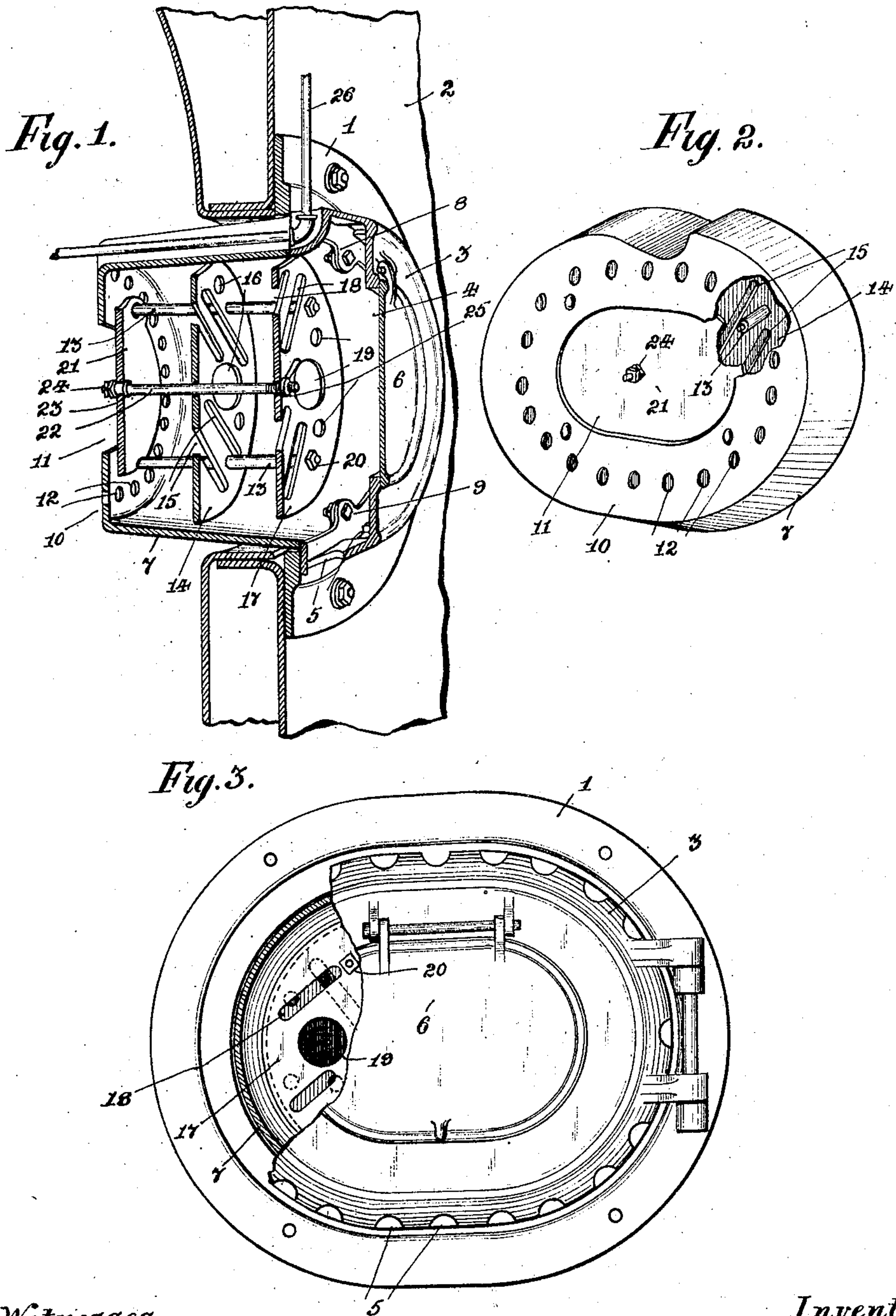


O. AUBÉ.
FURNACE DOOR.
APPLICATION FILED APR. 8, 1908.

925,444.

Patented June 22, 1909.



Witnesses.

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OCTAVE AUBÉ, OF MONTREAL, QUEBEC, CANADA.

FURNACE-DOOR.

No. 925,444.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed April 8, 1908. Serial No. 425,898.

To all whom it may concern:

Be it known that I, OCTAVE AUBE, a subject of the King of Great Britain, residing at 47 St. Vincent street, in the city and district of Montreal, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Furnace-Doors, of which the following is a specification.

10 The invention relates to improvements in furnace doors, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

15 The invention consists essentially in the novel arrangement and construction of parts whereby a particular form of box is attached to the door for heating air passing through suitable openings in said door into the fire 20 box.

The objects of the invention are to insure proper combustion of the fuel and thus achieve great economy in the consumption thereof, and to provide a simple method of 25 consuming the smoke, thereby eliminating that nuisance.

In the drawings, Figure 1 is a sectional perspective view of the furnace door. Fig. 2 is a perspective detail of the box from the 30 rear partially broken away to disclose the interior. Fig. 3 is a front elevation of the door partially broken away to disclose the interior of the box.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 is the door frame suitably secured to the furnace wall 2 and surrounding the fuel ingress opening.

3 is the door hinged at one side thereof to 40 the frame 1 and having a central opening 4 therethrough and a plurality of slots 5 at the edge of its inwardly turned side, said slots forming openings into said fuel ingress opening when the door is in its closed position.

45 6 is a flap door hinged at its upper side to the front of the door and closing the central opening 4.

7 is a box formed of suitable material and rigidly secured to the door through the lugs 8 50 and 9 projecting from said box and said door respectively, the said box 7 converging slightly toward the rear side 10, said rear side having a central opening 11 therethrough and a row of perforations 12 there- 55 through around said opening.

13 are posts rigidly secured to the rear side 10 and projecting forwardly into said box.

14 is a plate having the oblique slots 15 and a plurality of holes 16 therethrough, said plate 14 being supported by the said posts 13 60 intermediate of the length of said posts.

17 is a plate having oblique slots 18 running in a contrary direction to the slots 15 and a plurality of holes 19. The said plate 17 is supported at the forward ends of the 65 posts 13 and firmly secured thereon by the nuts 20.

The plates 14 and 17 are of smaller dimensions than the inside of the box 7, consequently the air flowing through the box 70 may pass around the edges of said plates through to the inside of said box and consequently to the inside of the fire box.

21 is a plate serving as a damper and adapted to close the central opening 11 in 75 the rear side of the box, said plate 21 having a central hole therethrough. 22 is a pin threaded at one end and at the other end inserted in the said central hole in the plate 21 and turning freely in said hole, being se- 80 cured therein to the outer side of the shoulder 23 by the nut 24. The posts 13 also extend through suitable orifices and slots in the plate 21, the said plate sliding freely on said posts. The pin 22 extends through 85 suitable holes in the plates 14 and 17 and slides freely therein, a nut 25 being placed on the outer end of said threaded pin to the outside of the plate 17 so that by turning on the said nut 25, the plate 21 is drawn 90 forwardly on the posts 13 or forced rearwardly thereon to close the opening 11, as the case may be.

26 is a steam pipe connected with a suitable steam supply and projecting through 95 into the fire box above the box 7.

In the operation of this invention, the box 7 forms a hot air chamber, the air flowing in through the opening or openings in the door and being diverted in its straight 100 course firstly, by the plate 17. On striking said plate or parts of it, a large percentage of the said air receives its first heating finding ingress after the first obstruction through the oblique slots 18 and other holes and 105 around between the edges of said plate and the side of the box. The further flow of the air is again obstructed by the plate 14 and as the slots 15 are substantially at right angles to the slot 18, there cannot be a clear 110

flow of the air through said plates, the different direction of the slots offering a requisite obstruction. The air becomes further heated before passing the plate 14 and then reaches the inside of the box, flowing through the row of perforations and through the opening between the edge of the plate 21 and the rear side 10. The size of this opening regulated by the turning of the nut on the threaded pin 22, and it will depend largely on the size of the furnace and fire box there- to as to what opening will be left between said plate and said rear side. The steam is turned on through the steam pipe and co- acts with the flow of air in promoting the combustion of the fuel in the furnace, thus doing away with the smoke nuisance. The heating of the air before it reaches the fire box will of course develop a gas highly com- bustible in mixing with the other gases from the fuel and combined with the steam, effect improved combustion.

The side wall of the box rigidly secured to the front plate of the door at the opening end of said door slopes sufficiently to clear the front wall of the furnace, and further the depression in the top of the box, clearly shown in Fig. 2, permits the free opening of the said door notwithstanding the steam pipe extending into the fire box, as the said de- pression widens considerably toward the extreme inner end of said box.

The arrangement of the plate, which is arranged immediately in front of the back plate in the interior of the box, may be varied according to the existing conditions under which the invention is used, for the object of said plate is to vary the opening into the fire box over the edges thereof and through the said opening in said back plate, therefore in most cases when its position has been determined for the particular furnace to which it is to be applied, it will be se- curely locked in that position and no doubt rigidly secured to such position.

What I claim as my invention is:

1. A furnace door, comprising a front side having suitable openings therethrough, a rear side having a large central opening and a circular row of small holes surrounding said opening and converging wall joining said front and rear sides and forming there- with a box, a plurality of plates having many holes therethrough and arranged within said

box between the front and rear sides and a solid plate of greater diameter than said cen- tral opening, overlapping the rear side for part of the distance between the edge of said central opening and the surrounding row of holes and held adjacent to said rear side.

2. In a furnace door, the combination with a fire box having a fuel ingress opening, of a door having an opening therethrough, means for closing said opening, a box rigid with said door and converging slightly to its rear side, said rear side having a central opening therethrough, posts rigidly secured to said rear side and extending forwardly, a plurality of plates supported on said posts and having oblique slots therethrough in staggered arrangement respectively, a plate closing said opening in the rear side and sliding on said posts and an adjusting pin extending from said rear plate through the aforesaid plates.

3. In a device of the class described, in combination, a fire box having a suitable fuel ingress opening thereinto, a door frame secured around said fuel opening, a door hinged to said door frame and having a plu- rality of slots around the edge thereof form- ing openings and a central opening there- through, a flap door closing said central opening, a box rigidly secured to said door and extending rearwardly therefrom con- verging to its rear side, said rear side having a central opening therethrough and a row of perforations therearound, posts rigidly se- cured to said rear side and extending for- wardly, plates having holes and oblique slots therethrough supported on said posts immediately of the depth of said box, a plate closing said central opening in the rear side and sliding freely on said posts, an ad- justing pin turning freely in said plates and having a threaded end extending through said plates and adjusted by a suitable nut, and a steam inlet pipe extending at one end into the fire box above said door and at the other end connected to a suitable steam supply.

Signed at the city and district of Mon- treal, in the Province of Quebec, in the Dominion of Canada, this 14th day of March, 1908.

OCTAVE AUBÉ.

Witnesses:

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