

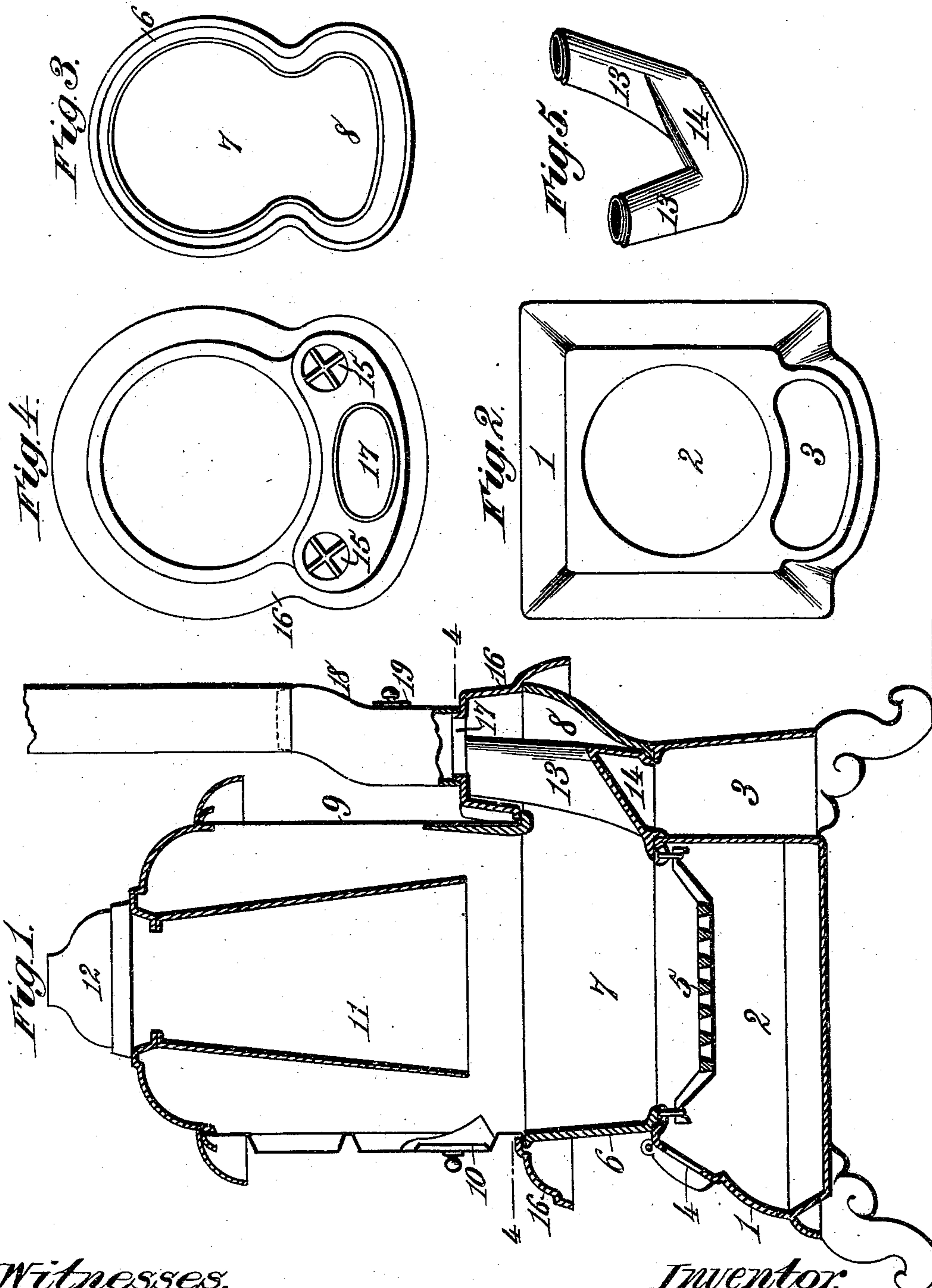
(No Model.)

2 Sheets—Sheet 1.

F. KAEMPEN, Jr.
HEATING STOVE.

No. 551,640.

Patented Dec. 17, 1895.



Witnesses.
Robert G. Smith.
Dennis S. Sundry.

Inventor:
Folkert Kaempen Jr.
By *James L. Norris,*
Atty.

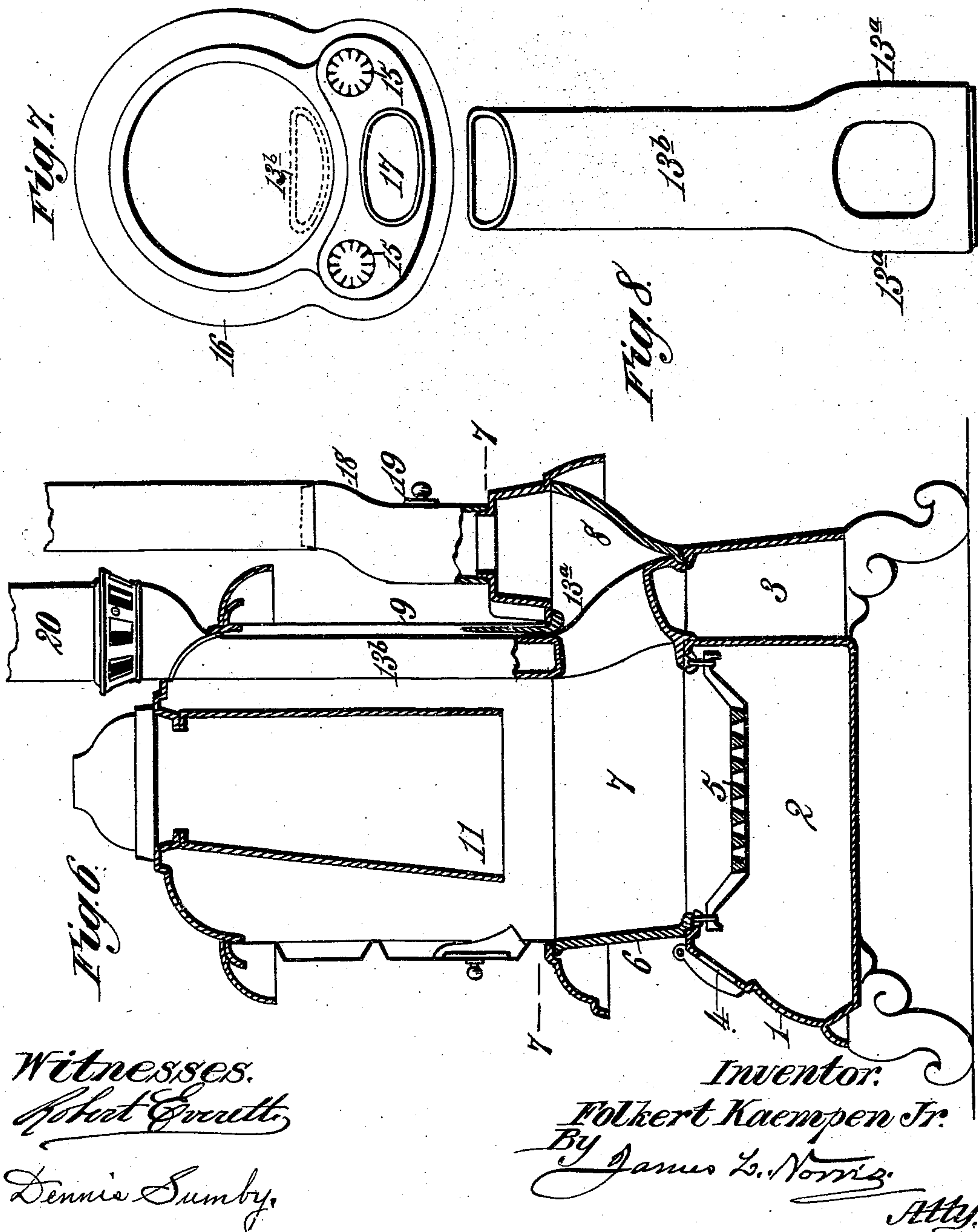
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UNITED STATES PATENT OFFICE.

FOLKERT KAEMPEN, JR., OF QUINCY, ILLINOIS, ASSIGNOR TO THE GEM CITY STOVE MANUFACTURING COMPANY, OF SAME PLACE.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 551,640, dated December 17, 1895.

Application filed June 27, 1895. Serial No. 554,237. (No model.)

To all whom it may concern:

Be it known that I, FOLKERT KAEMPEN, Jr., a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented new and useful Improvements in Heating-Stoves, of which the following is a specification.

This invention relates to heating-stoves, and has for its object to provide a heating-stove adapted for burning either hard or soft coal and in which the smoke and other products of combustion are carried into an auxiliary combustion-chamber and there thoroughly consumed, to augment the heating capacity of the stove and effect an economy in the consumption of fuel, and, finally, to improve the construction and efficiency of this type of stoves generally.

To these ends my invention consists in the features and in the construction or arrangement of parts hereinafter described, and pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a vertical central section of my improved stove. Fig. 2 is a top plan view of the stove-base. Fig. 3 is a similar view of the double fire-pot. Fig. 4 is a top plan view taken on the line 4 4 of Fig. 1. Fig. 5 is a detail perspective view of the hot-air ducts. Fig. 6 is a vertical central section of a stove, showing the invention applied to a double heater. Fig. 7 is a top plan view taken on the line 7 7 of Fig. 6, and Fig. 8 is a detail view of the hot-air ducts.

Referring to the drawings, the numeral 1 indicates the base of the stove suitably supported upon legs, as usual, and provided with an ash-chamber 2 and at its rear with an air-inlet chamber 3 open at its top and bottom. Arranged in the front wall of the base 1 is a draft-opening 4 provided with draft-controlling means of any usual or desired construction, and which I denominate a "blast-draft." Secured to the upper portion of the base 1 immediately above the ash-chamber 2 is a grate 5. Supported upon and suitably secured to the base 1 is a double fire-pot 6 comprising a front fuel-chamber 7 and a rear aux-

iliary combustion-chamber 8, said chambers being open at both top and bottom, the fuel-chamber 7 resting immediately above the grate 5, while the bottom of the auxiliary combustion-chamber rests over the air-inlet chamber 3. Seated upon the top of the double fire-pot 6 and over the fuel-chamber 7 is a cylindrical or other suitably-shaped drum or casing 9, provided at its front with a draft-opening 10, provided with any suitable draft-controlling device, and which I denominate a "combustion-draft." Arranged in the drum or casing 9 is a magazine 11, which at its upper end is closed by a lid or cover 12, as usual. Arranged within the auxiliary combustion-chamber 8 are two hot-air ducts 13, said ducts communicating with each other at their lower ends and having a common inlet 14. The said ducts are fitted in the lower open end of the auxiliary combustion-chamber 8, the inlet 14 registering with the upper end of the air-inlet chamber 3 in the base 1. The ducts 13 extend up through the auxiliary combustion-chamber, and at their upper ends communicate with two grated openings 15, formed in a cover 16 fitted over the upper end of said auxiliary combustion-chamber. The said cover 16 is provided with a centrally-arranged opening 17, constituting a smoke-exit for the auxiliary combustion-chamber, and over said opening is arranged a smoke-exit flue 18, provided with a check-draft 19, and at its upper end is adapted to be connected to a stove-pipe.

The operation of the stove constructed as above described is as follows: When the stove is charged with fuel the surface of the latter will be in a plane slightly below the combustion-draft 10. Air is admitted beneath the grate 5 through the blast-draft 4 and passes up through the burning fuel, and at the same time air is also admitted above the fuel through the combustion-draft 10, forcing the flames, smoke and products of combustion backward and into the auxiliary combustion-chamber, where the smoke and gases are burned and pass off through the smoke-exit flue 18. The heat, flames and burning gases in their passage into and through the auxiliary combustion-chamber pass between and

upon both sides of the air-ducts 13, and the cold air drawn up through the air-inlet chamber 3 in the stove-base passes up through said air-ducts, wherein it is heated to a high temperature and discharged through the openings 15 into the room.

By means of the check-draft 19 air may be admitted for additional combustion if found desirable or as circumstances may prove advisable, owing to the different draft of different flues, or for other reasons.

In a stove such as described soft coal may be burned equally as well as hard coal, for not enough heat is generated in the heater containing the magazine to cause the soft coal to coke, the greater portion of the heat being generated in the auxiliary combustion-chamber.

Although I have shown and described the stove as being a magazine-stove, it will be manifest that the magazine may be omitted, converting the stove into a surface burner.

By means of the double fire-pot, comprising the fuel-chamber and the auxiliary heating-chamber, and by admitting air through the fuel from beneath and over the fuel from above, the greater portion of the heat is generated in said auxiliary combustion-chamber, and the smoke and products of combustion are not only consumed, but aid in increasing the heating capacity of the stove.

In Figs. 6 to 8 I have illustrated my invention as applied to a double heater or stove designed for conveying a portion of the heat to another room or portion of the building.

The principle of operation in this stove is precisely the same as that before described, the construction of the hot-air ducts only being slightly altered. As shown, the hot-air ducts 13^a are bent forward slightly into the forward combustion-chamber and at their upper ends are united to form a single duct 13^b, that passes up through the stove drum or casing and passes out through the upper portion thereof, where it is connected to one end of a hot-air pipe 20 that leads to another room or to another portion of the building. The hot-air pipe 20 at its upper end is provided with a register-valve 21, by means of which the amount of hot air permitted to escape into the room may be regulated. The openings 15, heretofore described, are closed by any suitable or desired means, when the stove is used as a double heater, to prevent the escape of products of combustion into the room.

As before stated, the operation of the double heater is precisely the same as that first described, and from said description will be readily understood.

Having described my invention, what I claim is—

1. In a heating stove, the combination with a base, of a double fire pot comprising a fuel chamber and an auxiliary combustion chamber arranged one in front of the other and communicating with each other, hot air ducts arranged in said auxiliary combustion cham-

ber and communicating at their opposite ends with the atmosphere outside the stove, a smoke exit for said auxiliary combustion chamber, and a stove drum or casing arranged over the fuel chamber, whereby the smoke and gases generated in the fuel chamber pass into the auxiliary combustion chamber and are there consumed and heat the air in its passage through the hot air ducts, substantially as described.

2. In a heating stove, the combination with a base, of a double fire pot comprising a fuel chamber and an auxiliary combustion chamber arranged one in front of the other and communicating with each other, hot air ducts arranged in said auxiliary combustion chamber and communicating at their opposite ends with the atmosphere outside the stove, a smoke exit for said auxiliary combustion chamber, a stove drum or casing arranged over the fuel chamber, a draft opening arranged beneath the fuel chamber, and a draft opening arranged above the fuel level in said chamber, whereby a downward draft is caused to pass over the fuel into the auxiliary combustion chamber, substantially as described and for the purpose specified.

3. In a heating stove, the combination with a base having an ash chamber and an air inlet chamber, of a double fire pot supported thereon and comprising a fuel chamber arranged over said ash chamber and an auxiliary combustion chamber arranged over the air inlet chamber, the said fuel chamber and auxiliary combustion chamber communicating with each other, hot air ducts arranged in said auxiliary combustion chamber and communicating at their lower ends with said air inlet chamber and at their opposite ends with the atmosphere outside the stove, a smoke exit for said auxiliary combustion chamber, and a stove drum or casing arranged over the fuel chamber, whereby the smoke and products of combustion pass from the fuel chamber into the auxiliary combustion chamber and are there consumed and heat the air in its passage up through the hot air ducts, substantially as described.

4. In a heating stove, the combination with a base having an ash chamber and an air inlet chamber, of a double fire pot supported thereon and comprising a fuel chamber arranged over said ash chamber and an auxiliary combustion chamber arranged over the air inlet chamber, said fuel chamber and auxiliary combustion chamber communicating with each other whereby the smoke and products of combustion pass directly from the fuel chamber into the auxiliary combustion chamber and are there consumed, hot air ducts arranged in said auxiliary combustion chamber and communicating at their lower ends with said air inlet chamber and at their upper ends with the atmosphere outside the stove, a smoke exit for said auxiliary combustion chamber, a check draft in said smoke

exit, a stove drum or casing arranged over the fuel chamber, a draft opening below the fuel chamber, and a draft opening arranged above said chamber, substantially as described.

5. In a heating stove, the combination with a base having an ash chamber and an air inlet chamber, of a double fire pot supported thereon and comprising a fuel chamber arranged over said ash chamber and an auxiliary combustion chamber arranged over the air inlet chamber, the fuel chamber and auxiliary combustion chamber communicating with each other, two air ducts united at their bottom to form a common inlet seated over the air inlet chamber within the auxiliary combustion chamber and communicating at their

upper ends with openings formed in the cover of the auxiliary combustion chamber, said air ducts being separated from each other to form a flue for the passage of the smoke and products of combustion from the fuel chamber to the auxiliary combustion chamber, a smoke exit for said auxiliary combustion chamber and a stove drum or casing arranged over the fuel chamber, substantially as described.

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

FOLKERT KAEMPEN, JR.

Witnesses:

H. C. SPRICK,

N. A. GRIMMER, Jr.