

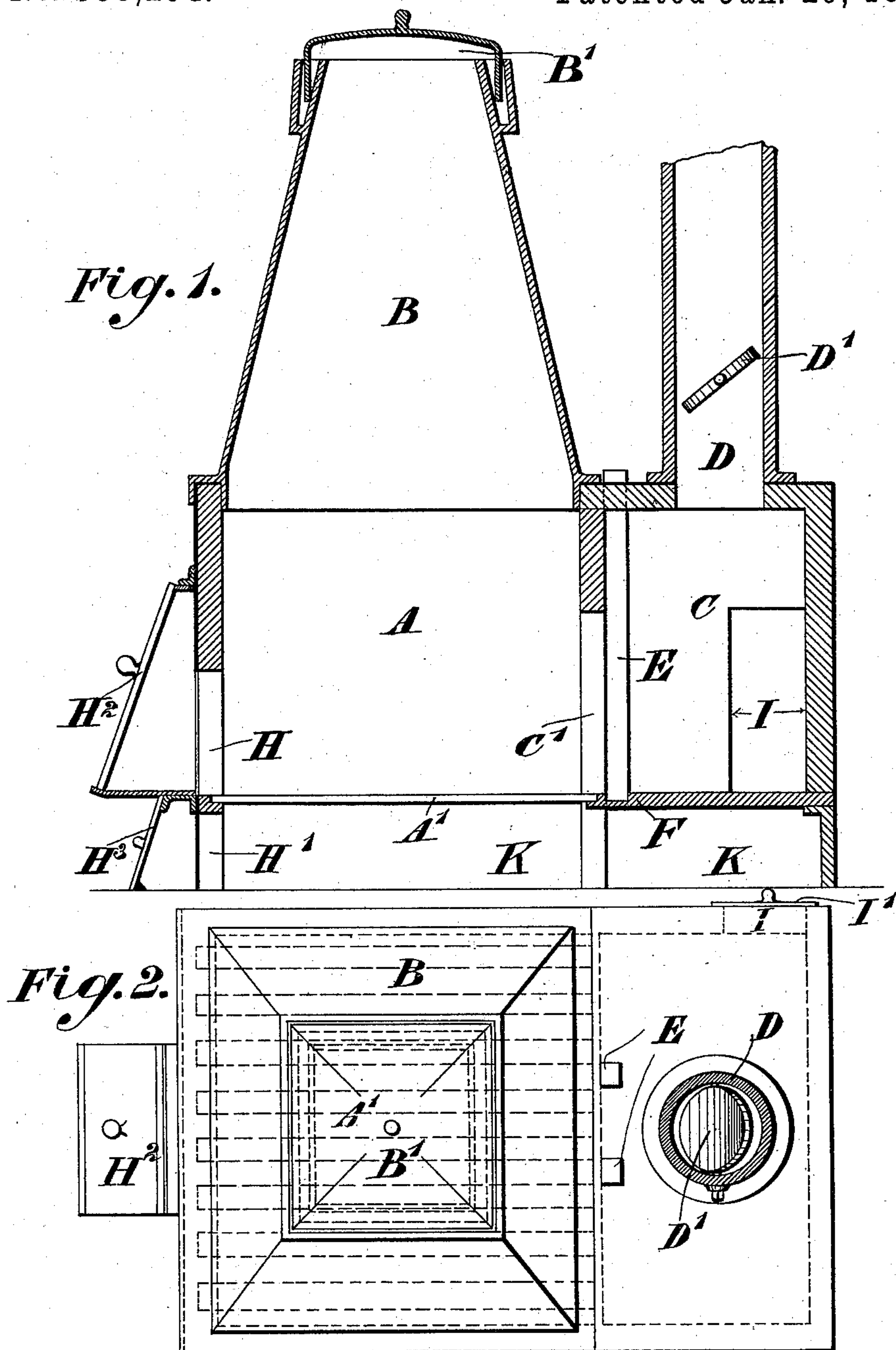
(No Model.)

2 Sheets—Sheet 1.

C. J. GRIFFITHS.
STOVE.

No. 533,294.

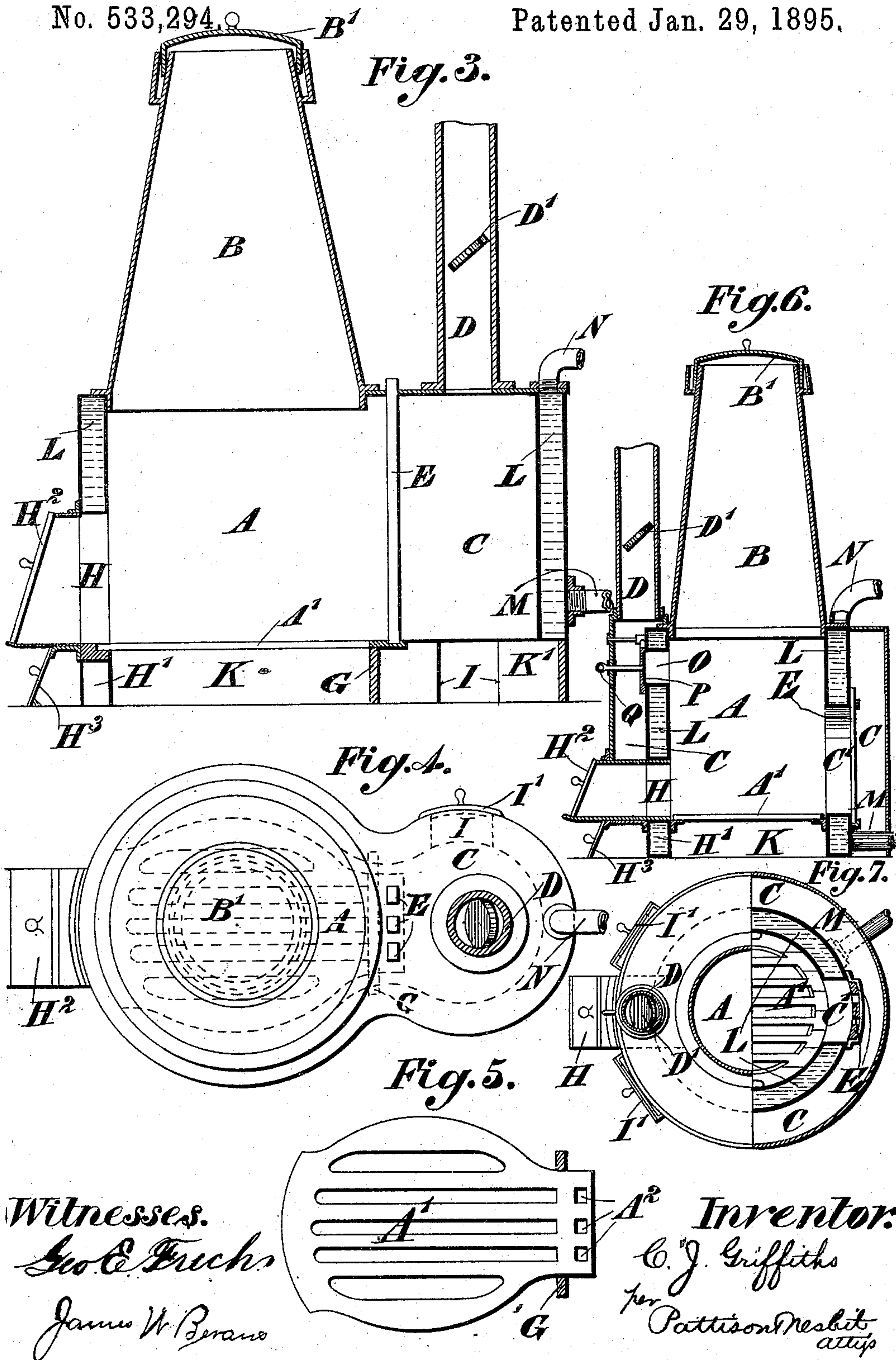
Patented Jan. 29, 1895.



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UNITED STATES PATENT OFFICE.

CLEMENT JAMES GRIFFITHS, OF SOUTHAMPTON, ENGLAND.

STOVE.

SPECIFICATION forming part of Letters Patent No. 533,294, dated January 29, 1895.

Application filed May 16, 1894. Serial No. 511,473. (No model.) Patented in England January 14, 1892, No. 732, and in Canada January 13, 1894, No. 45,063.

To all whom it may concern:

Be it known that I, CLEMENT JAMES GRIFFITHS, a subject of the Queen of Great Britain and Ireland, residing at Harefield, Southampton, in the county of Hants, England, have invented Improvements in Stoves, (for which foreign patents have been granted as follows: in Great Britain, dated January 14, 1892, No. 732, and in Canada, dated January 13, 1894, No. 45,063,) of which the following is a specification.

My invention has reference to improvements in the construction of stoves of the kind in which a supply of fuel is contained in a shaft or chamber above the fire box, the object being to insure that in such stoves after the fuel therein has been ignited, it shall continue to burn in a more reliable manner and without the same liability of the lower end of the smoke flue or chimney to become choked as obtains with other constructions of stoves now in use. For this purpose I provide at the rear of the fire box or combustion chamber, above which the fuel supply chamber is arranged, a space or chamber that may be an extension of the fire box, or be another chamber of the same or smaller cross sectional area and in free communication with the first one, and from the top or other part of which the flue extends, the arrangement being such that ashes or fuel entering the said rear space or chamber will rest upon the bottom thereof and cannot obstruct the outlet for hot gases and products of combustion. The chambers may be of square, rectangular, circular or elliptical form in plan. In each case the flue or chimney extends from the top of the rear chamber and may be provided with a valve for controlling the rate of combustion.

In the accompanying drawings, Figure 1 is a vertical section, and Fig. 2 a plan of a stove, constructed according to this invention having chambers of rectangular form in plan. Fig. 3 is a vertical section, and Fig. 4 is a plan of another construction of stove in which the chambers are of circular form in plan. Fig. 5 is a plan of a grate and a support for the inner end thereof. Figs. 6 and 7 are respectively vertical and horizontal sections showing a modified construction of stove according to this invention.

Referring to Figs. 1 to 5 inclusive A is the fire box or combustion chamber. It is provided with a grate A' of ordinary construction, and has arranged above it the fuel chamber B provided with a cover B'. This fuel chamber can be of various forms. In Figs. 1 and 2 it is shown as of pyramidal form, and in Figs. 3 and 4 as of truncated conical form.

C is the space or chamber at the rear of the fire box, and from the upper part of which extends the flue D provided with a valve or damper D'.

The chambers A and C which communicate with each other by the opening C', are raised somewhat from the ground, as shown, leaving an inclosed space K that may extend beneath each of them as in Fig. 1, or separate spaces K, K' one below each as in Fig. 3.

Between the chambers A and C are provided vertical removable bars E, or an equivalent grating. The bottom of the rear chamber C may be closed by a plate F, as in Fig. 1, or be left open to the lower inclosed space K' which is shut off air tight from the first space K by a vertical wall or partition G, so that air entering the rear chamber C has to pass through the combustion chamber A. The wall or partition G, may, as in the example shown in Figs. 3 and 4, also serve to carry the inner end of the grate A' which is formed with recesses A² as shown in Fig. 5 for the reception of the lower ends of the vertical grate bars E which can be withdrawn through the top of the stove when desired.

Two openings H, H' are formed in the front of the stove, the upper one H leading into the combustion chamber A and the lower one H' leading into the space K or ash pit below the said chamber. An opening I is also provided at the rear of the stove for cleaning out the rear chamber C (Figs. 1 and 2) or the space K' (Figs. 3 and 4) below the same or for admitting air to said chamber and thence to the flue D above. These openings are provided with suitable doors or covers H² H³ and I' respectively, by which they can be more or less closed for the purpose of regulating the passage of air therethrough and thus controlling the rate of combustion of the fuel in the fire box.

The combustion chamber of the stoves shown

in Figs. 1 and 2 is formed of sheet metal lined with suitable refractory material such as fire-brick.

The stove shown in Figs. 3 and 4 is designed for use in connection with hot water pipes and for this reason both the combustion chamber A and the rear chamber C are constructed with double walls so as to form a water jacket L that is connected at M and N with the inlet and outlet pipes for the water to be heated.

In the modified construction shown in Figs. 6 and 7, the rear chamber C is extended laterally on each side so as to surround the combustion chamber as shown. In this case the flue D leading from the top of the chamber C may advantageously be arranged at the front of the stove above the opening H, which is formed in a tube that passes through the front portion of the chamber C but without communicating with such chamber. In this arrangement the combustion chamber is constructed with a water jacket that is heated internally by the burning fuel, and externally by the hot products of combustion passing through the chamber C to the exit flue D. In other respects the arrangement is substantially like that shown in Figs. 3 and 4.

O is a passage formed through the water jacket and above the air inlet opening H. It is provided with a hinged flap valve or damper P provided with a handle Q that can be moved from the exterior of the stove, the arrangement being such that by pulling the handle to open the valve or damper, the heated air and products of combustion can, when it is desired to reduce the heating effect of the stove, be led through the opening O direct to the front portion of the chamber C and thence to the flue D above. In each case the rate of combustion of the fuel can be regulated to suit requirement by opening the door H² or I', or both, to the necessary extent.

By constructing stoves in the manner described and shown, it will be seen that all liability of the exit flue becoming choked is obviated, and the fuel will burn regularly at the lower part of the combustion chamber, the depth of burning fuel remaining approximately constant for a given stove, so long as the supply of fuel in the fuel chamber lasts, thereby enabling a practically constant heating effect to be obtained; and the fuel chamber can be made of considerable height so as to contain a large supply of fuel and enable the stove to burn for many hours without attention thereby saving much time and labor.

When the stove is intended for use inside a green-house it will be desirable to arrange that air shall be supplied to the combustion chamber from the outside by a pipe extending through the wall of the green-house and provided with a regulating valve or damper.

What I claim is—

1. A stove comprising a fire box terminating at its upper part in a shaft or chamber to contain a store of fuel, a chamber arranged parallel with and in free communication with

said fire box at the rear side thereof, closed at its lower end and having in its outer wall an opening controlled by a cover or door, a vertical grate arranged between said fire-box and chamber, and a flue extending from the upper part of said chamber, substantially as herein described.

2. A stove comprising a fire box A, a fuel shaft or chamber B located above the same, a chamber C located at the rear of said fire box and in free communication therewith, said chamber being closed at its lower end and having in its outer wall an opening I controlled by a door or cover I', vertical grate bars E arranged between said fire box and rear chamber, and a flue D extending from the upper part of said rear chamber substantially as described and shown for the purpose specified.

3. A stove comprising a fire-box terminating at its upper part in a shaft or chamber to contain a store of fuel, and provided at one side with vertical grate bars, a chamber in free communication with said fire-box through said grate, a flue extending from the upper part of said space or chamber, an open grate forming the bottom of said fire-box, and means for controlling separately the passage of air directly from the atmosphere into said fire-box, and into the space immediately beneath the last mentioned grate, substantially as herein described.

4. A stove comprising a fire-box A, a fuel shaft or chamber B located above the same, vertical grate bars E a chamber C located at the rear of and parallel with said fire-box and in free communication therewith through the spaces between said grate-bars, a flue D extending from the upper part of said chamber C, an open grate A' forming the bottom of said fire-box, and doors H² and H³ for controlling separately the passage of air directly from the atmosphere into said fire-box and into the space K immediately beneath said grate A', substantially as described and shown for the purpose specified.

5. A stove comprising a fire box with fuel shaft or chamber above, horizontal grate and ash pit below, and an exit opening and vertical grate at the rear, openings with doors for separating and controlling the entrance of air to said fire box and ash pit, a chamber arranged parallel with and in free communication with said fire box and having in its outer wall an opening controlled by a valve, a vertical grate arranged between said fire box and chamber, and a flue extending from the upper part of said chamber, substantially as herein described.

6. A stove comprising a combustion chamber A, with rear chamber C each constructed with a water jacket adapted to be connected with circulating pipes, a fuel shaft or chamber B located above and in free communication with said combustion chamber, a vertical grate arranged between said combustion and rear chambers, and a flue extending from

the upper part of the latter chamber substantially as described.

5 7. A stove comprising a combustion chamber A having a water jacket adapted to be connected with circulating pipes, a fuel shaft B located above and in free communication with said chamber, a chamber C in free communication with the rear side of said combustion chamber and arranged to extend around
10 the water jacket of such chamber, vertical grate bars arranged between said combustion and rear chambers and a flue extending from said chamber C at a point located at a distance from the part where said chamber C is
15 in communication with said combustion chamber substantially as herein described.

8. A stove comprising a combustion chamber A having a water jacket adapted to be connected with circulating pipes, a fuel shaft
20 B located above and in free communication with said chamber, a chamber C arranged to

extend around the said combustion chamber, front and rear openings O and C' between said chambers A and C, vertical grate bars E extending across said opening C', a valve 25 adapted to control said opening O and capable of being operated from the exterior of the stove and a flue with damper extending from said chamber C at a point near to said opening O substantially as herein described for 30 the purposes specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLEMENT JAMES GRIFFITHS.

Witnesses:

ALBERT LOWE,

30 Avenue Rd., Southampton, Law Clerk.

WILLIAM HAYTER,

9 Upper Bannister St., Southampton, Law Clerk.