

(No Model.)

E. A. KERN.
FURNACE DOOR.

No. 415,512.

Patented Nov. 19, 1889.

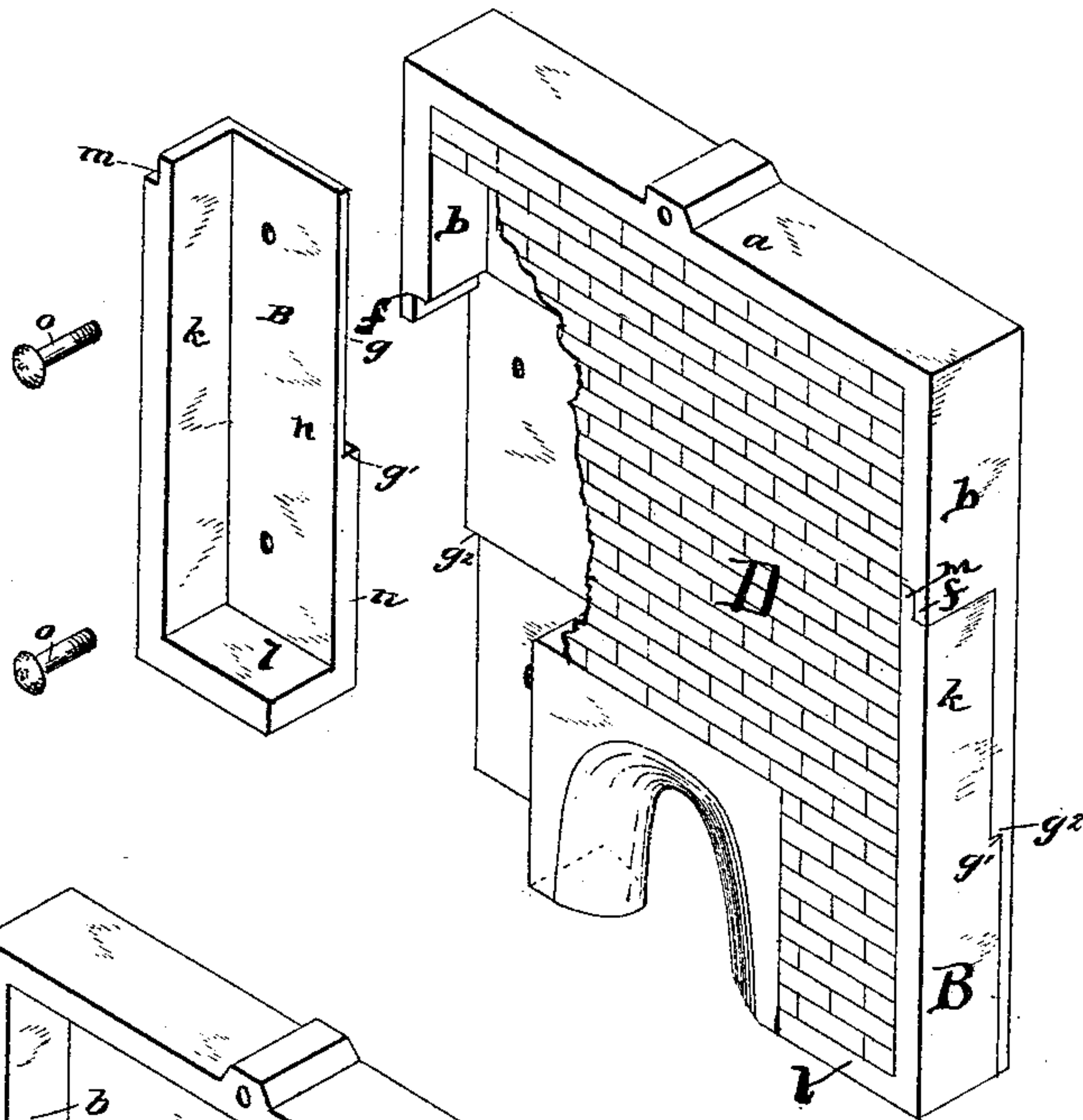


Fig. 2.

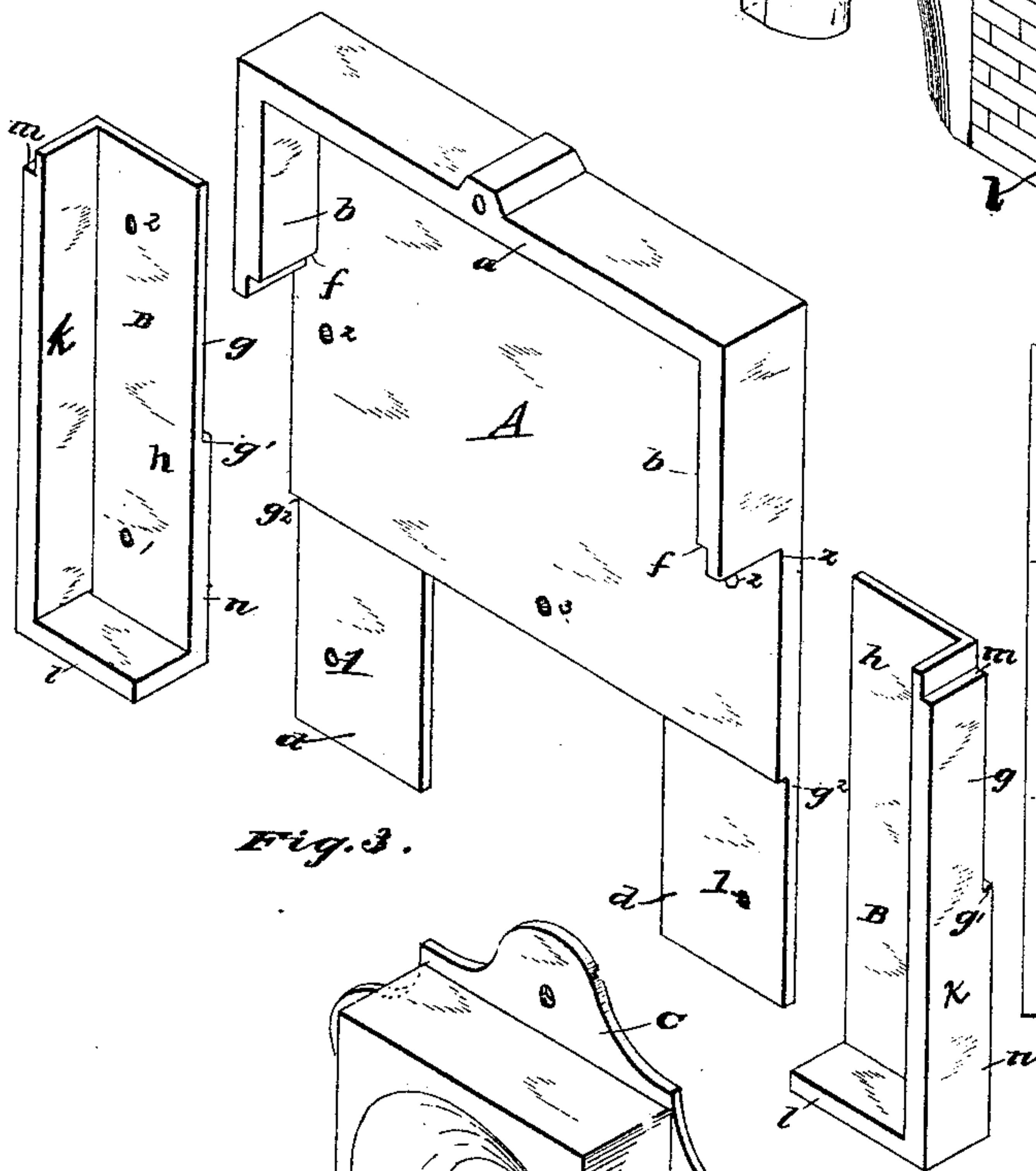


Fig. 3.

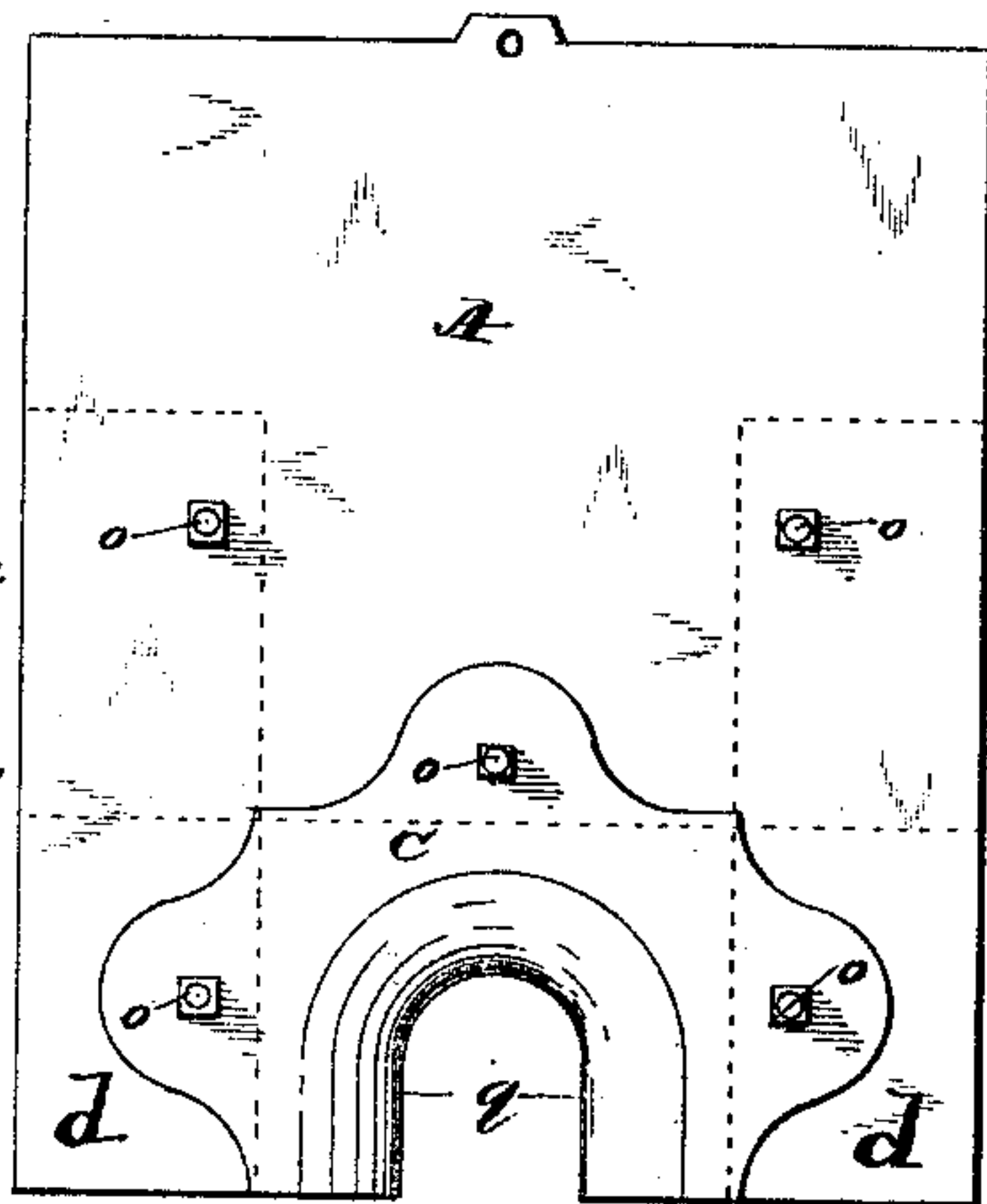


Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN A. KERN, OF WARREN, OHIO.

FURNACE-DOOR.

SPECIFICATION forming part of Letters Patent No. 415,512, dated November 19, 1889.

Application filed June 10, 1889. Serial No. 313,760. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. KERN, a citizen of the United States, and a resident of Warren, county of Trumbull, State of Ohio, have invented a new and useful Improvement in Furnace-Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to doors for puddling-furnaces; and the object is to provide a door made of case metal, having such portions as are most exposed to the heat removably secured to the body portion, so that portions destroyed may be renewed from time to time, as occasion may require.

With these ends in view my invention relates to certain features of construction and combination of parts, as will hereinafter be described, and set forth in the claim.

Figure 1 of the accompanying drawings is a front elevation of a furnace-door, illustrating my invention; Fig. 2, a view in perspective from right rear, showing brick lining and one side cheek removed. Fig. 3 is a similar view comprising the front portions of the door disconnected.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

As my invention is applicable to many of the approved forms of puddling-furnaces now in use, I will proceed with a description of the door, referring to the furnace only as conjunctive thereto. The body portion A of the door is provided with a flange *a*, extended across the top portion of the body, and side flanges *b*, extending a distance down the side portions of the body A, and the arm portions, as *d*, extending downwardly a distance from the body, substantially as shown in Fig. 3 of the drawings. The lower end portions of the side flange *b* are cut away on the inside to form a gain, as *f*, and the rear faces of the arms *d* are cut away transversely, as shown, by the shoulder *g*², leaving the arm portion about one-half the thickness of the body portion. There are also provided in said body portion perforations 1, 2, and 3. Side or cheek pieces B are provided in pairs, of the form substantially as shown in Fig. 3, and adapted or fitted to the body portion A,

the said side pieces having a body portion *h*, a side flange *k*, and a bottom end flange *l*. The upper back portion of the body *h* is cut away transversely, forming an offset *g* and shoulder *g*¹ corresponding with a similar shoulder *g*² of the body and arm portions A *d*. The outside upper end portion of the flanges *k* is cut away or gained, as shown at *m*, to correspond with the gain *f* on the lower portion of side flange *b* of the body A. The cheek B is placed upon the body A, the lower front portion *n* of the cheek resting on the inside face of the arm *d*, the gained portion *g* resting on the inside face of the body A, the outside gain *m* of the upper end portion of side flange *k* resting on the inside gain *f* at the lower end portion of the flanges *b*, in which position the cheek-piece is further secured by bolts, as *o*, through perforations 1 and 2 as provided therefor, thus forming overlapping joints, as shown.

For the lower central portion of the door a plate C is provided, having a rearwardly-projecting re-enforcement *p*, rectangular in form, and having at its lower central portion a notch *q*, forming a bit provided with the usual opening in such doors for the introduction of the puddling-tools. The plate C, with its re-enforced rearwardly-projected portion *p*, is secured to the body portion A by bolts *o* through perforations 1 and 3, forming, with the flanges *a*, *b*, and *k*, a box-like portion in which the fire-brick lining D is built about the re-enforced portion *p* of the plate C against the inside face of the body A and cheeks B, and embraced by the flanges *a*, *k*, and *l*.

In use the re-enforced portion *p* of the plate C, by reason of its contact with the fire in the furnace, will fuse and waste away, rendering that portion of the door useless. The sides or cheeks B are also liable to and do for the same reason fuse and waste away, when by reason of such destruction the parts C and B are no longer useful in holding the lining or in otherwise forming a useful portion of the door, and as occasion requires either of the parts may be removed and a new one put in place without injury to the other parts, and a door constructed of the several parts hereinbefore described is not so liable to crack as when cast on one piece. Doors of this class are usually raised be-

tween guides secured to the front of the furnace; but, if preferred, they may be supported on cranes or suitable hinges.

Having thus fully described the nature and object of my invention, what I claim, and desire to secure by Letters Patent, is—

In a puddling-furnace door, the combination of the body portion A, having a top flange *a* and side flanges *b*, the latter having at their lower ends a cut-away or gained portion *f*, and provided with downwardly-extending arms *d*, having shoulders *g*², side cheeks B, having a body portion *h*, and provided with

side and bottom flanges *k* and *l*, having gained or cut-away portions *g* and *m*, which fit, respectively, the shoulders *g*² and cut-away portions *f*, plate C, having re-enforced portion *p*, provided with a notch *q*, and bolts *o*, for removably securing the parts A B C together, substantially as set forth.

In testimony whereof I have hereunto set my hand this 24th day of May, A. D. 1889.

EDWIN A. KERN.

Witnesses:

W. K. MILLER,
L. F. CARL.