W. O. ABBOTT.

DOOR FOR COKE OVENS.

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950,983. Patented Mar. 1, 1910.

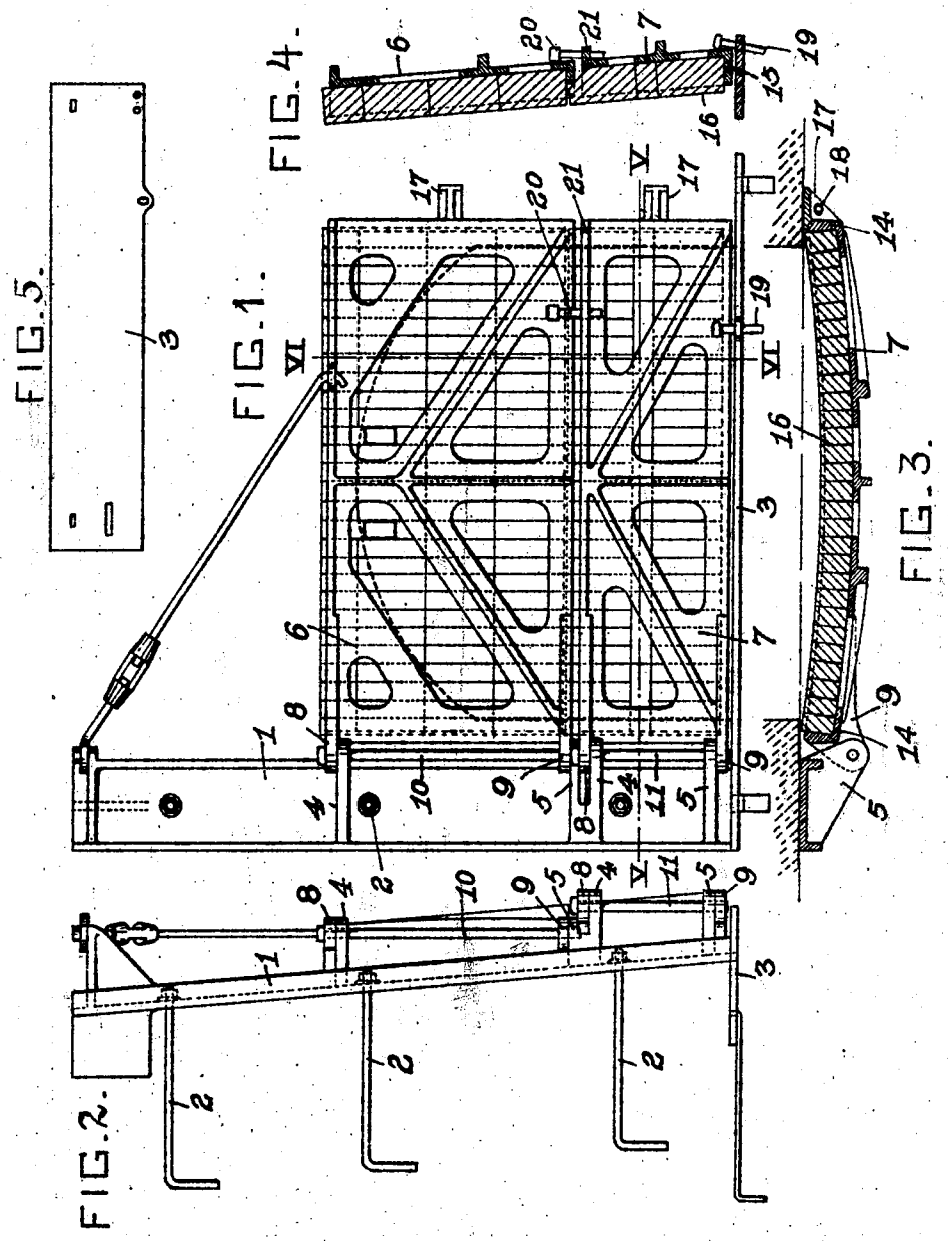

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

WITNESSES:

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DOOR FOR COKE-OVENS.

950,983. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed May 28, 1909. Serial No. 499,015.

To all whom it may concern:

Be it known that I, WILLIAM O. ABBOTT, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Doors for Coke-Ovens, &c., of which improvements the following is a specification.

The invention described herein relates to certain improvements in coke oven doors, and has for its object a construction whereby the refractory portion of the door may be held securely in its supporting frame and the latter protected from the heat.

It is a further object of the invention to so construct the door that ample draft opening may be provided at the top of the door, such opening being formed by such an arrangement of parts, that it can be readily reduced or entirely closed.

It is also an object of the invention to construct the door in sections so that one part may be closed to retain the coal in the oven while the other section is open to permit of the operation of the leveler.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification Figure 1 is a front elevation of my improved door and its supporting frame detached from the oven; Fig. 2 is an edge elevation of the parts shown in Fig. 1; Figs. 3 and 4 are sectional views on planes indicated respectively by the lines V—V and VI—VI Fig. 1, and Fig. 5 is a detail view of the sill plate or forehearth.

In the preferred construction the door is made in two sections independently hinged to the supporting post 1, which is firmly secured to the front of the oven by means of hooks 2 embedded in the masonry of the oven and having their ends secured to the post. The post has its lower end stepped in the sill or forehearth 3, as shown in Figs. 1 and 2. The post is provided, where sectional doors are employed, with a pair of lugs or ears 4 and 5 for each door section, and the frames 6 and 7 of the door sections are provided with pairs of ears or lugs 8 and 9, so spaced with reference to the ears on the post, that the pairs of ears on the latter will project between the members of the pairs on the doors or vice versa.

For the sake of stability the front wall of the coke ovens is made quite thick at the base and its front face given considerable batter. Hence in order that the door sections may swing together and have a good bearing on the face of the wall around the opening therein, the lugs or ears on the post and door sections are so arranged that the pintles 10 and 11 forming the axes of rotation of the door sections will be in a vertical plane at right angles to the front wall but will be in different vertical planes at right angles to the first as clearly shown in Figs. 1 and 2. The frames of the lower sections are arched as shown in Fig. 3 the concavity being inward and are provided with flanges or retaining walls 14 and 15 along two sides and the bottom. The lining 16 is formed of bricks arranged in arch form on the inner surfaces of the frames and between the side flanges 14. The bricks are supported vertically by the flanges 15 along the lower edge of the frames. When the bricks expand under heat, they will become more tightly wedged in place, and being thus keyed in place. When thus secured in place any jar or shock, especially such incident to closing the door will not have any loosening effect. As shown in Fig. 4, the lining is extended above the upper edge of the frames, so as to protect the latter from contact with the heat of the oven. The upper portion of the lining of the lower section will protect not only the upper edge of the lower frame but also the lower edge or flange 15 of the upper section of the door. As shown in Figs. 3 and 4, the lining extends inward beyond the side flanges 14 and the edges of such lining are designed to contact or nearly contact with the wall of the oven.

In order to prevent injury to the lining when closing the door sections the latter are provided with bearing blocks or projections 17, which bear against the front face of the oven. The blocks are desirably provided with holes 18 for the insertion of a hook for opening the sections. The lower section can be conveniently held closed by a bolt 19 placed in a hole in the sill and the upper section can be locked by a pin 20 inserted in a hole in a flange 21 on the lower section.

In coking operations provision must be made for the admission of air to support the

required combustion and provision must also be made for regulating and entirely closing such opening. In my improved door this air inlet is formed by the arch shape of the door itself. The fore-hearth or sill extends out under the lower edge of the door, and the edges along the vertical sides of the door contact with the front wall of the oven. These joints along the bottom and sides may be luted if desired. As the door closes against the front face of the oven only the edges of the sides contact therewith, and by reason of the bowed shape of the door a sector shaped opening is formed at the top of the door for the inflow of air. This opening may be partially or completely closed by placing brick on top of the door and against the front wall of the furnace.

In charging the furnace the lower section of the door is closed so as to prevent coal from dropping out. After the coal is charged it can be leveled off by a suitable tool inserted through the upper portion of the opening. The upper section is then closed and the joints luted if necessary.

I claim herein as my invention:

1. A door for coke ovens, etc., having in combination a supporting frame and a lining, formed of a refractory material and having an approximately uniform thickness and arched to withstand displacement by shocks or jars.

2. A door for coke ovens, etc., having in combination a supporting frame provided on opposite sides with retaining flanges and a lining of refractory material keyed between said flanges, the lining being concave inwardly.

3. A door for coke ovens, etc., having in combination a supporting frame, and a lining secured thereto the inner face of the lining being arched and a pivotal connection between the oven and the door said parts being so arranged that the edges at the ends of the arch will bear on opposite sides of the oven opening.

4. A door for coke ovens having in combination a frame and a plurality of door-sections adapted to be hinged to the frame, the axes of the door sections being in different vertical planes and at an angle to the plane of the door frame.

In testimony whereof, I have hereunto set my hand.

WILLIAM O. ABBOTT.

Witnesses:
CHARLES BARNETT,
FRIEDA E. WOLFF.