

G. W. & A. W. WALKER.
FURNACE.

Patented Aug. 25, 1891.

Fig: 1.

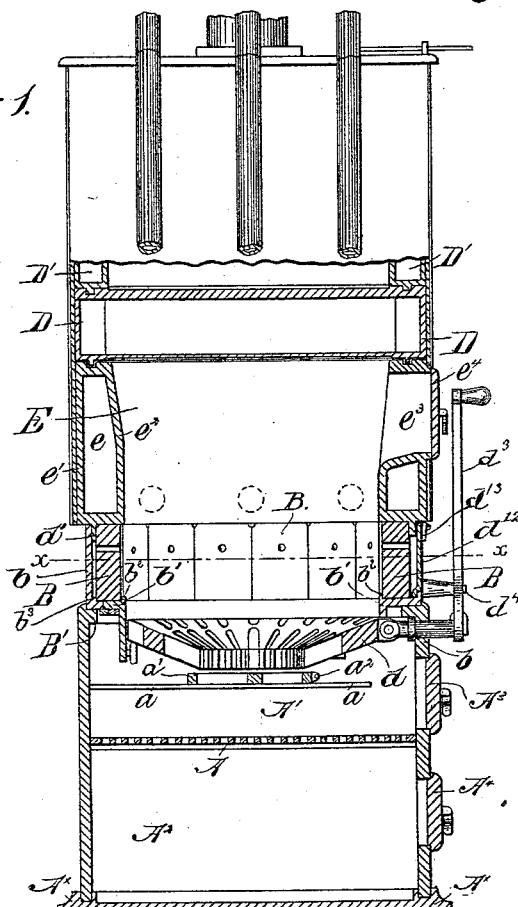


Fig: 2.

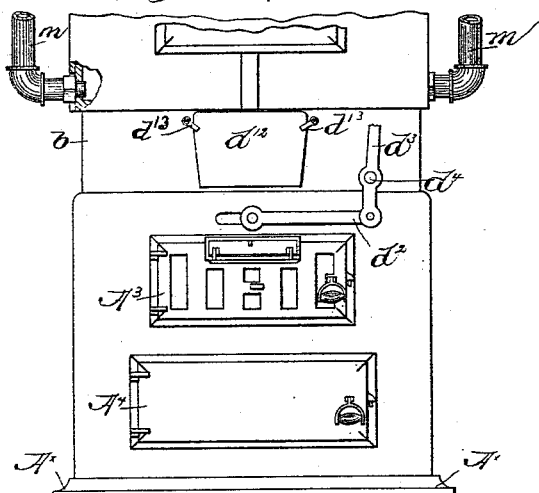
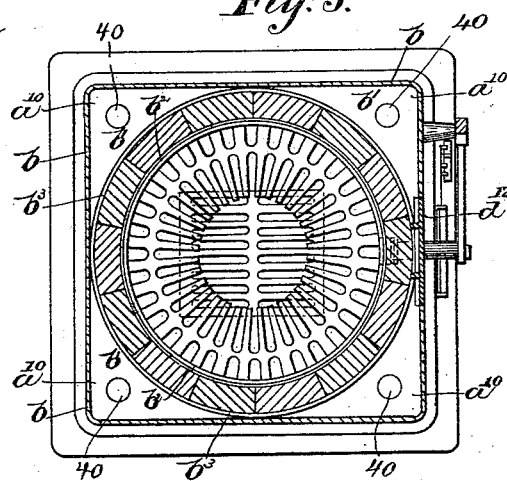


Fig: 3.



Witnesses,
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UNITED STATES PATENT OFFICE.

GEORGE W. WALKER AND ARTHUR W. WALKER, OF MALDEN,
MASSACHUSETTS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 458,245, dated August 25, 1891.

Application filed October 10, 1890. Serial No. 367,716. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. WALKER and ARTHUR W. WALKER, of Malden, county of Middlesex, State of Massachusetts, have
5 invented an Improvement in Furnaces, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention in furnaces has more especial reference to the construction of the fire-pot section, or that which is lined with fire or other brick or blocks. The fire-pot section (shown as composed of a quadrangu-
15 lar upright wall and arranged above the base-section) has a door through which the fire-pot lining composed of usual bricks or blocks may be inserted in sections, the last brick or block keying the series of sections together
20 in a circular wall, a suitable rest or support between the fire-pot and the base-section being provided to support the fire-pot lining. The bottom of the combustion-chamber at its outer edge is provided with a projection,
25 quadrangular in shape, to rest on the top of the wall of the fire-pot section. The bricks or lining-blocks may be put in place through the door referred to, and the last or key
30 block when put through the said door fastens the lining in place. The circular wall of fire-brick located within the quadrangular fire-pot section leaves ample air-spaces, which materially lessen radiation of heat into the
cellar or room where the heater is located.

35 Figure 1 in side elevation partially broken out shows a furnace embodying our invention; Fig. 2, a partial front elevation thereof, and Fig. 3 a section on the lines *x*, Fig. 1.

40 The ash-grate A divides the base of the heater into a space A' and ash-pit A², each provided with a suitable door, as A³ A⁴. The base has at its opposite sides like tracks *a*, on which rest loosely the sliding center grate *a'*, it having a suitable projection, as *a*², adapted
45 to be engaged by a hook or poker when it is desired to reciprocate the sliding center grate, on which the center of the mass of fuel rests, to thus shake the center of the said mass rather than the outer sides of the mass resting
50 ing against the fire-brick lining B.

The fire-pot section, as shown, consists, essentially, of a casting having a wall *b* and a bottom *b'*, the wall being shown as quadrangular in cross-section, as in Fig. 3, the bottom serving as a support for the fire-pot lining B, shown as composed of a series of bricks or blocks of usual shape, so that when set into circular form and keyed together they will constitute a circular wall, leaving ample air-spaces *a*¹⁰ about the said wall and particularly at the corners. (Clearly shown in Fig. 3.) The said bricks or blocks may be put in place through the door *d*¹² in the wall *b*, and the last or keying brick or block must be put in place through the said door. We have
60 shown the bottom or support *b'* as having a circular outer lip or ledge *b*³, constituting a sort of wall against which the bricks or blocks will be placed when putting them into circular position, the said lip or ledge preventing
70 the outward movement of the lower edge of the said bricks or blocks and quickly aiding in putting them in correct position. The bottom or support *b'* has also an inner circular lap or ledge *b*², concentric with the ledge *b*³,
75 which prevents the inward movement of the lower edge of the fire-bricks. The combustion-section E is provided on its under side with a circular projection *d'*, which bears upon the outer side of the upper ends of the
80 fire-bricks, preventing outward movement thereof.

Viewing Fig. 3, it will be seen that there is considerable space between the outer side of the fire-bricks and the interior of the metal
85 wall *b*, and this space is made to communicate with the fire-pot by suitable passages 40, (see Fig. 3,) so that air admitted into the ash-pit may rise into the space outside the fire-bricks and passing over between or through
90 the said fire-bricks enter the combustion-chamber and commingle with the products of combustion.

The combustion-section E is shown as having an outer wall *e'*, inner wall *e*², a water-chamber *e* between said walls, a feed-opening
95 *e*³, and a door *e*⁴ therefor. This section rests upon the fire-pot section, as shown in Fig. 1, and circulatory sections D D' are shown above the combustion-section E.
100

The pipes *m* (see Fig. 2) convey water into the water-chamber *e*.

The space between the outer side of the lining *B* and the interior of the wall *b* aids in preventing undue radiation of heat through the said wall.

We have shown the fire-pot section as a separate piece set on a shoulder *B'* of the base-section; but the wall *b* of the fire-pot section might be integral with the base-section, and in such case the bottom plate or support *b'* might, and preferably would, be a separate plate. The ledge *b³* will preferably be omitted opposite the door *d¹²*, so that the last or keying brick or block may be made as long as the remaining bricks or blocks of the series. When the last or keying brick has been put in place and the door *d¹²* inserted and secured, as shown in Fig. 1, the circular wall of fire-brick will be complete and any outward movement prevented by the means hereinbefore described, the circular form of wall holding the bricks from inward displacement.

The door *d¹²* is kept in place, as shown, by buttons *d¹³*, and it acts against the keying-brick to keep it in place.

The reciprocating grate *d* is operated by a link *d²*, pivoted to the lower end of the shaking-lever *d³*, having its pivot at *d⁴*. (See Fig. 2.)

We claim—

1. A base-section and a wall above it having a removable door for the insertion of the fire-pot lining in sections, a superimposed combustion-section having on its under side a circular projection to retain the outer side of the upper edges of the bricks in position, a support provided with a circular ledge to retain the outer side of the lower end of the

lining, means, as the removable door, to retain the key-brick in place to thus maintain the lining keyed in position, and means to retain the door in place, substantially as described.

2. A base-section and wall *b* above it, the latter having a removable door, a circular depending projection to retain the outer sides of the upper edges of the bricks, and a support for the bottom of said door, said support being provided with two concentric ledges, combined with a series of lining bricks or blocks resting upon said support and being retained in place between the said concentric ledges to form a circular wall, substantially as described.

3. The fire-pot section having a wall *b* above it, a superimposed section having on its under side a circular projection to retain the outer side of the upper edges of the bricks in position, and a bottom *b'*, provided with circular concentric ledges *b²* *b³* upon the upper side of said bottom, said wall having an opening therein and a removable door to close said opening, the ledge *b³* being cut away opposite said door, combined with a series of independent fire bricks or blocks adapted to be inserted in place between the said ledges, the opening and cut-away portion of the ledge *b³* forming a passage therefor, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE W. WALKER.
ARTHUR W. WALKER.

Witnesses:

JAS. H. CHURCHILL,
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