

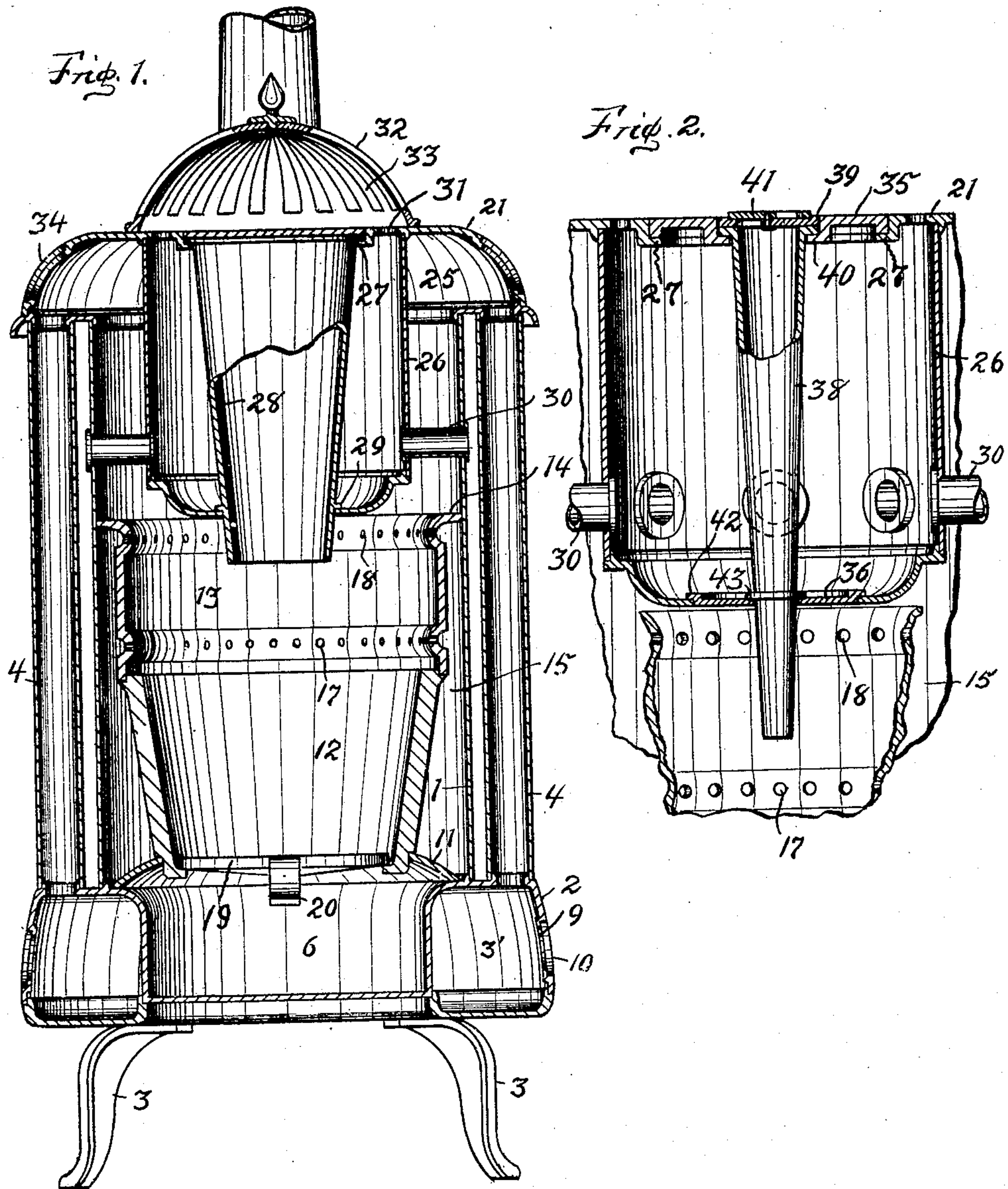
No. 865,528.

PATENTED SEPT. 10, 1907.

F. M. REED.  
HEATING STOVE.

APPLICATION FILED OCT. 23, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

*J. M. Dickens,*  
*W. J. Lampke*

*Franklin M. Reed*

INVENTOR

*By Chapin & Denny*

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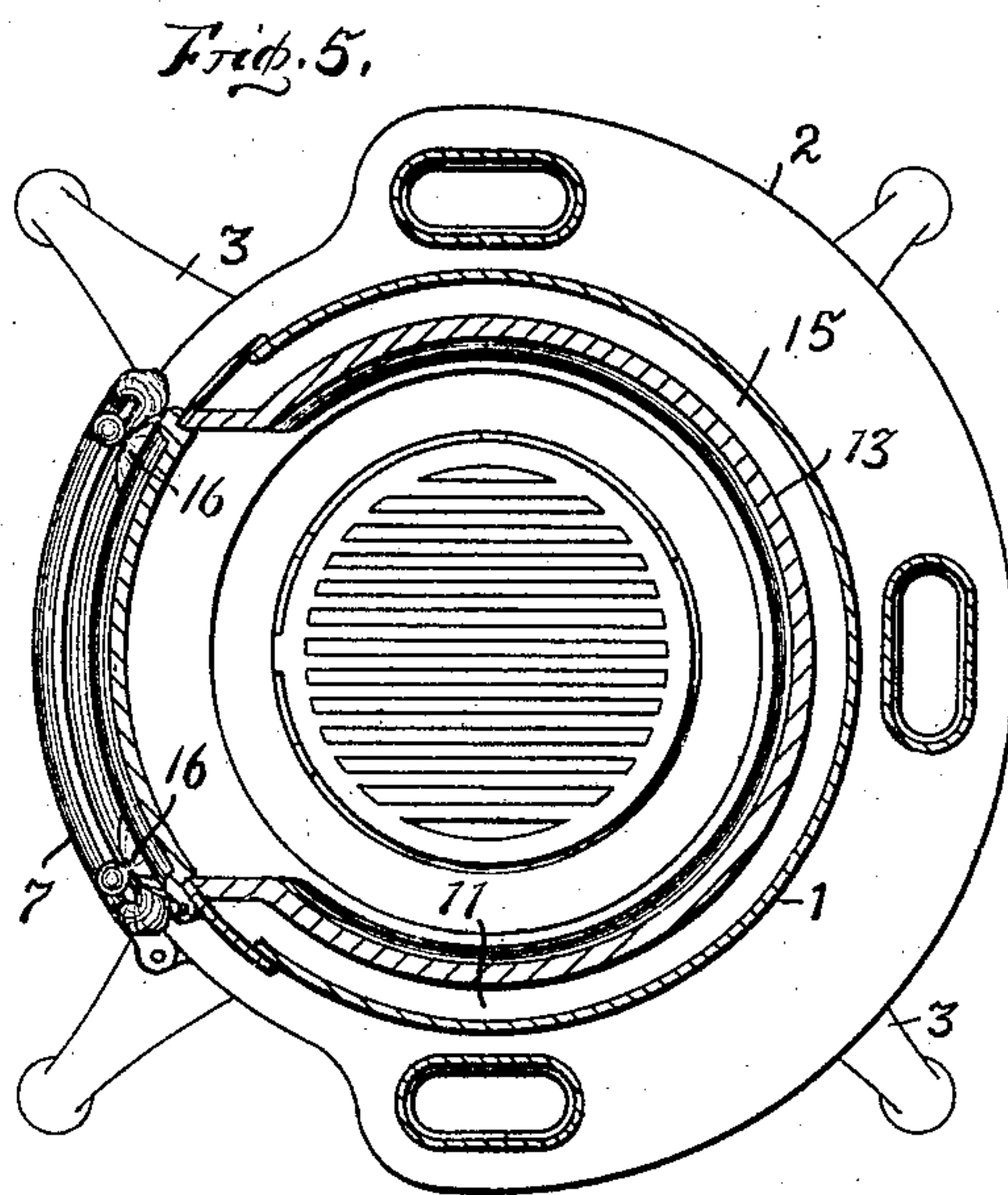
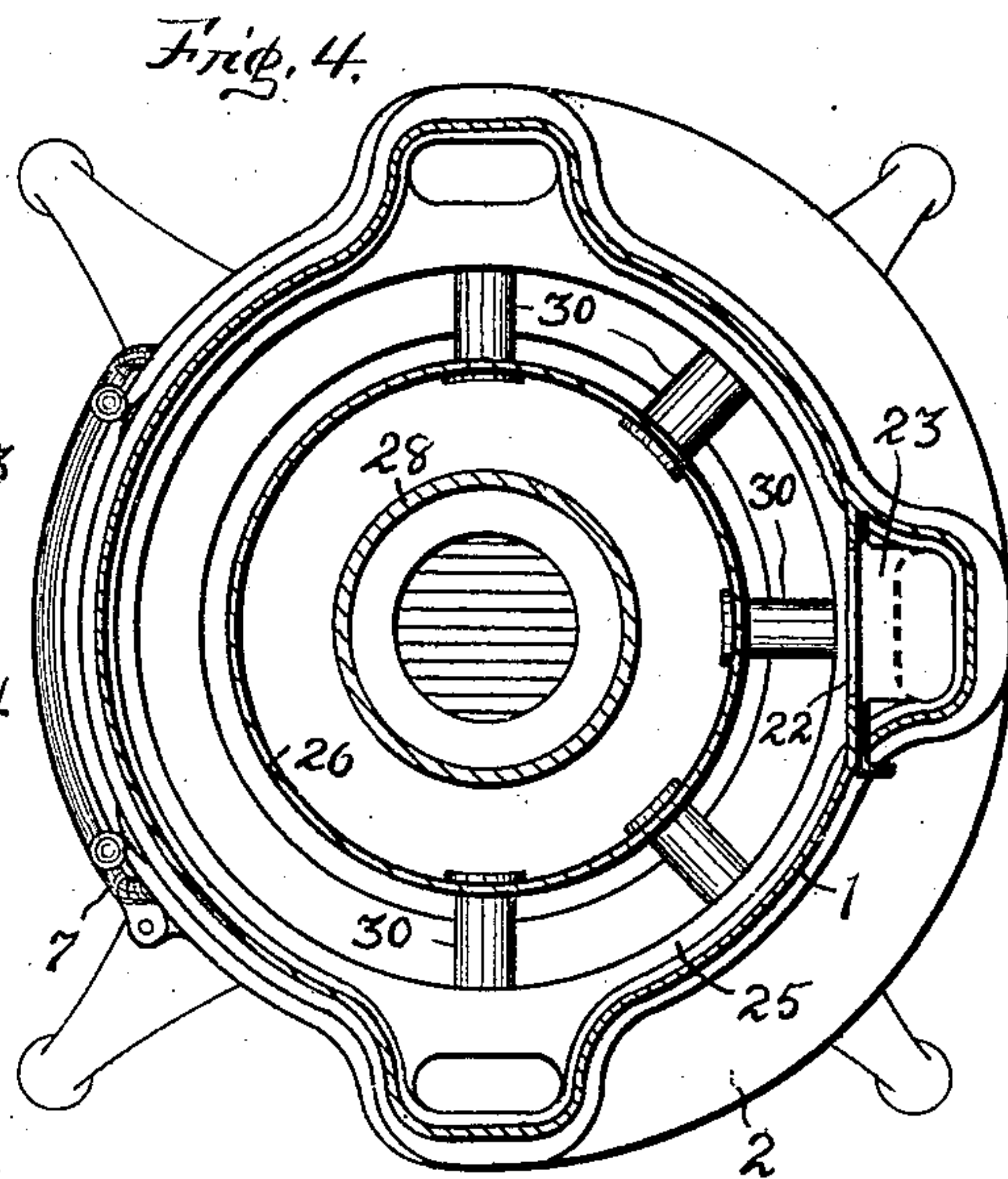
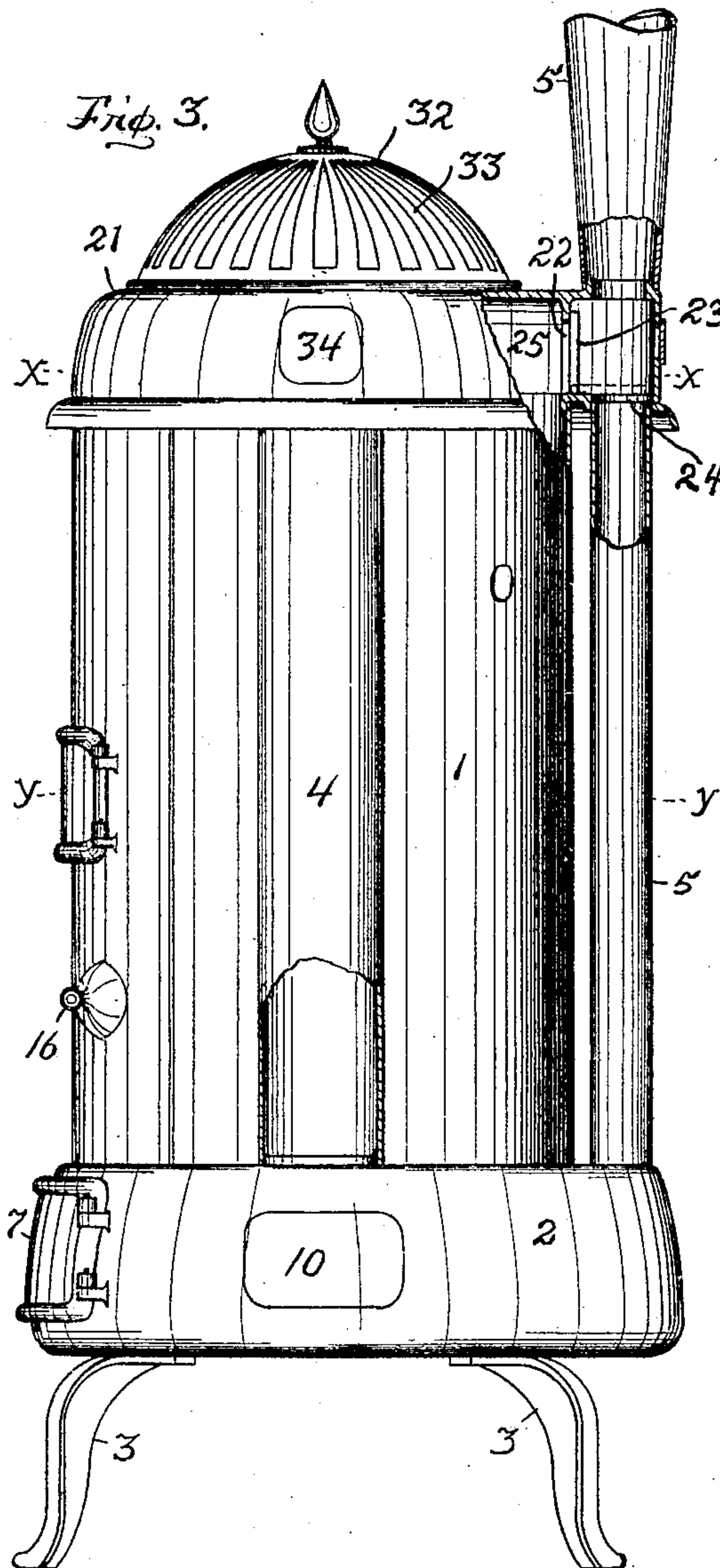
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# UNITED STATES PATENT OFFICE.

FRANKLIN M. REED, OF FORT WAYNE, INDIANA, ASSIGNOR TO WAYNE STOVE COMPANY,  
OF FORT WAYNE, INDIANA.

## HEATING-STOVE.

No. 865,528.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed October 23, 1905. Serial No. 283 983.

*To all whom it may concern:*

Be it known that I, FRANKLIN M. REED, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Heating-Stoves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in heating stoves for domestic use, and adapted to be used for the consumption of either hard or soft coal.

The object of my present invention is to provide an efficient and reliable heating stove adapted by a simple removal of the coal magazine and a substitution therefor of a down draft tube, to be converted from a hard coal burning stove to a soft coal burning stove and vice versa.

Another object is to provide a heating stove having a novel means for supplying fresh air to the combustion chamber; and a novel and highly efficient radiation; and a novel means for substituting a central down draft tube for the hard coal magazine.

My invention consists of an upright heating shell having a fire pot and combustion chamber in its lower and central portion and a concentric inner heating shell in its upper portion whereby a simple and efficient double radiation is secured; and improved means for securing a down draft circulation of the heated gases and other escaping products of combustion within the stove.

The principal novel feature of my invention resides in the means for securing a double radiation; in the means for regulating and maintaining an improved combustion; and in the means for interchangeably mounting the coal magazine and central down-draft tube in coöperative relation with the combustion chamber.

In the accompanying drawings similar reference numerals indicate like parts throughout the several views in which

Figure 1 is a vertical central section of my invention showing the relative arrangement of the coöperative parts. Fig. 2 is an enlarged detail of the inner heating shell in vertical central section, with the outer shell and combustion chamber broken away, and showing the central down draft tube substituted for the fuel magazine shown in Fig. 1, thereby adapting the stove for the consumption of soft coal. Fig. 3 is a view in elevation of my invention taken at right angles to Fig. 1, and partly in section to show the damper for regulating the down draft circulation. Fig. 4 is a cross section of Fig. 3 taken on the line  $x-x$  showing the concentric ar-

rangement of the inner heating shell, fuel magazine and grate, and the relative arrangement of the air tubes of the inner heating shell. Fig. 5 is a cross section of Fig. 3 taken on the line  $y-y$ .

Referring for the present to the construction shown in Fig. 1 containing the hard coal magazine, the outer upright cylindrical shell 1 of proper dimensions is fixed upon a cylindrical base 2 of slightly greater diameter and has a plurality of supporting feet 3. This base 2 has an annular chamber 3' connecting the down draft flues 4 with the smoke pipe 5 at the rear of the stove, Figs. 3 and 4, and has a central chamber 6 for the ash pan, not shown. The central chamber has a proper door 7. The annular chamber 3' has a plurality of lateral openings 9 for cleaning out the same, which are closed by proper doors 10.

On the top of the chamber 6 is mounted a concavo-convex disk 11 or other proper supporting plate having a comparatively large central opening in which is mounted the fire-pot 12 of the usual cylindrical form open at both ends, and surmounted by a cylindrical receptacle 13 forming the combustion chamber. This receptacle 13 has its upper edge provided with an out turned annular flange 14 adapted to snugly fit against the adjacent inner sides of the shell 1 and form the upper end of the annular fresh air chamber 15 into which the air is supplied at pleasure by means of proper dampers 16, Figs. 3 and 4, preferably two in number. The receptacle 13 is provided with a series of peripheral draft openings 17 at its lower end, and a similar series of draft openings 18 at or near its upper end, opening into the fresh air chamber 15, Fig. 1.

In the bottom of the fire pot 12 is rotatably mounted a proper grate 19 having a suitable shaker handle 20.

On the open upper end of the shell 1 is rigidly mounted a suitable top 21 of any desired contour or design, preferably as shown. This top 21 forms an annular chamber 25 into which the products of combustion are received after passing upward from the combustion chamber through the annular space between the inner and outer shells, and from which they pass directly into the vertical smoke pipe 5 when the damper 23 therein is open Fig. 3. This damper 23 is adapted to close the opening 22 from the chamber 25 to the pipe 5 when it is placed in a vertical position as shown in Fig. 3, thereby forcing the products of combustion downward to the base chamber 3' through the open ended down draft tubes 4, from which chamber they escape into the lower end of the smoke-pipe 5.

To the inner face of the top 21 is rigidly fixed the pendent inner shell 26 having an opening in its top provided with an annular flange 27 adapted to support the concentric pendent fuel magazine 28 whose lower end protrudes through a central opening in the closed lower end of the inner shell 26, and is partially support-



ed by the contact of the annular flange 29 therewith. The lower open end of the fuel magazine 28 projects a suitable distance into the upper portion of the combustion chamber, and is arranged in concentric relation therewith.

The outer air is freely admitted at all times to the interior of the inner shell 26 at or near its lower end by means of a plurality of short open ended tubes 30 whose opposite ends are fixed in the sides of the outer and inner shells respectively Figs. 1 and 4.

The top 21 has a series of outlet openings 31 communicating with the interior of the inner shell 26, Fig. 1, through which the heated air escapes into the chamber formed and inclosed by the semi-spherical cap 32, and then outward through the plurality of openings 33 in this cap.

The cap 32 is removable, and is of proper size to cover the top of the fuel magazine and also all of the openings 31.

The chamber 25 has a plurality of lateral openings to afford access thereto for cleaning out the same, which openings are closed by proper doors or covers 34.

In Fig. 2 is shown the means for substituting a down draft tube for the hard coal magazine, consisting of two removable annular plates 35 and 36. The plate 35 is adapted to snugly fit the opening in the top 21 which receives the upper end of the magazine 28, and is supported upon the annular flange 27. This plate 35 has a central opening of proper size to admit and contain the upper end of the pendent tubes 38 having an annular supporting flange 39 which rests upon the corresponding annular flange 40 in the said opening of the plate 35. This tube 38 is provided upon its upper end with a suitable damper 41 for regulating the admission of air thereto. The plate 36 is adapted to snugly close the opening in the bottom of the inner shell 26 and has an annular flange 42 by which it is removably supported therein. It also has a central opening adapted to snugly receive the lower portion of the tube 38, and which is securely closed by the annular plate or collar or flange 43. The lower end of the tube 38 projects a proper distance into the combustion chamber for the purpose of supplying fresh air thereto when desired.

The operation of my invention thus described is obvious and briefly stated is as follows: When my invention is employed for the burning of hard coal the fuel is supplied to the magazine and fire-pot in the usual manner. In starting the fire the damper 23 is turned down thereby closing the opening 24 in the upper end of the lower pipe section 5, and permitting the products of combustion to pass directly outward from the chamber 25, after which the damper 23 is again adjusted to its vertical position shown in Fig. 3 thereby directing the products of combustion downward from the chamber 25 to the base chamber 3' through the down-draft tubes 4, and thence into the lower end of the smoke-pipe 5. At the same time the dampers 16 are properly adjusted for the admission of air to the annular chamber 15 and thence to the combustion chamber through the openings 17 and 18. Fresh air from the room to be heated is constantly supplied to the interior of the inner shell 26 through the tubes 30 and thence, after being properly heated therein passes out of the stove through the openings 31 and 33 in the top thereof. I thus secure a double radiation, one being from the outer shell, and

the other from the inner shell, while at the same time I utilize the waste heat which passes upward from the fire pot by circulating it through the down-draft tubes 4.

It is obvious that when it is desired to burn soft coal the magazine 28 can readily be lifted out upwardly, since it rests loosely in position, and the plates 35 and 36 can be conveniently placed in their respective positions, after which the tube 38 can be readily mounted in the central openings in these plates, and the supply of fresh air to the combustion chamber through this tube regulated at pleasure by means of the damper 41.

When desired the tube 38 can again be readily replaced by the fuel magazine 28 as before.

Having thus described my invention and the manner of employing the same what I desire to secure by Letters Patent is:

1. In a stove of the class described, a base having a chamber formed therein, an outer shell carried by said base and extending upwardly therefrom, a fire-pot structure arranged in said shell but spaced therefrom to form an air-chamber, the upper portion of the fire-pot structure being in contact with said outer shell to close the upper end of said air chamber, said fire-pot structure having draft openings to provide communication between said air space and the interior of the fire-pot structure, a top surmounting said outer shell and forming a chamber at the top thereof to receive the products of combustion, an inner shell depending from said top and having communication with the outer air, a tubular structure arranged in said inner shell and passing therethrough, whereby the interior of said inner shell is closed against communication with the interior of the outer shell to thereby constitute an air heating chamber, draft tubes connecting the chamber at the top of the outer shell with the chamber in the base, a smoke pipe also connected with said chambers, and means for causing the products of combustion to pass either directly to the smoke pipe or through the draft tubes to the chamber in the base.

2. In a stove of the class described, a base having a chamber formed therein, an outer shell carried by said base and extending upwardly therefrom, a fire-pot structure arranged in said shell but spaced therefrom to form an air chamber, said structure including a fire-pot proper, and a combustion chamber superposed thereon, the upper portion of said combustion chamber being flanged and in contact with said outer shell to close the upper end of said air chamber, said combustion chamber having draft openings to provide communication between said air space and the interior of the fire-pot structure, a top surmounting said outer shell and forming a chamber at the top thereof to receive the products of combustion, an inner shell depending from said top and having communication at its top and bottom with the outer air, a tubular structure arranged in said inner shell and passing therethrough, whereby the interior of said inner shell is closed against communication with the interior of the outer shell to thereby constitute an air heating chamber, draft tubes connecting the chamber at the top of the outer shell with the chamber in the base, a smoke pipe also connected with said chambers, and means for causing the products of combustion to pass either directly to the smoke pipe or through the draft tubes to the chamber in the base.

3. In a stove of the class described, a base having a chamber formed therein, an outer shell carried by said base and extending upwardly therefrom, a fire-pot structure arranged in said shell but spaced therefrom to form an air chamber, the upper portion of the fire-pot structure being in contact with said outer shell to close the upper end of said chamber, said fire-pot structure having draft openings to provide communication between said air space and the interior of the fire-pot structure, a top surmounting said outer shell and forming a chamber at the top thereof to receive the products of combustion, an inner shell depending from said top and provided in its upper end with openings communicating with the outer air, draft tubes extending from the lower end of said inner shell

through the outer shell, whereby communication is afforded between the outer air and the interior of the inner shell, a tubular structure removably supported in said inner shell and passing therethrough, whereby the interior of said inner shell is closed against communication with the interior of the outer shell to thereby constitute an air-heating chamber, draft tubes connecting the chamber at the top of the outer shell with the chamber in the base, a smoke pipe also connected with said chambers, and means

for causing the products of combustion to pass either directly to the smoke pipe or through the draft tubes to the chamber in the base. 10

Signed by me at Fort Wayne, Allen county, State of Indiana, this 16th day of October, A. D. 1905.

FRANKLIN M. REED.

Witnesses:

WATTS P. DENNY,  
AUGUSTA VIBERG.