No. 847,704. PATENTED MAR. 19, 1907.

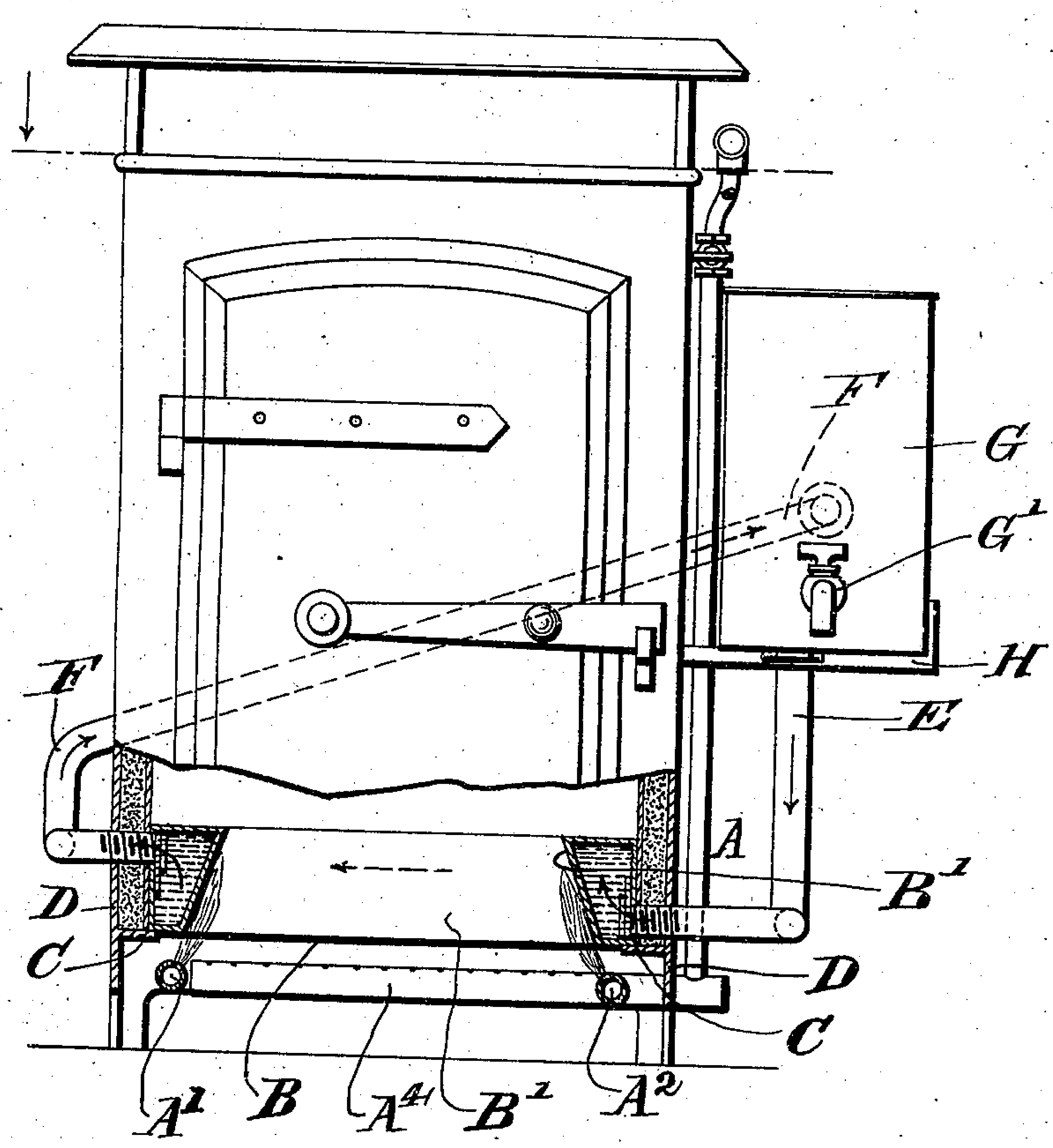
W. D. SHEPPARD.

GAS COOKING STOVE OR THE LIKE.

APPLICATION FILED AUG. 24, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Henry J. Suhrbier.

W. C. Rockwell

INVENTOR

William Dart Sheppard,

BY Goepel & Niles

ATTORNEYS.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 2.

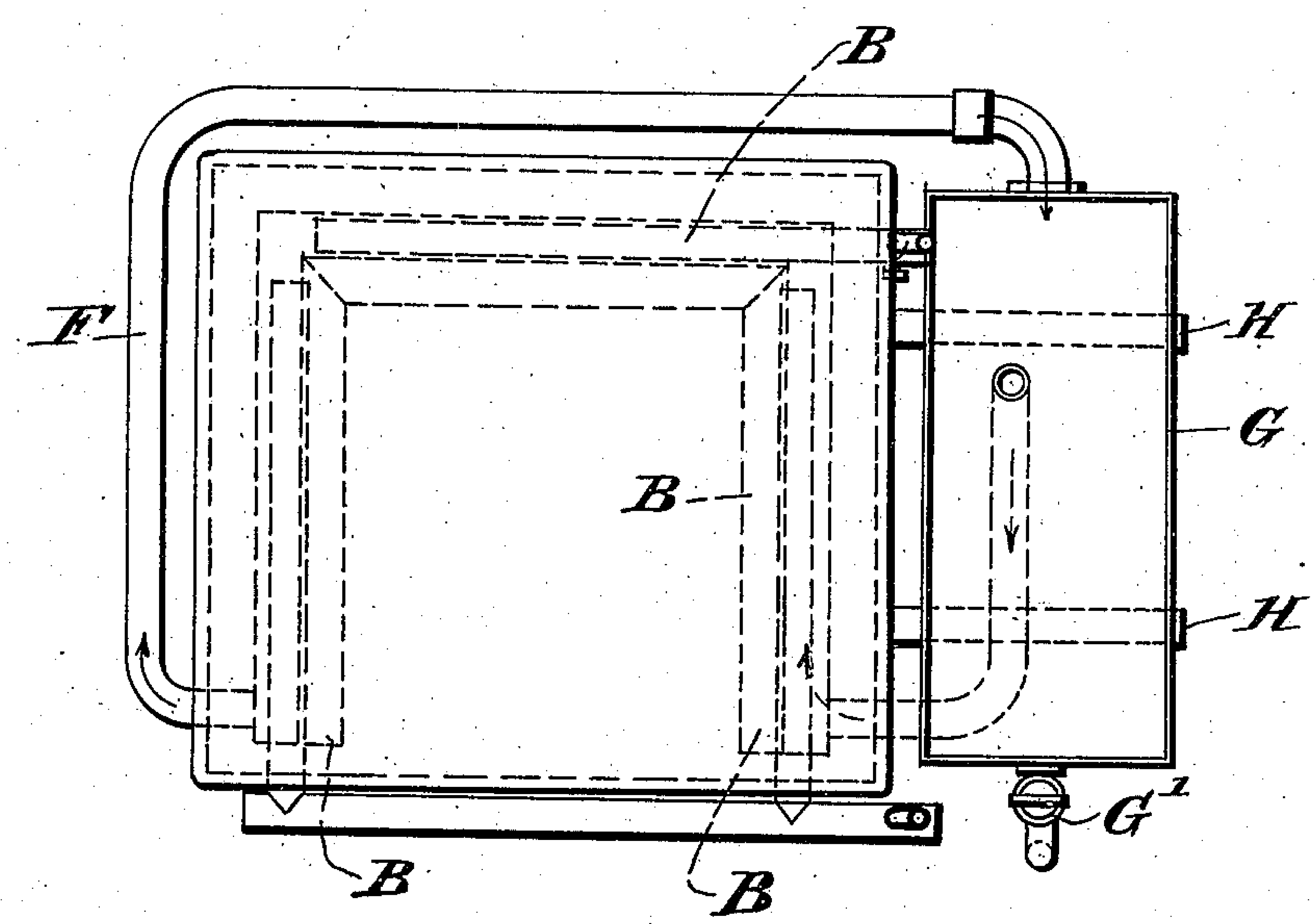
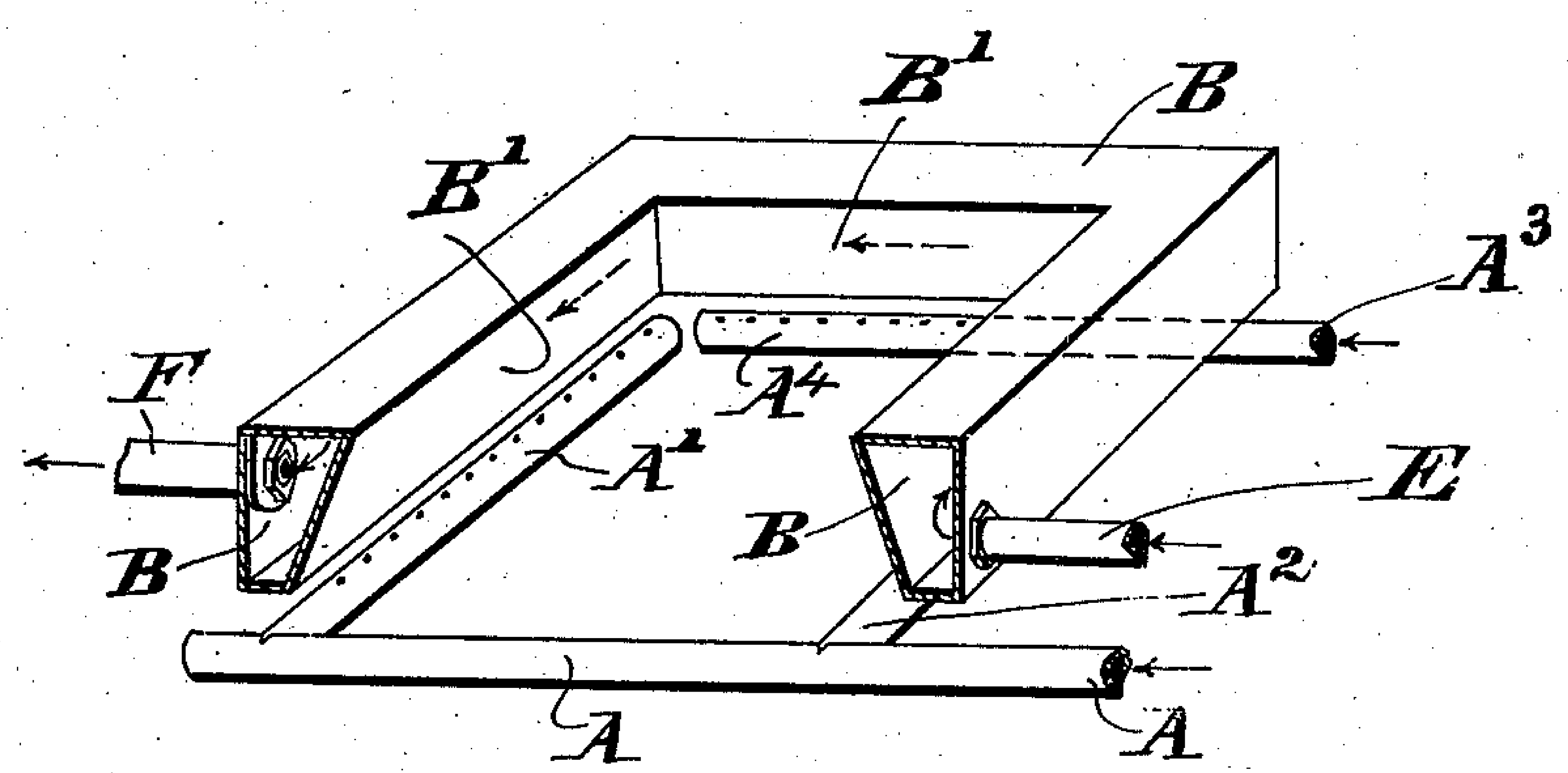


Fig. 3.



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Henry J. Suhrbier.

W. E. Koeckerel

INVENTOR

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ATTORNEYS.

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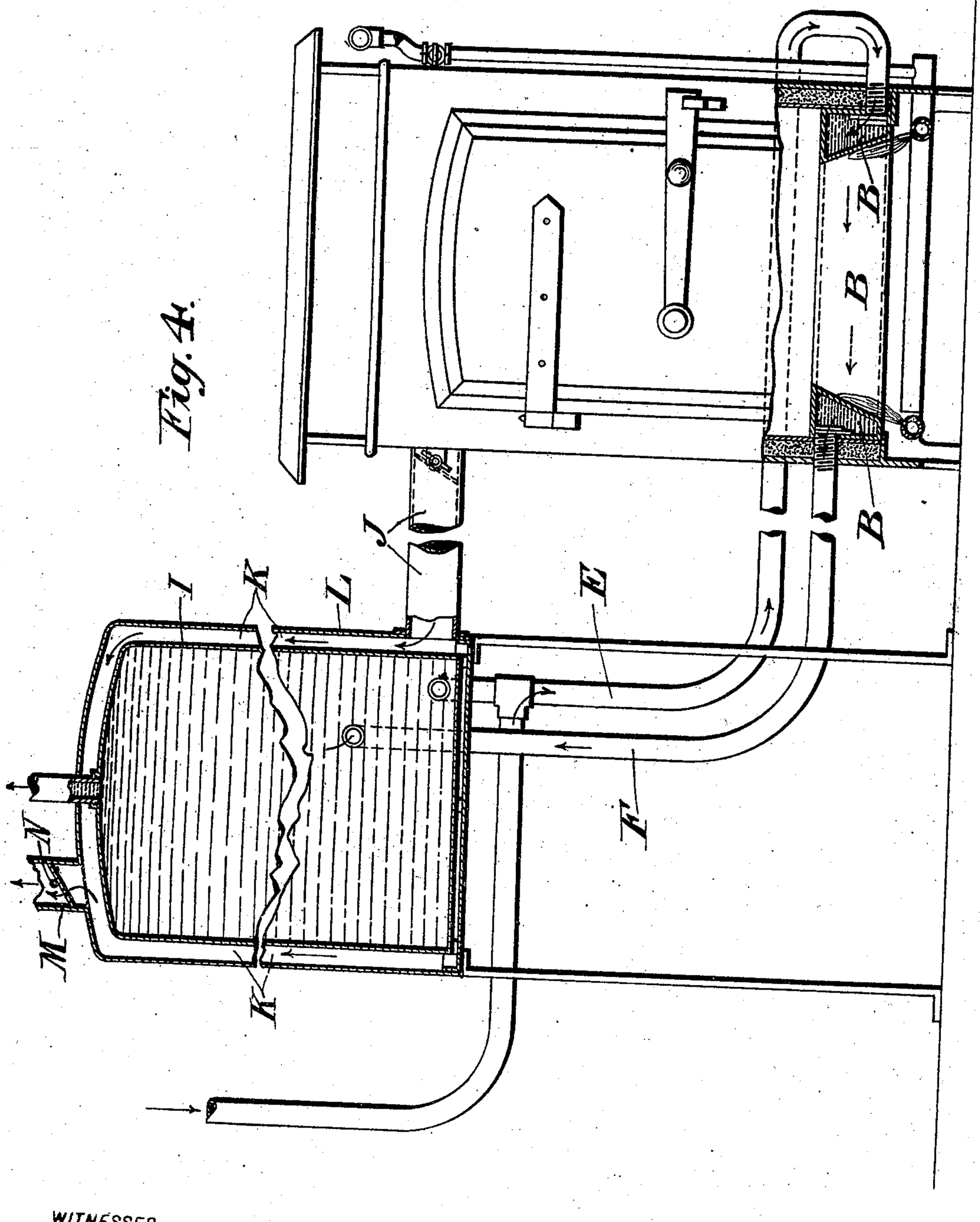
3 SHEETS—SHEET 3.

Fig. 4.



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W. Rockwell

INVENTOR,

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BY Goepel & Niles

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM D. SHEPPARD, OF EXETER, ENGLAND.

GAS COOKING-STOVE OR THE LIKE.

No. 847,704. Specification of Letters Patent. Patented March 19, 1907.

Application filed August 24, 1904. Serial No. 221,991.

To all whom it may concern:

Be it known that I, WILLIAM DART SHEPPARD, a subject of the King of Great Britain, residing in Exeter, Devonshire, England, have invented certain new and useful Improvements in or Relating to Gas Cooking-Stoves or the Like, of which the following is a specification.

This invention relates to gas cooking-stoves or the like, such as cooking-stoves heated by liquid hydrocarbon burners, (all of which I will hereinafter refer as to "gas cooking-stoves,") and has for its object to provide new or improved means inside the stove for heating water (or any other liquid desired) from the same source of heat or products of combustion as that by which the cooking-stove is heated and at the same time as the cooking is being done. The waste heat or products of combustion may (if desired) be utilized, as hereinafter described, without consuming more gas (or oil) than is ordinarily used for cooking purposes—*i. e.*, the heating of the water is obtained practically without reducing the heat available for cooking purposes, and thus without affecting or interfering with the cooking properties of the stove, and, if desired, an auxiliary burner may be provided for heating the water when the cooking-stove is not required for cooking, and also this auxiliary burner may be utilized, if desired, during the cooking operation.

For the sake of example I will describe my invention with reference to the accompanying drawings as carried into practice in conjunction with an ordinary gas cooking-stove of the present well-known type with a Bunsen gas-burner arranged at or near the bottom of said stove and extending all round or partly round said stove, and I have illustrated in the drawings a square upright stove with a Bunsen gas-burner, which latter in addition to extending, as usual, along two opposite sides of the stove may also advantageously extend along a third side (say across the back of the stove opposite the door) as a separate and independent burner.

In the accompanying drawings, Figure 1 is a view in front elevation, partly in vertical section, of a gas cooking-stove having my present improvements applied thereto and with a small cistern supported on a bracket upon one side of said stove. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a perspective view of the boiler, partly in section, and Bunsen burner, removed from the stove. Fig. 4 is a view in front elevation (partly in section) of similar construction of gas-stove according to my present invention, but showing a modification with respect to the water-supply and water-heating arrangement exterior of the stove.

Referring to the accompanying drawings, A is the gas-supply pipe from any suitable source which conducts the gas to the Bunsen burners A′ A^2 on each side of the stove-casing, while gas is supplied independently through the supply-pipe A^3 to the Bunsen burner A^4 across the back of the stove, so that this auxiliary Bunsen burner A^4 may either burn alone or may be used in conjunction with the burners A′ A^2, or the latter may be used alone without the auxiliary burner A^4, according to requirements. Just above said burner or burners A′ A^2 A^4, I arrange and mount a boiler B, extending along the two sides and across the back of the rectangular stove-casing in substantially the same horizontal plane, said boiler being mounted on or supported by means of brackets C, bolted or secured to the sides or walls of the stove or on any other suitable supports, and any suitable means may be employed to keep said boiler B in position on or between its supports—as, for example, bolts or flanges on the brackets C, &c. Said boiler may be a four-sided tube, as illustrated, or of rectangular form, or of any other suitable form—for example, oval-shaped in cross-section. The form, arrangement, and location of this boiler B is according to my present invention advantageously as follows—*i. e.*, as illustrated in the accompanying drawings, the bottom of the said boiler may be flat (or of any suitable form) and is located close down upon and just over the gas-burners, (say about one inch between the bottom of the boiler and the top of the burners,) and the inside wall or inner face B′ of said boiler is advantageously sloped upwardly and inwardly toward the center of the stove, so that said boiler is wider (in cross-section) at the top than at the bottom or in such wise that the inside wall of said boiler all round the stove will present an inwardly-sloping surface B′, against which latter the heat from the Bunsen burners will act (to heat the water in the boiler) as said heat rises in the stove, the water being thus heated in the boiler practically without interfering with the operation of cooking in the stove. The form, arrangement, and location of this

boiler B inside the stove and just above but close down to the Bunsen burner or burners in the lower part of said stove constitutes a very essential or important feature of my present invention, the following being important features in connection therewith: (*a*) The boiler is so constructed and designed as to be adapted to be placed in the lowermost part of the stove (just over the Bunsen burners) in such wise that it practically does not reduce the available cooking-space within the stove. (*b*) This boiler being provided with the inwardly-sloping sides B′ and, owing to the location of this boiler B, close to and directly over the Bunsen burners, as illustrated in the drawings, thereby the water is heated in the boiler practically without interfering with the cooking operation in said stove. (*c*) The top of said boiler B can, if desired, be utilized as a ledge or means for supporting a grid or other open-work shelf in the stove. Water is supplied to said boiler B in any suitable manner and from any suitable source—for example, by flow-pipe E and return-pipe F, which pipes are connected to a cylinder or tank (or other suitable vessel) located at any desired point, either near to or distant from the stove, from which cylinder, &c., said water can be drawn off as and when required, cold water being advantageously supplied automatically to said cylinder &c.—as, for instance, by means of a ball-and-cock arrangement or by bird-fountain feed, &c.

In carrying this invention into practice I may arrange and mount the water-supply tank or vessel G, attached to the stove by means of brackets H, as illustrated in Figs. 1 and 2, and connect the flow and return pipes E F to said tank G and provide a draw-off cock G′, so that in this arrangement, as illustrated in said Figs. 1 and 2, the water would be fed to said tank G (and boiler) by hand, or, as illustrated in Fig. 4, the feed-water cylinder tank or reservoir I may advantageously be located quite close to the stove and be so constructed, arranged, and mounted as to be adapted to heat or warm the water-supply therein by the waste heat or products of combustion coming from the stove, so as thus to deliver warm or partly-heated water to the boiler in the stove, and for this purpose the waste pipe or flue J, through which the products of combustion pass out of the stove, is led to the said cylinder or tank I, so as to heat the water therein. For example, I may form an annular chamber K between the outside of the tank I and the outer cylinder or jacket L, surrounding the cylinder or tank I, the products of combustion being led from the flue J into the annular chamber or space K between said tank and said cylinder L, or any other suitable jacket arrangement may be employed. After thus utilizing the waste heat from the products of combustion same may be allowed to escape through any suitable outlet M, Fig. 4, which latter may be controlled by a valve, such as N.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cooking-stove, the combination, with a rectangular casing, of a boiler comprising a horizontal tube divided into portions extending along and supported on the side walls and the rear wall of said casing, said tube having a flat top surface and an upwardly and inwardly sloping inner surface which defines an opening for the passage of the products of combustion, and burner-tubes arranged parallel to and directly beneath the side and rear portions of said tube.

2. In a cooking-stove, in combination, a rectangular casing, a boiler comprising a tube divided into portions which extend along and are supported on the side walls and the rear wall of said casing, burners extending beneath the two side portions of said tube and connected with the same source of fuel, and an independent burner arranged beneath the rear portion of said tube.

3. In a cooking-stove, in combination, a rectangular casing, a boiler comprising a horizontal tube divided into portions extending along and supported on the side walls and the rear wall of said casing, said tube having a flat top surface and an upwardly and inwardly sloping inner surface which defines an opening for the passage of the products of combustion, a gas-supply tube extending across the front wall of said casing, burner-tubes connected to said supply-tube and arranged directly beneath and parallel to the side portions of the boiler, and an independent burner-tube arranged beneath and parallel to the rear portion of said boiler.

In witness whereof I have hereunto set my hand in presence of two witnesses.

W. D. SHEPPARD.

Witnesses:

ALFRED AUSTEY,

EDWIN JAMES HARRIS.