

No. 688,523.

Patented Dec. 10, 1901.

J. B. HOWARD.
COOKING STOVE OR RANGE.

(Application filed Jan. 7, 1901.)

(No Model.)

2 Sheets—Sheet 1.

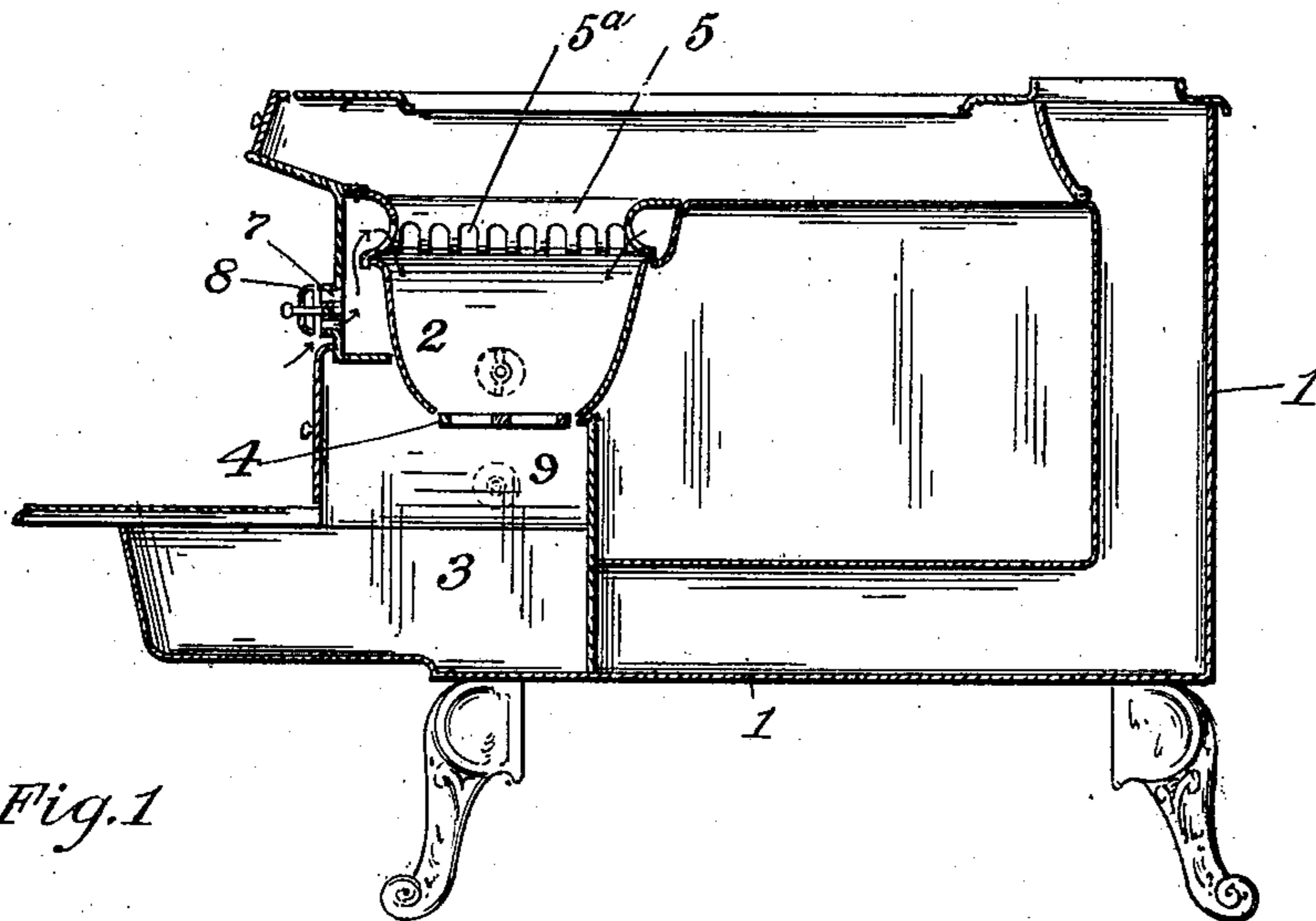


Fig. 1

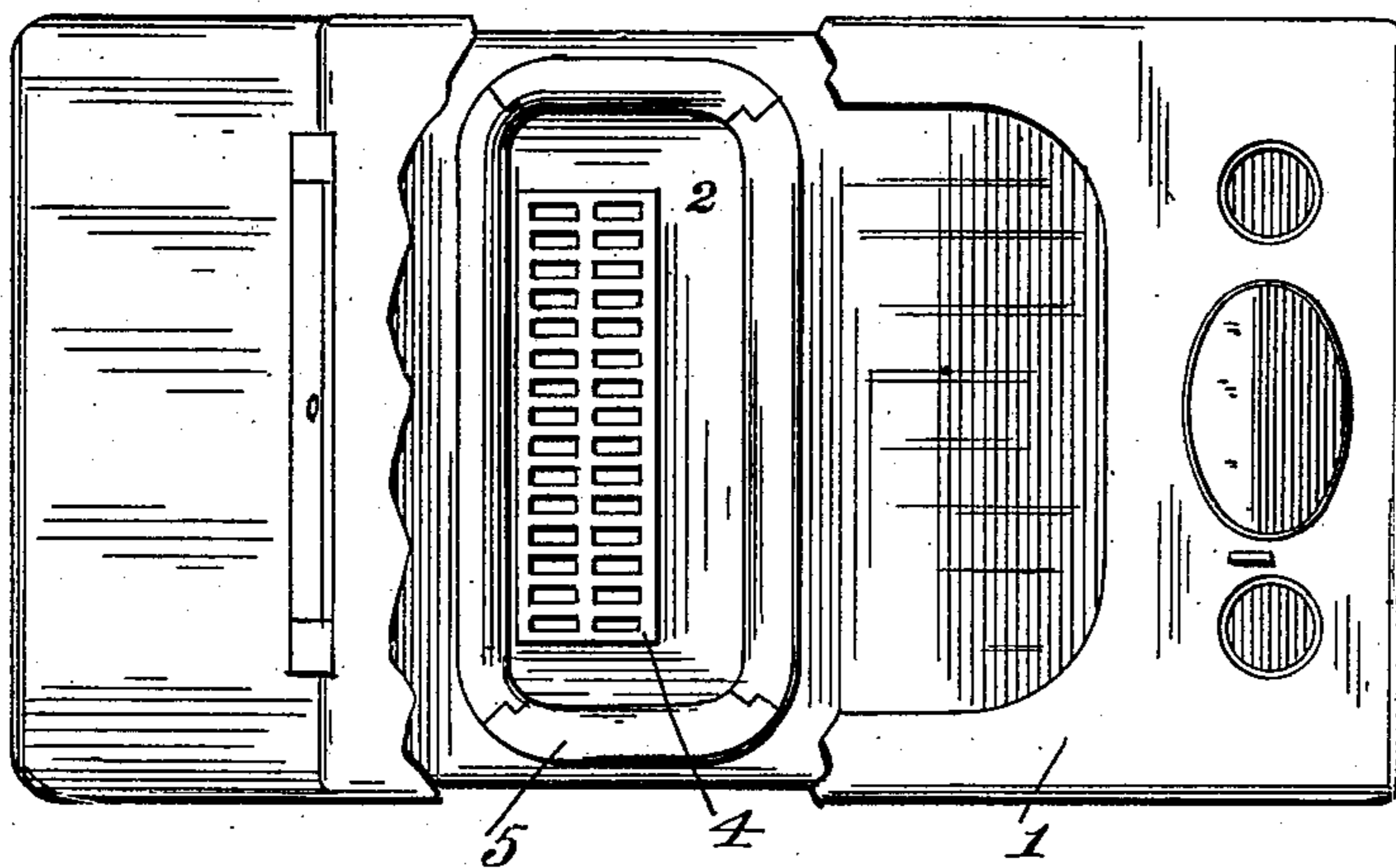


Fig. 2

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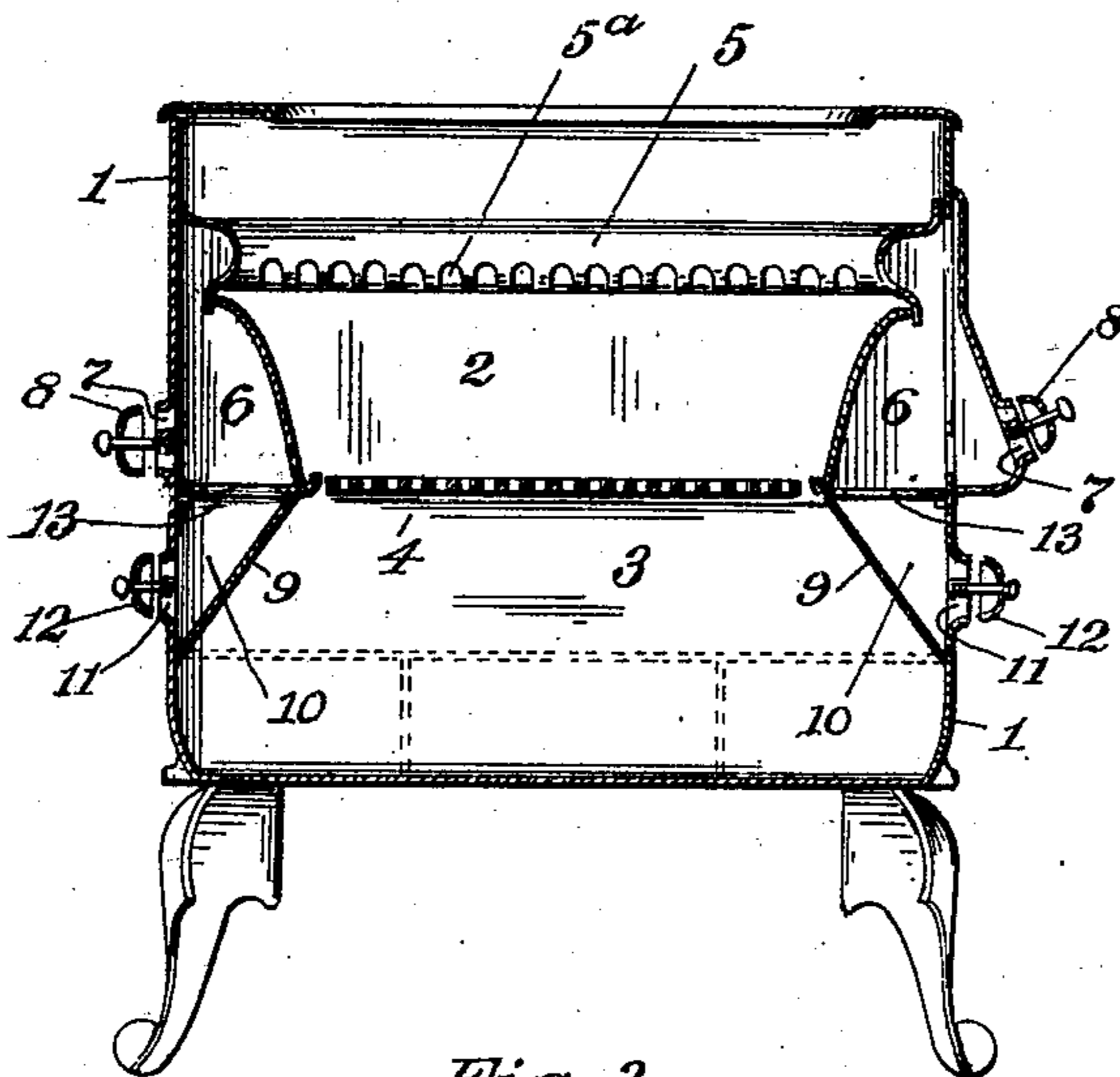


Fig. 3

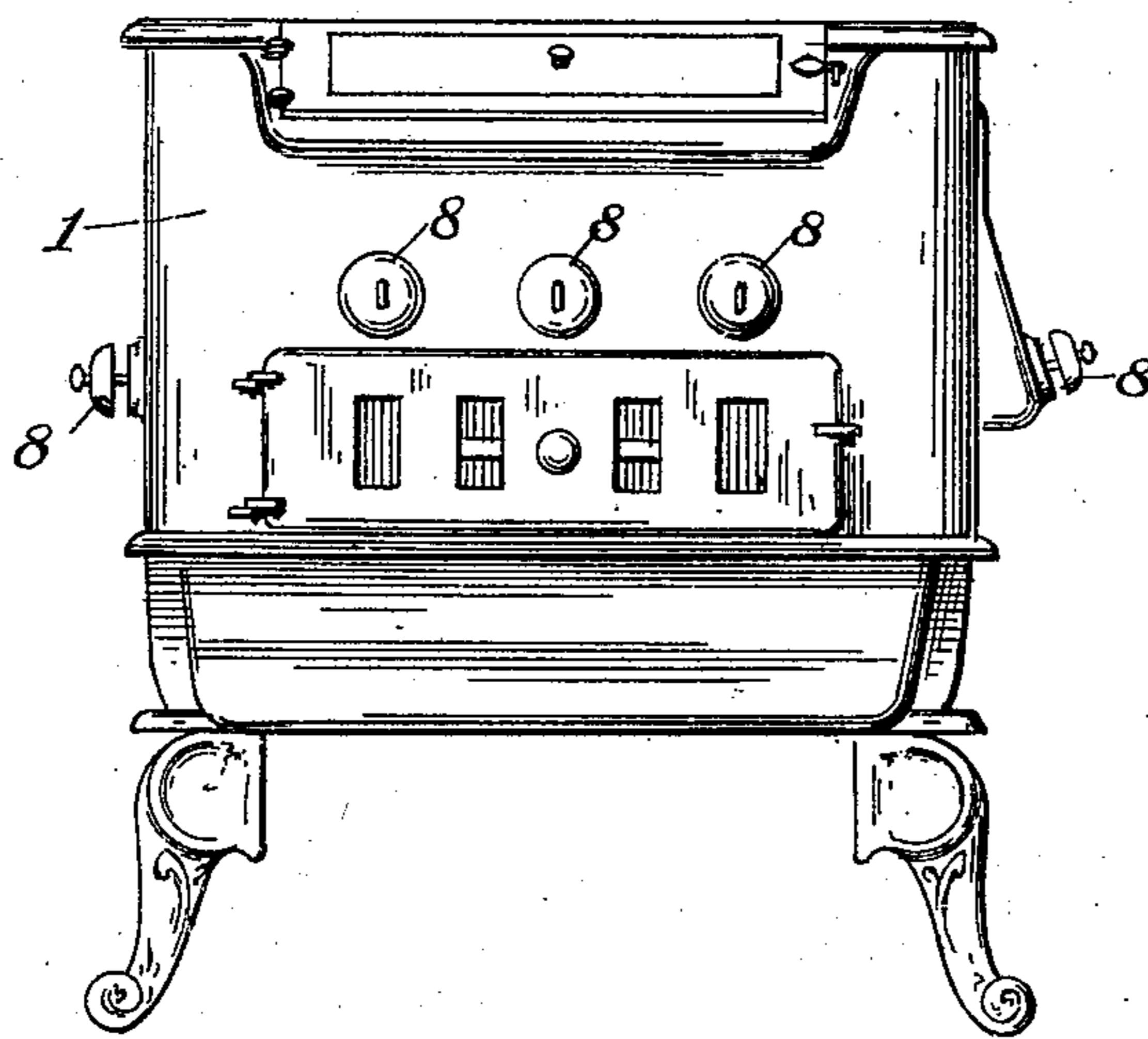


Fig. 4

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UNITED STATES PATENT OFFICE.

JAMES BARZILLAI HOWARD, OF COLUMBUS, OHIO.

COOKING STOVE OR RANGE.

SPECIFICATION forming part of Letters Patent No. 688,523, dated December 10, 1901.

Application filed January 7, 1901. Serial No. 42,352. (No model.)

To all whom it may concern:

Be it known that I, JAMES BARZILLAI HOWARD, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Cooking Stoves and Ranges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In cooking stoves or ranges as now commonly in use a very considerable portion of the fuel goes up the chimney in smoke and gas. Moreover, much of this smoke accumulates in the form of soot about the oven and in the flues and chimney, greatly diminishing the efficiency of the stove and occasioning much annoyance in cleaning the stove.

The object of the present invention is to provide an improved construction of cooking stove or range in which the smoke and gases are practically all consumed. I have discovered that by injecting a quantity of highly-heated air into the smoke and gases as they arise from the fuel in the fire-pot such smoke and gases will be ignited, and therefore consumed. Ordinarily the gases and smoke are difficult of ignition, and the reason for this is the absence of sufficient oxygen. If oxygen in abundant quantity and in a highly-heated condition be intermingled with the smoke and gases, the mixture will readily ignite, and therefore be consumed.

In the accompanying drawings, in which I have shown my present improvements, Figure 1 is a central vertical section of the cooking-stove. Fig. 2 is a plan view, a part of the top over the fire-pot being broken out and removed. Fig. 3 is a transverse vertical sectional view through the fire-pot, and Fig. 4 is an elevation of the front of the stove.

Like characters of reference in the several views designate corresponding parts.

1 designates the outer shell of the stove, and 2 the fire-pot or fuel-chamber, composed of front, back, and end linings, as usual.

3 is the ash-pit, and 4 an ordinary grate that separates the fire-pot and ash-pit, as usual. Upon the upper edges of the linings comprising the fire-pot are fitted four semi-tubular chamber-forming sections 5, making

a continuous circumambient chamber at the upper end of the fire-pot. This chamber is made slightly bulging, so as to project over into the fire-pot, and the several sections thereof have openings 5^a, that are preferably made at the under side of the bulging portion, so that soot and cinders shall not tend to accumulate in and choke the chamber. From the drawings it will be observed that there is space 6, contracted toward the top thereof, between the outer shell of the stove and the fire-pot. In the walls of the outer shell and in the horizontal plane of the fire-pot are formed openings 7, closable with adjustable dampers or valves 8. The spaces 6 communicate with the hot-air chamber formed by the sections 5, and air admitted through the openings 7 is first heated by contact with the sides of the fire-pot, after which it finds its way to the hot-air chambers 5 and thence through the openings 5^a thereof into the body of smoke and gas arising from the fuel. To more highly heat the air, I form in the ash-chamber, by means of septa 9, supplementary air-heating chambers 10, and make in the walls of the outer shell openings 11 into said chambers, with adjustable dampers 12, similar to those hereinbefore designated as 8. These supplementary chambers communicate with the chambers 6 by means of openings 13, as shown in Fig. 3. The dampers 12 are omitted from the view shown by Fig. 4. They can be omitted in practice, but better results are had with the supplementary air-heating chambers.

It will be observed that the chamber 6 or both the chamber 6 and the communicating chambers 10 take air independently of the supply that supports combustion of the fuel in the fire pot or box and that the supply of air to both or either of these chambers 6 and 10 can be regulated. This ability to govern the supply of air to these chambers is important, because the temperature of the oxygen is determined in a large measure by the quantity of air admitted and the condition of the fuel, and in order to effect perfect combustion of the smoke and gases the temperature of the oxygen must be regulated according to these conditions. If desired, the air can be shut off when most of the smoke and combustible gases have been consumed or driven from the fuel and the coke-like remains consumed

in the ordinary way. I am aware, however, that it is not new to provide means for regulating and shutting off air, and I do not attempt to claim this alone, but it is the combination of this feature with the other elements of my construction that makes practical the work for which the stove is intended.

With my improved construction the smoke and cinder nuisance, both public and private, is largely abated, the coal bill reduced, and much better results had from the stove. A further and very important advantage incident to the use of my construction resides in the fact that the linings of the fire-pot are saved from melting down or burning out, because the constant impact of cool air against the outer sides of these linings prevents them from becoming so intensely heated, as heretofore. After a stove has been put into use there has been, perhaps, no other item of expense so great as the renewal of these linings.

What I claim, and desire to secure by Letters Patent, is—

1. In a cooking-stove, the combination with the outer shell thereof, a fire-pot therein communicating with the outlet-flues from the upper end thereof and receiving its air-supply from below, air-heating spaces 6 contracted toward their top between the fire-pot and shell and non-communicant with the ash-chamber, a circumambient hot-air chamber 5 at the top of the fire-pot communicating with the spaces 6 and projecting inwardly

over said fire-pot and perforated at its under side, and valves in the outer shell located approximately in the plane of the bottom of the fire-pot for regulating the supply of air to the aforesaid air-heating spaces 6 independently of the air-supply to the fire-pot, substantially as described.

2. In a cooking-stove, the combination with the outer shell thereof, a fire-pot therein communicating directly with the outlet-flues from the upper end thereof and receiving its air-supply from below, air-heating spaces 6 between the fire-pot and shell non-communicant with the ash-chamber, air-heating spaces 10 in the ash-chamber communicating with the spaces 6 but not communicating with the ash-chamber, a circumambient hot-air chamber 5 at the top of the fire-pot projecting inwardly over said fire-pot and perforated at its under side, and valves in the outer shell located respectively approximately in the horizontal plane of and below the bottom of the fire-pot for regulating the supply of air to the air-heating spaces 6 and 10 independently of the air-supply to the fire-pot, substantially as described.

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

JAMES BARZILLAI HOWARD.

Witnesses:

SAMUEL W. LATHAM,
GEORGE M. FINCHEL.