(No Model.)

W. H. H. KNIGHT.

PORTABLE FURNACE.

No. 355,696. Patented Jan. 11, 1887.

Fig. 1.

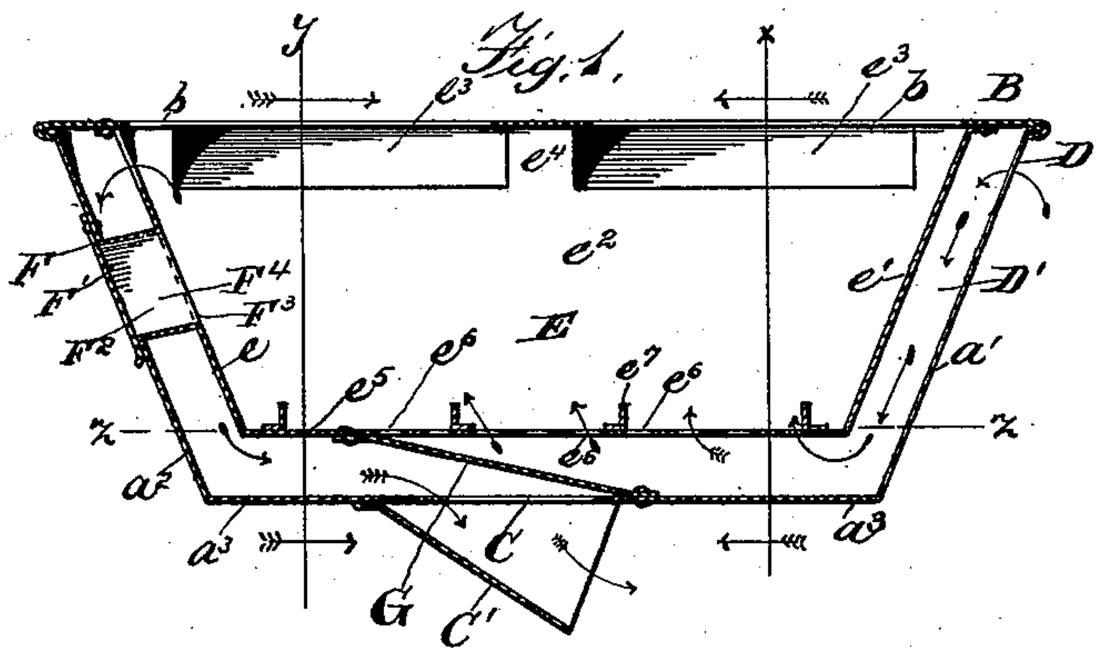


Fig. 2.

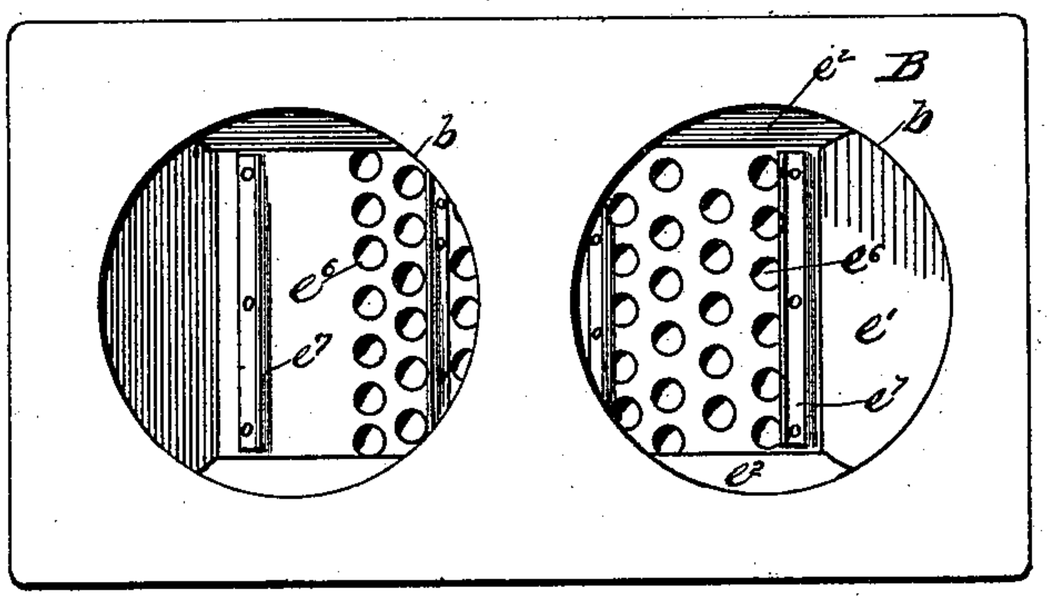


Fig. 3.

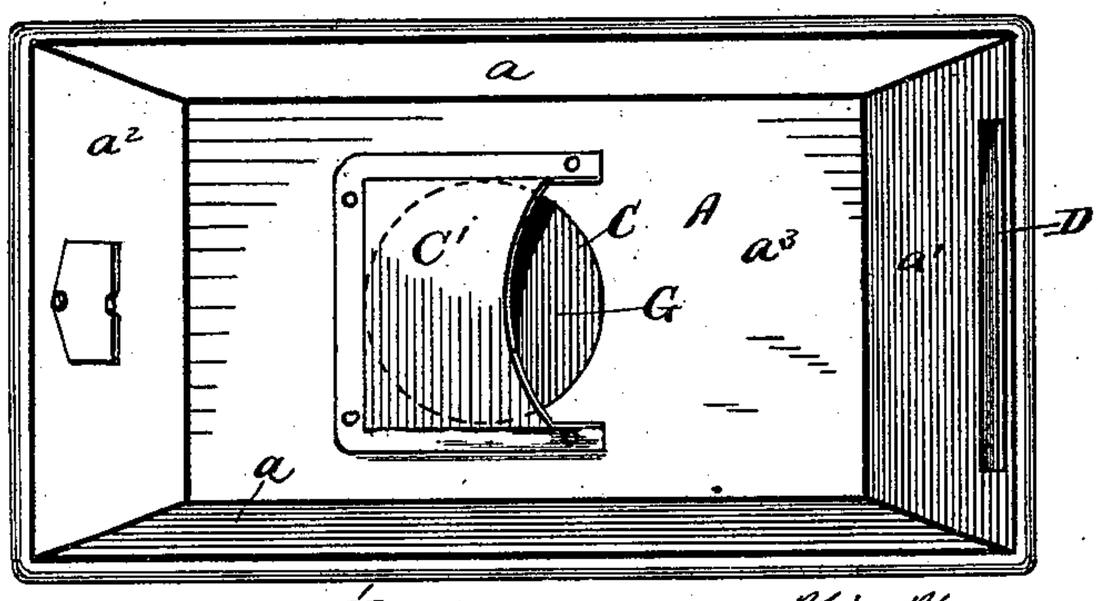


Fig. 4.

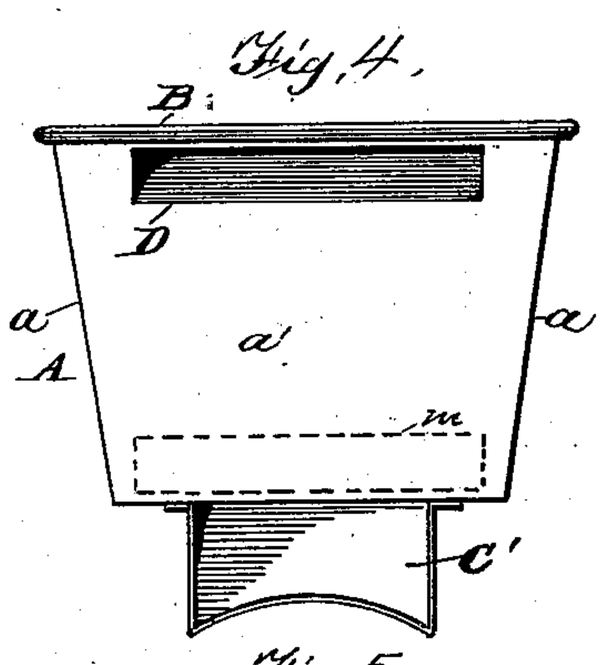


Fig. 5.

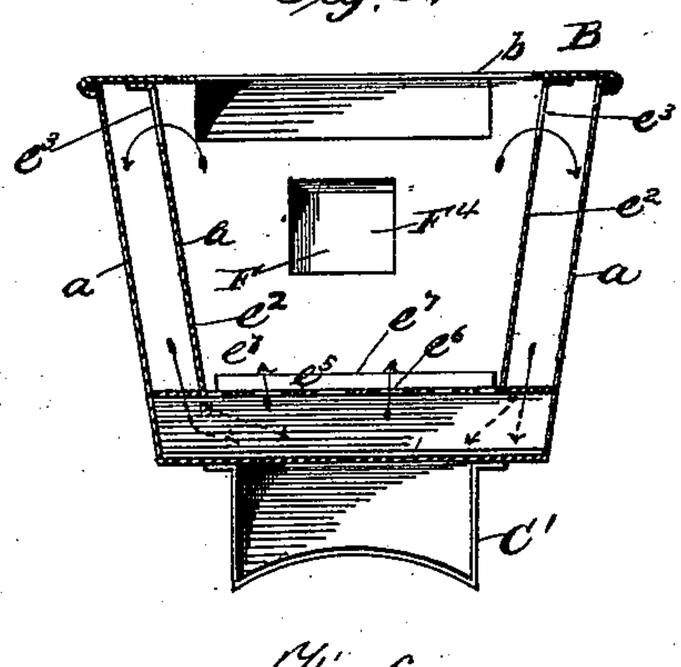


Fig. 6.

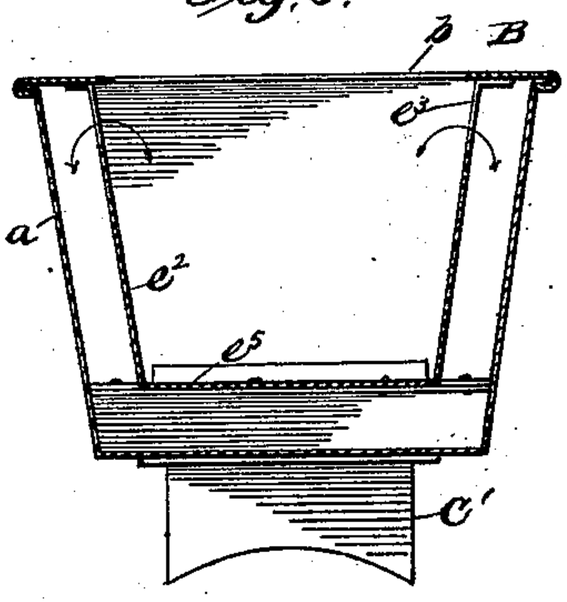
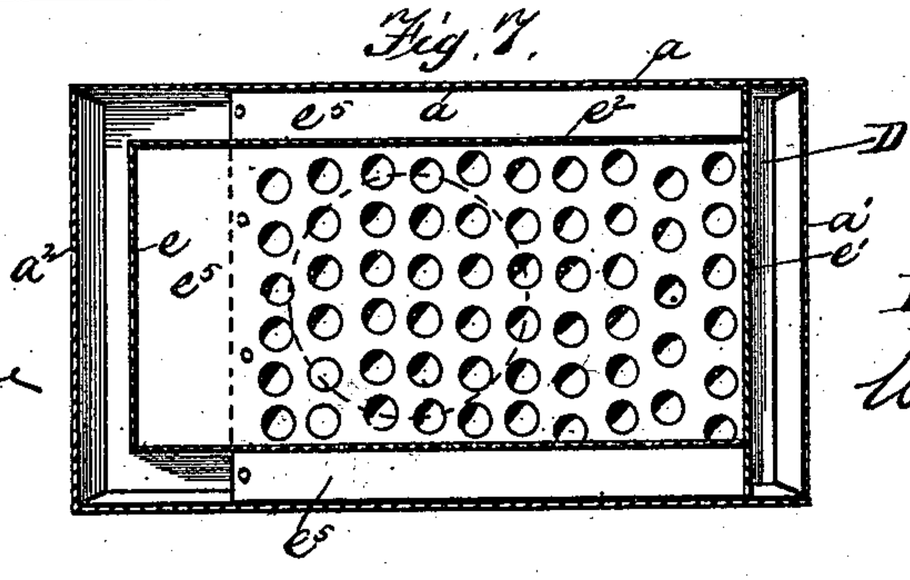


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PORTABLE FURNACE.

SPECIFICATION forming part of Letters Patent No. 355,696, dated January 11, 1887.

Application filed July 11, 1885. Serial No. 171,336. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. H. KNIGHT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Portable Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

My invention relates to portable furnaces, and has for its object the provision of an article of the class named adapted to be used in connection with a stationary range, cook, or parlor stove during the summer months, or at times when it is desirable to employ a quick fire for cooking or for other purposes, and at the same time as equally desirable that the temperature of the room wherein said stove and furnace are employed be kept at the lowest possible point.

The invention is fully shown in the accompanying drawings, described in the specification, and pointed out in the claims.

Referring to the drawings, Figure 1 represents a vertical longitudinal section through a portable furnace embodying my invention. Fig. 2 represents a top plan view thereof. Fig. 3 is a bottom plan view. Fig. 4 represents an end elevation. Fig. 5 represents a cross-section on line *x x* of Fig. 2. Fig. 6 is a similar cross-section on the line *y y* of Fig. 2; and Fig. 7 is a horizontal longitudinal section on the line *z z* of Fig. 5.

In the drawings, wherein similar letters of reference denote similar parts, A designates the exterior shell or case, consisting of the sides *a a*, ends a' a^2, bottom a^3, and top B, having openings *b b*, to receive cooking utensils. The bottom a^3 of the shell is provided at or near its middle with an opening, C, for the passage of products of combustion.

C′ designates an open-ended cap attached to the sides and one end of the smoke-exit C, to provide a strong draft through said exit. The cap C′ is shown and claimed in one of my former cases in this art, and may or may not be used herein.

D designates an air-opening in the end a' of the shell A, said opening communicating through flues D′ D^2 with the interior of the combustion-chamber E. If desired, the opening D in the end a' of the shell may be located near the lower edge of said end, just above the bottom a^3 of the shell. The opposite end, a^2, of the shell A is provided with an opening, F, covered by a hinged flap, F′. The opening F is connected by an open-ended box, F^2, with an opening, F^3, in one end, *e*, of the combustion-chamber E, thus providing a door, F^4, through which communication may be had with the combustion-chamber. The opposite end, e', of the combustion chamber is imperforate and forms one side of the air flue D′.

e^2 designates the sides of the combustion-chamber, both of which are provided with cut-away portions e^3 at their upper edges to form passages for the products of combustion.

e^4 designates tongues projecting upward from the sides e^2, between the cut-away portions e^3 thereof.

In practice the tongues e^4 may be omitted, as such tongues are not essential to the practical working of the furnace.

e^5 designates the bottom of the combustion-chamber, said bottom having a series of openings, e^6, formed therein to admit air to the combustion-chamber.

e^7 designates flanged bars placed upon the bottom e^5 of the combustion-chamber and projecting upward therefrom to support fuel. A grate may be substituted for the bars e^7, if desired.

By reference to Figs. 5, 6, 7 it will be observed that a portion of the bottom e^5 of the combustion-chamber E and one end, e', thereof extend to and bear against the sides *a* of the inclosing-shell A, thus forming, in connection with said sides and one end, a', of the shell, air-flues D′ D^2, whereby to conduct air from the opening D to the perforated bottom of the combustion-chamber, and thence to the fuel in said chamber.

G designates a partition extending obliquely from the inner surface of the bottom a^3 of the shell A to the lower surface of the bottom e^5 of the combustion-chamber. Said partition extends transversely across the shell, from side to side thereof, and from one edge of the opening C in the shell upward in an inclined direction to the point at which the apertures e^6 in the bottom of the combustion-chamber termi-

nate, thus completely preventing direct communication between said apertures e^7 and the smoke-exit, and at the same time forming one end of the lower air-flue, D^2. The partition G is secured to the respective bottoms of the shell A and combustion-chamber E.

By the above-described construction it will be understood that the combustion-chamber E is centrally arranged within the inclosing-chamber; that the partition G is arranged immediately below the middle of the said combustion-chamber and above a smoke-exit situated in the middle of the bottom of the inclosing-shell. I attach importance to this construction, as thereby a portable furnace is provided capable of being used upon any form of stationary stove or range without requiring special devices to hold it upon such stationary stove, as well as a furnace wherein the fuel may be centrally disposed, which disposition of fuel has been found by me to produce the best results in furnaces of the class named.

As hereinbefore stated, an opening may be formed in the end a' of the shell A, such point indicated by dotted lines m in Fig. 4. If desired, the bottom of the combustion chamber may be cut away between the upper edge of the partition G and the end e' of said chamber, and in lieu thereof a grate of any desired configuration may be used. Also, if desired, a flap of any configuration may be employed in connection with the air-opening D, to limit the supply of air admitted to the combustion chamber.

The operation of my improved furnace will be readily understood without further description.

Modifications of the herein-described improvement may be made without departing from the spirit of or sacrificing the advantages of my invention—as, for instance, the partition G may extend from end to end of the inclosing-shell instead of across said shell, as herein described, provided always the general relation of the parts—to wit, smoke exit, inclined partition, and perforated bottom of the combustion-chamber—be maintained.

Having thus described my invention, I claim—

1. In a portable stove, the combination, with the walls or casing of a stove having an exit-opening in the bottom and a draft-opening at one end, of the grate, consisting of a perforated plate of sheet metal and an inclined plate connected to or made integral with said grate, said plate extending forward beneath the grate and connected to the bottom between the draft and exit openings, and dividing the space below the grate into an air-chamber and a smoke-flue, said exit-opening being located under the grate, substantially as and for the purpose set forth.

2. In a portable furnace, the combination of the following elements, namely: an inclosing-shell having smoke-exit at or near the middle of its bottom, air-opening, and door communicating with the combustion-chamber, top having apertures to receive cooking utensils, centrally-arranged combustion-chamber having a perforated bottom, and an inclined imperforate partition extending below the perforate bottom of said combustion-chamber and between the perforations in said bottom, and the smoke exit or opening in the bottom of the inclosing-shell, substantially as described.

3. In a portable furnace, the combination of an inclosing-shell, A, having a smoke-exit at its bottom, air-opening D, and top B, having openings to receive cooking utensils, with a centrally-arranged combustion chamber, E, situate within said inclosing-shell and provided with sides, ends, and a perforate bottom, door F^4, communicating with said combustion-chamber, and an inclined imperforate partition below and connected at one edge to said combustion-chamber E, and extending thence beneath the air-openings therein to and connected to the bottom of the shell A above the smoke-exit, at or near the middle thereof, substantially as described.

4. In a portable furnace, the combination of an inclosing-shell having a smoke-exit about the center of the bottom thereof and a centrally-arranged combustion-chamber having a perforated bottom, the walls of the inclosing-shell and combustion-chamber arranged in parallel lines, with an imperforate partition extending forward beneath the perforated bottom dividing the space thereunder into an air-chamber and smoke-flue.

5. In a portable stove, the combination, with the walls or casing of the stove having an exit-opening in the bottom, substantially below the grate, and a draft-opening at one end of the grate, of an inclined plate extending forward beneath the grate and connected to the bottom of the stove between the draft and exit openings.

In testimony whereof I hereto affix my signature in presence of two witnesses.

WILLIAM H. H. KNIGHT.

Witnesses:

JOS. FORREST,

WILLIAM H. GIVEN.