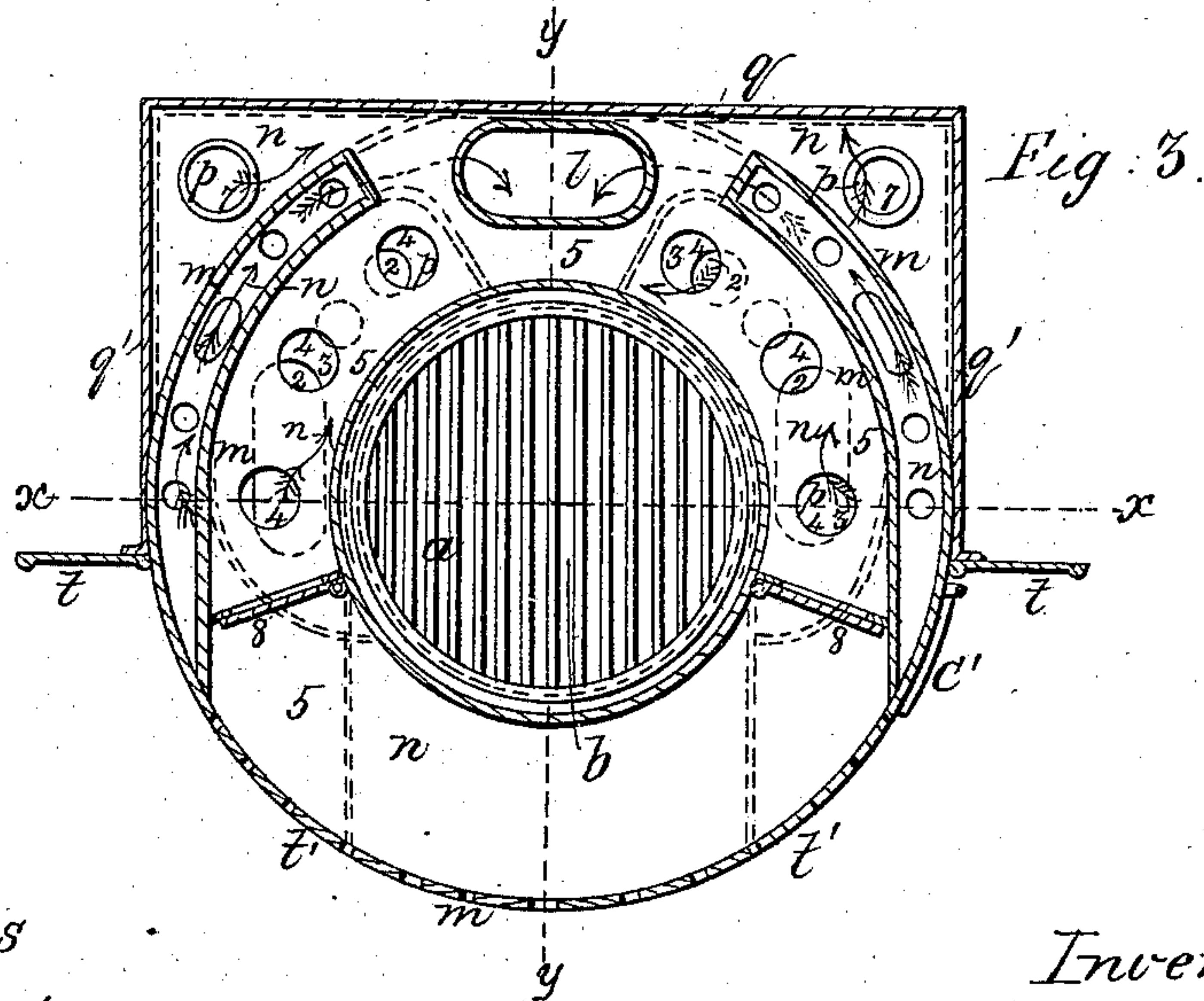
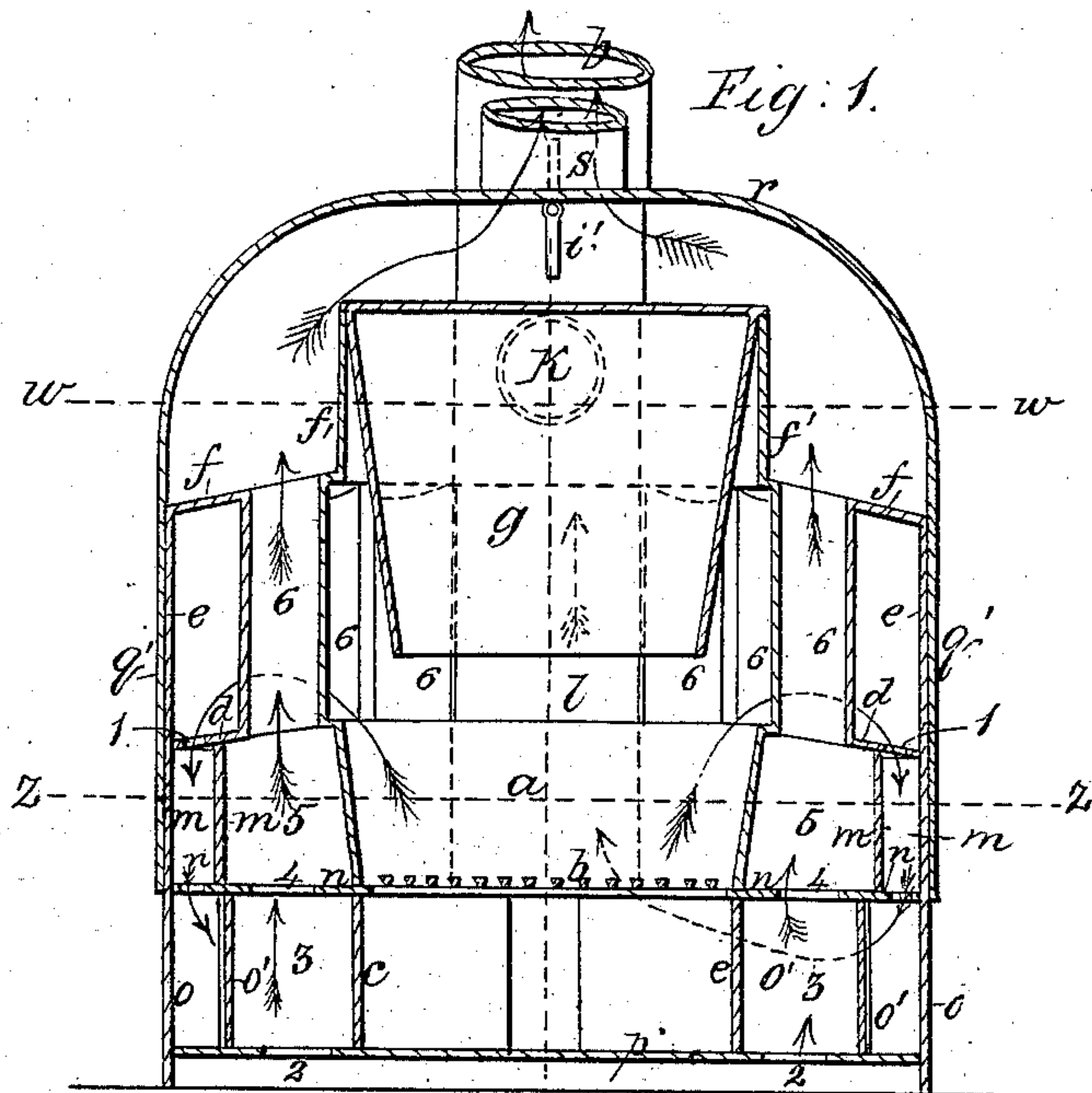


A. K. SANDERS.

Fireplace Stove.

No. 80,016.

Patented July 14, 1868.



Witnesses
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Chas. F. Smith.

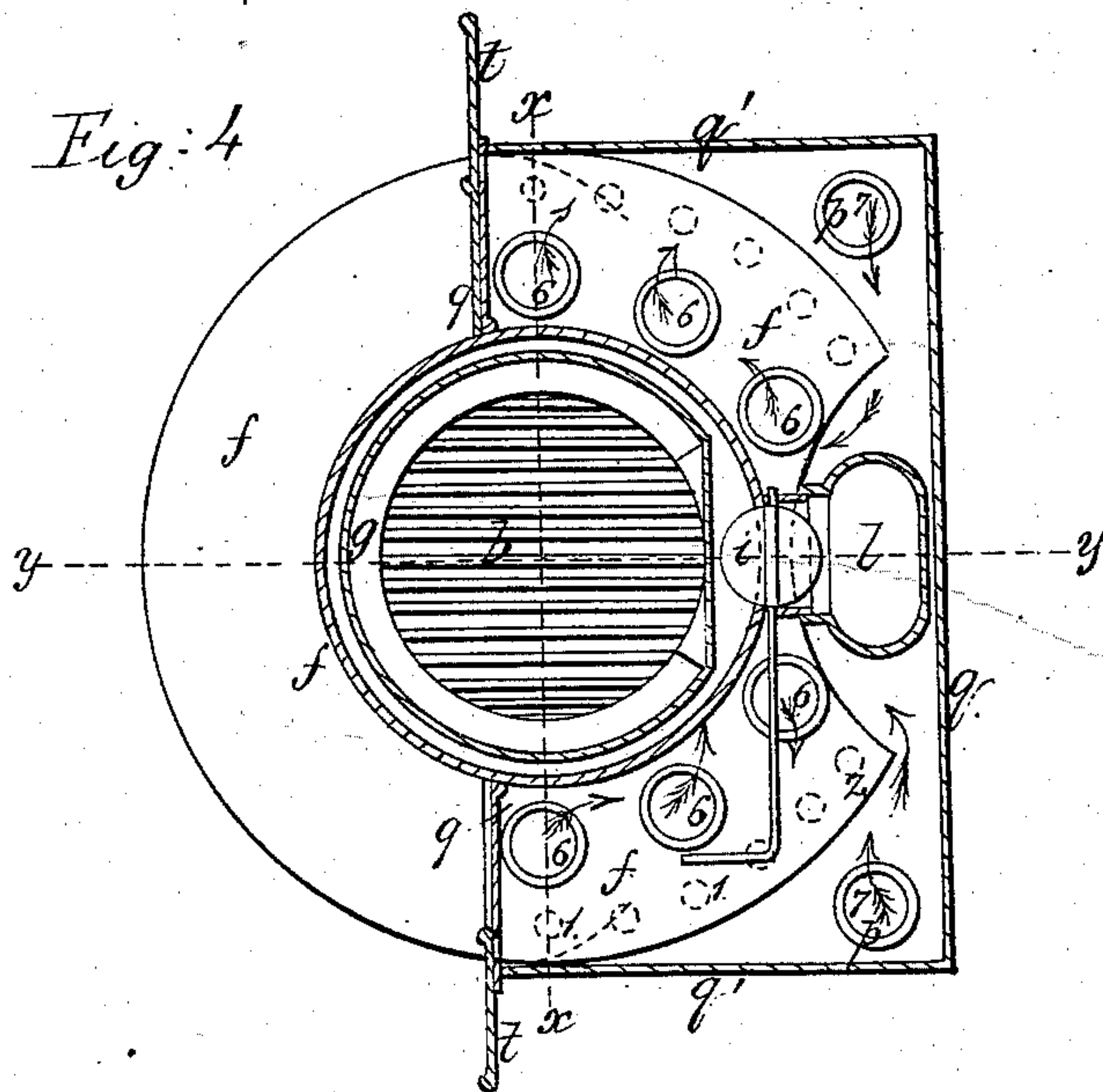
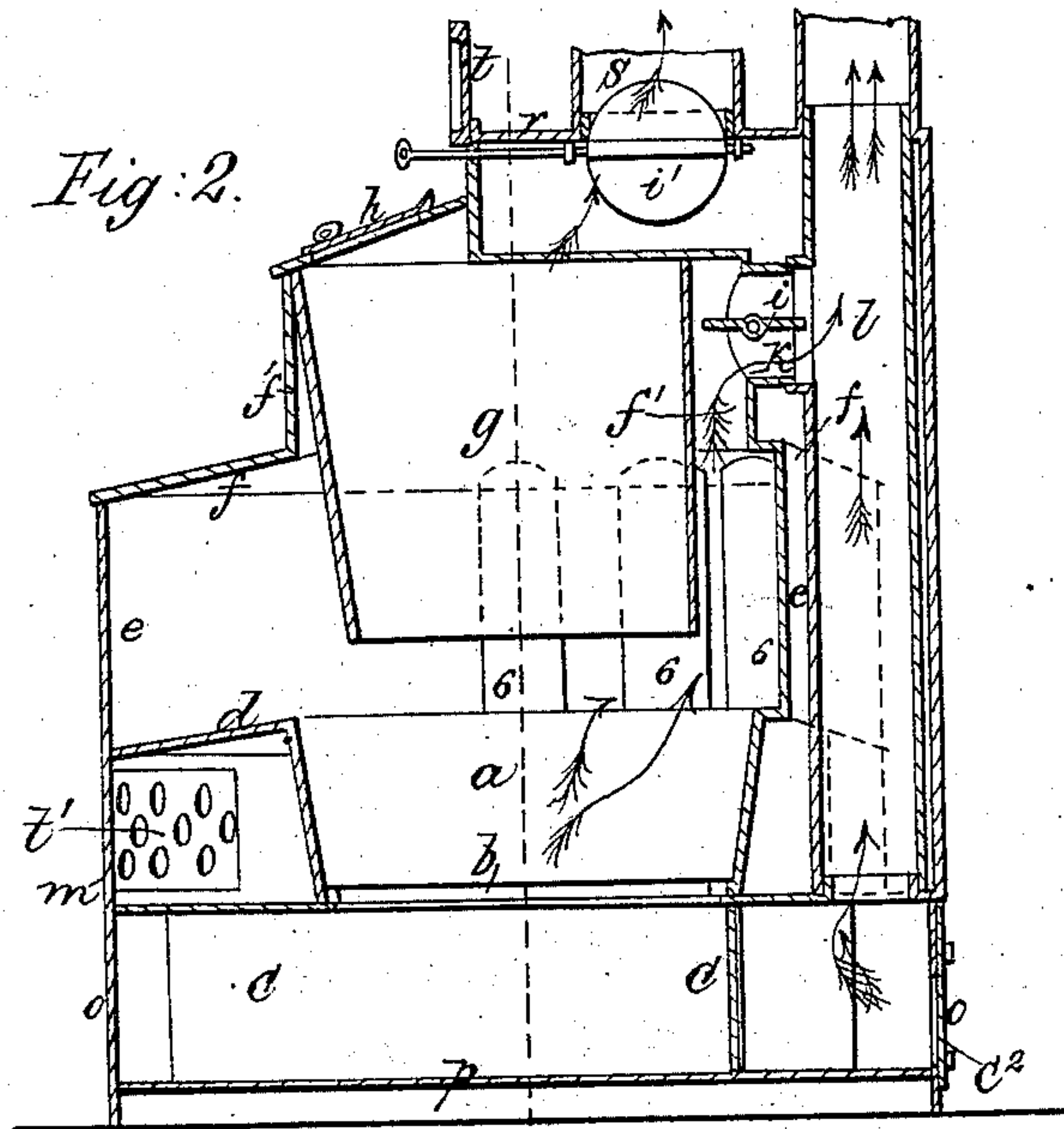
Inventor
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A. K. Sanders

United States Patent Office.

ABRAHAM K. SANDERS, OF BROOKLYN, NEW YORK.

Letters Patent No. 80,016, dated July 14, 1868.

IMPROVEMENT IN BASE-BURNING STOVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ABRAHAM K. SANDERS, of Brooklyn, in the county of Kings, and State of New York, have invented and made a certain new and useful Improvement in Fireplace-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a vertical section at the line *x x*.

Figure 2 is a similar view at the line *y y*.

Figure 3 is a sectional plan at and below the line *w w*.

Similar marks of reference denote the same parts.

The object of this invention is to obtain a large extent of air-heating surface in a small space, and to have a circulating current of air to be warmed upon one side of nearly every plate and pipe, with the other side of which the products of combustion are in contact, thus insuring the warming of the air, and the cooling of the products of combustion before ultimate escape.

In the drawing, *a* is a fire-pot, with a grate, *b*, above the ash-pit wall *c*.

d is a plate, extending from the top of the fire-pot *a* to the exterior shell, *e*, of the stove or heater.

f is the top of the heater, resting upon the shell *e*, and supporting the magazine *g* for fuel, the cylinder *f'* extending from the top, *f*, to the flange of said magazine *g*.

h is a cover or slide in the top of the magazine, that is to be opened for supplying the fuel.

The products of combustion pass by the direct draught *k*, in kindling the fire, to the smoke-flue *l*, but when the damper *i* is closed, the heated gases descend, through openings *1* in the plate *d*, into the space formed by the casing *m*, and through the plate *n*, that is near the level of the fire-grate, into the space formed between the plates *o* and *o'*, the latter of which curves around, and unites with the walls of the ash-pit *c* at its ends, and from this space the products of combustion pass to the ascending flue *l*.

A door is provided on each side of the base of the heater, at *e'*, to give access for cleaning out the flue, and a similar door, *e''*, at the back of the ash-pit, gives access at this point for cleaning out the same flue, and removing any ashes and soot that may from time to time fall down the ascending flue *l*.

There is to be an air-space left between the brick-work or support of the heater and the bottom plate *p*, and through this plate *p* are openings at *2 2*, for air to ascend into the air-flue *3*, between the wall *c* of the ash-pit and the plate *o'*, and at *4 4* are openings through the plate *n*, into the air-space *5*, that is between the fire-pot and the casing *m*, and *6 6* are air-tubes, passing between the plates *d* and *f*, and opening through them, and around these the heated products of combustion pass as they go off by the openings *1 1*.

The enclosure of metal or brick-work formed by the back *q*, sides *q'*, and top, *r*, forms the hot-air chamber, and from that a pipe or pipes, *s*, pass to the apartments above that are to be heated. The upper ends of the hot-air tubes *6* open into this space, and that portion of the shell *e* and casing *m* that is within the enclosure *q q'* also becomes a radiating-surface, to heat the air within the said enclosure, and openings are provided at *7 7* in the plate *n*, and also in the plate *p*, directly below them, to allow air to circulate up at the back corners of said enclosure. It will be seen that the flue *l* is also within the air-space, so that in all instances the heated gases or products of combustion act on one side of the metal plates, and a current of air to be warmed is in contact with the other side of said plate.

This heater, although primarily intended as a fireplace-heater, might be used as a detached stove, or be set in brick or metal casing, and form a furnace. I have, however, shown the grate or mantel-frame *t* as surrounding the furnace, and a lattice or open-work at *t'* between the plates *d* and *n*, at the front part of the heater, to allow heat to radiate into the room from the front part of the fire-pot, and I provide swinging doors, *8*, at the front ends of the air-spaces *5*, by the opening of which air will pass from the room in which the heater is set into the flue *5*, and convey the heat into the apartment above; but if the damper *i'* is closed, to prevent air passing to the apartment above, the heat will then pass out at the doors *8* into the apartment containing the heater, so as to heat the same.

I also provide swinging doors at 9, between the cylinder f' , top plate f , and grate-frame t , by the opening of which air will be allowed to pass freely out of the enclosure q q' , so that all the heat can be turned into the room in which the heater is placed. The front portion of the shell e may be provided with a door or doors, or mica windows, if desired, or it may be a close metal plate.

When made as a heating-furnace, the range of air-tubes 6 may be increased in number, and extended further around to the front of the apparatus, and the doors 8 and 9 be dispensed with.

What I claim, and desire to secure by Letters Patent, is—

1. The descending smoke-flue between the casing m , opening into the base of the heater, in combination with the air-flues 3, 5, and 6, arranged and acting substantially as specified, so that the air to be heated comes in contact with one side of the flue-plates or tubes, and the products of combustion on the other side, as set forth.

2. The magazine g , supported by the cylinder f' and top plate f , in combination with the fire-pot a , and combustion-chamber formed between the said magazine g and the casing e , in which chamber are the air-heating pipes 5, as and for the purposes set forth.

3. The doors 8, between the plates d and n , and at the end of the air-flue 5, for the purposes and substantially as set forth.

4. The doors 9, between the cylinder f' , top plate f , and grate or mantel-frame t , and opening into the hot-air enclosure, for the purposes and as set forth.

5. The descending flue m , conveying the products of combustion from the fire-chamber to the base of the heater, in combination with the air-flue 3 5, that exposes the air to be heated to the wall of the ash-pit, the fire-pot, and said descending flue m , substantially as specified.

6. A fireplace-heater, in which the magazine for the fuel extends to the top of the heater, and is provided with an opening in front of the mantel-frame for the introduction of fuel, substantially as set forth.

In witness whereof, I have hereunto set my signature, this sixth day of April, A. D. 1868.

A. K. SANDERS.

Witnesses:

CHAS. H. SMITH,

GEO. T. PINCKNEY.