

T. J. MITCHELL & J. A. McCREARY

COKE OVEN DOOR.

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1,050,677.

Patented Jan. 14, 1913.

Fig. 2.

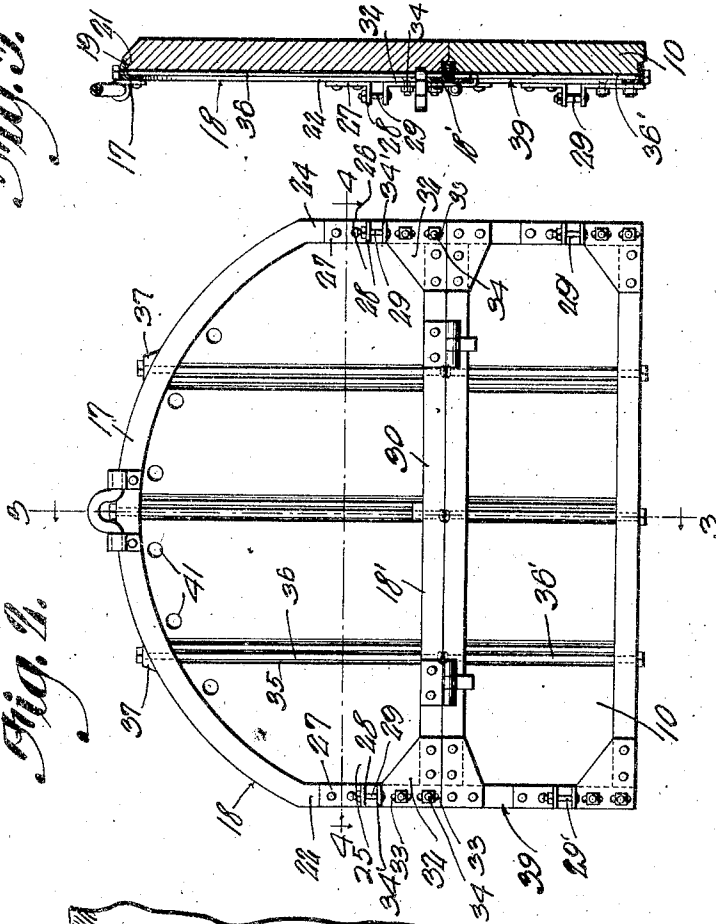


Fig. 1.

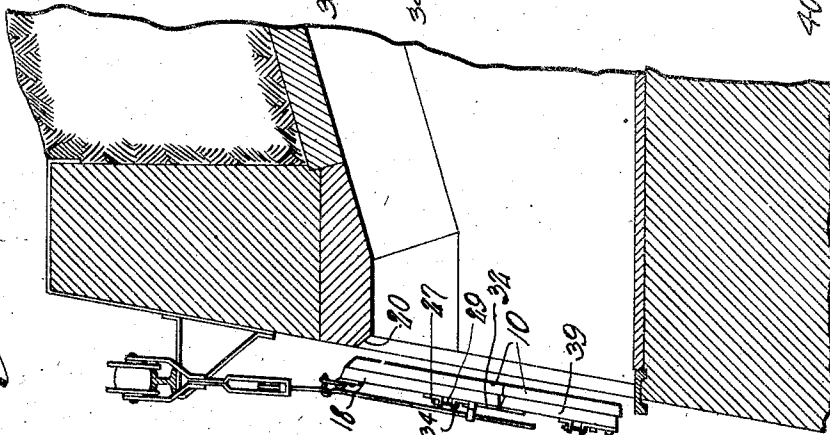


Fig. 3.

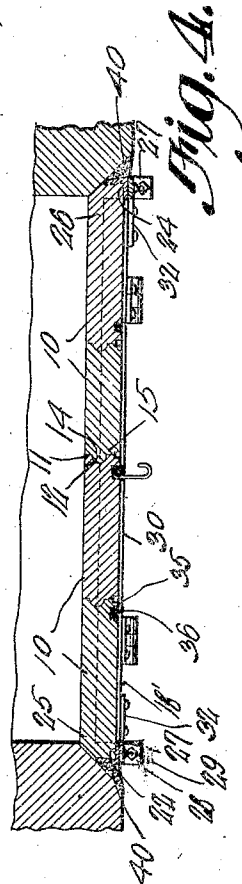


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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COKE-OVEN DOOR.

1,050,677.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed July 18, 1912. Serial No. 710,304.

To all whom it may concern:

Be it known that we, THOMAS J. MITCHELL and JAMES A. McCREARY, citizens of the United States, residing at Uniontown, in the county of Fayette, State of Pennsylvania, have invented a new and useful Coke-Oven Door, of which the following is a specification.

This invention relates to an improvement in coke oven doors.

The primary object of the invention is to provide a coke oven door for a rectangular or bee-hive oven which will snugly fit the door opening of the oven and which may be adjusted to compensate for the contraction of the refractory tile of which the door is made.

A further object of the invention is to provide a door which may be readily swung into position to close the door opening in the oven and in which the metallic frame of the door and its connecting members are not subjected to heat.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a sectional view of a portion of an oven, showing the door and its supporting mechanism in end elevation. Fig. 2 is a front elevation of the door. Fig. 3 is a vertical section on the line 3—3 of Fig. 2, and Fig. 4 is a section on the line 4—4 of Fig. 2, the door in this view being shown as positioned in the door opening of the oven, the mud or loam being shown between the door and oven.

Both of the sections of the doors are formed of a plurality of bricks 10 which are disposed vertically of the frame, the meeting edge 11 of one brick, being formed with a groove 12, which receives the rib 14 formed integral with the edge 15 of the adjacent brick. These bricks are of a number consistent with the width of the door, the bricks being substantially rectangular, the upper edges of the bricks forming the upper section of the door being curved to conform to the curved portion 17 of the frame 18 of the upper section. These curved

upper ends are beveled as shown at 19, conforming to the bevel 20 of the door opening of the oven. The upper section of the door consists of the upper and lower frame members 18 and 18', these frame members being composed of angle iron formed to an acute angle so as to firmly grip the inclosed brick or tile, the tile being formed with a recess 21 which at their upper edges receive the frame member 17, the frame and the beveled surface 19 being co-extensive. Particular attention is called to this arrangement as when the door is forced in position, as shown in Fig. 4, the heat cannot contact with the metallic frame. The upper section 17 of the frame is curved to conform to the curvature of the door opening of the oven, embracing the outer edges of the tile 25 and 26.

An angle iron 27 is secured to each of the vertically extending portions 22 and 24 of the curved bar 17 of the frame 18, the upstanding portions 28 of said angle irons receiving a bolt 29. The lower section of the frame which consists of the angle bar 30 and the vertically extending portions 31 have secured to each of its corners, a plate 32, said plate being provided with elongated slots 33 through which bolts 34 pass, the plate being vertically adjustable on the vertically extending portions 31 of the lower sections of the frame. The plates 32 are each provided with the upstanding portion 34' which is in alinement with the upstanding portion 28 of the angle bars 27, the bolts 29 passing through the upstanding portion 34 of the plate 32. It will be noted by this construction that the two sections which constitute the frame of the upper door section may be drawn together to compensate for the contraction of the tile. The tiles are provided with vertically extending grooves 35 to receive the vertically disposed rods 36. These rods pass through the lower bar 30 of the upper frame and the two outer bars pass through washers 37 placed on the curved portion of the curved upper section 17. The upper terminals of these bars receive nuts, it being noted that when said nuts are tightened, the two frame members between their adjustable connected plates may be drawn together.

In the drawings, each of the sections of the door are provided with three of the rods 36, the central rod as shown in Fig. 3 of the drawings, passing through the center of the

curved portion of the section 17, the washers 37 which receive the two outer rods being provided to assure a vertical movement of the rods when the nuts are tightened.

5 The door is composed of the upper and lower sections, the lower section 39 having the same frame construction as the upper section, the upper longitudinal beam of said lower section being straight, to conform to the lower beam 30 of the upper frame the frame of the lower section being drawn together by adjusting the bolts 29' and the vertically extending rods 36'.

15 It will be noted by this construction that the door frame may be clamped to the tile regardless of the degree to which the same contracts when exposed to heat for any length of time. It will also be noted that the adjustment of the frame may be readily accomplished while the door is in position.

20 Particular attention is called to the peculiar formation of the fire surfaces of the tile, it being noted that by referring to Fig. 4 of the drawings, that when the door is positioned within the door opening of the oven and the loam or mud 40 is placed between the frame and the wall of the oven, that all openings in the door with the exception of the draft opening 41 in the upper section, are closed, attention being called to the fact, that any of the draft openings may be closed with loam to regulate the draft. By this construction it will be noted that the heat does not contact directly with the metal frame of the door and even though the tile with which the door is formed should contract, the heat will not contact

with the door frame even before the bolt members are tightened to clamp the frame to the tile.

What is claimed is:

1. A coke oven door consisting of a frame, tiles of refractory material supported by said frame, said frame being adjustable to compensate for the contracting of the tiles.

2. A coke oven door consisting of a frame, tiles of refractory material supported by said frame, said frame being formed in sections, and adjustable means connecting said sections.

3. A coke oven door consisting of a frame, tiles of refractory material supported by said frame, said frame being formed in sections, and vertically disposed adjustable members connecting said sections.

4. A coke oven door consisting of a frame, tiles of refractory material, a frame formed in sections embracing said tile, the sections of said frame being adjustable with respect to each other.

5. A coke oven door consisting of a frame formed in two sections, tiles of refractory material embraced by said frame, means for drawing the frame together intermediate their ends, and means for drawing the same together at their ends.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

THOMAS J. MITCHELL.
JAMES A. McCREARY.

Witnesses:

J. M. SMITH,
WALTER T. SMITH.