

No. 670,741.

Patented Mar. 26, 1901.

J. SIMPSON.  
HEATING STOVE.

(Application filed Sept. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.

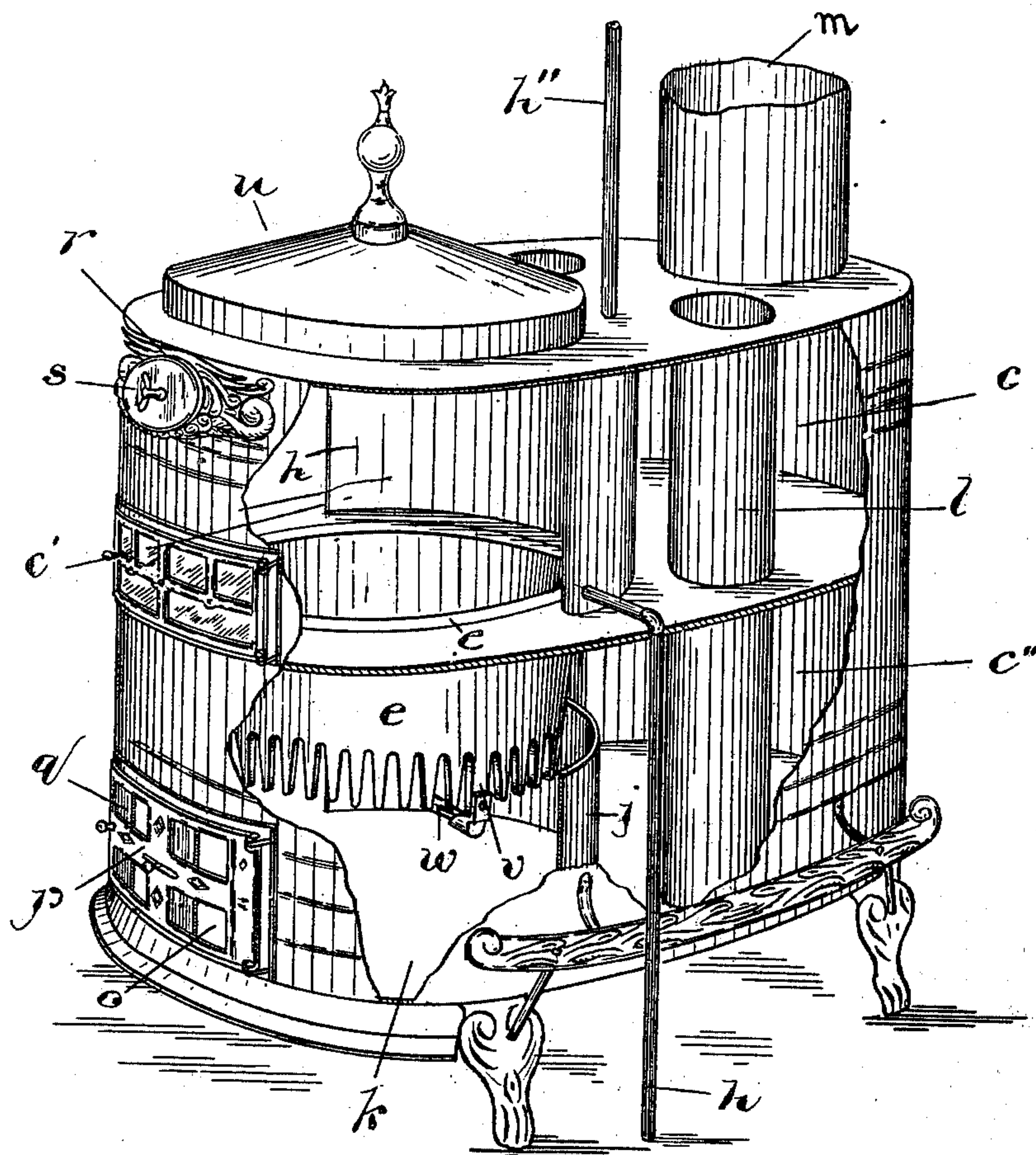


Fig. 1

Witnesses

J. E. Cameron  
G. Snyder

Inventor

John Simpson  
by C. J. Smith  
Att'y

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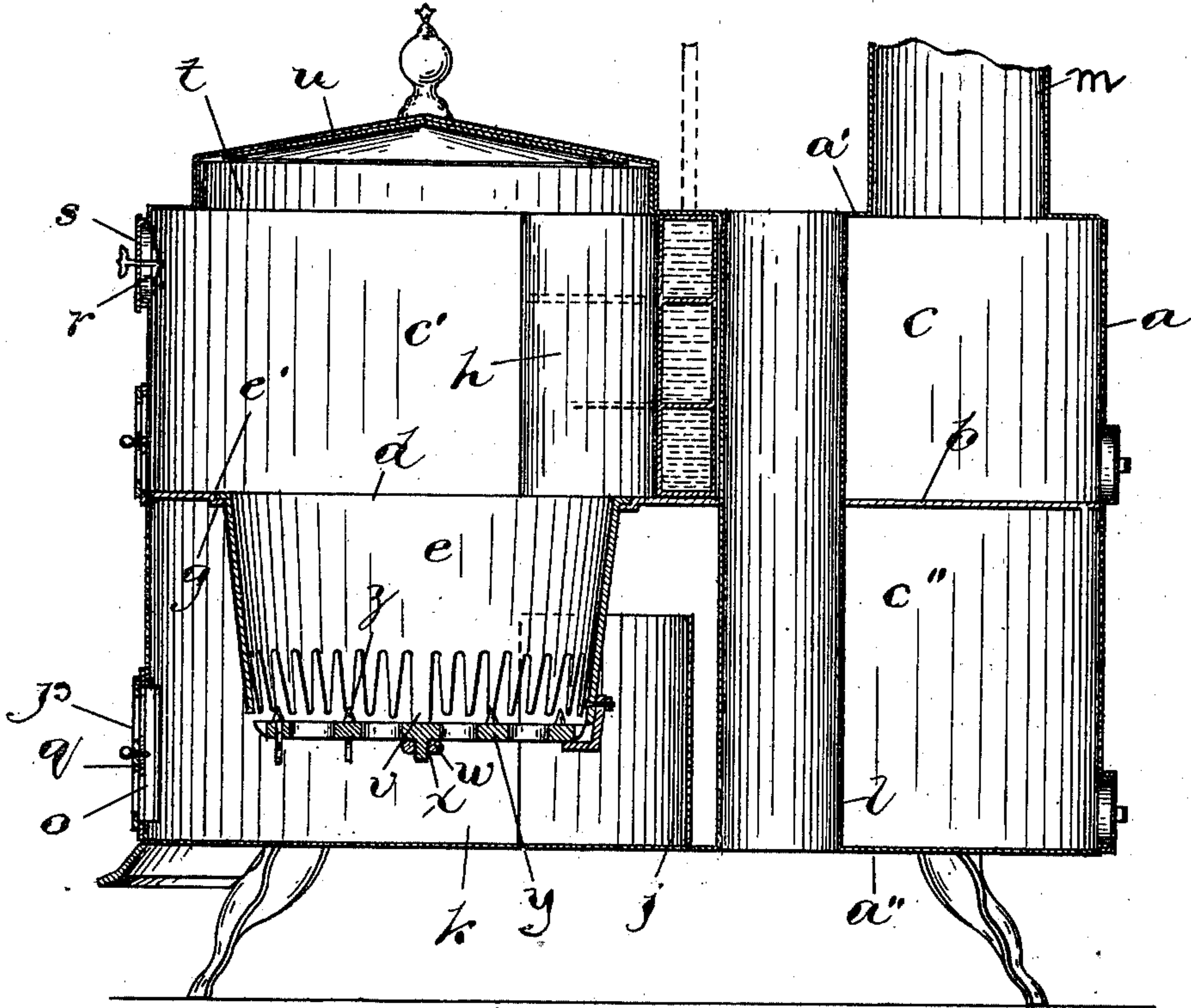


Fig. 2

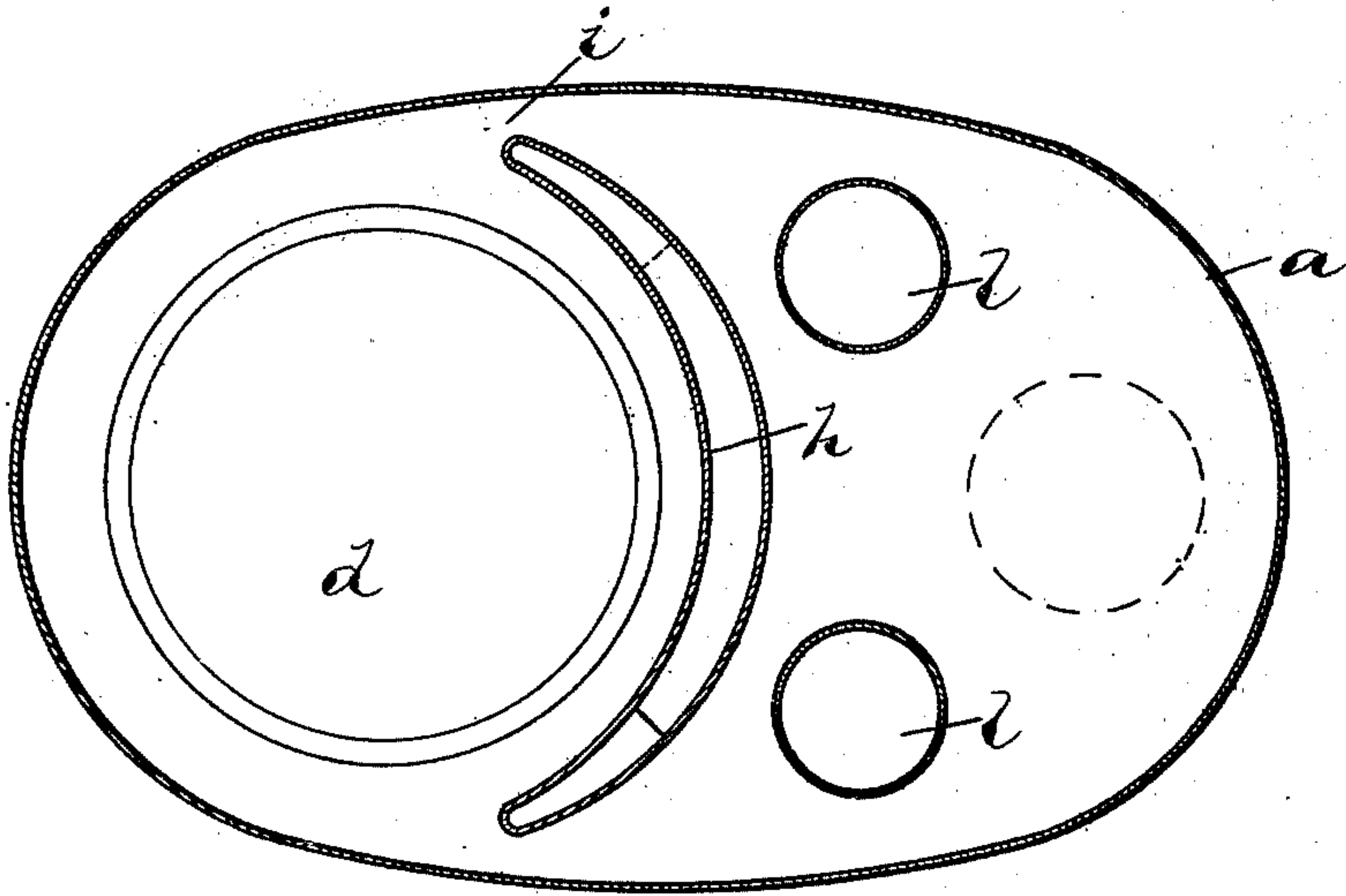


Fig. 3

Witnesses

J. E. Cameron  
G. Snyder

Inventor

John Simpson  
by C. H. Riches  
his atty.



# UNITED STATES PATENT OFFICE.

JOHN SIMPSON, OF TORONTO, CANADA, ASSIGNOR OF TWO-THIRDS  
TO CHARLES LEONARD BAILEY, OF SAME PLACE, AND WILLIAM  
FRANCIS WAGNOR, OF EAST ORANGE, NEW JERSEY.

## HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 670,741, dated March 26, 1901.

Application filed September 15, 1900. Serial No. 30,130. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SIMPSON, a subject of the Queen of Great Britain, residing at 191 Gladstone avenue, in the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Heating-Stoves; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a heating-stove; and the object of the invention is to so arrange the internal parts that the products of combustion will be deflected to the front and against the sides in their passage to the outlet and the heat will be radiated from the fire-pot against the front, sides, and back, as hereinafter more fully set forth, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the stove, showing the casing partly broken away to illustrate the internal arrangement of the parts. Fig. 2 is a longitudinal section through the same. Fig. 3 is a cross-sectional view.

Like letters of reference refer to like parts throughout the specification and drawings.

*a* represents the casing, which may be of any suitable shape and size and constructed of any suitable material, such as cast or sheet metal. Within the casing *a* is a horizontal division-plate *b*, connected to the front, back, and sides to form smoke and combustion chambers *c* and *c'*, respectively, in the upper part of the stove and a radiating-chamber *c''* in the lower part. Formed through the division-plate *b*, near the front, is an opening *d* for the fire-pot *e*. The fire-pot *e* consists of an ordinary fire-basket, having at its upper end an outwardly-directed flange *e'*, which rests upon the downwardly and inwardly directed flange *g* of the division-plate *b*. Connected to the top of the division-plate *b* and to the under side of the top *a'* of the casing *a* and contiguous to the opening *d* is a baffle-plate *h*, concentric with the fire-pot *e*. Between the ends of the baffle-plate *h* are passages *i* for the products of combustion as they pass from the combustion-chamber *c'* to the smoke-chamber *c*. The baffle-plate *h* divides the upper part of the stove into the smoke-chamber *c* and combustion-chamber *c'* and not only makes this division of the upper part of

the stove, but it also, owing to its curved form, deflects the products of combustion as they rise from the fire toward the front and top of the stove. During the passage of the products of combustion from the combustion-chamber *c'* to the smoke-chamber *c* they are deflected against the sides of the casing at the ends of the baffle-plate *h*. By the use of this baffle-plate it is possible to deflect the heat units of the products of combustion to those parts of the stove where they can be utilized to the best advantage for heating the surrounding atmosphere. In the radiating-chamber *c''* is a shield *j*, attached to the inner side of the bottom *a''* of the casing contiguous to and concentric with the lower end of the fire-pot *e*. The shield *j* forms, with the bottom *a''*, an ash-pit *k* vertically below the fire-pot *e*. The shield *j* is of sufficient height only to prevent the ashes contained in the pit *k* from entering the radiating-chamber *c''* in rear of the fire-pot. Passing through radiating and smoke chambers are vertical air-tubes *l*, the upper and lower ends of which communicate with the atmosphere. The air passes upwardly through these tubes and is heated by direct radiation from the fire-pot *e* and by the heat units of the products of combustion in their passage to the outlet *m*. In the lower part of the front of the stove is an opening *o* for the purpose of removing the ashes from the pit *k* and for providing a draft to the fire-pot. The opening *o* is closed by a door *p*, having a damper *q* for increasing or reducing the draft through the opening *o*. In the top of the front of the stove is an opening *r*, having a damper *s*, and in the front of the top *a'* is a fuel-opening *t*, closed by the lid *u*. The use of the invention is as follows: The fuel is introduced into the fire-pot *e* through the fuel-opening *t*, after which the opening *t* is covered by the lid *u*. The draft through the opening *o* is opened, and the fire having been lighted the products of combustion pass upwardly from the fire-pot into the combustion-chamber *c'* and by means of the baffle-plate *h* are directed against the front and sides of the casing. The products of combustion passing from the smoke-chamber heat the air in the upper part of the air-tubes *l*, and when they pass to the outlet *m* the greater portion of their heat units has been abstracted and utilized.



The heat from the fire-pot is radiated through the opening between the top of the shield *j* and the inside of the division-plate *b* into the radiating-chamber *c''*, where it comes in contact with the lower part of the air-tubes and heats the air as it passes upwardly through the same, as well as heating the front, sides, and back of the lower part of the casing. By this means the heat units both of the radiated heat from the fire-pot and from the products of combustion are fully utilized for heating the casing of the stove and the air passing through the air-tubes. I have shown in the drawings two air-tubes only; but as I may use any number of air-tubes I do not confine myself to any specified number, neither do I confine myself to making the stove of any particular shape or design nor to making it of any particular material, as I may use either sheet or cast metal, although I prefer to make it of sheet-iron or sheet-steel. When the fire in the fire-pot has reached the desired state of combustion, the damper in the lower part is closed and the damper in the upper part is opened, or both dampers can be opened, as desired, the purpose of the top draft being to provide the combustion-chamber with sufficient oxygen to consume the carbon in the products of combustion. Two diametrically-opposed fingers *v* of the fire-pot are provided with in-turned flanges upon which is supported the grate-rest *w*, the middle of which is provided with a hub *x* for the grate *y*. The top surface of the grate *y* is provided with a series of upwardly-directed lugs *z* for the purpose of disintegrating the ashes and clinkers or fuel into the lower part of the fire-pot.

The baffle-plate *h*, as shown in the drawings, consists of a hollow water-jacket provided with horizontal partitions arranged one vertically over the other and extending from opposite sides of the water-jacket partly across the same. Connected to the bottom of the water-jacket is an inlet-pipe *h'*, and connected to the top is an outlet-pipe *h''*. By providing the stove with a water-jacket or baffle-plate similar to that shown and described it is possible to use the stove for the purpose of heating a range-boiler or bath-tub.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A heating-stove embracing in its construction a division-plate dividing the interior of the stove into two principal compartments, an opening through the front of the division-plate, a fire-pot opposite the opening, a baffle-plate at the rear of the opening, connected to the division-plate and top of the casing, providing smoke-passages at its sides, an upwardly-directed shield connected to the bottom of the casing in the rear of the fire-pot, a smoke-outlet from the rear of the upper compartment and draft-openings for the combustion-chamber and fire-pot, substantially as specified.

2. In a heating-stove the combination with a casing, of a horizontal division-plate dividing the interior of the stove into two principal compartments, an opening through the front of the division-plate, a fire-pot opposite the opening, a curved baffle-plate in rear of the opening, connected to the division-plate and top of the casing, passages between the ends of the baffle-plate and sides of the casing, the baffle-plate dividing the upper principal compartment into combustion and smoke chambers, an outlet from the smoke-chamber for the products of combustion, a draft-opening for the combustion-chamber, an upwardly-directed shield connected to the bottom of the casing in rear of the fire-pot dividing the lower principal compartment into an ash-pit and radiating-chamber, a draft-opening through the casing into the ash-pit, substantially as specified.

3. A heating-stove embracing in its construction a division-plate dividing the interior of the stove into two principal compartments, an opening through the front of the division-plate, a fire-pot opposite the opening, a baffle-plate at the rear of the opening connected to the division-plate and top of the casing, providing smoke-passages at its sides, an upwardly-directed shield connected to the bottom of the casing in the rear of the fire-pot, a smoke-outlet from the rear of the upper compartment and draft-openings for the combustion-chamber and fire-pot, air-tubes extending upwardly through the radiating and smoke chambers and communicating at the upper ends with the atmosphere, substantially as specified.

4. In a heating-stove the combination with the casing of a horizontal division-plate dividing it into upper and lower principal compartments, an opening through the front of the division-plate, a downwardly and inwardly directed flange surrounding the opening, a fire-pot having at its upper end an outwardly-directed flange supported upon the flange of the opening through the division-plate, a curved baffle-plate connected to the division-plate and top of the casing in rear of the fire-pot providing passages between its ends and sides of the casing for the products of combustion, the baffle-plate dividing the upper principal compartment into combustion and smoke chambers, an outlet from the smoke-chamber and a draft-inlet into the combustion-chamber, an upwardly-directed shield connected to the bottom of the casing dividing the lower principal compartment into an ash-pit and radiating-chamber, an opening into the ash-pit and air-tubes passing through the radiating-chamber and smoke-chamber substantially as specified.

Toronto, Canada, September 4, 1900.

JOHN SIMPSON.

In presence of—

J. E. CAMERON,  
G. SNYDER.