

(No Model.)

I. HAYES.
Grate for Stoves and Furnaces.

No. 232,494.

Patented Sept. 21, 1880.

Fig: 1.

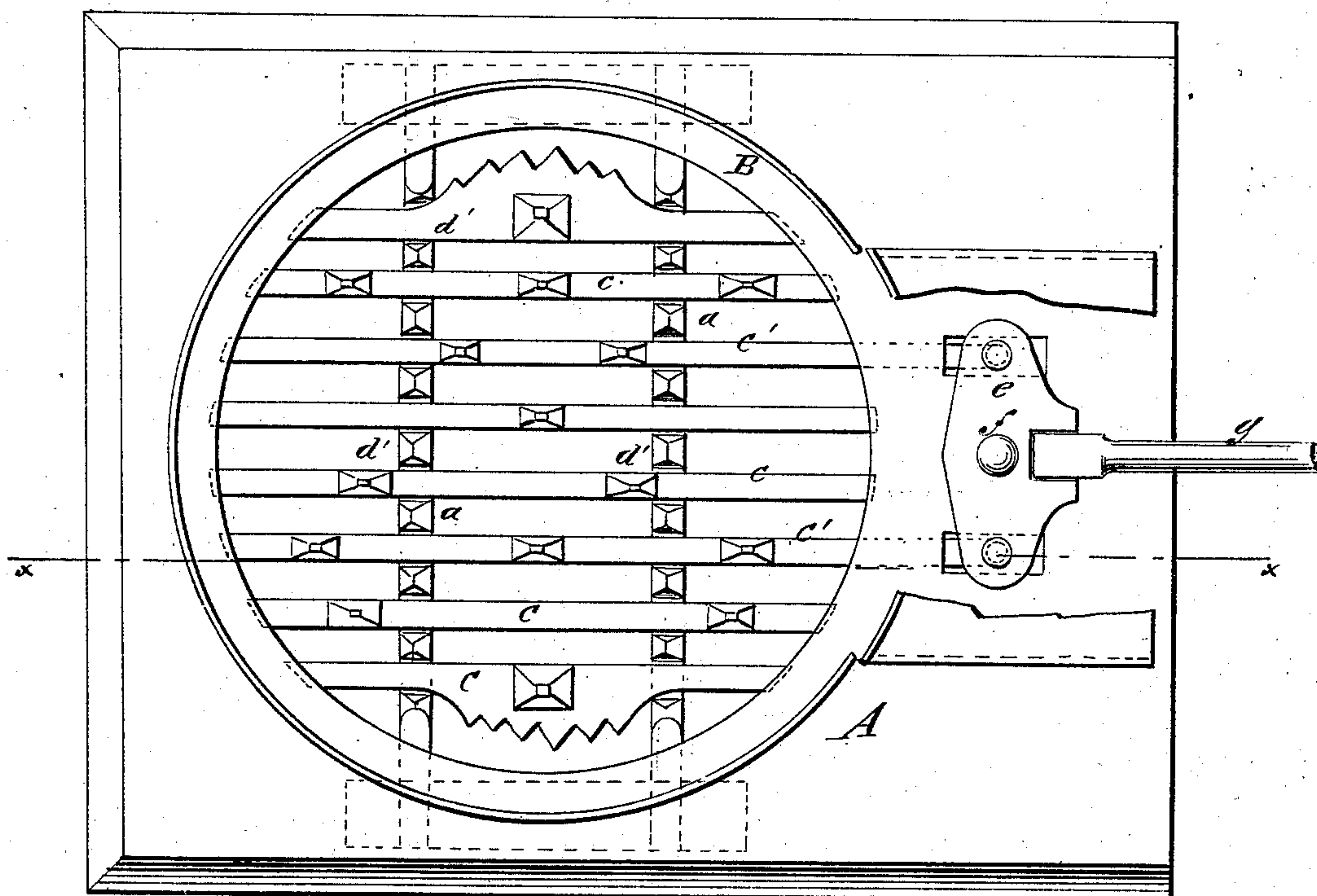


Fig: 2.

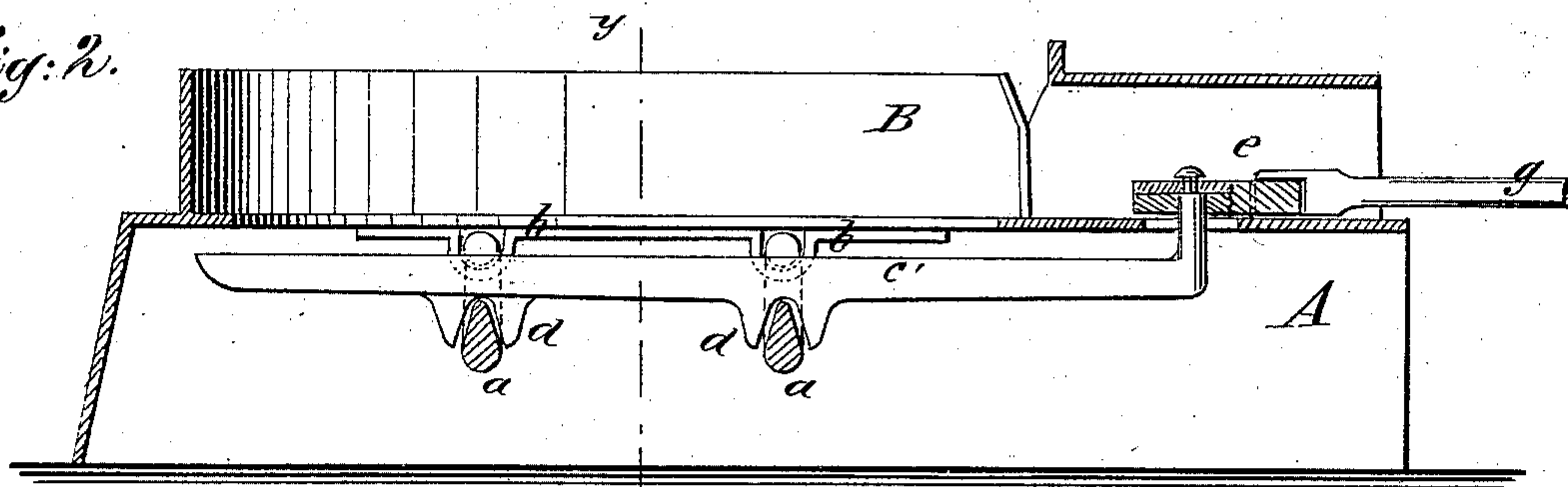
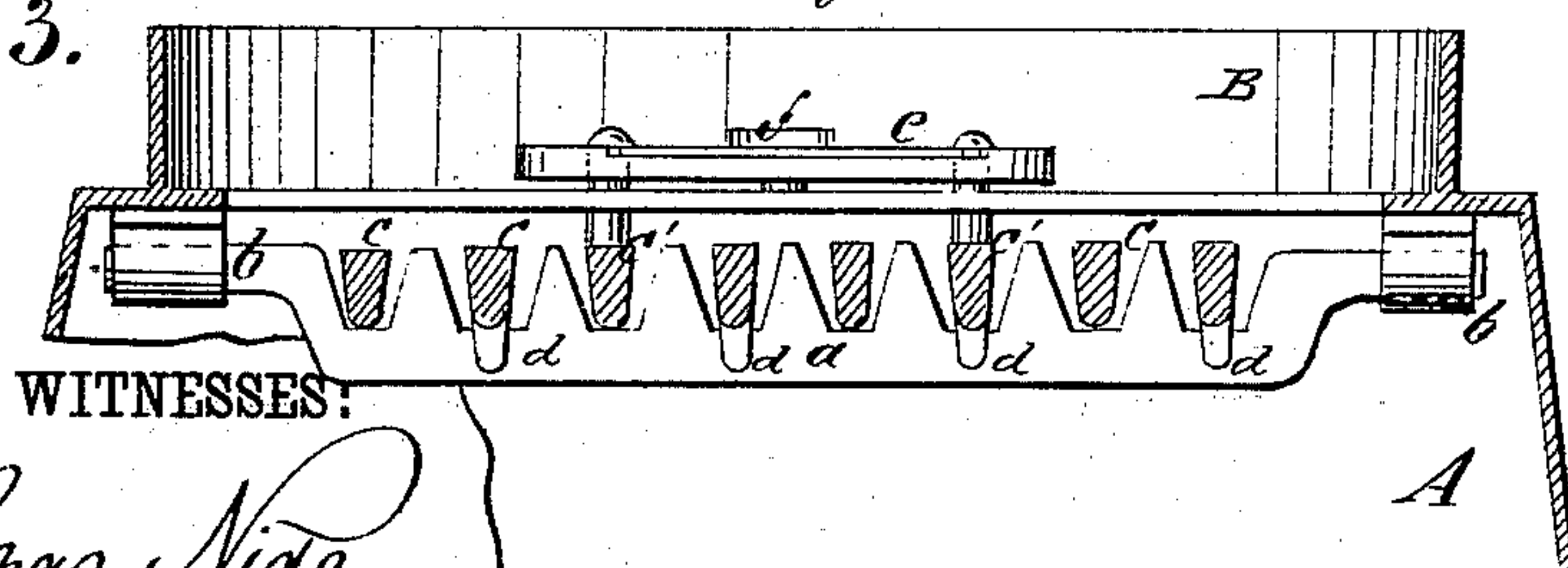


Fig: 3.



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GRATE FOR STOVES AND FURNACES.

SPECIFICATION forming part of Letters Patent No. 232,494, dated September 21, 1880.

Application filed July 24, 1880. (No model.)

To all whom it may concern:

Be it known that I, ISAAC HAYES, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Grates for Stoves and Furnaces, of which the following is a specification.

The object of my invention is to furnish a grate which shall permit ready removal of ashes and clinkers.

My invention consists in a grate composed of cross-bearers that are fitted for being rocked and support the grate-bars. The bearers are moved by a rock-lever and handle, that is connected with two of the grate-bars, whereby the bearers and grate-bars are vibrated alternately in opposite directions.

In the accompanying drawings, Figure 1 is a plan view of my improved grate as applied to a furnace-base. Fig. 2 is a vertical section of the same on line *x x*, Fig. 1. Fig. 3 is a vertical transverse section on line *y y* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A is the base, and B the circular fire-box, of a furnace of any usual or desired construction. *a a* are the grate-bearers, which extend beneath the fire-box from side to side, and are supported at their ends by lugs *b b*, that form boxes, in which the bearers can turn.

The lugs *b* may be attached to the under side of the base A, or formed therewith, or the bearers *a* may be supported in any suitable manner.

The bearers *a* have their ends forming the spindles that enter lugs *b* bent upward, so that the central portion of the bearers is below the lugs. This portion is formed with serrations, as shown, to receive the grate-bars *c*, which rest loosely upon the bearers.

The bars *c* are formed with double lugs *d* at the under side, which take against bearers *a*. These lugs are positioned so that they come alternately upon the front and rear bearers—that is to say, the lugs of the first bar take on the forward bearer, the lugs of the second on

the rear bearer, and so on, as shown most clearly in Fig. 2.

Two of the middle bars, *c'*, extend forward beneath the front portion of base A, and their ends turn upward and enter apertures at opposite ends of a rock-lever, *e*, that is pivoted on base A by a rivet or bolt, *f*. This lever *e* is formed with a mortise for receiving the handle *g*, by which the lever can be vibrated in a horizontal plane, and the bars *c'* thereby reciprocated.

By the above-described construction the movement of lever *e* gives a reciprocation to bars *c'*, one forward and the other back, and these bars act, by their lugs *d*, to rock the bearers *a* in the same manner, one bearer swinging forward as the other swings back. The lugs of the other grate-bars being placed as described, the bars are moved, one-half of them by one bearer in one direction, and the others by the other bearer in the other direction. This movement is most effective in sifting the ashes through the grate and breaking up the clinkers.

To facilitate the operation, lugs *d'* may be formed on the upper surface of bars *c*, as shown. Two or more bars, *c*, may also be formed, with hooks at their forward ends, so that they can be tipped up and drawn out to give space for escape of large clinkers. This construction also permits the renewal of any one bar when broken, without the expense of an entire new grate.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In grates, the combination of bars *c c'*, formed with lugs *d*, bearers *a a*, hung in boxes *b*, and rock-lever *e*, connected to bars *c'*, substantially as shown and described, for operation as specified.

ISAAC HAYES.

Witnesses:

W. A. ARNOLD,
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