

J. Harrison,

Chok Stove.

No. 78,522.

Patented June 2, 1868.

Fig. 1.

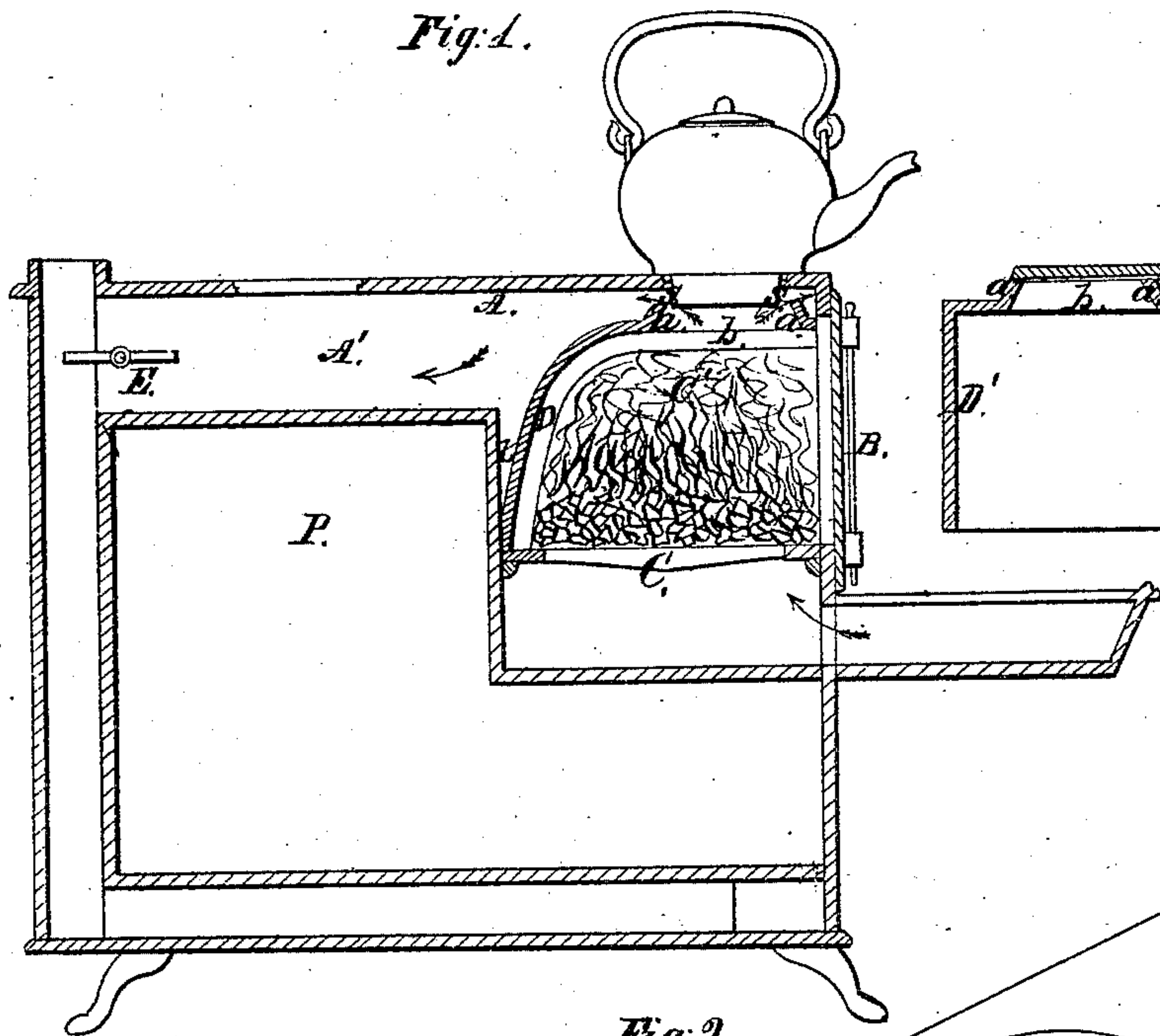


Fig. 3.

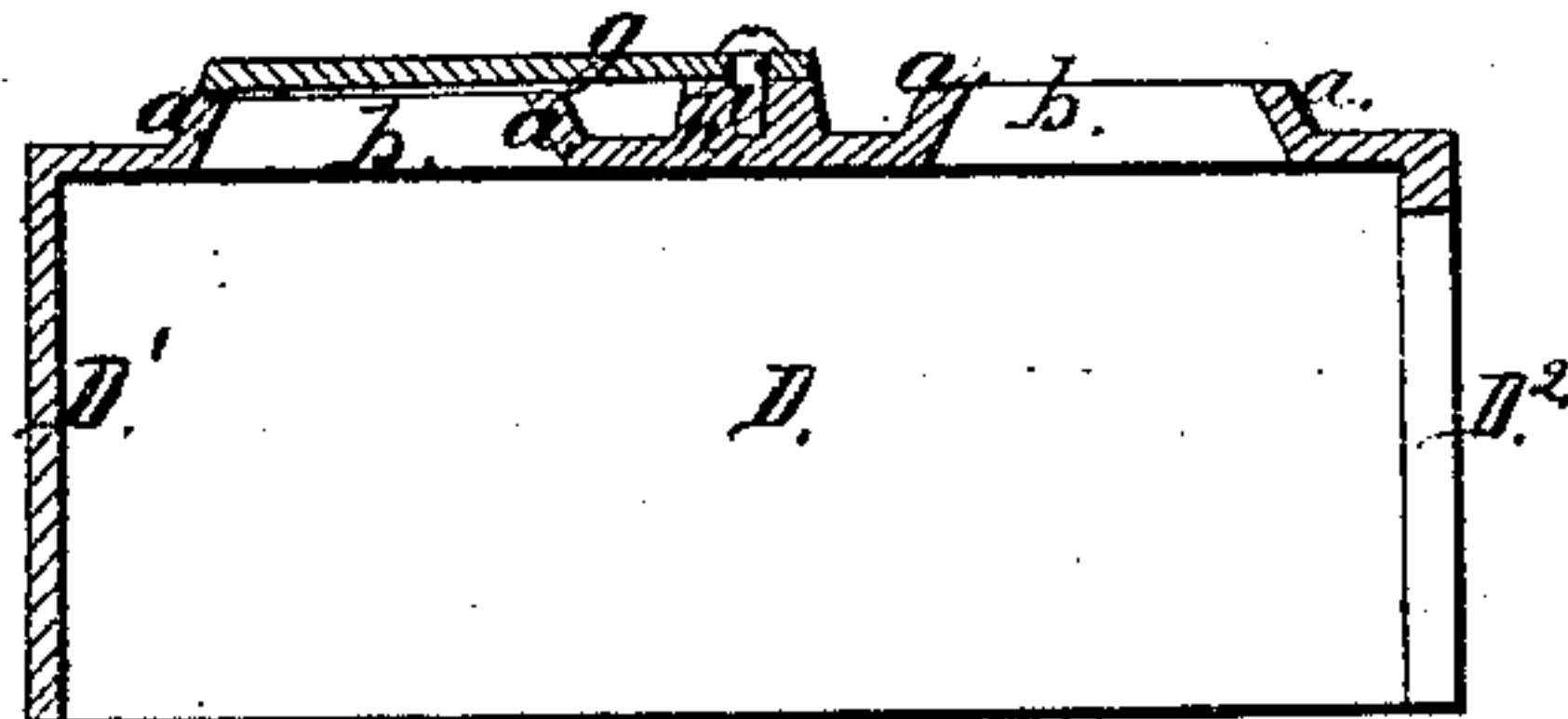
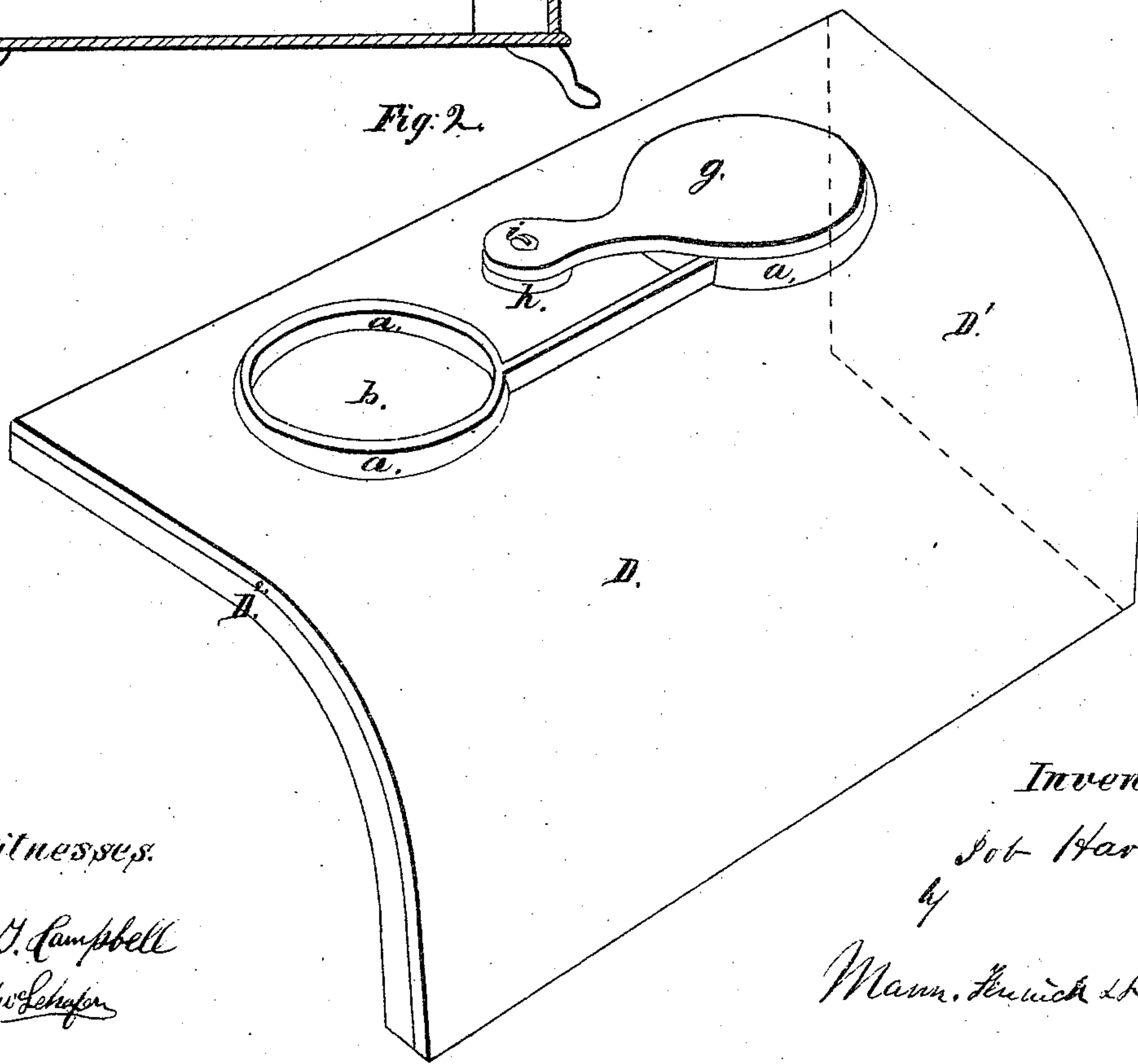


Fig. 2.



Witnesses:

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Inventor:

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Mann, Smith & Lawrence.

United States Patent Office.

JOB HARRISON, OF WHITEWATER, WISCONSIN, ASSIGNOR TO HIMSELF,
GEORGE W. ESTERLY, AND C. C. LEWIS, OF SAME PLACE.

Letters Patent No. 78,522, dated June 2, 1867

ATTACHMENT TO COOKING-STOVE FIRE-CHAMBERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOB HARRISON, of Whitewater, in the county of Walworth, and State of Wisconsin, have invented an Improved Attachment for Utilizing Heat and Fuel in Cooking-Stoves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal section through a common cook-stove, showing my invention applied to it.

Figure 2 is a perspective view of one form of heat-concentrator, detached from a stove.

Figure 3 is a vertical longitudinal section through the device, shown in figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to provide a simple attachment for a cooking-stove, which will cause a perfect combustion of the inflammable gases rising from the fire in the fire-chamber of the stove, and also concentrate the heat rising immediately from said chamber, and arrest most of this heat directly beneath the front holes through the stove-top, thereby utilizing a large amount of heat and fuel which have been wasted under the old mode of allowing a too free escape of the products of combustion from the fire-chamber.

The nature of my invention consists in arranging within the fire-chamber of a cooking-stove a removable or permanently fixed arch, or heat-concentrating plate, which will cause the products of combustion rising in said fire-chamber to ascend nearly to the top plate of the stove before they are allowed to pass back into the horizontal flue of the stove, thereby concentrating a large amount of heat below the front stove-holes, and retaining the inflammable gases long enough to allow a very perfect combustion of these gases at and near the front part of the stove, as will be hereinafter described.

It also consists in so constructing said removable or fixed arch or plate, and applying it within the fire-place of a cook-stove, that the gases which are not consumed within the fire-chamber by the direct heat of the fire will, upon escaping from this chamber, be consumed before escaping from the stove, as will be hereinafter explained.

It also consists in providing a heat-concentrating arch, which is adapted for being arranged within the fire-chamber of a cook-stove, with means whereby the heat rising from the fire can be concentrated directly beneath one or both of the holes through the front part of the top plate of the stove, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe one practical mode of carrying it into effect.

In the accompanying drawings I have represented my invention applied within the fire-chamber of a well-known form of cooking-stove, in which A represents the top, through which are holes for receiving boilers, kettles, and other culinary vessels. B represents one of the front doors of the stove, and C is the grate beneath the fire-chamber, C'. From this fire-chamber a horizontal flue, A', between the top plate of the oven, P, and the top plate of the stove, conducts off the products of combustion through a valve-opening, which is closed by a valve, E.

I desire to be understood as not laying claim to any peculiar form of cooking-stove, as my invention is applicable to almost any of the well-known forms of cooking-stoves constructed upon the general plan represented in fig. 1 of the drawings.

Within the fire-chamber C', and supported upon the grate-bars C, is a half arch, D, which is closed at one end, D', and provided with two flanged openings, b b, one or the other of which can be closed by a horizontally-vibrating cover, g. This cover g is pivoted by a pin, i, to a boss, h, cast upon the arch between the two holes b b, so that this cover will close either one of the holes b desired, by lying flat upon the lips or flanges a.

The front, and one end, D², of the half arch D are open, so that when this half arch is introduced into the fire-chamber C', as shown in fig. 1, access can be had to it either through the front doors, B, or through an end door leading into the fire-chamber. It will thus be seen that when said end and front doors are closed, the

only escape for the products of combustion rising in the fire-chamber is through the holes *b b* in the crown of the arch.

The arch *D* may be made of any desired height, provided a space, *S*, is left between it and the top plate *A* for the escape of the smoke and gases, which are not consumed, into the space *A'* forming the horizontal flue.

The holes *b b* through the crown of the arch *D* should be arranged directly beneath the holes through the front part of the plate *A*, so that vessels put upon these holes will be brought over the hottest parts of the stove.

It will be seen by reference to fig. 1 that there are two air-chambers formed in the stove by the introduction of the arch *D* into the fire-chamber. One of these air-chambers is between the arch and oven, as at *t*, and the other above the arch at *S*, both of which are in communication with the flue *A'*, and on the outside of the arched fire-chamber *C'*.

These two chambers will arrest the heat, radiated from or conducted through the arch, long enough to cause a very high temperature of the air in said chambers, which air will rise with and ignite the inflammable gases which were not consumed in the fire-chamber, thus producing perfect combustion of all combustible matter rising in and escaping from the fire-chamber.

The principal object of the arch *D* is to cause all the products of combustion to rise nearly to the top plate of the stove before they are allowed to pass into the horizontal flue *A'*. At the same time, it will be seen that said arch will direct the currents backward, and retard their escape, giving to said currents a whirling motion, in such manner that a most perfect combustion takes place within and directly above the fire-chamber.

Instead of employing a perforated arch, constructed as shown, a back plate, made flat and inclined backward, or made of a concave-convex form, may be used to advantage. I however prefer to use an arch or half arch, constructed substantially as shown and described, and applied within the fire-chamber of a cook-stove so that it can be removed at pleasure, or so applied that it forms a fixture of the stove.

The perforated half arch shown in the drawings is used in the following manner: When a small amount of cooking is to be done on top of the stove, and it is not desired to heat up the entire stove, I introduce said arch into the fire-chamber *C'*, and if only one of the holes *b* is to be used, the other can be covered by means of the valve *g*, as shown in figs. 2 and 3. Fire being made in the fire-chamber now enclosed by the arch, all the products of combustion will be drawn through the hole *b*, which was left open, directly beneath and in contact with the bottom of a vessel placed on the top of the stove over said hole, containing the thing to be cooked.

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

1. So applying the arch *D* to the fire-chamber of the stove, that the air-chambers *s t* are formed, one between the arch and oven, and the other both back of and above said arch, all in the manner substantially as herein described and shown.
2. The arch *D*, or its equivalent, constructed substantially as described, and applied to a stove for the purpose set forth.

JOB HARRISON.

Witnesses:

GEO. W. ESTERLY,
C. G. LEWIS.