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COKE OVEN DOOR.

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962,123.

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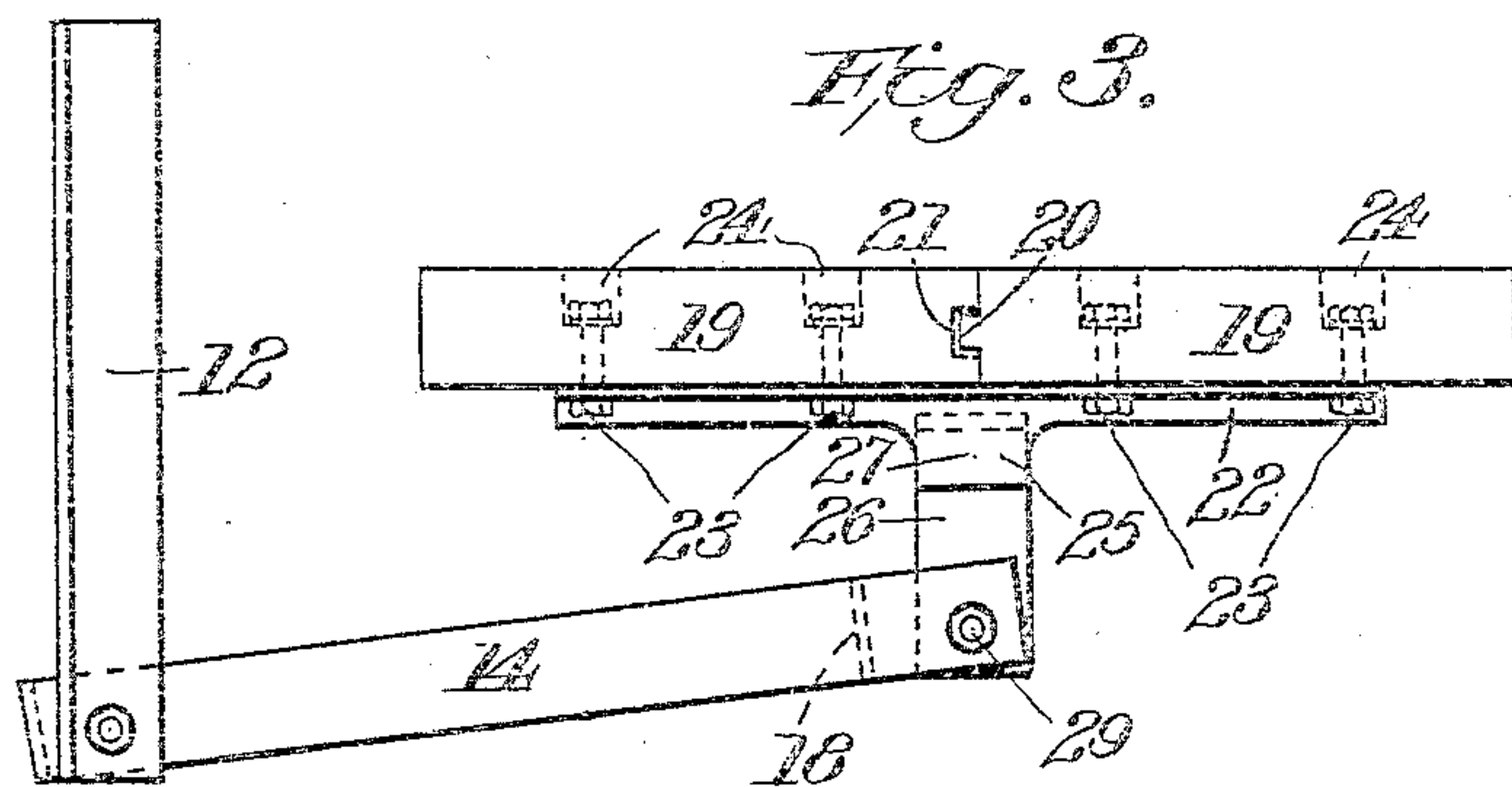
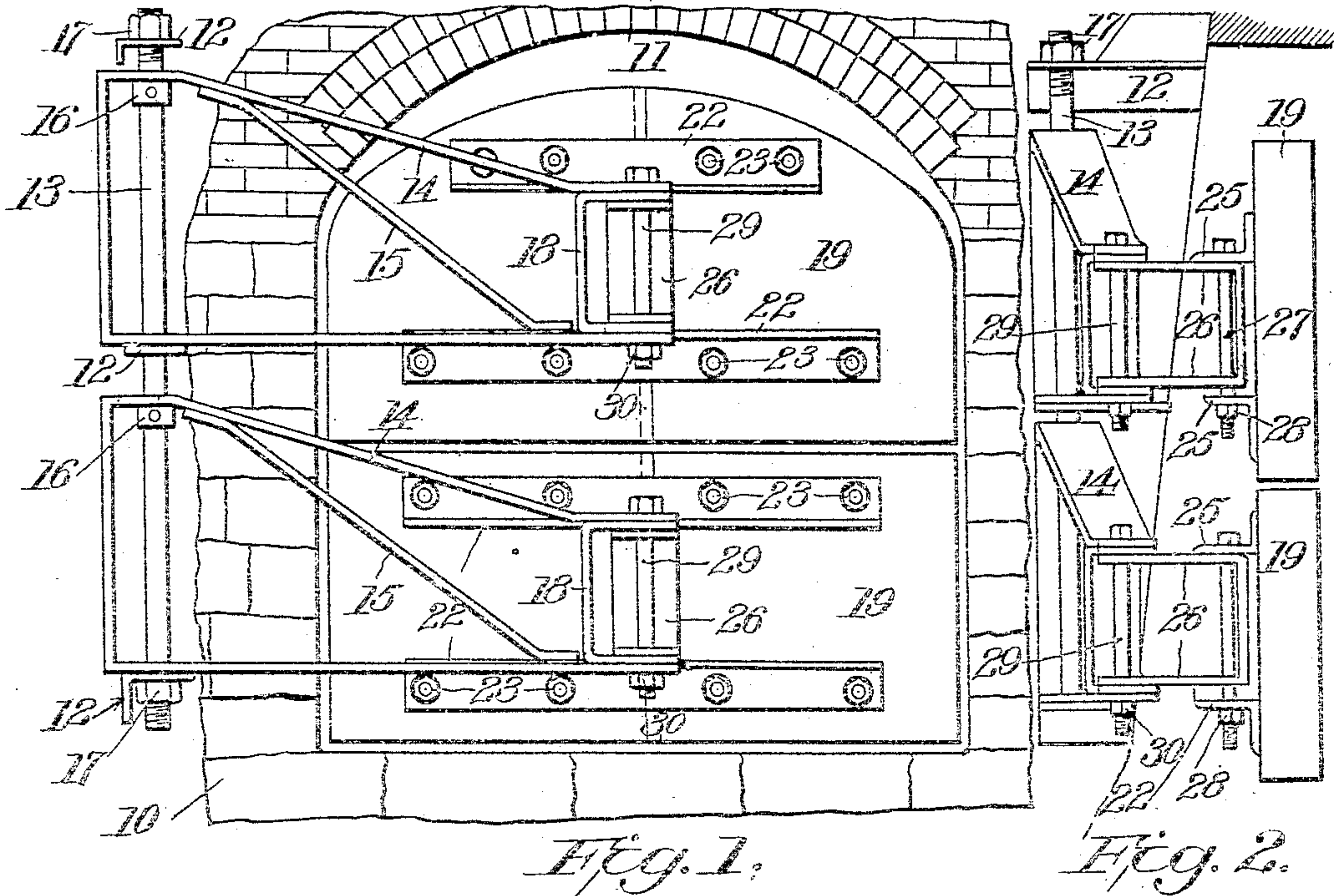


Fig. 4.



Fig. 5.



Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## COKE-OVEN DOOR.

962,123.

Specification of Letters Patent. Patented June 21, 1910.

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*To all whom it may concern:*

Be it known that we, FREDERICK D. BUFFUM, HOWARD N. EAVENSON, and EDWARD O'TOOLE, of Gary, in the county of McDowell and State of West Virginia, have invented certain new and useful Improvements in Coke-Oven Doors, of which the following is a specification.

This invention relates to doors especially adapted for coke ovens although it may be adapted for other similar purposes, such as for retorts, furnaces, kilns &c.

One of the objects of our invention is to provide an improved double-hinge support which will enable the door, when opened, to have its hot brick side turned to the wall of the oven at one side of the opening, so that a workman can not come in contact with said hot side.

Another object is to provide an improved hinge support for the two members of a horizontally divided door, so that when vertically adjusted the relationship of the two doors will not be varied.

Another object is to provide an improved structure of swinging arm which shall be light and strong and capable of properly sustaining the door under all conditions of use.

Another object is to provide an improved connection of the brick sections together and to the door support, so that different sections of the brick will form tight joints without the employment of fire clay.

To these ends, our invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings:—Figure 1 represents a front elevation of a portion of a coke oven, having our improved two-section door applied thereto. Fig. 2, represents a side elevation from the right of Fig. 1. Fig. 3 represents a top or plan view of one of the door sections and its support. Figs. 4, 5 and 6 are detail views of one of the fixed arms which support the vertical hinge rod.

Similar reference characters indicate the same or similar parts in all of the views.

The oven, a portion of which is indicated at 10, is provided with the usual or any suitable opening 11. The primary support for the door or doors of said opening com-

prise fixed arms 12 which are set in the masonry of the oven at one side of the opening. Each of the upper and lower arms preferably consists of two angle irons bolted together, one of said irons being shorter than the other and beveled as shown in Fig. 5. Mounted in holes in the flanges of the projecting ends of the fixed arms is a hinge rod 13, said rod, and with it the doors as hereinafter described, being vertically adjustable by means of nuts 17 to which jam nuts may be added if desired. Two swinging arms, each comprising a length of strap iron 14 bent to substantially a U-form and having a strut or brace 15, are mounted on the hinge rod 13 and held in proper position vertically thereon by collars 16 pinned on said rod. The ends of each strap iron 14 are connected by a brace 18.

Each of the upper and lower members of the door comprises bricks 19 one being formed with a tongue 20 fitting a groove 21 in the other to make a tight joint without the use of fire clay or "mud". The two bricks are connected by angle iron cross strips 22, bolts 23 securing the bricks to the strips. The heads or inner ends of the bolts are set in recesses 24 which are then filled with fire clay to protect the bolts. Between the horizontal flanges or lips 25 of the cross strips 22 is mounted a bracket 26, said bracket being hingedly connected with said lips or flanges by a rod or long bolt 27 having at its lower end a nut 28 to which may be added a jam nut. The vertical height of the bracket 26 is less than the space between the two lips or flanges 25, as best shown in Fig. 2, so that the door may swing freely relatively to said bracket and also to enable the height of the door to be adjusted as by inserting a washer between the top of the bracket and the upper lip 25. A bolt 29 having a nut 30, to which may be added a jam nut, passes through the outer ends of bracket 26, the ends of the member 14 of the swinging arm, and the brace 18.

The space between the top of the oven opening 11 and the upper edge of the upper door section is to supply draft. When desired, said space will be filled or partly filled with fire clay or "mud".

Having referred to the advantages of the several features of our invention in connection with the description of the struc-



ture, further reference to utility and advantages will be unnecessary. It should be stated however that with modern provision of coke-removing implements and the use  
 5 of cars running on tracks along a row of coke ovens, it is quite essential for the best results, that the oven doors shall be so supported that they can be moved out of the way to the utmost extent or degree when  
 10 open so as to not interfere either with the operation of the coke-removing implement, or with the passage of the machine or cars along the row of ovens. Our invention, as will be readily understood, not only enables  
 15 the hot side of the oven door to be turned to the wall at one side of the opening so as not to burn a passing workman, but also enables the door to be swung around to the utmost degree where it will be out of the way of the  
 20 removing machine or the coke cars.

We claim:—

1. A coke oven door having a substantially straight swinging arm, said arm comprising a substantially U-shaped metal strip having  
 25 its ends pivotally connected with the outside of the door and having a brace, and a hinge rod passing through the upper and lower members of said strip and having means for supporting it at one side of the oven opening.  
 30 ing.

2. A coke oven door having a substantially straight swinging arm, said arm comprising a substantially U-shaped metal strip having

its ends pivotally connected with the outside of the door and having a brace, and a  
 35 hinge rod passing through the upper and lower members of said strip and having means for supporting it at one side of the oven opening, said supporting means comprising angle irons set into the masonry of  
 40 the oven and projecting therefrom.

3. A coke oven door comprising upper and lower members, a substantially straight swinging arm pivotally connected with the  
 45 outside of each member, a hinge rod or pintle for both of said arms, and means for vertically adjusting the rod or pintle and with it both arms and their door members.

4. A coke oven door comprising upper and lower members, a substantially straight  
 50 swinging arm pivotally connected with the outside of each member, a hinge rod or pintle for both of said arms, means for vertically adjusting the rod or pintle and with it both arms and their door, and means  
 55 whereby each door member may be independently adjusted on its arm.

In testimony whereof we have affixed our signatures, in presence of the witnesses.

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