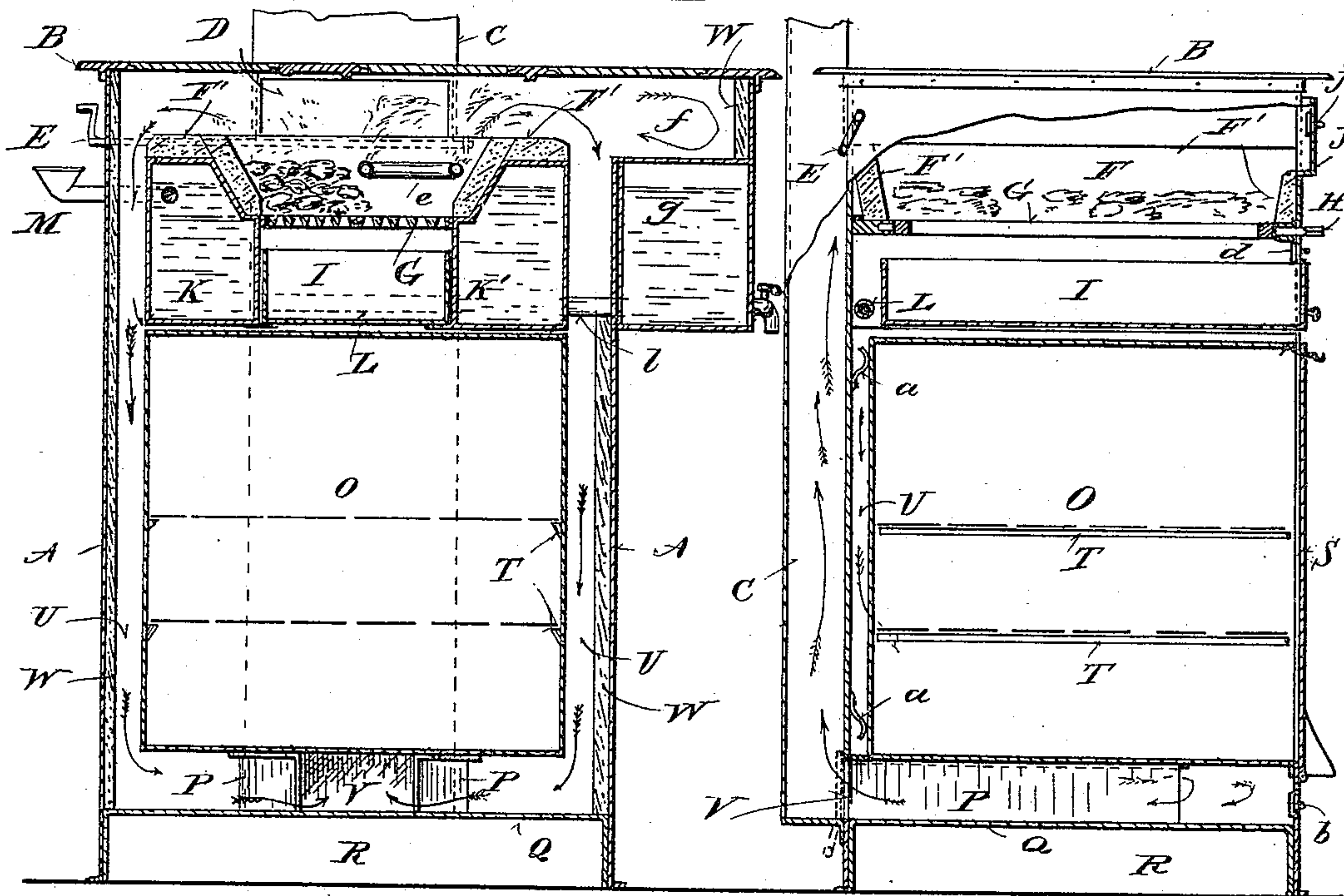
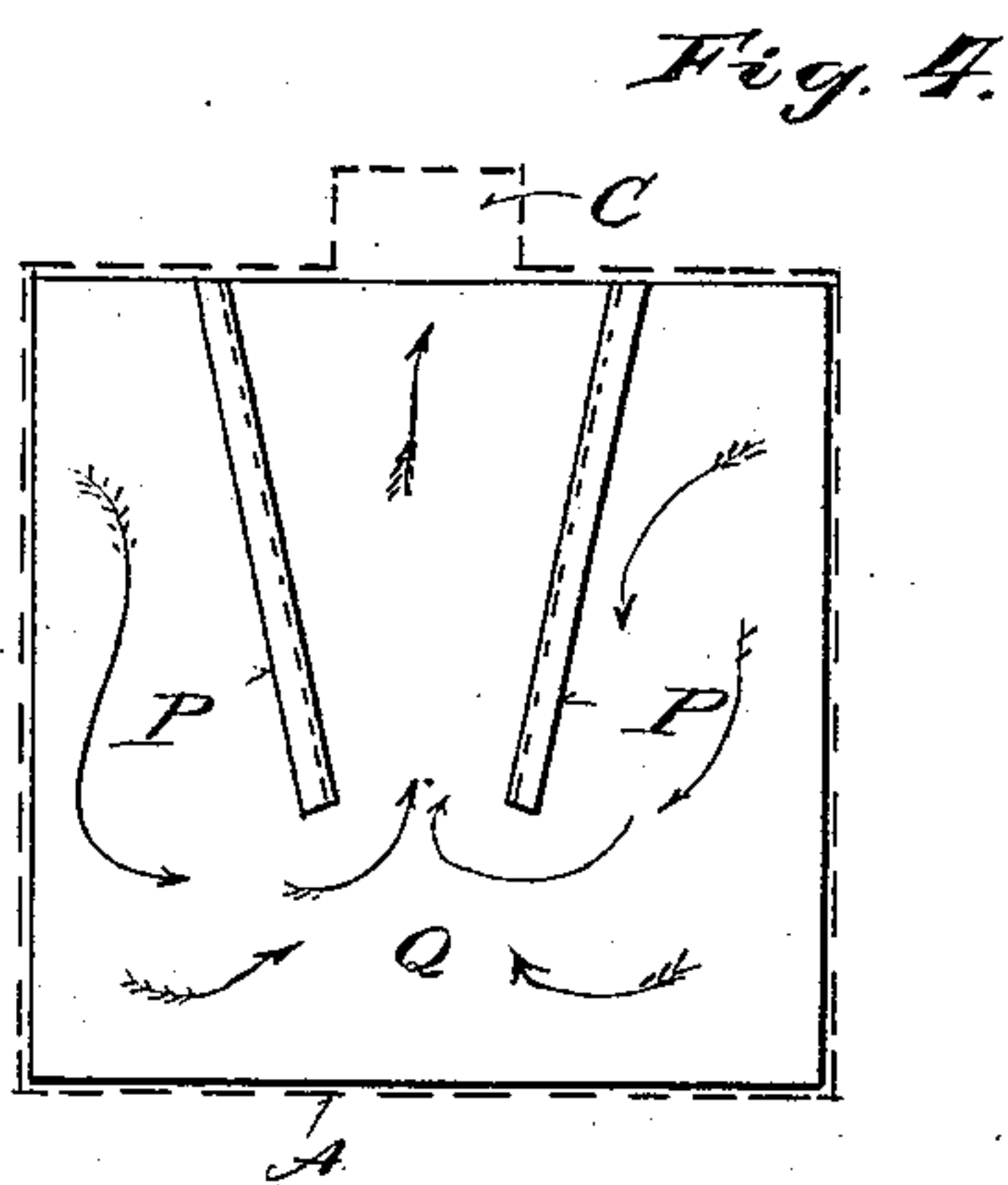
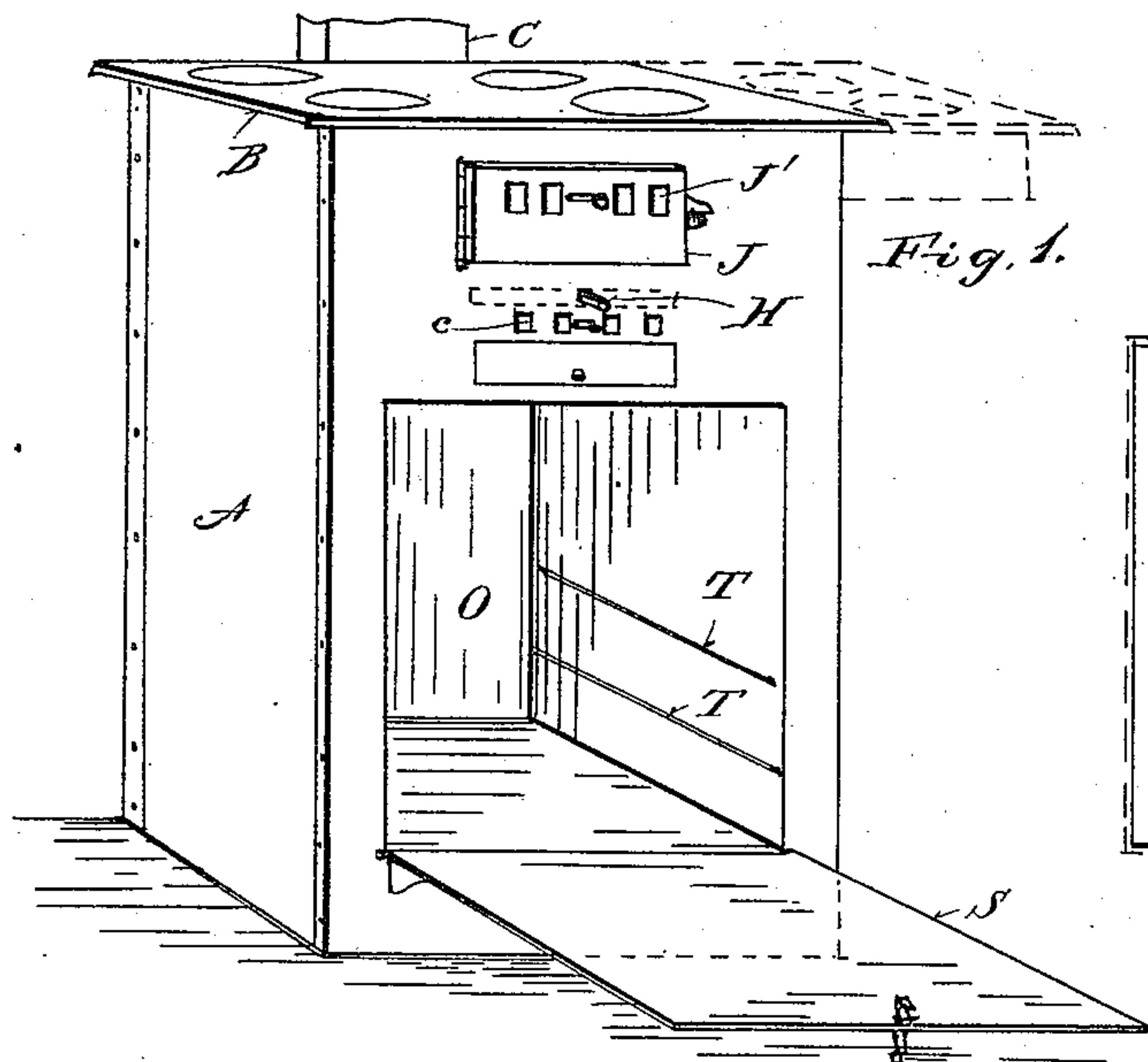


(No Model.)

R. A. GRIM.  
STOVE.

No. 451,271.

Patented Apr. 28, 1891.



WITNESSES:

Fig. 2.

Fig. 3.

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# UNITED STATES PATENT OFFICE.

ROBERT ASHLEY GRIM, OF SPRINGFIELD, OHIO.

## STOVE.

SPECIFICATION forming part of Letters Patent No. 451,271, dated April 28, 1891.

Application filed November 26, 1890. Serial No. 372,708. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT ASHLEY GRIM, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Stoves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in cooking-stoves, the peculiarities of which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a perspective view of my improved stove, the broken lines indicating how the top thereof may be increased in capacity; Fig. 2, a vertical section through the stove, looking to the rear; Fig. 3, a side and partial sectional view of the same; and Fig. 4 a plan view of the false bottom, showing the deflecting-guides.

The letter A designates a case, preferably of sheet metal, and conveniently riveted together, as shown in Fig. 1, to form a compact rectangular case. A cast-iron top B is adapted to fit on said case and is provided with a convenient number of holes and covers therefor in the usual manner. A stove-pipe C is fastened to the back of said casing and has an opening D near the top of the stove closed by a damper operated by a crank E on the outside thereof, in the usual way. A fire-box F extends from the front to the rear of the casing near the top thereof and directly under the draft-opening D, before referred to. A grate-bar G is pivoted or otherwise mounted therein and has an extension H, adapted to receive a handle for rocking the said grate or otherwise shaking the same. Beneath the grate is located an ash-pan I, mounted in slides or otherwise, so that it may be drawn out when desired.

The fire-box is fed from a front door J, having a check-draft opening J', adjustable by the usual slide, whereby coal or other fuel is introduced upon the said grate. If desired, however, the fire-box may be fed through the top B.

On either side of the ash-pan and fire-box

are located water-tanks K K', the sides and tops of which conveniently support the fire-bricks F' or lining of the fire-box F. These tanks are conveniently connected by a cross-pipe L, Figs. 2 and 3, and are supplied with water through a spout M, extending outside of the casing. Below the water-tanks and ash-pan is located the oven O, conveniently mounted upon the inclined partitions P, supported by the false bottom Q, beneath which is the dead-air space separating it from the floor. A door S in the front of said casing is adapted to close said oven, which is conveniently provided with rests T for the support of the usual cross-shelves therein.

It will be seen from Figs. 2 and 3 that the oven and tanks are separated from the sides of the casing, leaving passages U, whereby the products of combustion from the fire-box may be drawn downward under and around the said oven and into the lower opening V in the stove-pipe C. This action occurs when the top damper closes the opening D, and the draft is thus deflected from its direct passage to the chimney, so that it must pass downward to the lower opening V.

The inclined partitions P are adapted to distribute hot air and gases under the whole bottom of the oven and prevent their rushing directly into the stove-pipe through the opening V without heating the front part of the bottom of said oven, as would be the case in the absence of the guides. If desired, the sides of the casing may be provided with a lining W, of asbestos or other non-conducting material, to prevent the radiation of heat through said casing. The dead-air space R before mentioned serves the same purpose at the bottom of the casing.

It will be seen from Figs. 2 and 3 that the fire-box is small in comparison to the size of the oven. The passages U at the sides of the oven and the space at the bottom and back thereof present a large heating-surface adapted to take from the products of combustion a large amount of heat and uniformly heat the said oven. It will be observed that the water-tanks K K' and the ash-pan I before mentioned protect the top of the oven from undue heat from the fire-box, and the heated gases, having free access to all the walls of



the oven except the front, uniformly heat the oven and secure better results in cooking. This oven O is preferably adapted to be removed from said casing by removing the false bottom Q. It is kept firmly pressed against the front of the casing by the springs *a*, Fig. 3, or otherwise, so as to allow no exit of gas into the oven between the front of the casing and the walls thereof. When it is necessary to remove the oven, the old one may thus be easily detached and the new one inserted at small expense. A small opening *b* in the front of the casing gives access to the space between the bottom of the oven and the false bottom Q, whereby the ashes or soot may be removed in the usual manner. This opening is normally closed by a slide or otherwise. The front of the casing is also provided with draft-openings *c* below the grate, closed by the slide *d* in the usual manner.

While the fire-box has been described and illustrated for the use of coal, yet natural gas or other fuel may be used therein. In Fig. 2 is shown the burners *e*, adapting it to the use of natural gas. In this case the ash-pan I would not be required, and the space might be used for a larger water-tank. The dotted lines in Fig. 1 indicate that a top of larger capacity may be applied to this casing, and Fig. 2 shows a convenient arrangement when this larger top is used. It will be observed that these side holes will also receive the benefit of the fire, as the draft draws the products of combustion out sidewise into the extension *f* of the casing. In the usual form of stove the draft from the grate has a tendency to avoid the side holes. In this form all of the top is heated, and there is less difference in the amount of heat distributed to the holes. If desired, an additional water-tank *g* may be located under this extension *f* and connected to the previously-mentioned tanks K K' by a pipe *h*. Thus a large boiler capacity for hot water is provided, and a large oven uniformly heated is secured by the use of a proportionately small fire-box and correspondingly small amount of fuel.

The compactness of this stove is apparent. Cheapness is secured by the simplicity of construction, and it is specially adapted for use in small kitchens or where space is limited, such as galleys on board ships and kitchens of railroad-cars.

From the construction of the fire-box it will be seen that the draft is directly through the center from the front to the draft-opening D into the chimney. This facilitates quick combustion in starting the fire, the heated gases from which may be instantly directed downward to heat the oven by turning the damper-handle E. If desired, the lower draft-opening V may also be closed by a damper, as indicated by the dotted lines in Fig. 3, in order to cause the entire draft to pass through the fire into the draft-opening D in starting the fire.

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

1. In a stove, the combination, with a casing and a top plate, of a fire-box near said top plate, an oven within said casing provided with a door and adapted to allow free access of the products of combustion to all sides thereof, except at the said door, a non-conducting lining to retain the heat within said casing, a flue from near the bottom of said casing adapted to lead off the products of combustion, and deflecting-partitions between said oven and casing adapted to spread out said products in contact with said oven and retard their escape through said flue.

2. In a stove, the combination, with a casing and a top plate, of a fire-box near said top plate, an upper flue immediately adjacent thereto, an oven below said fire-box having a door and mounted in said casing, so as to form passages for the products of combustion on all sides but one, inclined partitions in said passages to equalize the distribution of heat, and a lower flue from the last of said passages to lead off the said products of combustion.

3. The combination, with a stove-casing of riveted sheet metal provided with the usual cast top plate and pipe, of a fire-box near said top extending from the front to the back, an upper draft-opening at the rear of said box, lateral water-tanks next to said fire-box, an oven supported in said casing under said fire-box and water-tanks, so as to form passages between its walls and the casing, a lower draft-opening to the said pipe, and deflecting-partitions thereto, whereby the products of combustion pass out of the upper draft to start the fire and may be directed downward about said oven to heat the same uniformly and out of the lower draft-opening.

4. The combination, with a rectangular stove-casing of riveted sheet metal and a cast-iron top plate, a fire-box under the same, lateral water-tanks forming the sides of said fire-box, and supply and outlet pipes for the water, of an oven below said tanks and fire-box, mounted to form passages between the walls of the casing and the oven, and upper and lower draft-flue openings, one directly connected with the fire-box and the other with said passages below the oven, whereby the draft may go directly from the fire-box starting the fire and then be deflected laterally to each side of the box and downward about said oven to the lower draft-opening.

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

R. ASHLEY GRIM.

Witnesses:

E. O. HAGAN,  
WARREN HULL.