

J. E. KENDALL.  
Heating-Stoves.

No. 154,398.

Patented Aug. 25, 1874.

Fig. 2.

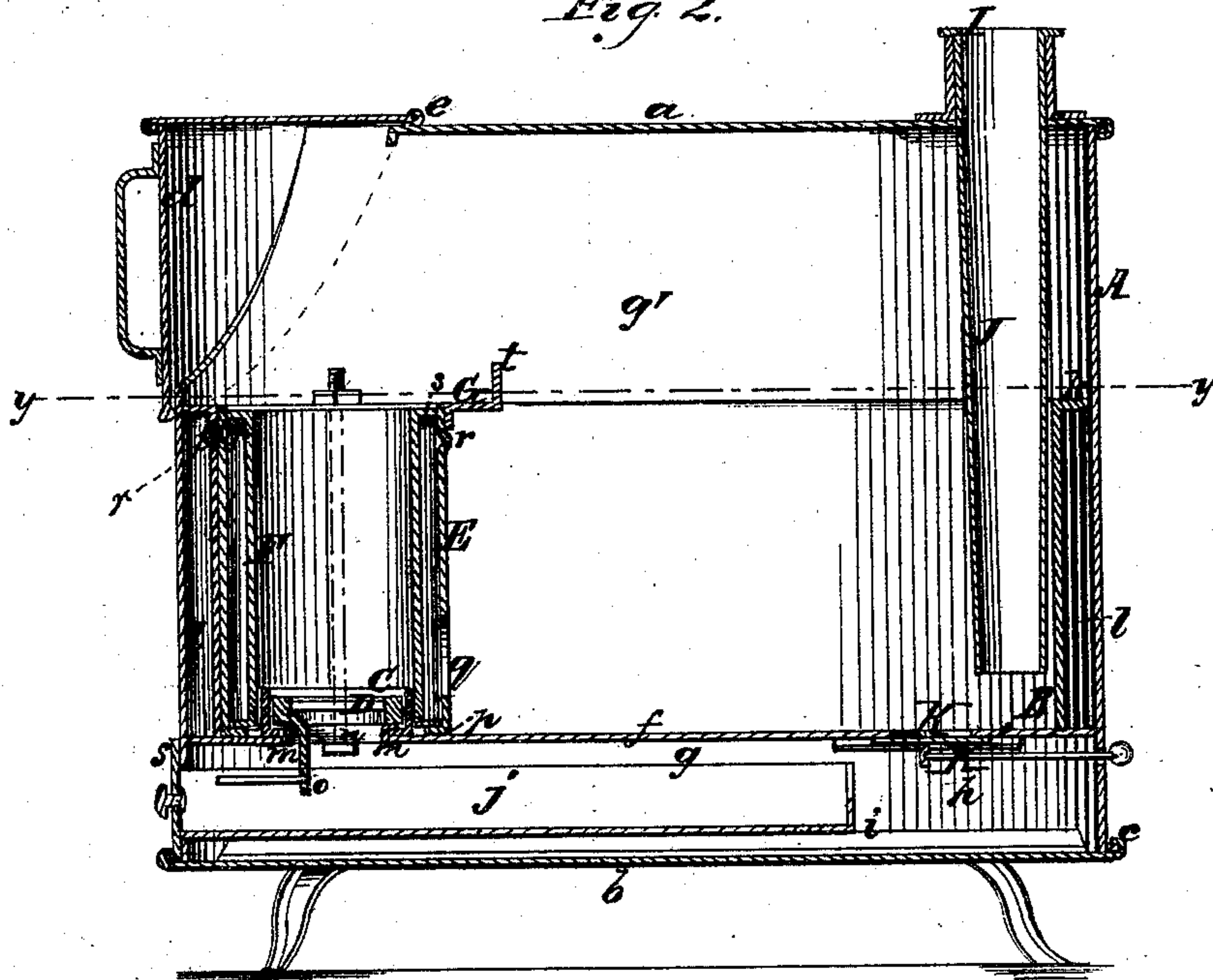
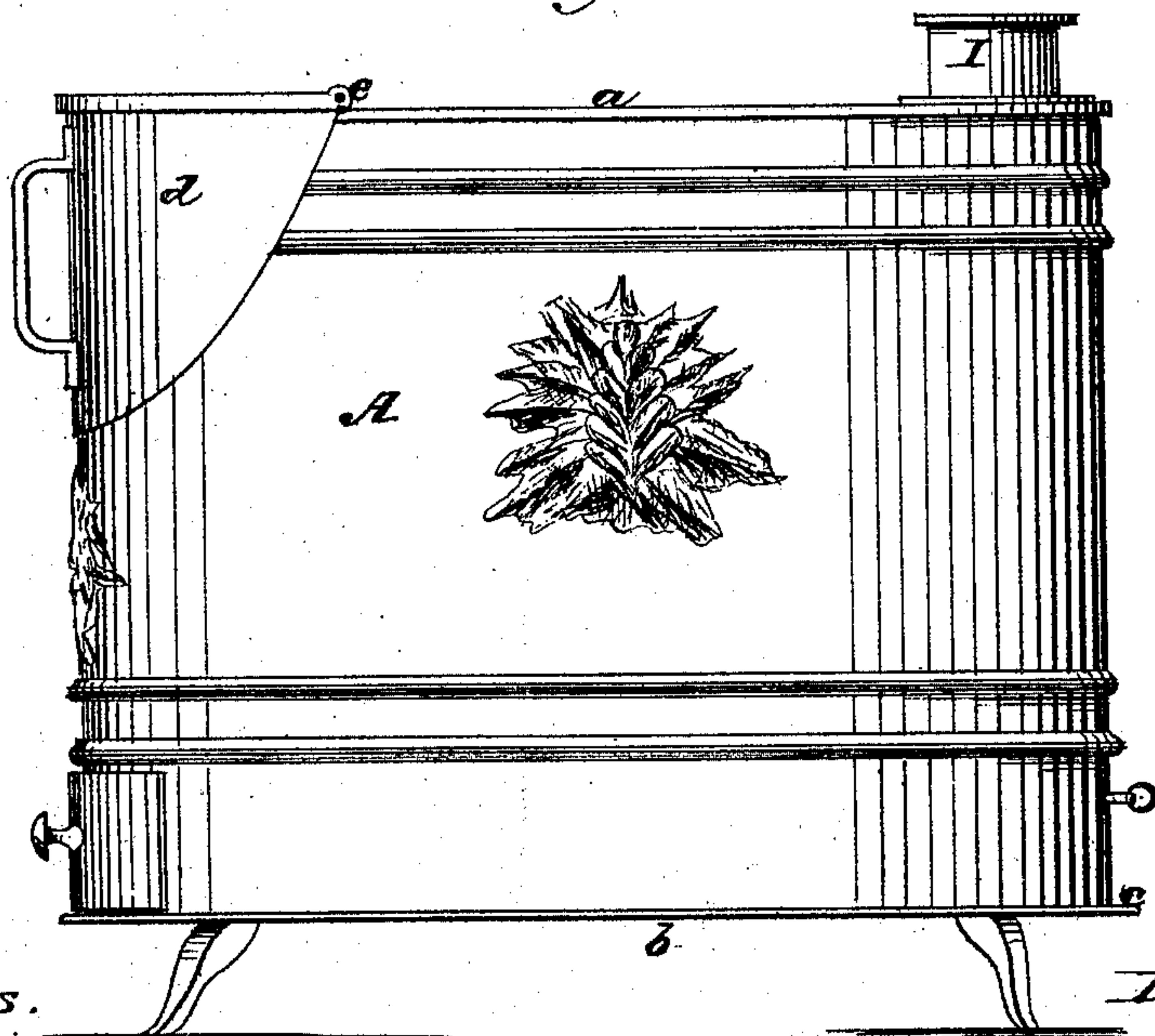


Fig. 1.



Witnesses.

Edwin M. Stearns

Nathan Linton

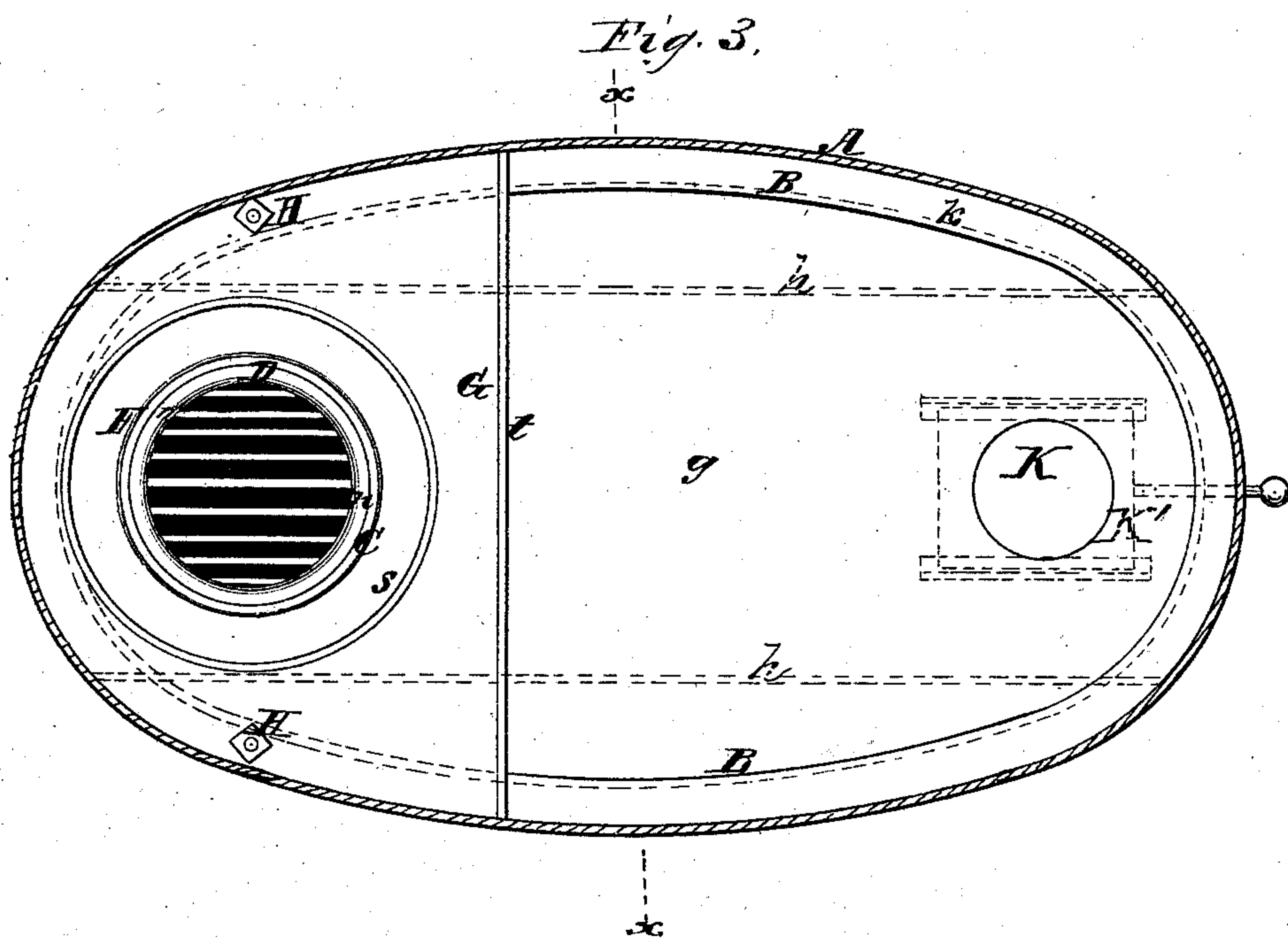
Inventor.

Joseph E. Kendall.

J. E. KENDALL.  
Heating-Stoves.

No. 154,398.

Patented Aug. 25, 1874.



Witnesses.

Edwin M. Stearns

Nathan Linton

Inventor.

Joseph E. Kendall

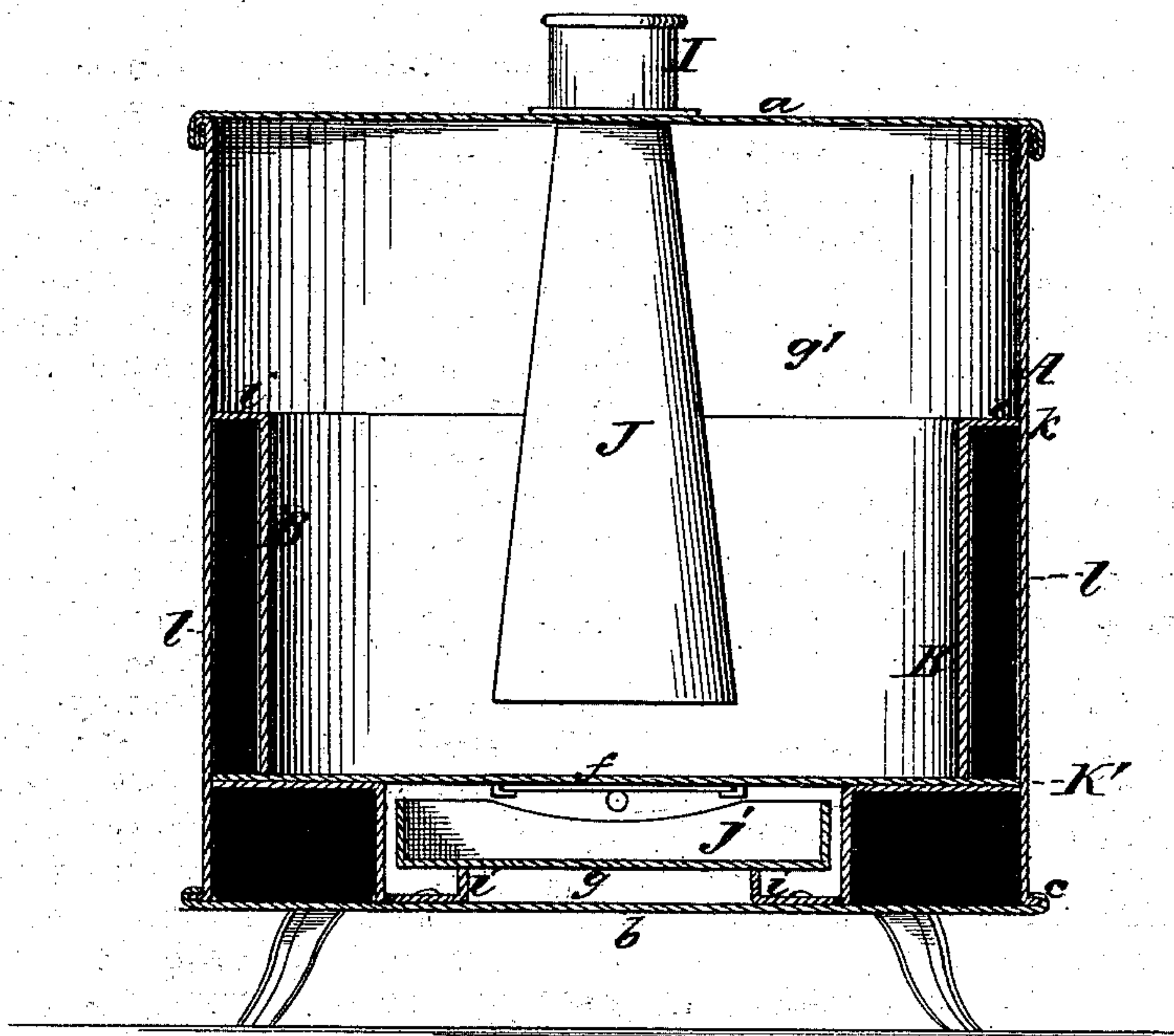
J. E. KENDALL.

Heating-Stoves.

No. 154,398.

Patented Aug. 25, 1874.

*Fig. 4.*



*Witnesses:*

*Edwin M. Stearns.*

*Nathan Linton.*

*Inventor.*

*Joseph E. Kendall.*



# UNITED STATES PATENT OFFICE.

JOSEPH E. KENDALL, OF CAIRO, ILLINOIS.

## IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. 154,398, dated August 25, 1874; application filed June 26, 1873.

*To all whom it may concern:*

Be it known that I, JOSEPH E. KENDALL, of Cairo, in the county of Alexander and State of Illinois, have invented a new and useful Improvement in Sheet-Iron Drum-Stoves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view of a drum-stove as improved by me. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a horizontal section in the line *y y* of Fig. 2. Fig. 4 is a transverse section of the same in the line *x x*, Fig. 3.

My improvements relate to the well-known elliptical-shaped combined sheet and cast iron drum-stove in which wood only has heretofore been used as fuel. The nature of my invention consists in certain constructions herein-after specified, whereby the aforesaid elliptical sheet-iron drum-stove is rendered capable of serving either as a coal or wood burner, and, at the same time, its durability greatly enhanced, while convenience for removal of ashes is afforded and the flying of ashes about the room when the grate is shaken prevented.

To enable others skilled in the art to make and use my invention, I will proceed to describe it.

A is a Russia sheet-iron drum, of elliptical form, in horizontal section. To the upper and lower ends of this drum a sheet-iron top, *a*, and bottom *b* are fastened by a lap-joint, *c*, as shown. The front end of the top and a portion of the front of the drum are cut away to form a feed-door passage, and over this passage a hood-shaped door, *d*, is applied, and hinged permanently to the top sheet, as at *e*, so as to swing back upon the top, as will be fully understood from the drawings. The door thus permanently hinged will not be liable to be tumbled off when opened to introduce fuel. This drum I divide into two horizontal chambers by means of an auxiliary bottom sheet, *f*, which is set about five or six inches (more or less) above the bottom proper of the drum. The chamber *g* below the bottom *f* is the ash-pit and ash-draft passage, and the chamber *g'* above this bottom is the circulation-chamber

for the products of combustion. The auxiliary bottom is supported and kept in place by sheet-iron angle-strips *h h*, and these strips *h h* are held against the inside of the drum and in position by sheet-iron angle-rails *i i*, as shown. These rails are riveted to the bottom proper of the drum. They also serve to support an ash-drawer, *j*, which is inserted through an opening cut in the front of the lower part of the drum, as shown. The drawer at its rear end is cut down, so as to permit it to pass in and out free of contact with a shake-bar of a grate which is used in connection with this stove. B is a lining of common sheet-iron applied to the drum, extending up from the auxiliary bottom and terminating near the middle of the depth of the drum. This lining is in form of the outer drum, but of smaller diameter, except at its upper edge, where it is flanged horizontally, as at *k*, so as to bear against the inner circumference of the drum A. This lining, when placed in the drum, rests with its lower end upon the auxiliary bottom and its flange against the inside of the drum, and by this means a hollow wall or a continuous closed chamber, *l*, is formed between the outside drum and the lining. This lining braces the outer drum, and prevents it from collapsing or warping and having its beauty marred by the effects of the intense heat of the fire. The space or chamber *l* saves the lining from very rapid destruction by the fire, as the heat has a chance to radiate from the lining and pass, in a modified condition, to the interior surface of the drum. C is a sheet-iron angle-ring, fastened to the auxiliary bottom by a lap-joint at *m*. This ring surrounds a circular hole, *n*, cut through the said auxiliary bottom, and leading into the ash-pit. Within the ring, and upon its horizontal portion, a circular cast-iron grate, D, is placed, so as to vibrate. This grate has a vertical shaking-lug, *o*, formed on it, which extends down into the ash-pit through the hole *n*, and to this lug a shaking-arm is firmly fastened, as shown. E is a cylinder of sheet-iron, with an internal horizontal flange, *p*, at its bottom. This cylinder forms the wood-burning fire-chamber, and is placed around the ring which supports the grate. Through the rear of this cylinder, near its bottom, a circular flame-



passage, *q*, is cut, as shown. This cylinder is formed with an external or male bead, *r*, which fits a corresponding or female bead formed on the lining. By this bead the cylinder is held in position. F is a coal-burning cylinder, formed with external horizontal flanges *s* at top and bottom. This cylinder fits exactly the outside of the ring C, while its flanged portion exactly fits the inside of the wood-burning cylinder E. It is set down around the ring C upon the flange *p* within the cylinder E, as shown. G is a horizontal coal plate or shelf, arranged around the upper end of the coal-cylinder, and upon the flange of the lining. This plate extends from the rear of the wood-cylinder to the front of the drum, as shown. Its rear edge is turned up at right angles, as at *t*, so as to form a ledge to arrest the coal which might fail to fall into the cylinder while the fire is being supplied with fuel. H H are vertical screw-rods, with nuts on their upper ends, for confining the coal plate or shelf, cylinders, and other parts in position. These rods extend up from the lower part of the stove where their heads have a firm hold or support. It will be observed that a space or chamber is formed between the cylinders E and F, and by this means the coal-cylinder will be saved from burning out very rapidly. I is the draft-pipe of the stove, as used for wood, and J is a vertical extension of this pipe within the stove. This extension is of flaring form, and reaches nearly to the auxiliary bottom. When the stove is used for burning coal this extension is used. K is an ash-escape hole in the auxiliary bottom. This hole is almost directly under the draft-pipe, and it is covered by a horizontal slide, K', the rod of which extends out through the drum. By opening the damper when the grate is shaken the draft will draw all the flying ashes to the back part of the ash-pit, and thus prevent their flying out at the front of the ash-pit.

The stove, as represented in the drawings, is adapted for burning coal, and is supplied with this fuel by turning up the door and pouring the coal in the cylinder F. Under this construction the heated products of combustion are compelled to circulate against the whole lower surface of the lining, and escape through the draft-pipe near the back and false

bottom of the stove. This insures a very thorough heating of the entire radiating surface. When the grate is vibrated to shake down the ashes, the ash-escape passage is opened, and the ashes pass toward it.

To use the stove for wood, take out the cylinder F and the coal plate or shelf, and the internal extension of the draft-pipe. Under this construction the flame will pass out through the hole *q* in the cylinder, and then up to the draft-pipe.

The combination of the elliptical drum and the cylindrical combustion-chamber in the manner shown secures a very powerful heat from a very compact structure, for the flame or heat of the fire from the small combustion-cylinder, arranged at the front end of the drum, will almost immediately strike the flattened sides of the drum, and continue to impinge upon the same until its power to heat is spent, or it escapes in form of smoke into the draft-flue at the back end of drum.

What I claim as new is—

1. The combination, with the sheet-iron drum A, having a door and a draft-passage, of the partial sheet-iron lining B, the perforated auxiliary bottom *f*, having the ring C upon it, the cylinder E having a flame-passage, *q*, through its lower part, and the grate D, the whole constructed and arranged substantially as described.

2. The removable coal-cylinder F, in combination with the cylinder E, grate D, and the sheet-iron drum-stove with internal extension draft-pipe, substantially in the manner described and shown.

3. The combination of the coal-shelf G, having the flange *t*, the drum A, having the lining B, and the coal-combustion chamber E F, substantially as described.

4. The combination of the draft-pipe I, the drum A, the ash-escape passage K, the slide K', the ash-pit *g*, and the combustion-chamber, having a vibrating grate at its bottom, through which the ashes are discharged directly into the ash-pit, all substantially in the manner shown and described.

JOSEPH E. KENDALL.

Witnesses:

OLIVER PERRY LAWRENCE,  
WILLIAM H. DAVIS.