

C. W. GARLAND.
DOOR FOR COKE OVENS.

No. 578,510.

Patented Mar. 9, 1897.

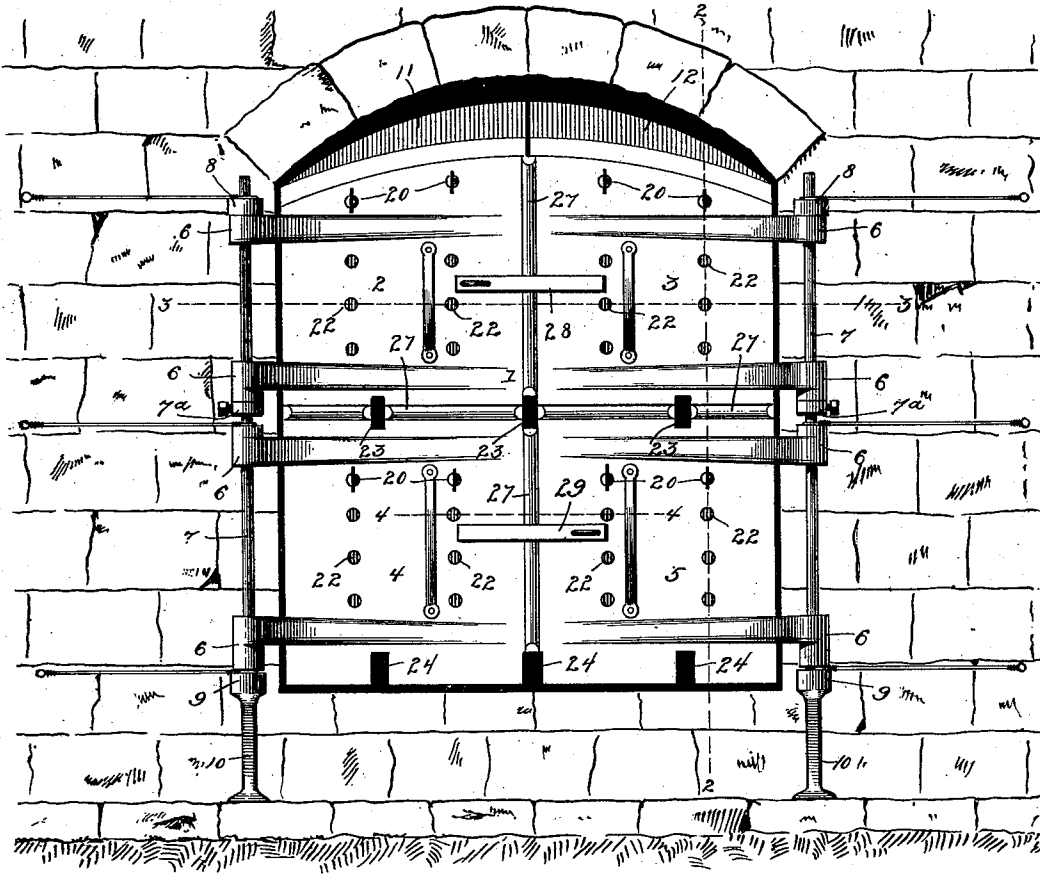


Fig. 1.

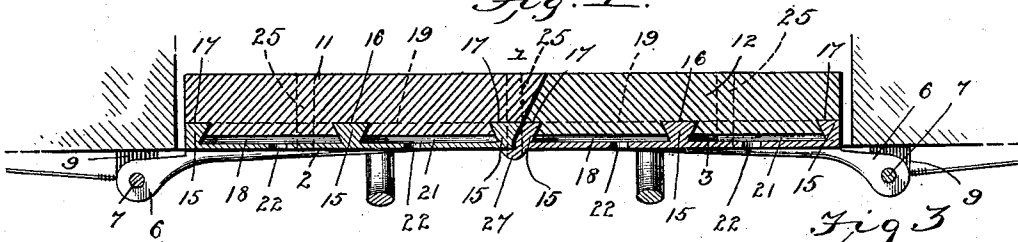
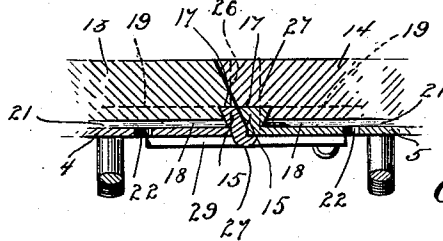


Fig. 3.

Fig. 4.



Inventor

Charles W. Garland.

Witnesses

E. N. Monroe

J. F. Riley

By his Attorneys,

C. A. Snow & Co.

(No Model.)

2 Sheets—Sheet 2.

C. W. GARLAND.
DOOR FOR COKE OVENS.

No. 578,510.

Patented Mar. 9, 1897.

Fig. 6.

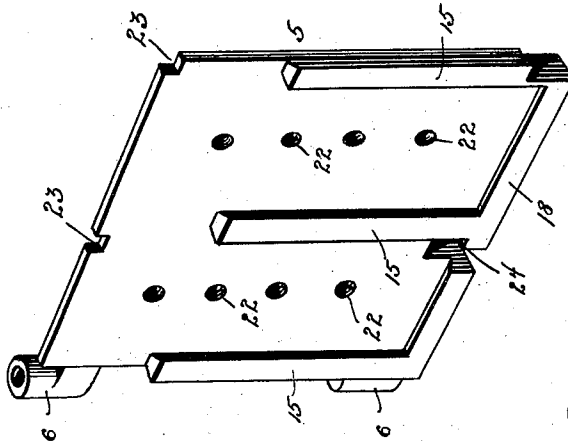


Fig. 5.

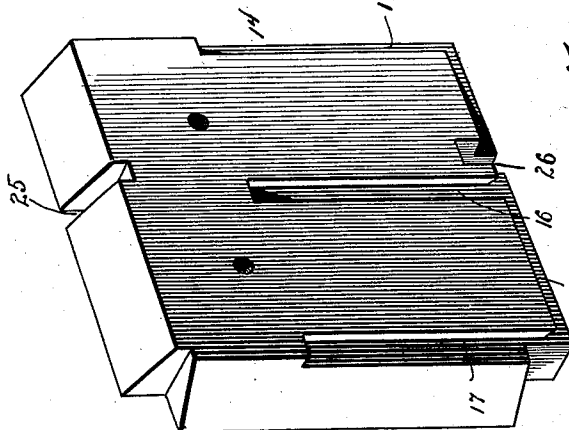
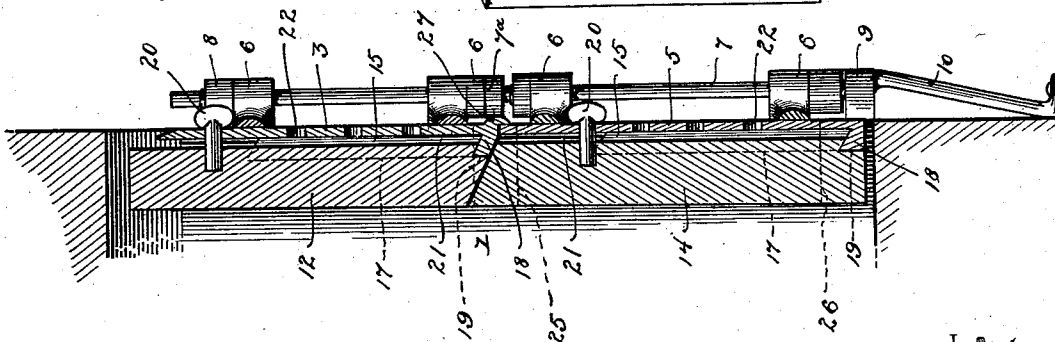


Fig. 2.



Inventor
Charles W. Garland

Witnesses
Est. Monitor
J. P. Riley

By His Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

CHARLES WILSON GARLAND, OF McDOWELL, WEST VIRGINIA, ASSIGNOR
OF ONE-HALF TO C. W. SHAFER, OF KEYSTONE, WEST VIRGINIA.

DOOR FOR COKE-OVENS.

SPECIFICATION forming part of Letters Patent No. 578,510, dated March 9, 1897.

Application filed July 22, 1896. Serial No. 600,124. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILSON GARLAND, a citizen of the United States, residing at McDowell, in the county of McDowell and State of West Virginia, have invented a new and useful Door for Coke-Ovens, of which the following is a specification.

The invention relates to improvements in doors for coke-ovens.

The object of the present invention is to improve the construction of coke-oven doors, and to provide a simple, inexpensive, and efficient one which will enable a coke-oven to be quickly opened and closed to avoid keeping an oven open any great length of time, whereby loss of heat is avoided and an oven may be maintained at the proper temperature.

A further object of the invention is to provide an oven-door in which the metal parts will not be directly exposed to the heat of an oven, whereby the expansion and contraction of the metal are prevented and consequent warping and cracking avoided.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claim hereto appended.

In the drawings, Figure 1 is a front elevation of a coke-oven constructed in accordance with this invention. Fig. 2 is a vertical sectional view on line 2 2 of Fig. 1. Fig. 3 is a horizontal sectional view on line 3 3 of Fig. 1. Fig. 4 is a detail sectional view on line 4 4 of Fig. 1. Fig. 5 is a detail view of the fire-brick lining of one of the lower doors. Fig. 6 is a similar view of one of the lower doors, the lining being removed.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a coke-oven door comprising a pair of upper doors 2 and 3 and a pair of lower doors 4 and 5, all of the doors being provided at their outer side edges with projecting eyes 6, arranged on vertical pintle-rods 7, whereby the doors are hinged to an oven. The vertical pintle-rods are supported by upper and lower eyes 8 and 9, the eyes 9 being provided with inclined braces 10, located directly beneath and supporting the

pintle-rods. The lower terminals of the inclined braces 10 are bent outward to form feet, which are supported upon the ledge located at the base of the oven. The upper doors are supported by collars 7^a, mounted on the pintle-rods and located beneath the lower eyes of the upper doors to relieve the lower doors of the weight of the upper ones, and these collars are provided with clamping-screws to enable them to be secured at the proper adjustment.

The doors 2, 3, 4, and 5 are provided, respectively, with fire-brick linings 11, 12, 13, and 14, and each door, which is constructed of metal, has at its inner face vertical rods 15, located at the side edges and at the centers of the doors and fitting in corresponding grooves 16 and 17 of the linings, whereby the latter are mounted on the doors. The ribs 15, which are beveled at their side edges, are wedge-shaped in cross-section, and the grooves 16 and 17 of the linings are correspondingly beveled, whereby the linings are interlocked with the doors. The lower ends of the vertical ribs are connected by a horizontal rib 18, beveled at its upper edge and fitting in a corresponding horizontal groove 19 of the lining.

The upper terminals of the vertical ribs are inwardly beveled or inclined, and the upper ends of the grooves 16 and 17 are correspondingly shaped, and the linings, which are interlocked with the doors by sliding downward on the inner face thereof to engage the said ribs, are locked against upward movement by horizontal pins 20, located near the upper edges of the doors and fitting in registering perforations of the doors and the linings.

The vertical ribs of the doors are of greater thickness than the depth of the grooves of the linings, whereby the latter are inwardly offset from the doors to provide an intervening air-space 21, and the doors are provided at intervals with perforations 22, communicating with the air-spaces 21 and with the outside atmosphere, and permit any heat collecting in the air-space to escape.

The inner edges of the linings of the upper and lower doors are beveled and overlap to provide a tight joint, as clearly illustrated in

Figs. 3 and 4 of the accompanying drawings, and the adjacent horizontal edges of the linings of the doors are beveled and overlap, as illustrated in Fig. 2 of the accompanying drawings, whereby when the upper and lower doors are closed the linings will form a solid wall of fire-brick and will prevent the metal of the doors from being directly exposed to the heat of the oven. By this construction the doors are prevented from expanding and contracting, and consequent warping and cracking are avoided.

As space is provided between the outer edges of the doors and the door-opening of the oven, and the lower doors are provided at their upper and lower edges with rectangular openings 23 and 24, registering with corresponding openings 25 and 26 of the linings, and these openings afford access to the interior of the oven and permit the operator to fire up the same and maintain the oven at the proper temperature. The overlapping flanges 27 for closing the joints at the adjacent edges of the doors are provided and are located at the inner and bottom edges of the door 3, at the lower edge of the door 2, and at the inner edge of the door 5, as shown, and these flanges are recessed adjacent to the openings 23 and 24. The inner abutting edges of the upper and lower doors and their linings are oppositely beveled, as clearly illustrated in Figs. 3 and 4 of the accompanying drawings, and reversely-arranged hasps 28 and 29 are provided for securing the doors

when closed. The hasps are provided at their outer ends with openings for the reception of staples, to which they are secured by any suitable fastening devices, and the doors are provided with suitable handles.

It will be seen that the coke-oven door is simple and comparatively inexpensive in construction, that it will enable coke-ovens to be rapidly opened and closed in order to prevent loss of heat, and that the metal of the door is protected by a solid wall of fire-brick and is prevented from warping and cracking.

It will also be apparent that any heat collecting in the intervening space between the linings and the doors is permitted to escape through the openings or perforations 22.

What I claim is—

An oven-door comprising the upper and lower pairs of doors hinged at their outer edges and provided with perforations, the lower doors being provided at their upper and lower edges with openings 23 and 24, and the removable linings detachably interlocked with the doors, forming intervening spaces between them and the doors and provided with openings corresponding with the openings 23 and 24, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES WILSON GARLAND.

Witnesses:

G. W. PILE,

A. C. ALDERSON.