

(No Model.)

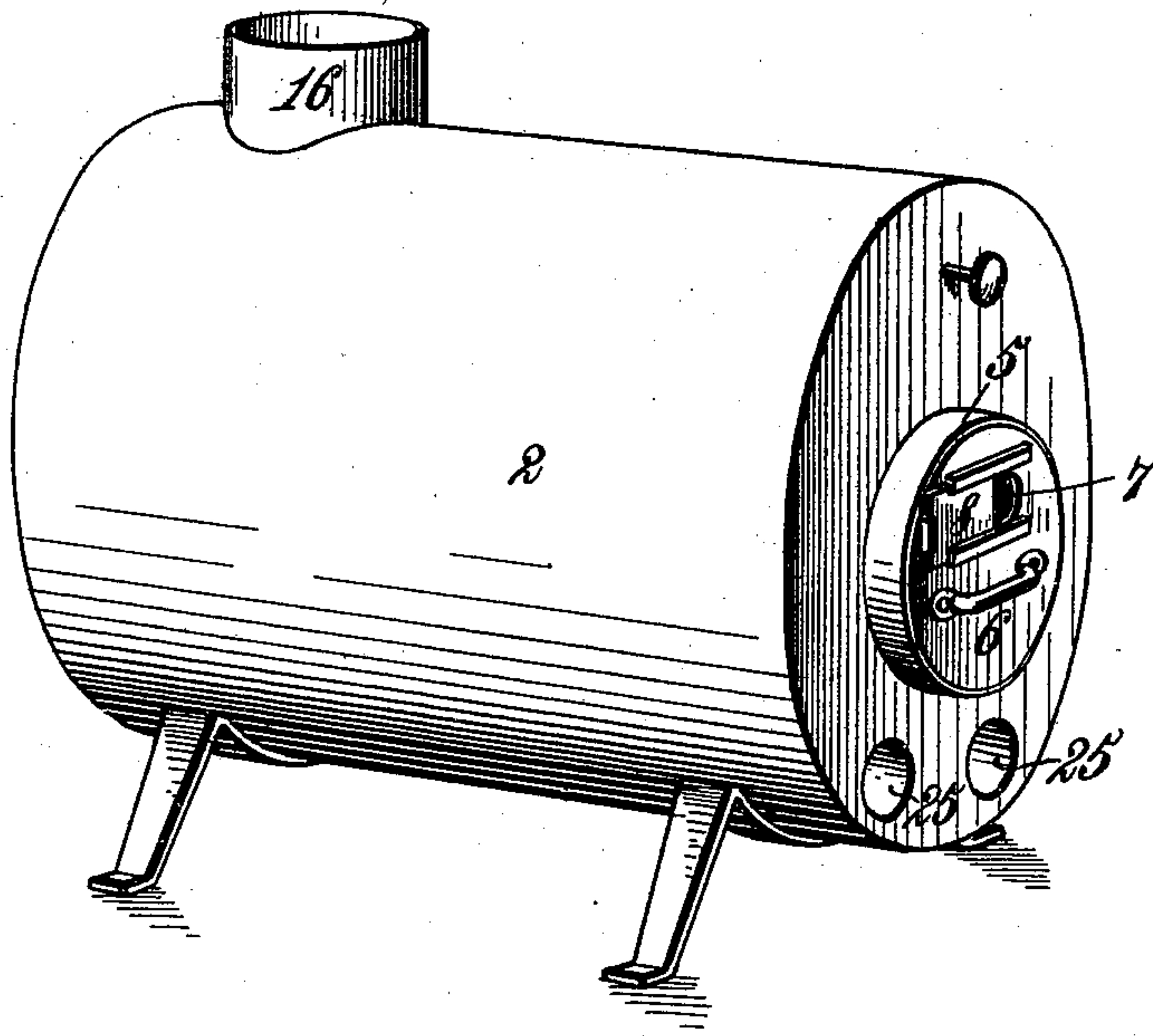
2 Sheets—Sheet 1.

W. H. LOY.  
HEATING STOVE.

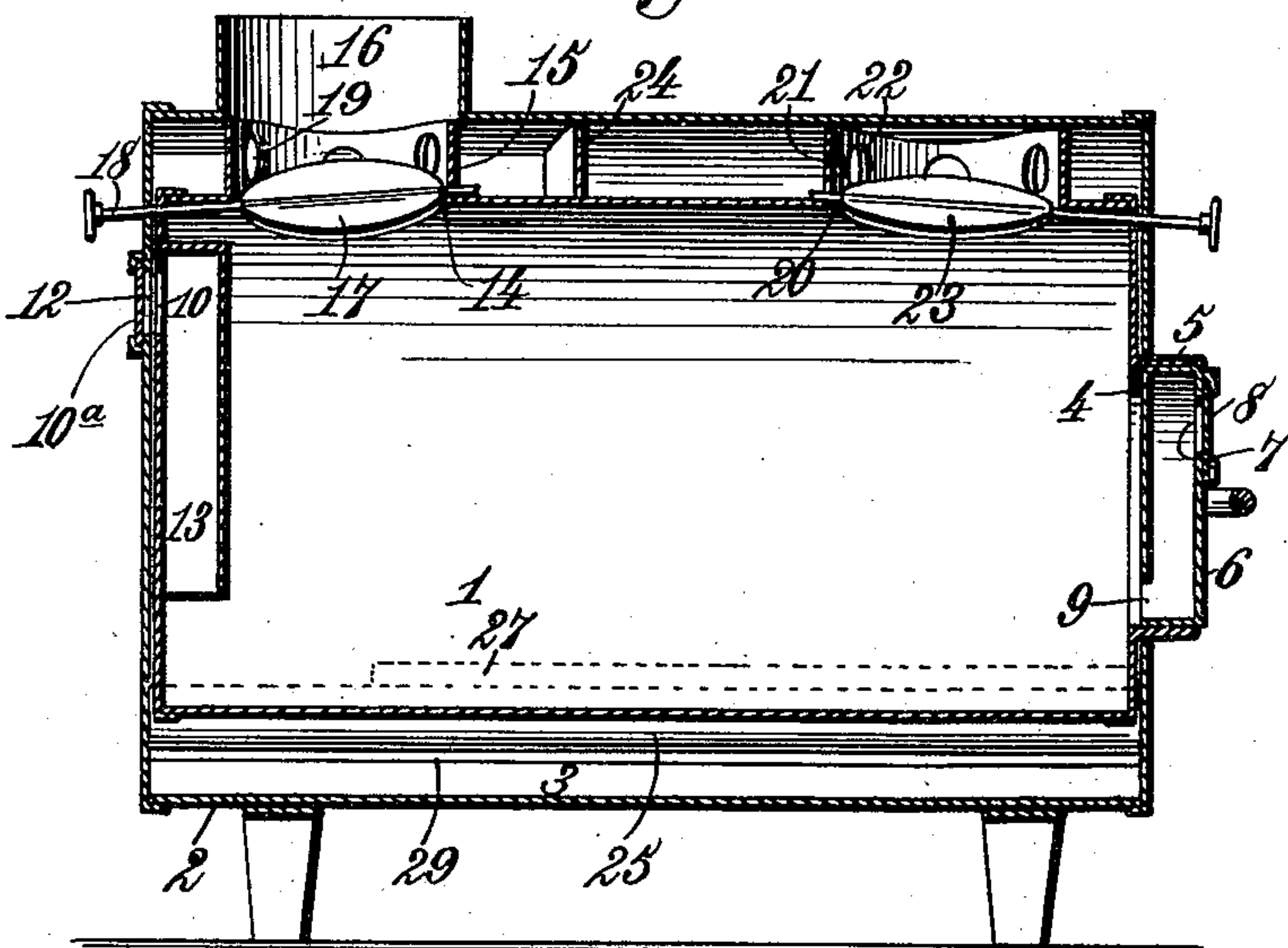
No. 567,034.

Patented Sept. 1, 1896.

*Fig. 1.*



*Fig. 2.*



Witnesses.  
*Robert Everett,*  
*Thos. A. Green*

Inventor.  
*William H. Loy.*  
By *James L. Norris.*  
*Atty.*

(No Model.)

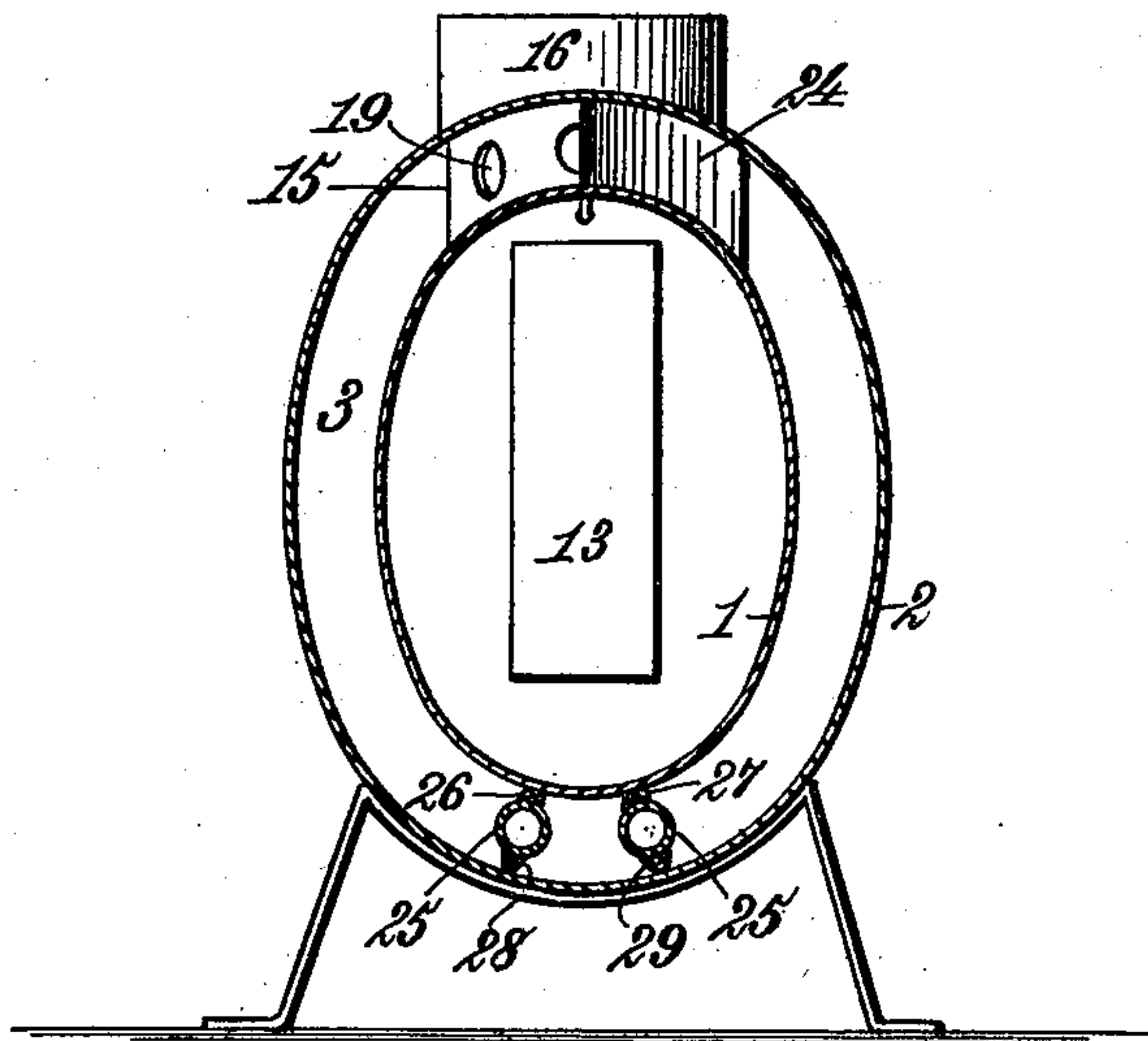
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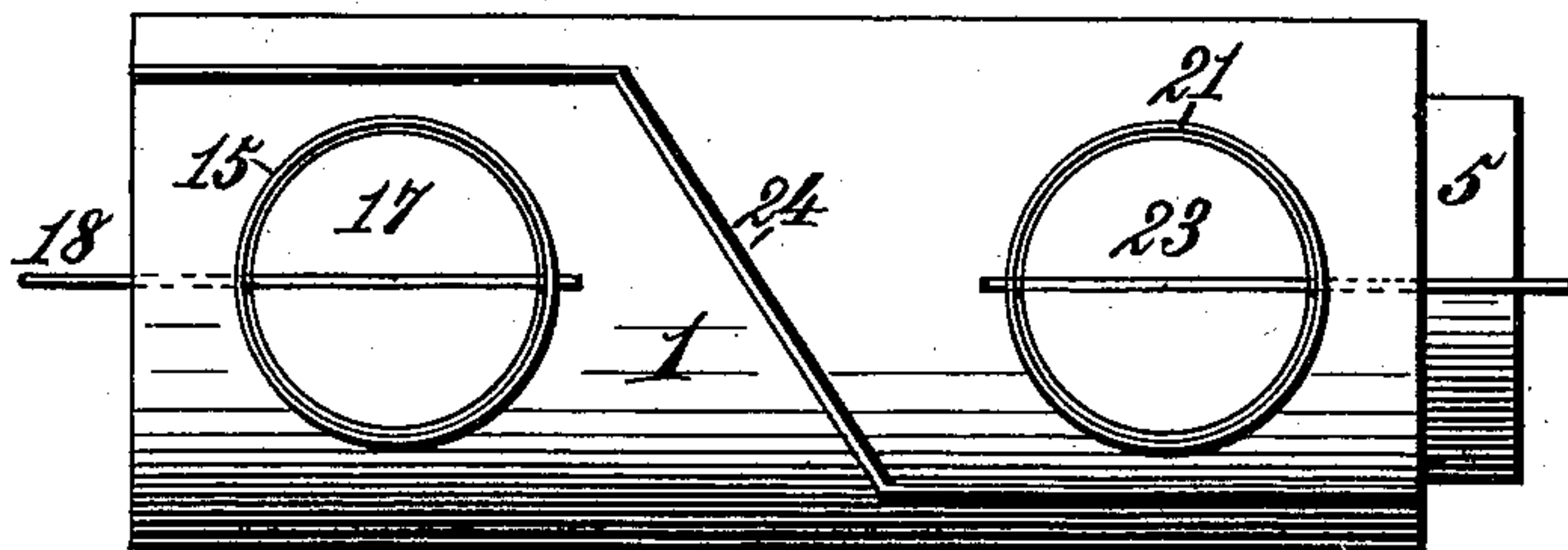
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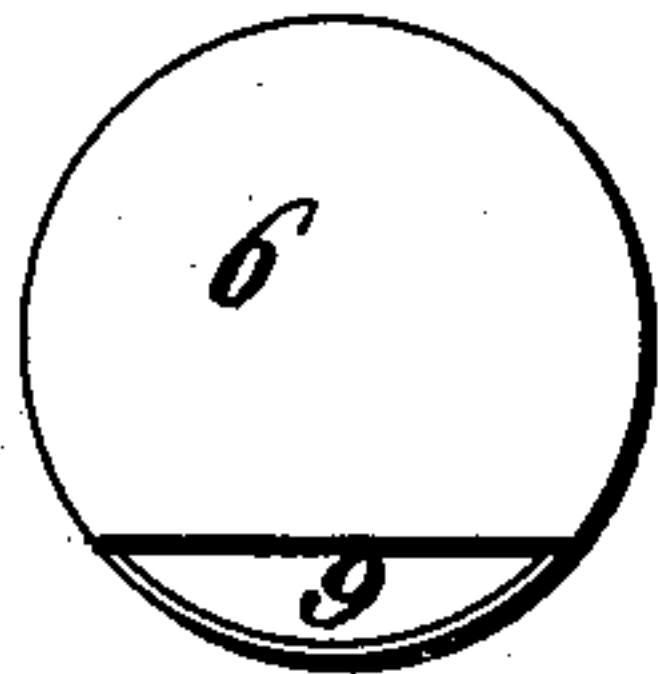
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

WILLIAM H. LOY, OF CEDAR RAPIDS, IOWA.

## HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 567,034, dated September 1, 1896.

Application filed February 25, 1896. Serial No. 580,644. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. LOY, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented new and useful Improvements in Heating-Stoves, of which the following is a specification.

My invention relates to heating-stoves in which wood is used as a fuel.

It is my object to provide a stove of this type having a construction and arrangement of parts whereby a greater degree of heat is produced by a given quantity of fuel than has heretofore been possible, thus effecting a material economy in the consumption and making a stove of medium size capable of heating a much larger apartment than has been possible with stoves of the same size but of other construction. It is my purpose, in other words, to provide a wood-burning stove with an outer inclosing drum and to provide such draft connections, draft-regulators, and dampers that I may have either a direct draft entering at the front end of the inner drum and passing directly to the uptake-flue or a return-draft entering the inner drum at its rear end, passing to the front, issuing between the drums, then returning to the rear end and entering the chimney or flue, means being provided for causing the heated currents to pursue a tortuous path between the drums to increase the heating-surface.

The invention consists, to these ends, in the several novel features of construction and new combinations of parts hereinafter fully described, and then particularly pointed out and defined in the claims.

To enable others to clearly understand and to make and use my said invention, I will now describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a perspective view of a stove constructed in accordance with my invention. Fig. 2 is a horizontal central section taken vertically. Fig. 3 is a transverse section taken upon the line 3 3, Fig. 2. Fig. 4 is a plan view of the inner drum. Fig. 5 is a detail view showing the inner face of the hollow door.

The reference-numeral 1 in said drawings indicates the inner drum or stove proper, which is here shown as consisting of a casing which is substantially elliptical in cross-section,

though it may have any form preferred. It is wholly inclosed within an outer drum of similar form, a substantially uniform space 3 being provided between the two drums, except at the ends, where the inner and outer walls are practically one and the same. At its front end the inner drum 1 is provided with an opening 4, surrounded by a flange or collar 5, which fits closely within and projects outward through an opening in the front end of the outer drum. In this collar or flange 5 is inserted the door 6, which consists of a hollow circular shell having its front or outer wall provided with air-inlets 7, which may be closed wholly or to any desired extent by means of a sliding valve or damper 8. The inner flat wall of the door is parallel with the outer wall, and at its lower edge said wall is cut away to form a segmental opening 9. The air-inlets 7 are preferably formed in the upper portion of the outer flat plate of the door, so that the air in entering must travel through the interior of the circular shell, whereby it receives warmth and thus avoids chilling the fire. At its rearward end the inner drum 1 is provided with a draft-opening 10, formed in the upper portion of the flat wall, which rests closely against the end wall of the outer drum. This outer wall is also provided with an inlet-opening 12, with which the opening 10 registers. These openings the entrance to which is controlled by a slide-damper 10<sup>a</sup> have communication with the upper end of a vertical air box or conduit 13 upon the inner surface of the flat end wall of the inner drum 1. This air-box extends downward to a point between the center and the bottom of the inner drum, its lower end being open and discharging directly downward, while the upper end is closed, save as to the inlet-opening.

Upon the top of the inner drum 1, near its rearward end, is an opening 14, surrounded by a flange or collar 15, which extends upward and communicates with a flue-opening 16 in the outer drum. The opening 14 may be closed, either partly or wholly, by a damper 17, having a suitable stem 18. Above this damper openings 19 are formed in the flange or collar 15, which communicate with the space 2 between the inner and outer drum. At the other end of the inner drum, and occupying a position corresponding to that of the opening 14 and flange 15, is a second open-



ing 20, surrounded by a flange or collar 21, which rises to the wall of the outer drum, with which it makes a close joint. Openings 22 are formed in the flange 21 like those in the flange 15, and a damper 23 is arranged in the opening 20 below the openings 22. Rising from the outer surface of the drum 1 is a partition 24, lying upon one side of the flange 15 and at a distance from it. This partition extends from the end of the outer drum longitudinally until it passes the flange 15, and thence it extends diagonally across the space between the flanges 15 and 21 to a corresponding point on the other side of the central line of the drum. From this point it runs longitudinally past the flange 21 to the front end of the other drum. The upper edge of this partition meets the walls of the other drum 2 and serves to direct the heated gases around and beneath the inner drum before they can escape into the flue. The particular form of this partition may evidently be varied considerably without affecting the result accomplished.

The operation of the stove is as follows: In kindling the fire in the inner drum it is expedient to use the direct draft by opening the slide valve or damper 8 in the door and the damper 17 in the opening leading to the flue. When well under way, however, I close both these dampers and open the damper 10<sup>a</sup> on the rearward end wall of the outer drum. The draft then passes down through the air-box 13, through the inner drum 1. Thence the products of combustion pass up through the opening 20, the valve 23 being opened. Passing through the apertures 22 in the collar 21 the hot gases and other products of combustion come into the space 9 between the drums and being guided by the partition 24 they flow over the top and toward the rear of the stove, being compelled to pass completely around and beneath the inner drum in order to reach the apertures 16 in the flange 15, through which they pass into the flue. This gives a greatly-enlarged area of heating-surface and causes the hot gases to be returned in circulation between the drums long enough to fully utilize all the heat they contain. Beneath the inner drum and between it and the outer drum I arrange pipes 25, running from end to end and having communication with the outer air at both ends. Upon the upper sides of these pipes are mounted hollow ribs 26 and 27, one extending from the rear end wall to a point suitably distant from the front wall, while the other runs from the front end wall to a point equally distant from the rear end. The rib 26 forces the hot gases to the front end of the stove, where they pass into the space between the ribs and pipes and then travel toward the rear to pass around the end of the rib 27. Beneath the pipes 25 are similar ribs 28 and 29, the former running from the front wall to a point removed from the rear wall and the latter running from the rear wall to a point

equally removed from the front wall, this arrangement being the reverse of that given to the ribs 26 and 27. The pipes 25, with these ribs attached, serve to support the inner drum 2, and also to deflect the products of combustion into the longest possible path.

The entire construction is very simple, and stoves built in accordance therewith can be very cheaply manufactured. The economy of fuel effected is very material and the stove has the capacity, when properly supplied with fuel, of heating an apartment which, with stoves of other patterns, would require a much larger fire-box and a far greater consumption of fuel.

What I claim is—

1. A heating-stove consisting of an inner and outer drum having an intermediate space for circulation, a door in the front end having a draft-opening and damper, an air-inlet in the rear end, openings in the upper side of the inner drum near the ends, having flanges provided with apertures, and dampers below said apertures, one of said openings communicating with the uptake, substantially as described.

2. A heating-stove, consisting of an inner and outer drum, having a space for circulation between their curved, or elliptical walls, the front end wall being provided with a circular hollow door having a segmental opening at the lower edge of its inner wall and air-inlets at the upper portion of its outer wall, the rear end wall being provided with an air-inlet and damper in its upper part communicating with a vertical air-box discharging near the bottom of the inner drum, and the top of said inner drum having two openings with flanges having apertures and dampers below said apertures, one of said openings having communication with the flue, substantially as described.

3. A heating-stove consisting of an inner and outer drum with a space between their curved walls, a circular, hollow door fitted in a flange projecting in front, said door having dampered draft-openings at top and bottom of its outer and inner walls of the door, an air-inlet at the upper part of the rear end wall, a vertical air-box on the inside to receive air from said opening and discharge it downward and into the inner-drum openings in the top of the inner drum near its ends, one leading to the flue, said openings having flanges provided with apertures communicating with the space between the drums, dampers below said apertures, and a partition upon alternately opposite sides of the flanges and crossing the top of the inner drum diagonally, substantially as described.

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

WILLIAM H. LOY.

Witnesses:

J. C. STODDARD,  
I. LOY.