

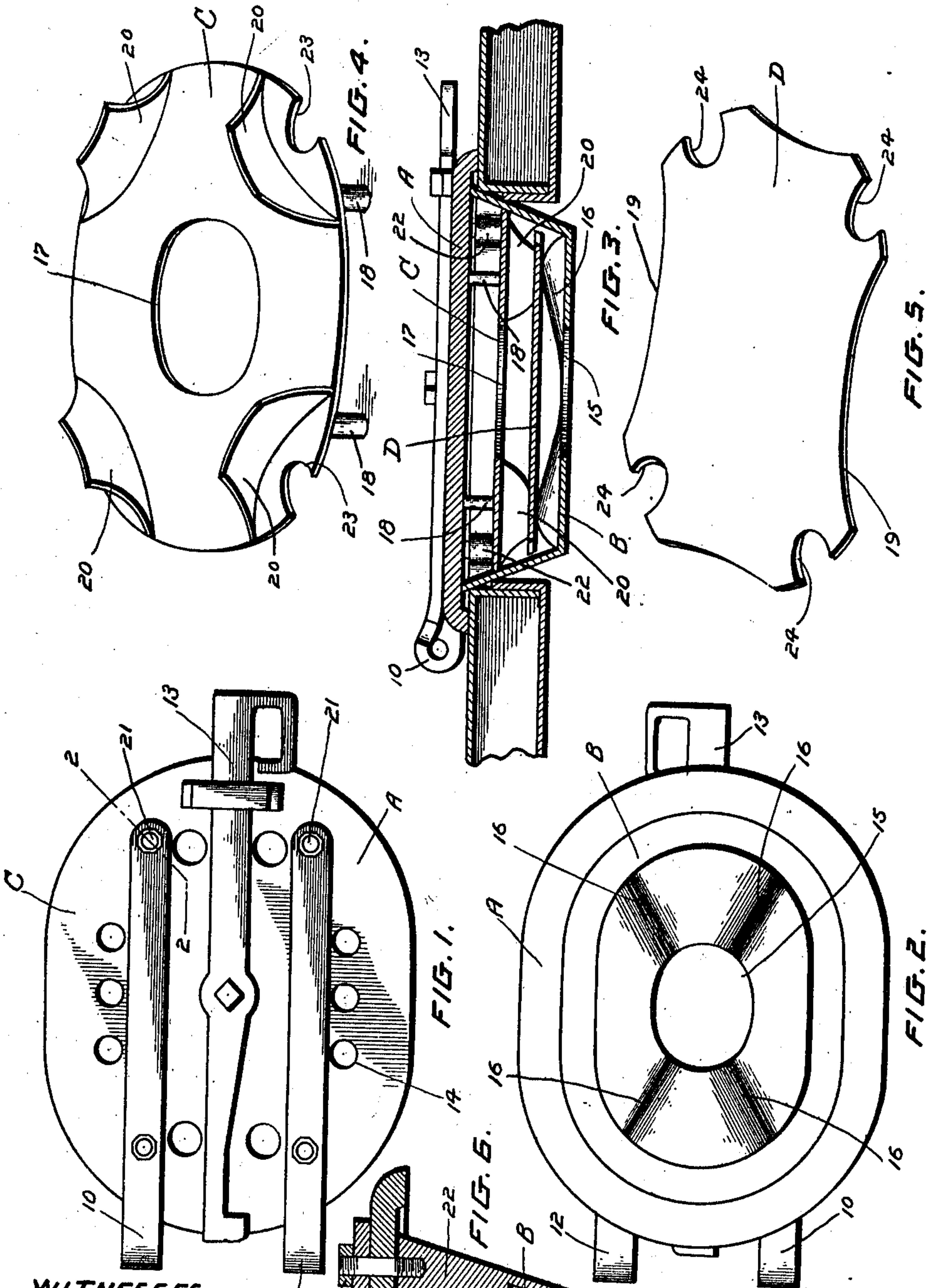
G. O'NEILL.

FURNACE DOOR.

APPLICATION FILED OCT. 7, 1909.

970,347.

Patented Sept. 13, 1910.



WITNESSES,
A. H. Gray
Russell E. Smith

INVENTOR.
G. O'NEILL.
BY *Frederick B. Schenck*
ATT'Y.

UNITED STATES PATENT OFFICE.

GEORGE O'NEILL, OF MONCTON, NEW BRUNSWICK, CANADA.

FURNACE-DOOR.

970,347.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed October 7, 1909. Serial No. 521,593.

To all whom it may concern:

Be it known that I, GEORGE O'NEILL, of Moncton, in the Province of New Brunswick, Canada, have invented certain new and useful Improvements in Furnace-Doors, of which the following is a specification.

My invention relates to improvements in furnace doors of the type adapted to admit air to the interior of the fire box to promote combustion and eliminate smoke, and the objects of my invention are to provide means insuring proper heating of the air before it is discharged into the fire box and further to generally simplify the construction of the door; and it consists essentially of a door formed with an outer and inner liner section having central openings and a plurality of spaced baffle plates between the sections, the said baffle plates conducting the air alternately from the center to the outside. These and other features of the invention are more fully set forth and described in the accompanying specifications and drawings.

In the drawings, Figure 1 is a front view of the door. Fig. 2 is a rear view. Fig. 3 is a transverse horizontal section. Fig. 4 is a perspective view of the first baffle plate. Fig. 5 is a perspective view of the second baffle plate. Fig. 6 is a sectional detail on the line 2—2, Fig. 1.

In the drawings like figures of reference indicate corresponding parts in each figure.

Referring to the drawings, A represents the outer section of the door which will be substantially the same shape as the ordinary door at present used, that illustrated being the door for a locomotive boiler and being provided with suitable lugs 10 and 12 for hinging purposes, and a central latching member 13. To admit air, the door is provided with a suitable number of perforations 14 which will vary in size and number with the amount of air desired to be introduced, and this will depend on the size of the furnace.

B represents the inner liner member, which is hollow and provided with a central aperture 15 through which the air discharges on to the fire. To increase the heating surface of this member and also to direct the air toward the discharge opening, the outer surface is provided with a plurality of radial corrugations 16.

Between the inner and outer members are a plurality of spaced baffle plates C and D

formed with openings adapted to conduct the air alternately from the center to the outside. The first baffle plate, in the embodiment illustrated, is provided with a central opening 17 and is formed with lugs 18 adapted to space it from the outer member A. The second plate D is formed with recesses 19 around the edges and is spaced from the first baffle plate by means of integral deflecting plates 20 which serve the double function of spacing the baffle plates and guiding the air current directly from the center apertures to the outside recesses, which leave opening between the edge of the baffle plate and wall of the inner member. Bolts 21 are employed to hold the baffle plates and inner and outer members together, the said bolts extending into lugs 22 on the inner member. To accommodate these lugs, the baffle plates are provided with notches 23 and 24, and in order to prevent the air passing through these notches, the deflecting plates are so arranged that they will deflect the current away from said notches.

In operation, the door is preferably used in conjunction with steam injecting means such as described in my application of even date herewith Serial No. 521,847, the air being drawn through the door by the natural draft of the boiler and being commingled with the steam, the carbon particles and unconsumed products of combustion effecting a secondary combustion in the fire box, thereby saving fuel and eliminating smoke.

Owing to the circuitous path which the air is forced to take in passing through the door, it is effectually heated and thus, more readily enters into combustion with the carbon particles. It will be observed that the recesses 19 are spaced at equal intervals around the baffle plate D insuring that the air will be uniformly distributed to the different sides, whereby each part of the door will give substantial an equal amount of heat to the air. It is also to be noted that the baffle plates 20, in addition to performing the function of deflecting the air from the lugs, guide the air directly from the outside to the center opening and prevent dead air remaining in the corners.

As many changes could be made in the above construction and many apparently, widely different embodiments of my invention, within the scope of the claims, could be made without departing from the spirit or scope thereof, it is intended that all matter

contained in the accompanying specifications and drawings, shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

- 5 1. A furnace door having a hollow lining member provided with a central opening, said member being formed with radial corrugations around the opening adapted to direct the air toward the opening and at the
10 same time to increase the air heating surface.
2. An air admitting furnace door comprising an outer member, an inner member having a central aperture, a baffle plate hav-
15 ing a central opening and being spaced from the outer member, and a second baffle plate spaced from the first baffle plate and provided with a plurality of recesses around the periphery spaced at equal intervals and
20 forming openings between the edge of the baffle plate and the wall of the inner member, said openings being opposite imperforated portions on the first mentioned baffle plate, whereby the air will be forced to
25 travel alternately from the center to the outside.

3. An air admitting furnace door comprising an outer member, an inner lining member having lugs thereon, bolts extending through the outer member to the lugs, a 30 plurality of baffle plates in the lining member, one at least of which has deflecting plates extending around the lugs, said inner and outer members being provided with suitable openings for the inlet and outlet of 35 air.

4. An air admitting furnace door comprising an outer member, an inner hollow lining member, a plurality of baffle plates in the lining member having apertures al- 40 ternately at the center and the outside, one of said baffle plates at least, being provided with deflecting plates projecting upwardly from the surface thereof and being adapted to guide the air directly from the center to 45 the outside apertures.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE O'NEILL.

Witnesses:

M. J. HENDRICK,
J. J. SWUMF.