

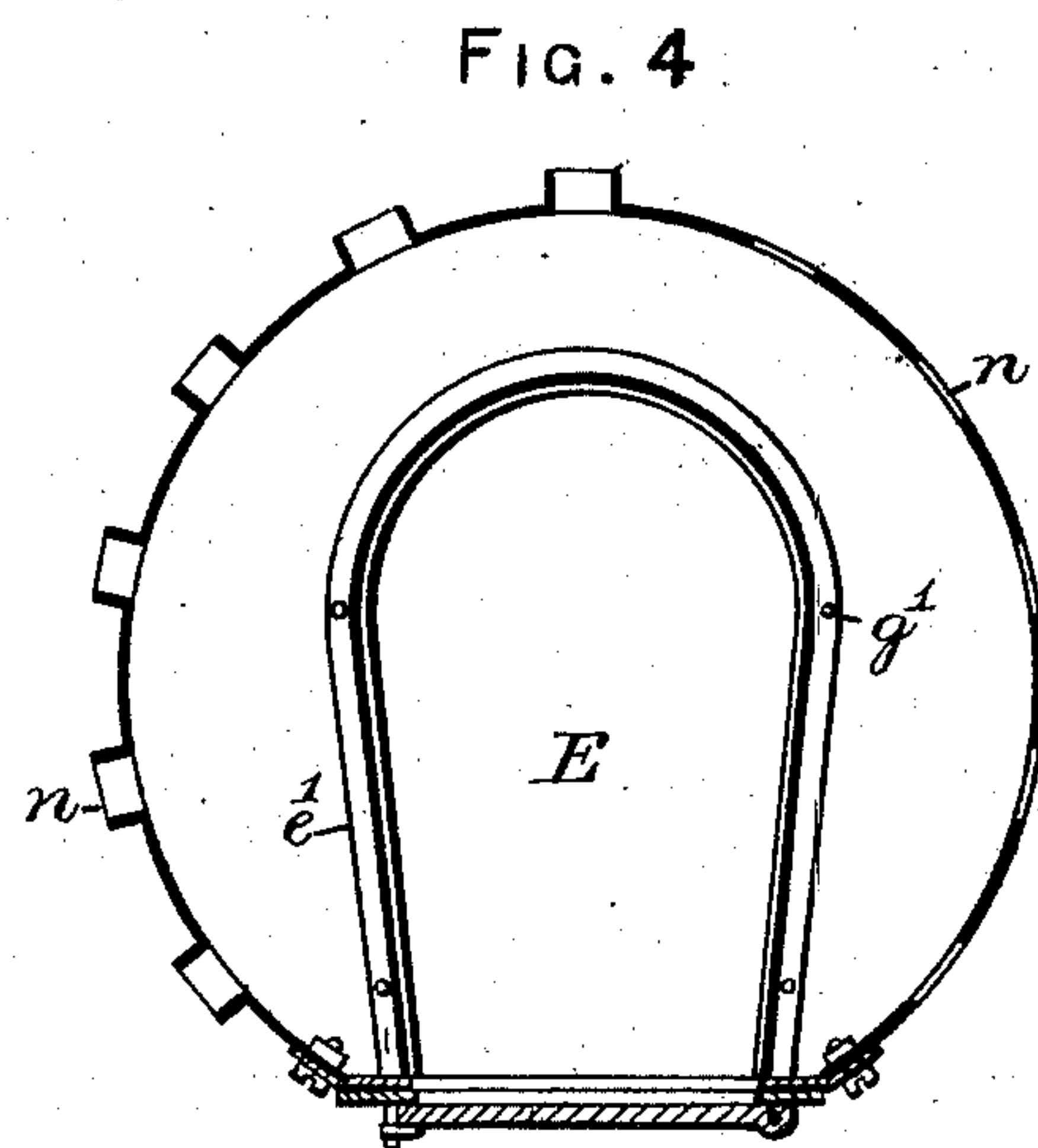
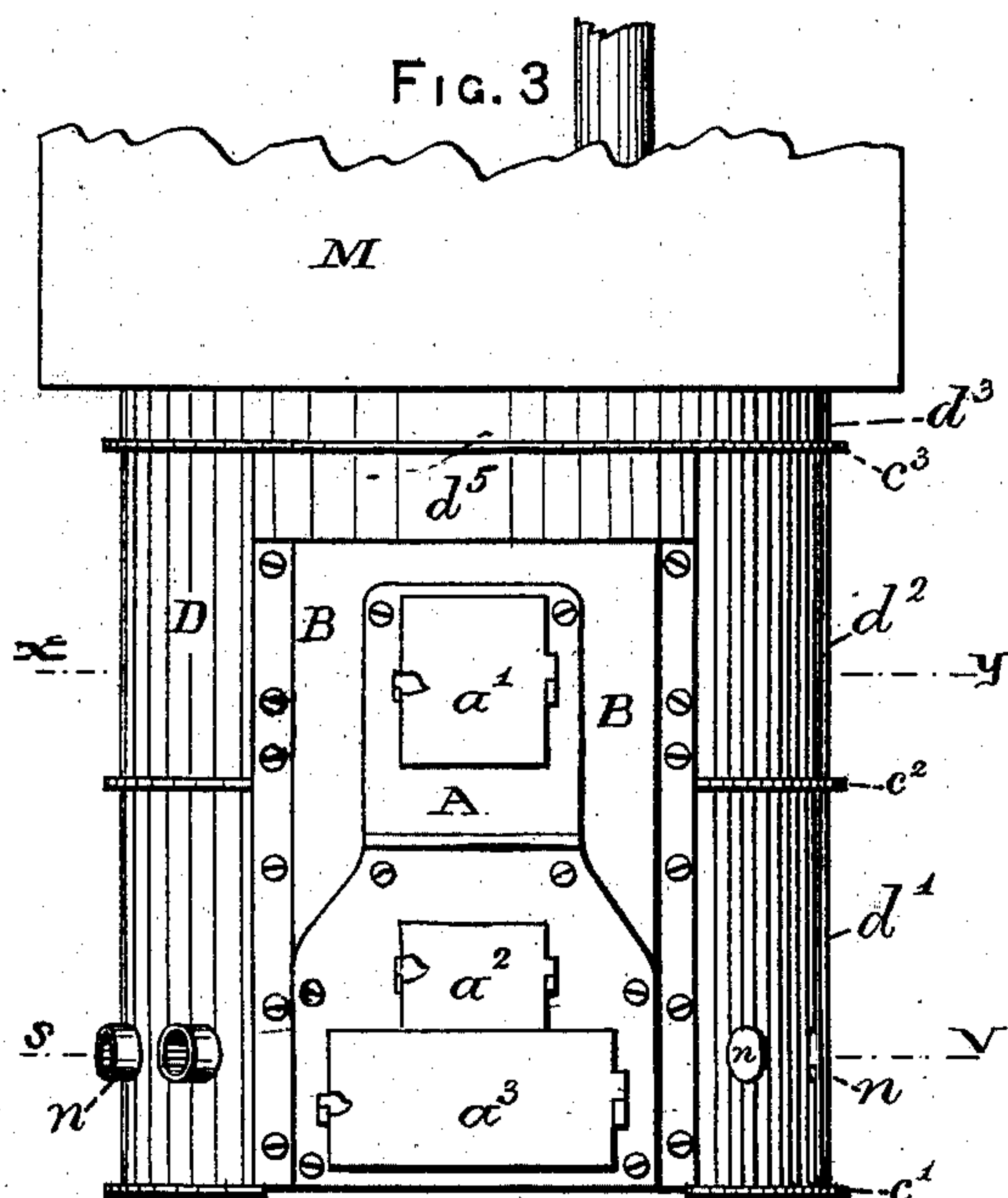
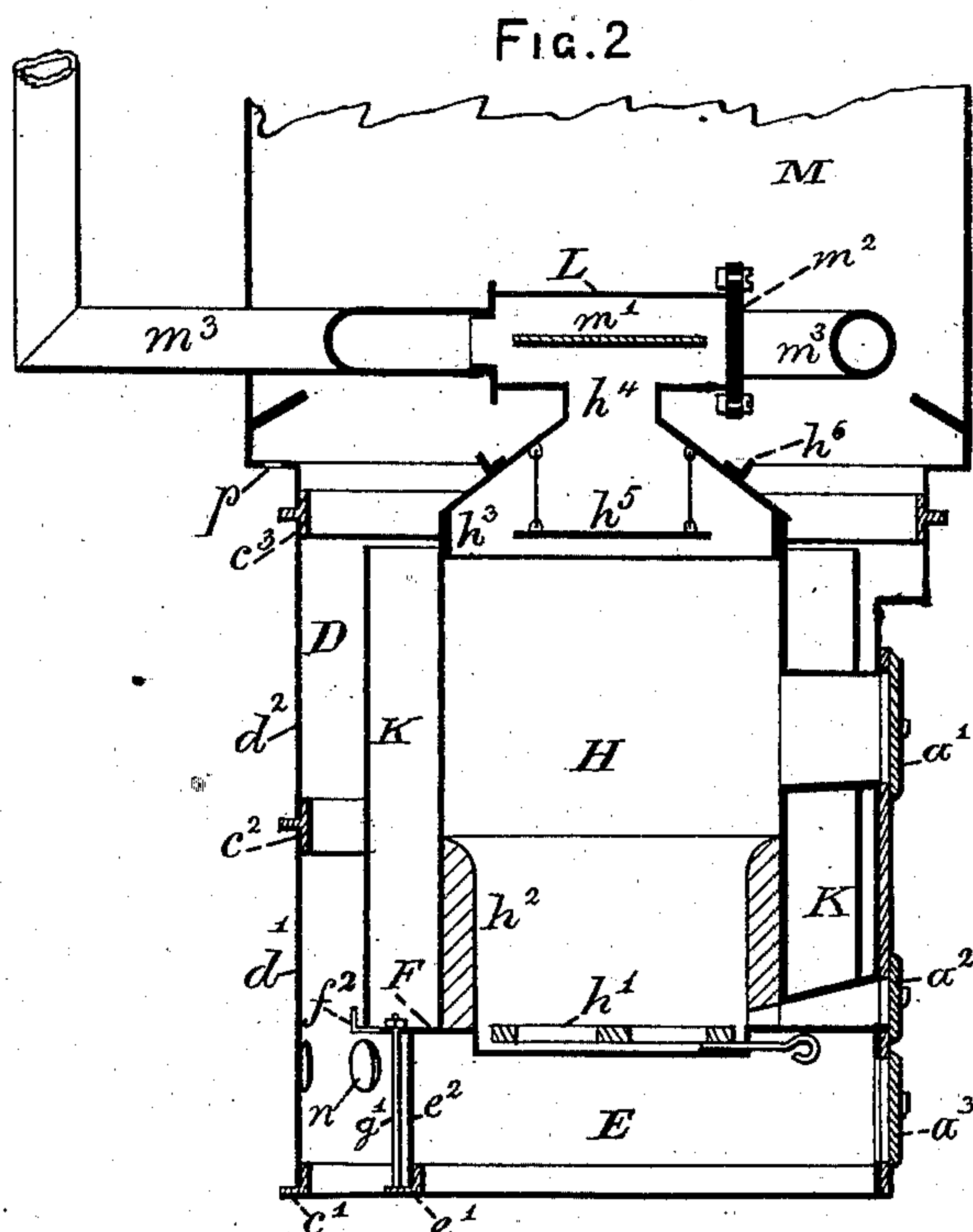
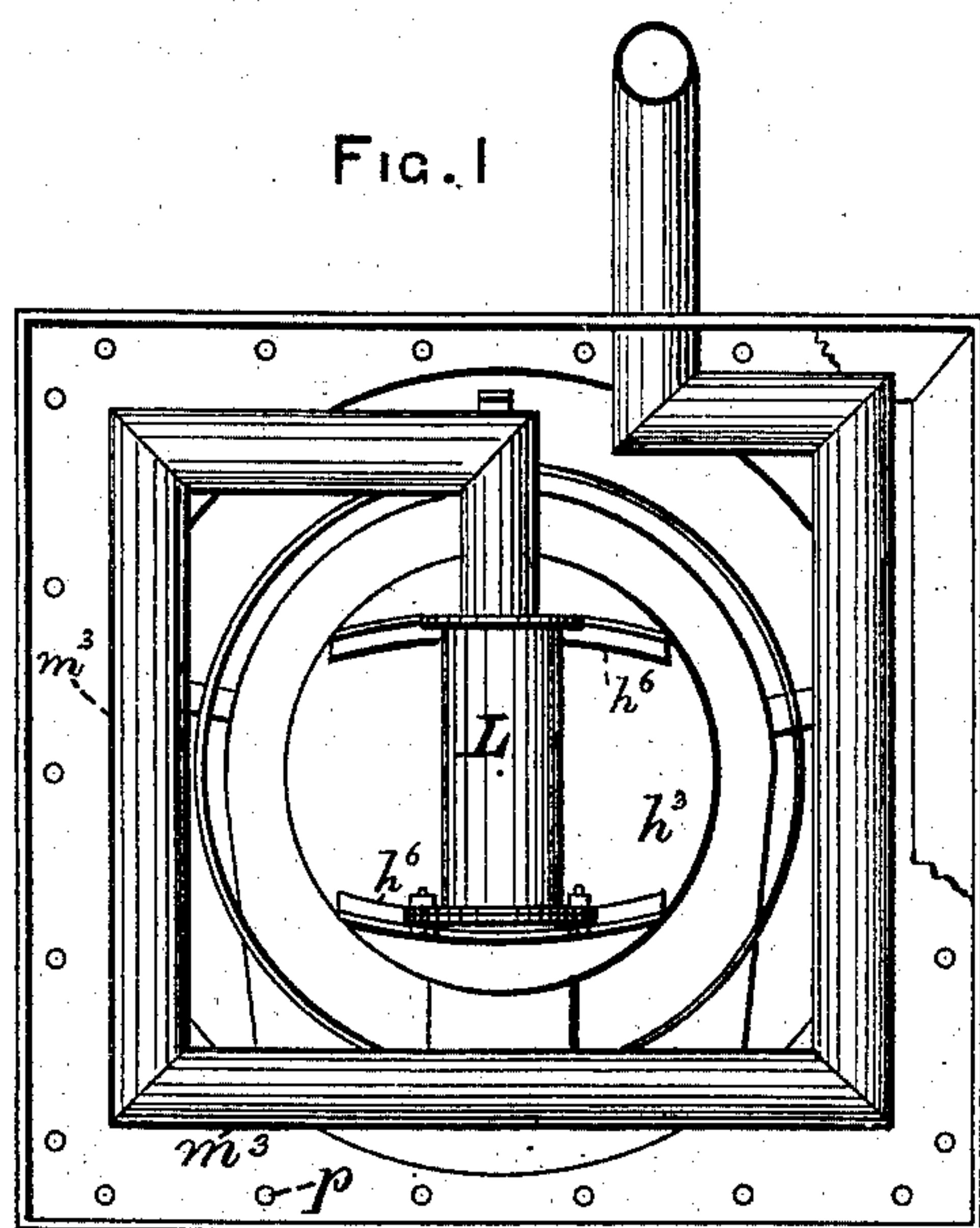
(No Model.)

2 Sheets—Sheet 1

M. H. ROBERTS.
Hot Air Furnace.

No. 238,003.

Patented Feb. 22, 1881.



Witnesses.

Paris M. Farland, Jr.
John F. Grant

Inventor.

Matthew H. Roberts
per Edw. Brown
attorney

(No Model.)

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FIG. 5

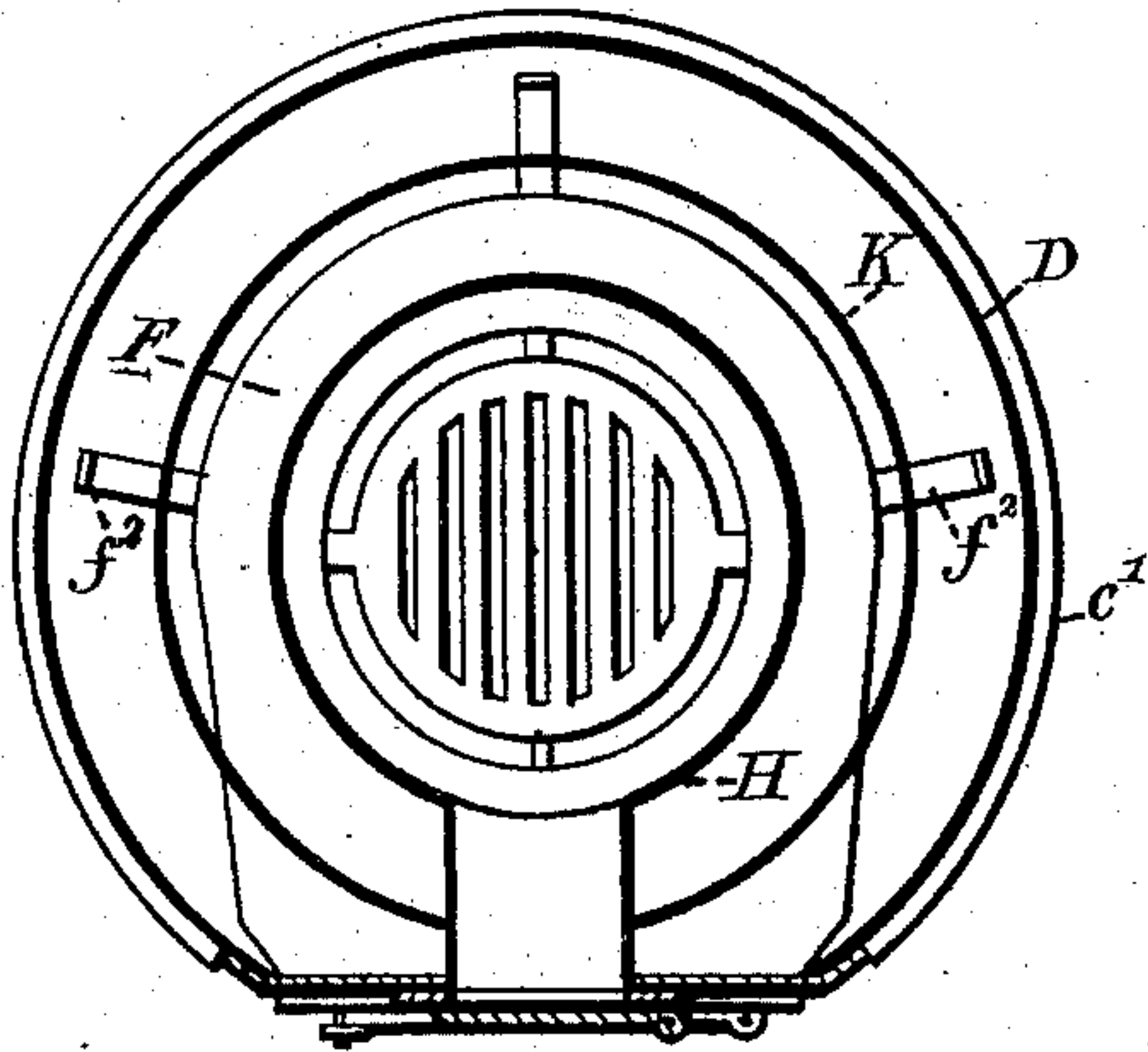
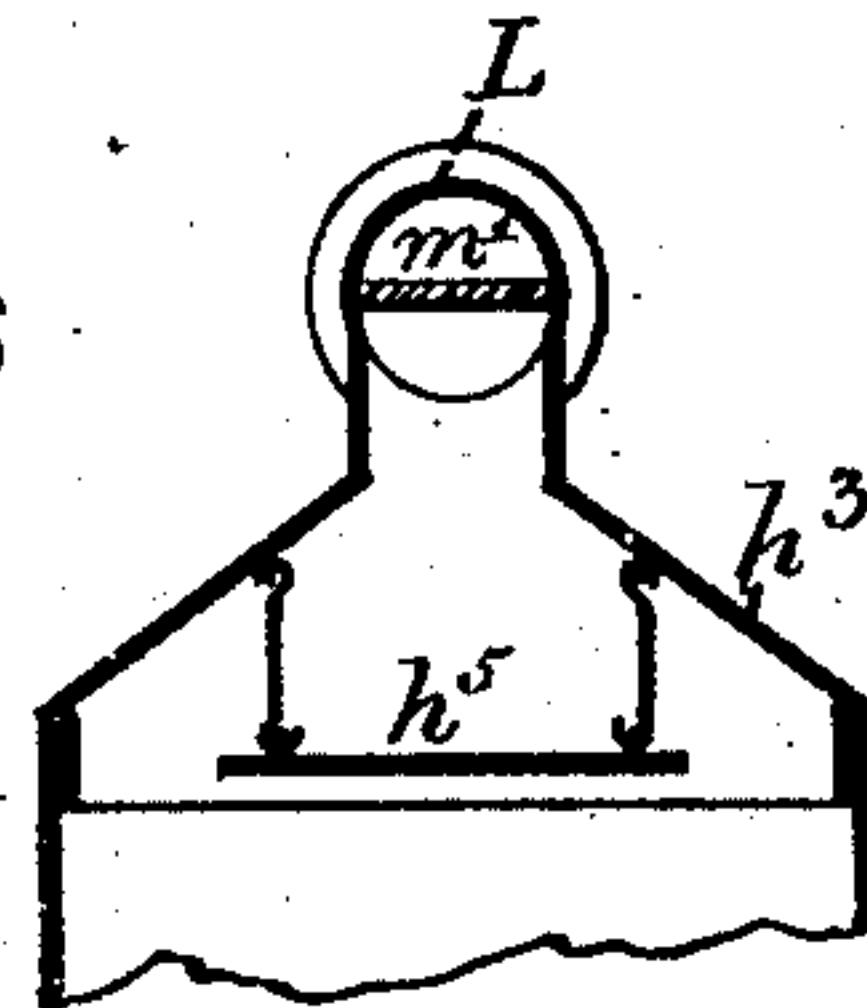


FIG. 6



Witnesses.

Charles W. Farland, Jr.

John T. Grant

Inventor.

Matthew H. Roberts
per Edw Brown
attorney

UNITED STATES PATENT OFFICE.

MATTHEW H. ROBERTS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
FRANK S. FITZWATER AND FRANK A. SHOEMAKER, OF SAME PLACE.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 238,003, dated February 22, 1881.

Application filed November 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW H. ROBERTS, of Philadelphia, Pennsylvania, have invented a new and useful Hot-Air Furnace, of which the following is a specification.

My invention relates to the improvement of various parts of the heater, the adaptation of the heater to the drying of fruit, and the general construction of the heater as an entirety, whereby it is simplified and cheapened in construction, and is more durable.

Figure 1 is a section through the drying-chamber above the heater. Fig. 2 is a vertical section. Fig. 3 is an elevation. Fig. 4 is a section on line *s v*. Fig. 5 is a section on line *x y*. Fig. 6 is a section through the top of the fire-chamber.

I take the cast-iron frame A, carrying the furnace-door *a'*, the cleaning-door *a''*, and the ash-pit door *a'''*, and attach it by screws to a wrought-iron front, B. To the bottom of this front I fasten a curved wrought angle-iron, *c'*, and about the mid-height of the heater I place a similar piece of wrought T-iron, *c''*, or two angle-irons riveted back to back, and near the top I place another wrought T-iron, *c'''*. These three form the frame which steadies in its position the outside case, D, of the heater. They may also be of cast-iron, but are more liable to break.

The case is made in three parts, *d'* *d''* *d'''*, which are easily slipped over these curved iron rings and held securely in place by them. The two lower rings are cut away in front and their ends fitted to the heater-front.

The ash-pit E is made in a horseshoe form. I take a piece of wrought angle-iron, *e'*, and bend it into a horseshoe form and secure it to the furnace-front. The side *e''* of the ash-pit I make of sheet-iron bent into a similar form and fitted to the angle-iron. I place upon this a cast-iron plate, F, and hold all three in tight contact by the bolts *g'*. It will be seen that by this construction the wrought angle-irons *c'* and *e'* rest on the floor, and the usual cast-iron bed-plate is dispensed with.

To the cast-iron plate, which carries the wrought-iron fire-chamber H and the grate *h'*, are bolted the lugs *f''*, upon which stands the

middle cylinder, K. The cylinder H is of plain sheet-iron lined with fire-brick *h''* just above the grate. The feeder-door *a'* leads by a short neck into the cylinder, and the top *h'''* is made as a removable cap having a central outlet, *h''''*, beneath which is suspended the deflecting-plate *h'''''*.

To the smoke-and-flame outlet *h''''* is attached the horizontal drum L, one end of which leads to the chimney through a coil, *m'''*, extending around the interior of the air-chamber M. The drum L has within it, placed horizontally, a plate of soapstone, *m''*, rather shorter than the drum. This is to receive the force of the current of flame and gas, which is deflected both ways, part passing around and over the top of the plate to the chimney, and part passing direct to the chimney. The end plate, *m''''*, of this drum L is removable, so that the soapstone deflector can be easily changed. The cap *h'''* being also removable, the parts *h''* and *h''''*, which are most subject to be worn out, are easily exchanged.

In order to carry the drum L and the coil of pipe *m'''*, the cap *h'''* is strengthened by the angle-irons *h''''*.

As the front of my heater is flat and the case above it circular, an overhanging lip is formed at *d''''*.

The outside section of the case *d'* stands upon the floor, and the air is admitted through holes *n*, which may be simply openings, or may have projecting collars, to which can be fastened pipes connecting with any source of pure air. The air entering at these holes passes upward on each side of the casing K into the chamber M. Here it commingles with another current of fresh air, which enters the chamber M at *p*, and impinges against the smoke-tube *m'''*. The heated air then passes upward in the extension of the chamber M for drying fruit, or it can be directed through various conductors to the rooms of a dwelling.

I claim—

1. In a hot-air furnace, the wrought-iron fire-chamber H, in combination with the fire-brick pot *h''*, the removable top *h'''*, having a central opening, *h''''*, the ash-pit E, and hot-air casing D.

2. In a hot-air furnace, the wrought-iron fire-chamber H, in combination with a removable top, h^3 , and the angle-iron braces h^6 .

3. In a hot-air furnace, the wrought-iron fire-
5 chamber H, in combination with the removable top h^3 and the flame-deflector h^5 .

4. In a hot-air furnace, the combination of a fire-chamber, a removable top, h^3 , and the drum L, having a deflecting soapstone plate
10 within it, as described.

5. In a hot-air furnace, the combination of

a fire-chamber and a drum, L, with soapstone deflecting-plate and removable cap m^2 .

6. In a hot-air furnace, the combination of the fire-chamber H, the casing D, and the inlet
15 air-holes n with the inlet air-holes p in the air-chamber M, as described.

MATTHEW H. ROBERTS.

Witnesses:

PARK M'FARLAND, Jr.,
JOHN F. GRANT.