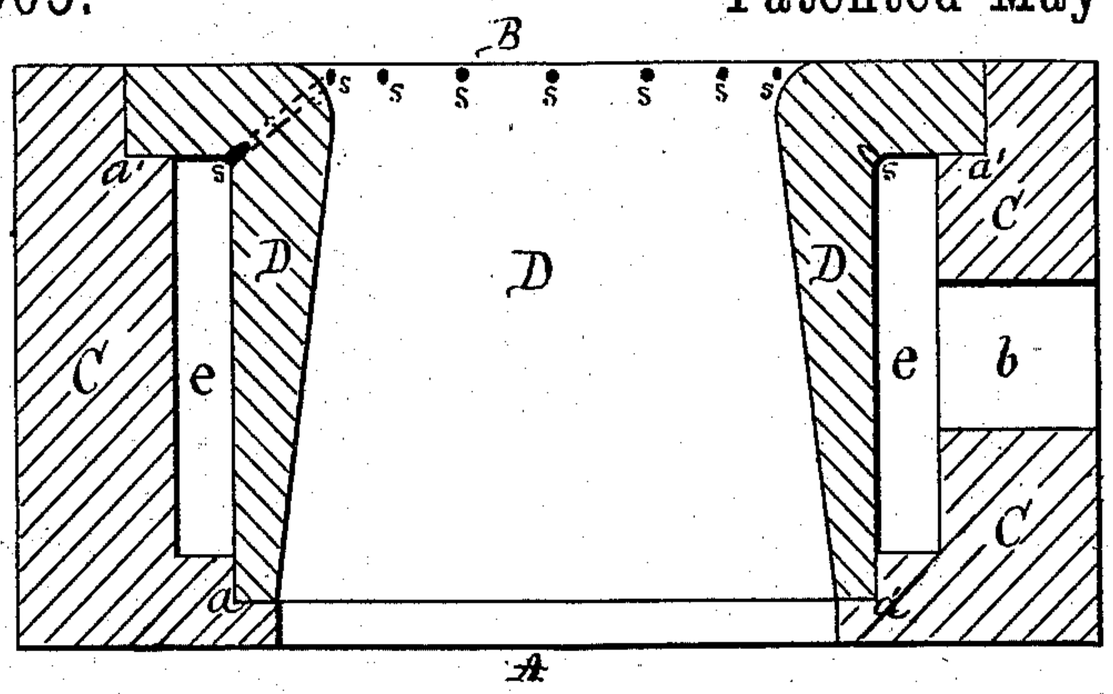

Fig. 1.

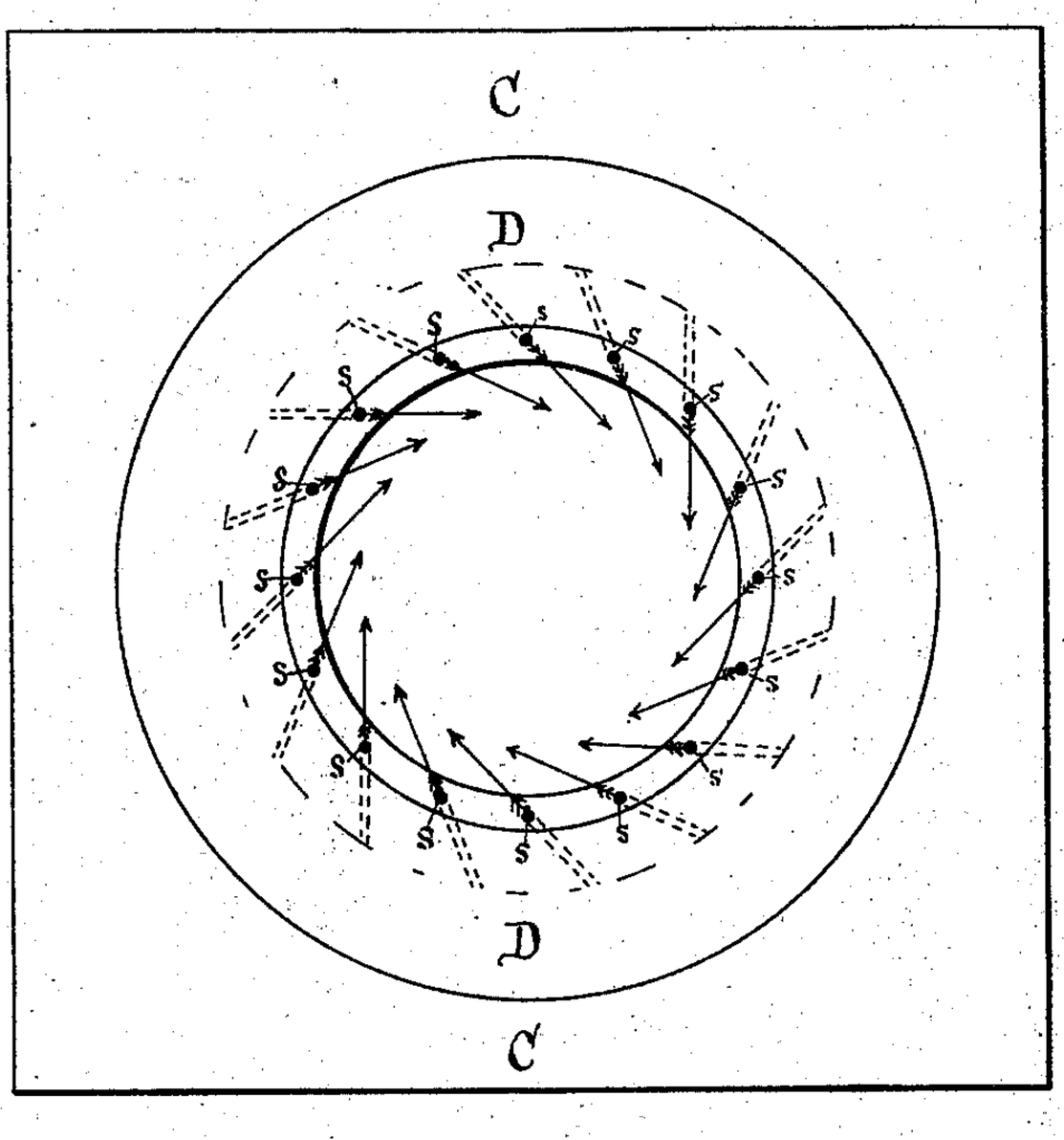

Fig. 2.

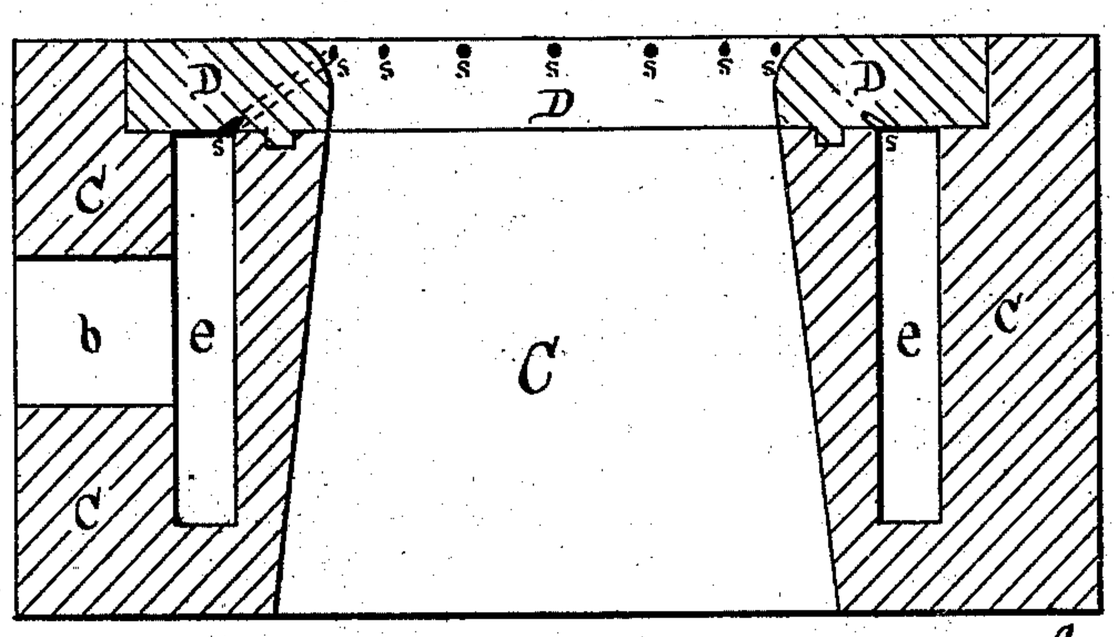

Fig. 3.

Witnesses:
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Inventor:
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by Chas. F. Sleeper,
his atty.

UNITED STATES PATENT OFFICE.

GEORGE B. N. TOWER, OF BOSTON, ASSIGNOR TO DAVID RENSHAW AND LYDIE F. RENSHAW, OF COHASSET; SAID DAVID RENSHAW ASSIGNOR TO HARVEY T. LITCHFIELD, OF HULL, MASSACHUSETTS.

FEEDING AIR TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 257,905, dated May 16, 1882.

Application filed October 21, 1878.

To all whom it may concern:

Be it known that I, GEORGE B. N. TOWER, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and improved process of mixing air with gases for purposes of combustion, of which the following is a specification.

This invention relates to improvements in feeding air to furnaces at such points as will assure much better combustion than has heretofore been gained.

It consists in locating at the bridge-wall peculiarly-constructed tile-sections or pieces of fire-brick or metal, by which the gases are retarded and made to mix or commingle with highly-heated air, by which the gases, as they pass from the furnace, are made to take a whirling or revolving course, thereby causing an intimate mixture immediately at the point where the heat is greatest, such mixture igniting in the rear combustion-chamber, thus consuming all the combustible gases that would be otherwise wasted.

I am well aware that devices have been used for supplying air at the bridge-wall, and that these devices retard the escape of the products of combustion more or less; but I am not aware that any device has ever been used that gave a whirling or revolving motion to the gases at the above-named point.

Referring to the accompanying drawings and the letters of reference marked thereon, which form part of this specification, Figure 1 is a horizontal cross-section of my invention. Fig. 2 is a face view, looking from the fire-door; and Fig. 3 is a horizontal cross-section of a modification.

The same letters of reference indicate corresponding parts in all the figures.

It will be seen that this tile is made of two pieces. In Fig. 1, C is the outer wall and D the inner wall. *e* is an annular chamber formed between them, and *b* the air-induction passage. *a a'* are annular projections or recesses for the insertion or reception of the inner section. A is the front or door side of the aperture or flue, and B the exit. The flue is tapering, as shown, but may be of any form suitable to the furnace to which it may be attached, and is applicable to all kinds of furnaces.

Fig. 2 is a face view of the tile or bridge-wall connection. This figure plainly shows the oblique apertures *s* and the direction the air and gases are forced to take—that is, a rotative one. By this means the air and gases of combustion are made to intimately mix. The mixture, being ignited in the rear combustion-chamber behind the bridge-wall, is entirely consumed. Thus the great waste of gases is avoided and the prevention of smoke complete.

Fig. 3 shows another form of construction of the bridge-wall air-disseminator. In this figure nearly the entire tile or piece is made in one, except the cap. The main tile is provided with recesses for the reception of the cap, the cap having the oblique perforations in it, which cause the whirling or revolving motion of the air and gases, as before described.

It is evident that other modifications may be made without departing from the spirit of my invention.

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

1. The combination, with the bridge-wall of a furnace, of the tile or casting provided with a double wall, between which is formed an annular chamber for the heating of air, and oblique outlets, whereby the air issuing therefrom forces the passing products of combustion to take a circular or revolving course for the better admixture of the two elements, as described, and in the manner set forth.

2. A tile or casting composed of an inner and outer shell, forming an air-chamber between them, one of which is provided with recesses and the other with corresponding projections to fit therein, the inner shell having oblique apertures, whereby the air and gases are made to take a whirling or revolving course while passing through the flue, substantially as herein set forth and described.

GEORGE B. N. TOWER.

Witnesses:
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