

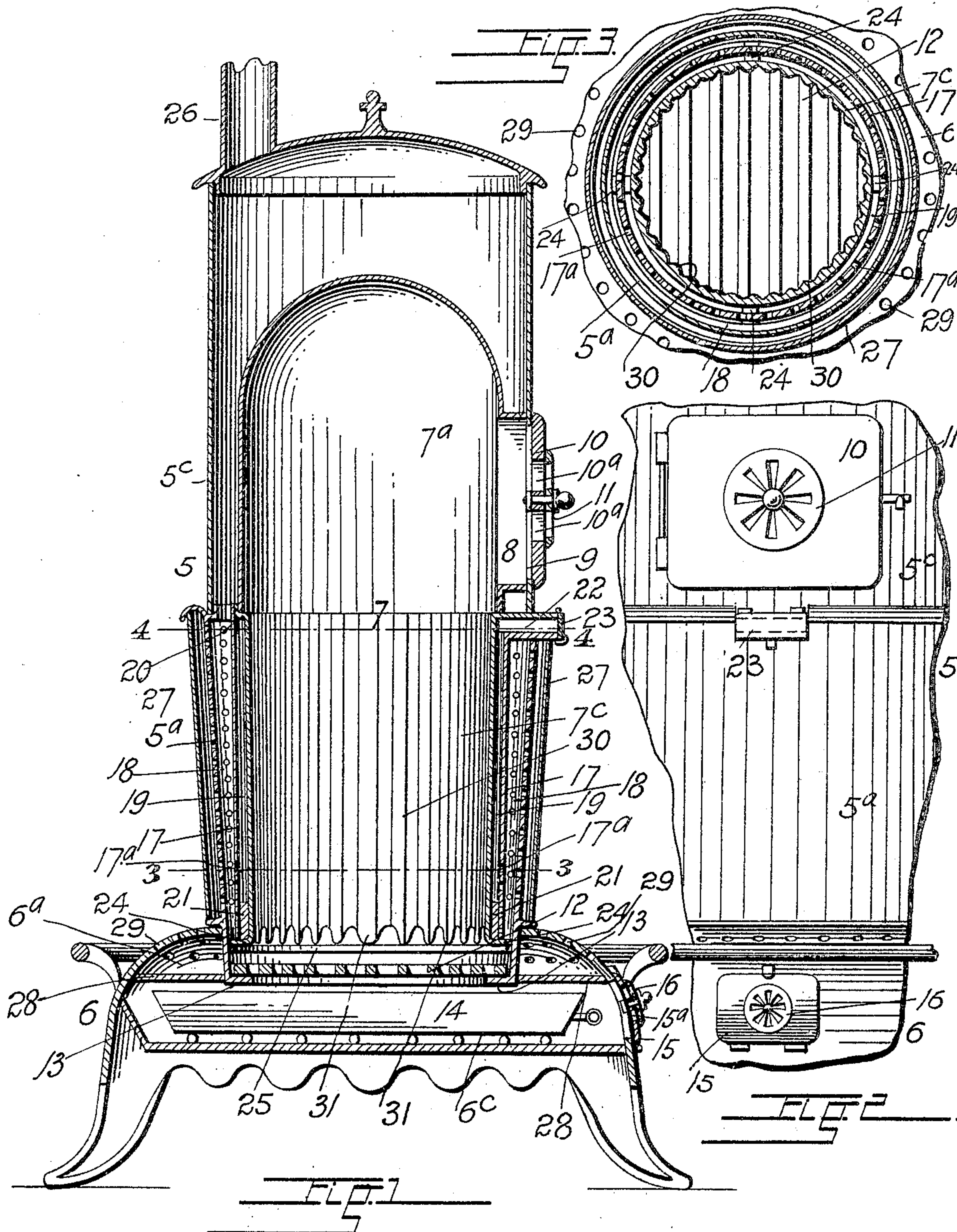
No. 803,036.

PATENTED OCT. 31, 1905.

N. G. VOSLER.
FIRE CHAMBER FOR STOVES, &c.

APPLICATION FILED APR. 18, 1904.

3 SHEETS—SHEET 1.



WITNESSES:
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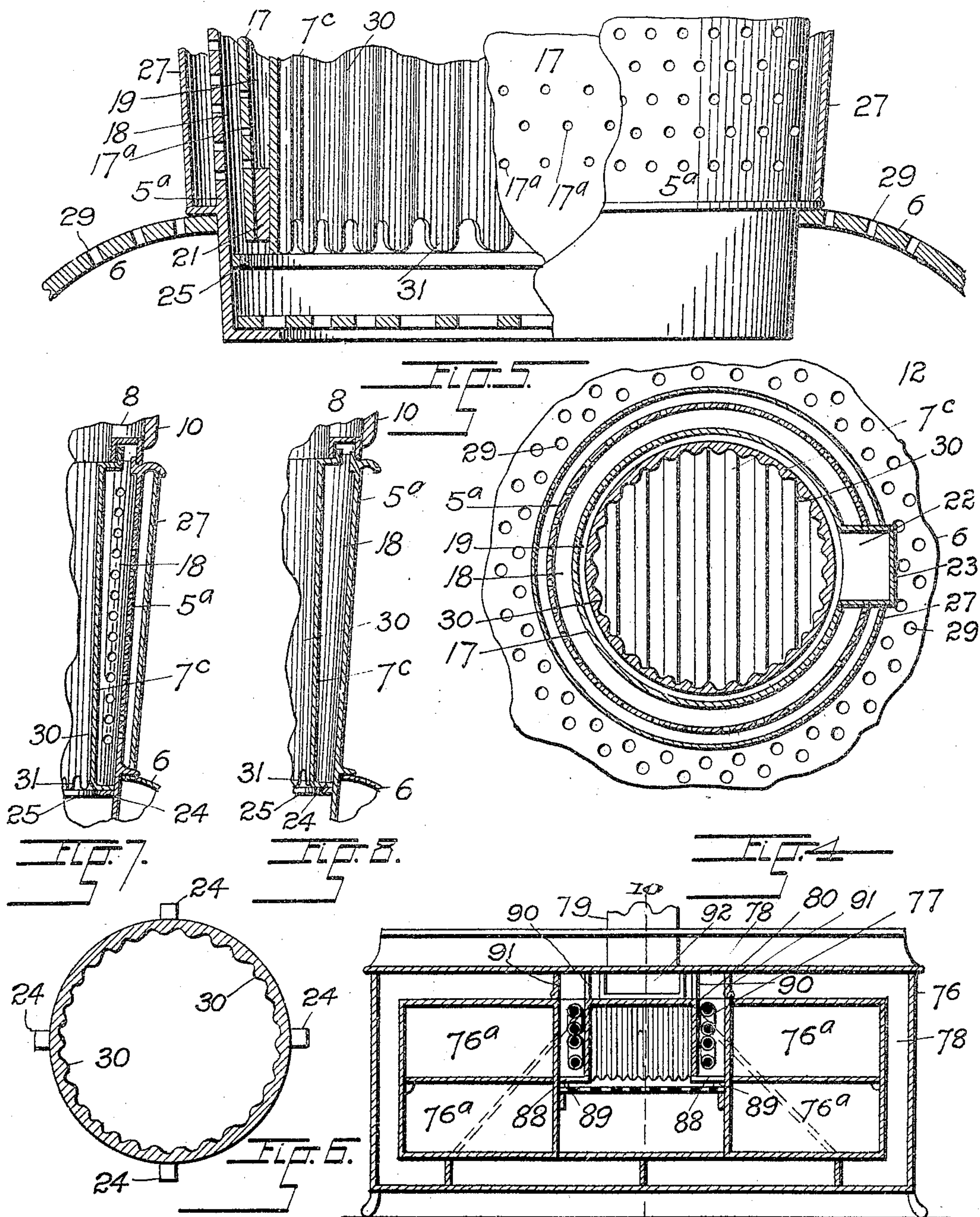
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

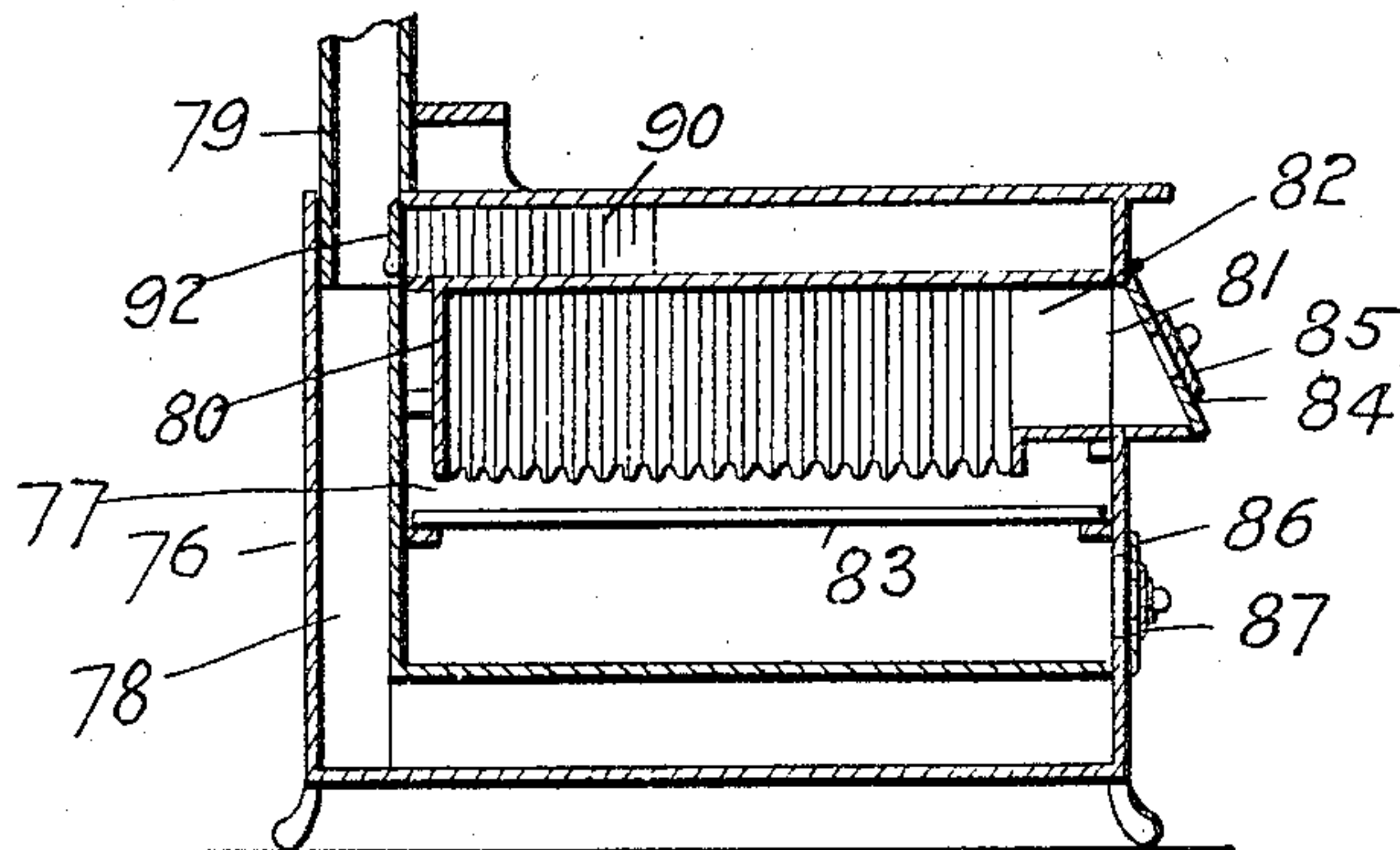


FIG. 10.

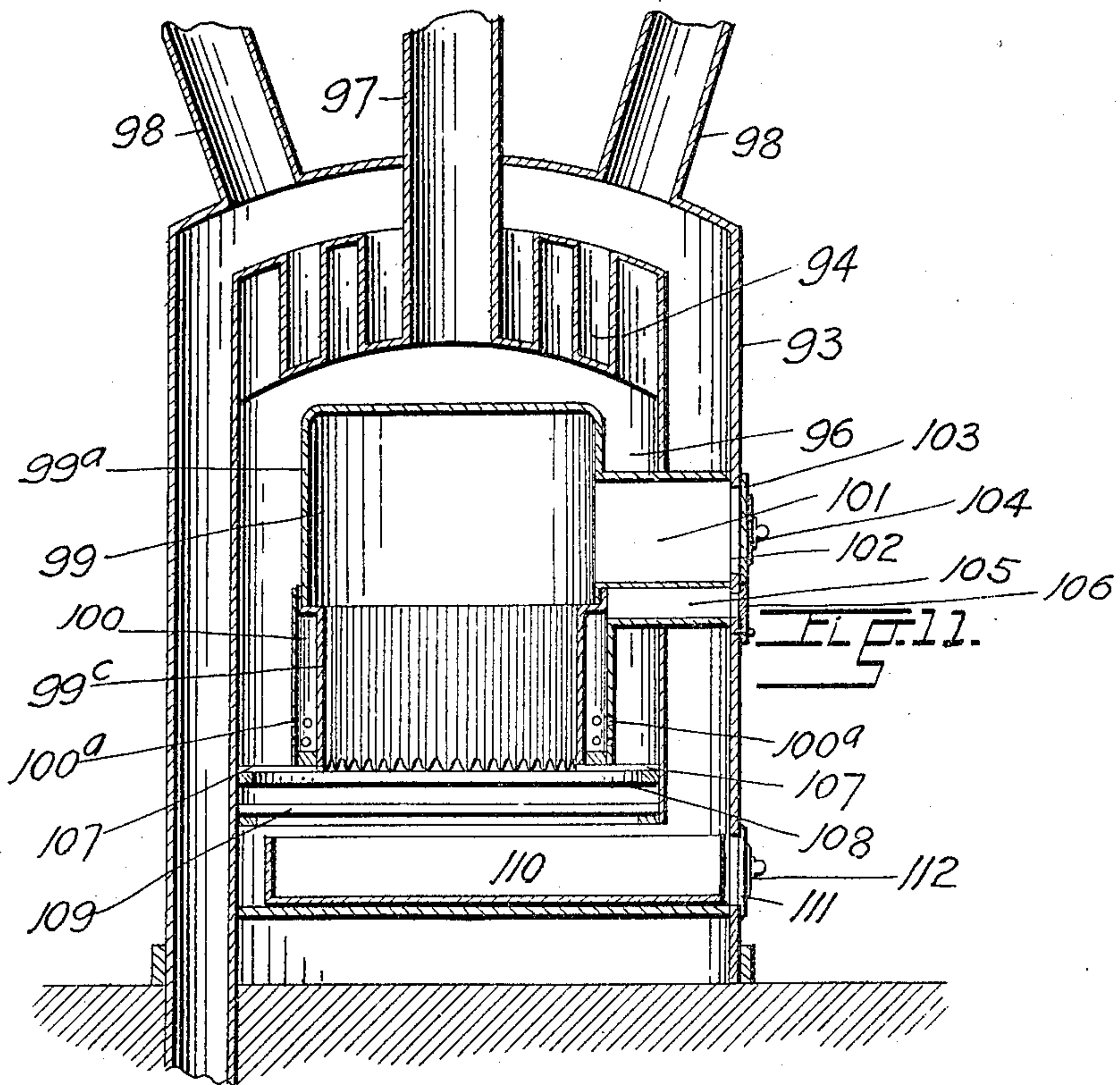


FIG. 11.

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UNITED STATES PATENT OFFICE.

NEWTON G. VOSLER, OF FORT COLLINS, COLORADO.

FIRE-CHAMBER FOR STOVES, &c.

No. 803,036.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed April 18, 1904. Serial No. 203,777.

To all whom it may concern:

Be it known that I, NEWTON G. VOSLER, a citizen of the United States, residing at Fort Collins, in the county of Larimer and State of Colorado, have invented certain new and useful Improvements in Fire-Chambers for Stoves, &c., of which the following is a specification.

My invention relates to improvements in fire-chambers of stoves and kindred contrivances; and the main object of my invention is to produce a fuel or fire chamber by which the greatest degree of heat may be developed from the minimum of fuel, which in consequence will be most economical in use, in which any kind of coal or slack may be used with satisfactory results, which by consuming the greater part of the volatile products of imperfect combustion will limit the expulsion of black sooty smoke, which by preventing the accumulation of gases will eliminate the danger of explosions, which will produce an even heat, and which will force the heat down and outwardly, which, as will be explained, is of particular value in heating-stoves.

My device, furthermore, allows absolute control of the fire by regulation of the draft and is of such simple construction that the fuel-chamber of almost any stove now in use may be readily altered to correspond with the construction of the improved device, as shown and described.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical section through a heating-stove having my improved fire-chamber; Fig. 2, a partial front view of same; Fig. 3, a horizontal section taken along line 3 3, Fig. 1, looking downward; Fig. 4, a similar section taken along line 4 4, Fig. 1; Fig. 5, an enlarged view, partly in section and partly in elevation, of the lower portion of the device, as illustrated in Fig. 1; Fig. 6, a cross-section looking downward of the lower portion of the hood, as shown in Fig. 1. Figs. 7 and 8, partial sectional views of the lower portion of the stove, showing modified form of construction; Fig. 9, a vertical section taken through a kitchen-range provided with my improved fire-chamber; Fig. 10, a vertical section taken along the line 10 10, Fig. 9, and Fig. 11 a vertical section taken through a hot-air furnace provided with my improved fire-chamber.

Similar reference characters refer to similar parts throughout the various views.

The improvements referred to consists chiefly in placing a hood inside the fire-chamber and a certain distance from its sides, the lower edge of said hood extending in close proximity to the upper surface of the grate, thus dividing the interior of the erstwhile fuel and fire chamber into a fuel-chamber and a surrounding combustion-chamber. A short conduit connects the side of the hood with the feed-opening in the side of the outer casing, said opening being, as usual, closed by means of a door provided with a contrivance to regulate the passage of air into the fuel-chamber.

In Figs. 1, 2, 3, 4, 5, and 6 is illustrated an ordinary stove, such as is used in dwellings for heating rooms, and which consists of a cylindrical casing 5, composed of two superimposed parts 5^a and 5^c, the lower one of which rests on and extends into a base 6.

7 designates the above-mentioned hood, which in this case is composed of two parts 7^a and 7^c, which are joined together in line with the place of contact between the upper and lower portions of casing 5.

8 designates the conduit which connects the upper half of hood 7 with the feed-opening 9, which may be closed by a door 10, provided with a number of radial slots 10^a and a register 11.

The grate 12 rests on an inwardly-extending flange 13 on the lower edge of section 5^a of the outer casing, while base 6 of the stove is provided with the usual ash-receptacle 14.

A door 15 affords access to the ash-chamber underneath the grate and is, like the fuel-door 10, provided with radial slots 15^a and a register 16.

The cylindrical shell or casing forming the lower half 7^c of hood 7 is surrounded by a correspondingly-shaped jacket 17, leaving an annular space 19 between the two, which forms an air-jacket designed to prevent destruction of the lower part of hood 7, as well as to supply fresh oxygen into chamber 18 between the hood 7 and the outer shell 5 of the stove.

The upper end of the air-jacket is closed by a flange 20, extending outwardly from the upper edge of section 7^c, while a ring 21, preferably made of fire-clay or other refractory material, connects the two cylinders 7^c and 17 at the lower edge of the hood.

A short conduit 22, preferably extending

below the feed-opening 9, connects the air-jacket with the surrounding atmosphere and may be closed by means of a door 23. The lower portion of cylinder 17 is provided with
 5 a number of holes 17^a, through which the heated air may flow from the jacket into the annular chamber 18.

The hood 7 is supported by means of lugs 24, extending outwardly from its lower edge
 10 and resting on a ring 25, secured to the inside of section 5^a of casing 5 in close proximity to the upper surface of grate 12.

Although not essential it is preferable that before feeding the fuel into hood 7 a fire
 15 should be started on the grate. The fuel is subsequently fed through opening 9 on top of the fire and may extend into the hood up to any desired height below opening 9. Register 16 in door 15 being opened a draft is cre-
 20 ated which supplies the necessary oxygen to the fire and sucks the smoke and other gases up around the hood and toward and through the smoke-pipe 26.

When passing apertures 17^a in the lower
 25 part of cylinder 17, new oxygen, which, having been drawn into the air-jacket through conduit 22, is heated on its way to the outlets 17^a, will unite with the carbon and hydrogen containing volatile products of imperfect com-
 30 bustion arising from the fire into the annular space 18, which surrounds hood 7 and which may be called the "combustion-chamber" of the device.

The natural result of the chemical combina-
 35 tion of the heated oxygen with the carbon and hydrogen will be ignition of the combustible matter contained in the gases, which otherwise would have been drawn through the chimney into the open, the effect of which is
 40 not only the production of additional heat, but also the elimination of black sooty smoke, which when expelled through the chimney is a menace to the general health of the com-
 45 munity, as well as a declared enemy to cleanliness.

At certain intervals or whenever it is desired to create more heat in the stove the register 11 in door 10 is opened and fresh oxygen is allowed to enter the hood. Before reach-
 50 ing the fuel the oxygen will be heated by the gases and smoke contained in the hood, and when it is drawn through the fuel it will not only cause more perfect combustion, but will draw the gases and smoke out of hood 7
 55 through the fuel and the fire into the combustion-chamber 18, with the result that a greater portion of them will be consumed by combining with the heated oxygen and by contact with the fire. By thus preventing the accu-
 60 mulation of gases in the hood the danger of explosion is minimized and no smoke or obnoxious gases will be allowed to enter the room when the register in fuel-door is opened.

It will be observed from the foregoing ex-
 65 planation that another great advantage is de-

rived from the use of my device—viz., the fact that the opening of the fuel-door will create more draft and cause consumption of smoke and other volatile gases instead of re-
 70 tarding the draft and driving the smoke and gases through the chimney, as is the case with the ordinary stoves now in general use.

The lower part 5^a of casing 5 may be perforated, as shown in Figs. 1, 2, 3, 4, and 5, in which case a shell 27, made of mica or other
 75 suitable transparent or translucent material, is placed around the perforated part to prevent escape of gases and smoke from the combustion-chamber 18. This arrangement does in no way aid or otherwise effect the working
 80 of the device, but is merely applied to impart a more cheerful appearance by exposing the light of the fire on the outside of the stove.

The interior of base 6 of the stove is divided into two chambers 6^a and 6^b by means of
 85 a circular plate 28, placed between the lower portion of cylinder 5^a and the outside wall of the base. The lower chamber 6^b contains the ash-receptacle 14, while the outside surface of the upper chamber 6^a has been provided
 90 with a number of apertures 29.

Owing to the location of the fire underneath the fuel and to the fact that the gases are drawn downwardly through the fire be-
 95 fore proceeding to the smoke-pipe, the lower portion of the stove will be heated to a greater extent than the upper part, the result being that the lower part of the room will be heated equally as well as the portions nearer the ceiling, the even distribution of the heated air
 100 through the room being augmented to a certain extent by the air constantly circulating in and out of chamber 6^a through apertures 29, said chamber being, as hereabove explained, located in the best-heated portion of
 105 the stove.

In using certain kinds of coals or slack the possibility exists that the fuel deposited on the grate or in the hood will become packed
 110 to such a degree as to make it impossible for the air introduced through register 11 and the gases and smoke contained in the upper part of the hood to pass through the fuel into the combustion-chamber. To obviate occur-
 115 rences of this description, I provide the lower part 7^c of hood 7 with internal perpendicular flutes or corrugations 30, which, no matter how close the fuel may be packed, will at all times leave channels between it and the wall
 120 of the hood to allow the air, gases, and smoke to pass from the hood into the annular chamber 18.

As it is essential that the lower edge of the hood should extend in as close proximity as possible to the grate and as it is equally im-
 125 portant that there should be sufficient room between the two to allow the volatile products of combustion to enter chamber 18, I have scalloped the lower edge of hood 7, thus meet-
 130 ing both requirements, the lobes 31 extend-

ing as near to the surface of the grate as may be desired, while the gases may find their way through the spaces between them.

It will be understood that instead of making the hood in two parts, as shown in the drawings, same may be made in one piece, especially if used in smaller stoves. On the other hand, the hood may be made of several sections to facilitate shipping, each section having its own air-jacket and inlets and outlets, if so desired.

For small stoves, in which the heat does not reach the degree attained in larger structures and in which there is but a comparatively small quantity of expelled smoke and gases, the air-jacket may be dispensed with, the lower part of the hood being composed of a single cylinder, as illustrated in Figs. 7 and 8, the latter figure showing a form of stove in which the outer casing has been made solid and the mica covering omitted in consequence.

The application of the hood to fire-chambers of furnaces, kitchen-ranges, &c., is in substance similar to the stove hereabove described, its shape and size differing according to the nature and size of the furnace in which it is to be applied.

In Figs. 9 and 10 is illustrated a kitchen-range comprising an outside casing 76, ovens 76^a, fuel-chamber 77, smoke and gas chamber 78, and pipe 79. Hood 80 has been shown without an air-jacket, the form previously described for small stoves. It is made rectangular to correspond with the shape of the range and connects with the feed-opening 81 by means of conduit 82. 83 designates the grate, above which the hood is suspended, 84 the feed-door with register, 85 and 86 the ash-door with the direct-draft register 87. Hood 80 is supplied with lugs 88, (similar to lugs 24 on hood 7,) which rest upon ridges 89, secured to the sides of the fuel-chamber.

The volatile products of combustion may be made to pass around the ovens or can be directed to go directly over the hood to the chimney by vertically-disposed partitions 90, connecting the top of the hood with the top plate of the range, and by proper manipulation of dampers 91 and 92.

The application of my improvements to the fuel-chamber of a hot-air furnace is illustrated in Fig. 11, in which 93 represents the outer casing, 94 the air-passage, 96 the fuel-chamber, 97 the smoke-pipe, and 98 the hot-air flues. Hood 99 is, like the one described for the stove, composed of two parts 99^a and 99^c, the lower one, 99^c, of which is provided with a surrounding jacket 100, which being spaced from part 99^c of the hood and closed on top and bottom forms an air-chamber around the latter. Jacket 100, like that of the stove, is provided with apertures 100^a. 101 is the conduit in the side of the hood, connecting it with the feed-opening 102, which may be closed by feed-door 103, having a reg-

ister 104. The communication between the air-jacket and the atmosphere is established by conduit 105, extending underneath conduit 101 and closed by door 106. The lower portion of the hood is provided with lugs 107, resting on a ring 108, secured to the inside of the fire-chamber.

109 is a grate over which the hood is suspended, 110 the ash-receptacle, and 111 the ash-door with the direct-draft register 112.

Among the many benefits derived from the use of my improved fire-chamber the fact previously referred to that the opening of the feed-door does not retard combustion is of special advantage, while by proper manipulation of the two registers in the feed and ash doors the draft, and consequently the combustion, is under absolute control, thus enabling perfect regulation of the temperature.

Having thus described my invention, what I claim is—

1. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing extending upwardly therefrom, its lower portion extending inside said base and supporting a grate, a hood composed of two superimposed sections concentrically located inside and spaced from said casing, a jacket having apertures a certain distance above its lower edge, located around and spaced from the lower section, a conduit leading from the annular chamber between the lower section and the jacket, terminating outside said casing, a conduit connecting the upper section of said hood with a feed-opening in said casing, and a door having draft-regulating means, adapted to close said opening.

2. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having two superimposed chambers, the upper one being perforated, while the lower one is provided with draft-regulating means, a casing supported by said base, extending through the upper chamber and into the lower one, a grate supported at the lower extremity of said casing, a hood concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in the casing, and a door having draft-regulating means adapted to close said opening.

3. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing having a surrounding ring resting thereon and extending into said base, a grate resting on a flange extending inwardly from the lower edge of said casing, a hood concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, and a door having draft-regulating means adapted to close said opening.

4. A fire-chamber for stoves and kindred contrivances, comprising in combination, a

base having draft-regulating means, a casing supported thereby, its lower portion extending inside said base and supporting a grate, a hood concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, a door having draft-regulating means adapted to close said opening, a jacket having apertures a predetermined distance above its lower edge, placed around said hood and spaced therefrom and from the surrounding casing, and a conduit communicating with the annular chamber formed between said hood and said jacket.

5 5. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing supported thereby, its lower portion extending into said base, and supporting a grate, a hood concentrically located inside and spaced from said casing and having outwardly-extending lugs, resting on a projection in said casing above said grate, a jacket located around said hood and spaced therefrom and from the casing, a refractory ring connecting the lower portions of said hood and said jacket, the latter having apertures above said ring, a conduit communicating with the chamber formed between said hood and said jacket, a conduit connecting the hood with a feed-opening in said casing, and a door having draft-regulating means adapted to close said opening.

6. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing supported thereby, its lower portion extending inside said base and supporting a grate, a hood having a scalloped lower edge concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, a door having draft-regulating means adapted to close said opening, a jacket having apertures a predetermined distance above its lower edge, placed around said hood and spaced therefrom and from the surrounding casing, and a conduit communicating with the annular chamber formed between said hood and said jacket.

7. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing supported thereby, its lower portion extending into said base and supporting a grate, a hood having longitudinal corrugations along its inner surface concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, a door having draft-regulating means adapted to close said opening, a jacket having apertures a predetermined distance above its lower edge, placed around said hood and spaced therefrom and from the surrounding casing, and a conduit

communicating with the annular chamber formed between said hood and said jacket.

8. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a partly-perforated casing supported thereby, its lower portion extending inside said base and supporting a grate, a translucent shell surrounding the perforated part, a hood concentrically located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, a door having draft-regulating means adapted to close said opening, a jacket having apertures a predetermined distance above its lower edge, placed around said hood and spaced therefrom and from the surrounding casing, and a conduit communicating with the annular chamber formed between said hood and said jacket.

9. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing supported thereby and extending into said base, a grate extending across said casing at its lower extremity, a hood located inside and spaced from said casing, a conduit connecting said hood with a feed-opening in said casing, and a door having draft-regulating means adapted to close said opening.

10. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing extending upwardly therefrom, and having an inwardly-extending flange, a grate supported by said flange, a hood concentrically located inside and spaced from said casing and having outwardly-extending lugs resting on a projection inside said casing above the grate, a conduit connecting the hood with a feed-opening in the casing, and a door having draft-regulating means adapted to close said opening.

11. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing extending upwardly therefrom and having an inwardly-extending flange, a grate supported by said flange, a hood concentrically located inside and spaced from said casing and having outwardly-extending lugs resting on a projection inside said casing above the grate, a jacket having apertures a predetermined distance above its lower edge, placed around said hood and spaced therefrom and from the surrounding casing, a conduit communicating with the chamber formed between said hood and said jacket, a conduit connecting the hood with a feed-opening in the casing, and a door having draft-regulating means adapted to close said opening.

12. A fire-chamber for stoves and kindred contrivances, comprising in combination, a base having draft-regulating means, a casing extending upwardly therefrom and having

an inwardly-extending flange, a grate supported by said flange, a hood having longitudinal corrugations and a scalloped lower edge concentrically located inside and spaced
5 from said casing and having outwardly-extending lugs resting on a projection inside said casing above the grate, a conduit connecting the hood with a feed-opening in the

casing, and a door having draft-regulating means adapted to close said opening.

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

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