

No. 661,257.

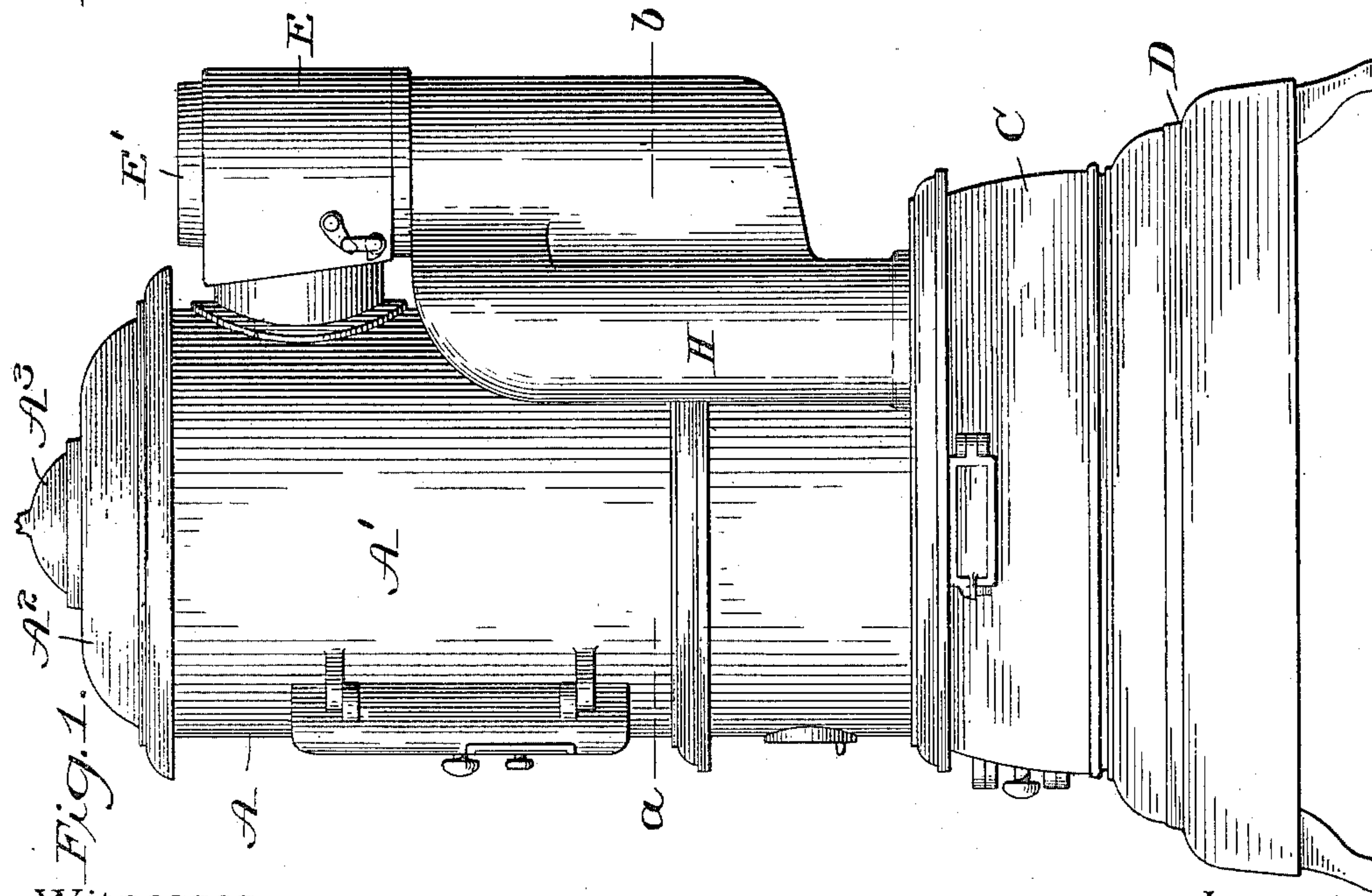
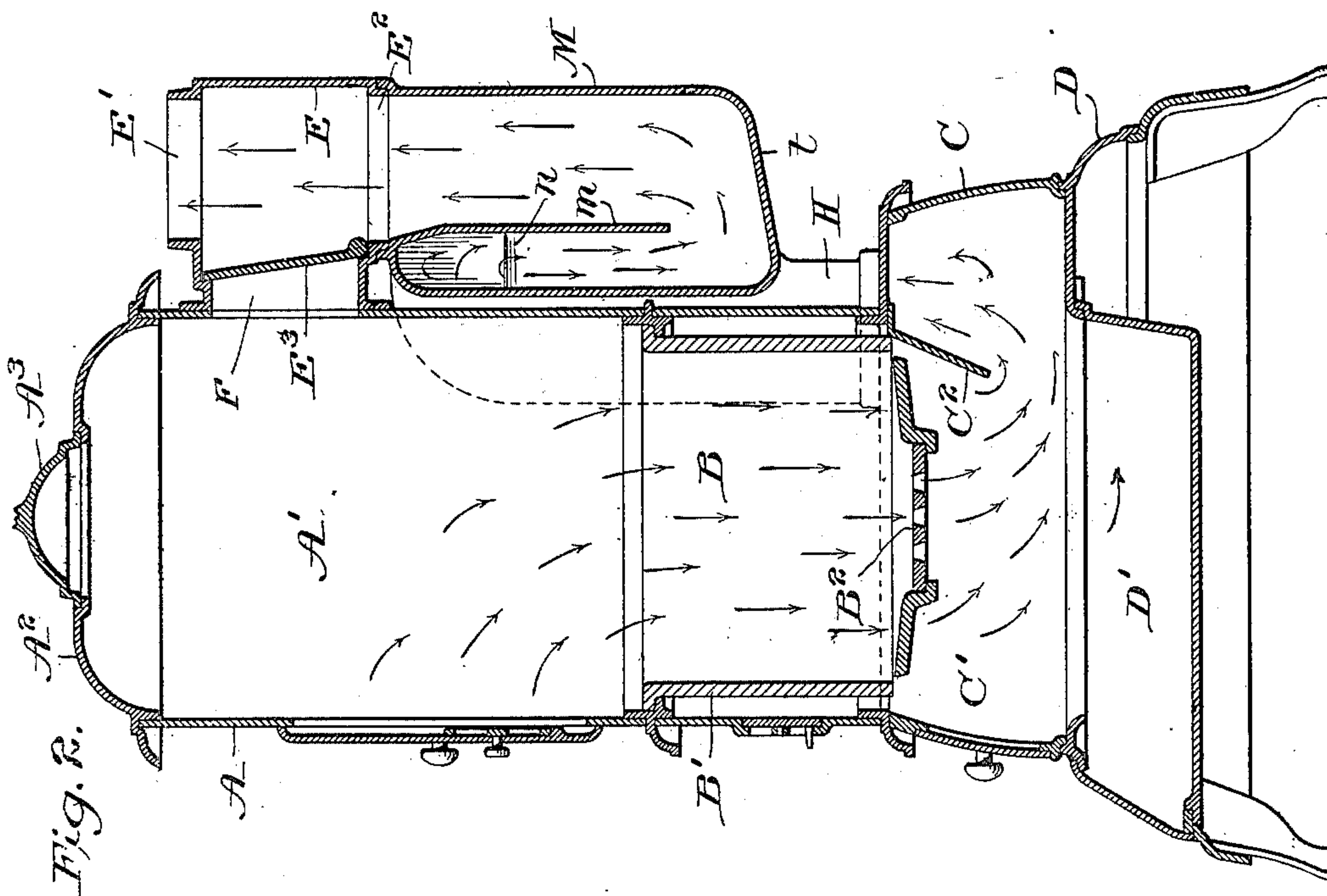
Patented Nov. 6, 1900.

I. BROOKE.
STOVE.

(Application filed Jan. 6, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

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2 Sheets—Sheet 2.

Fig. 3.

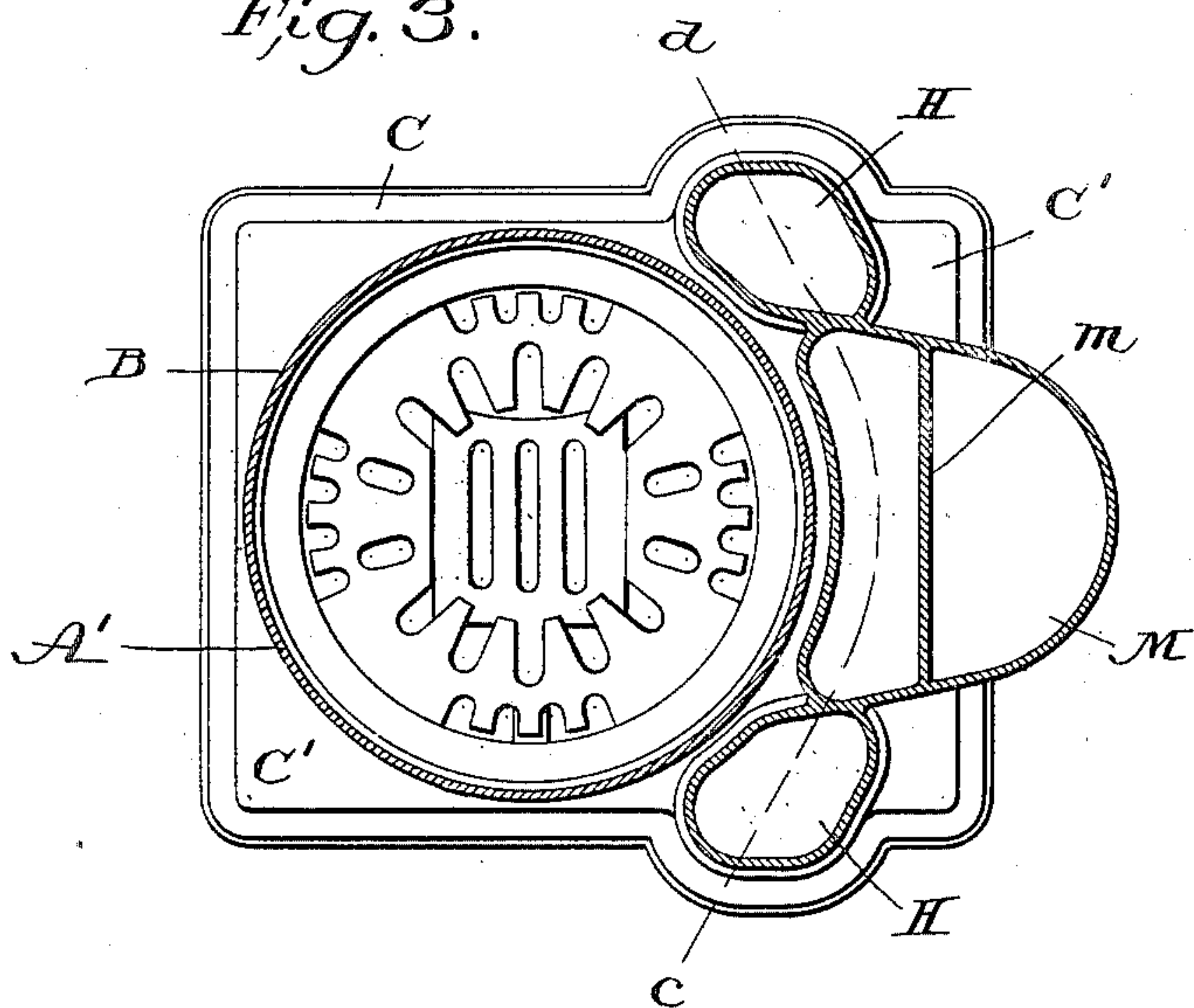
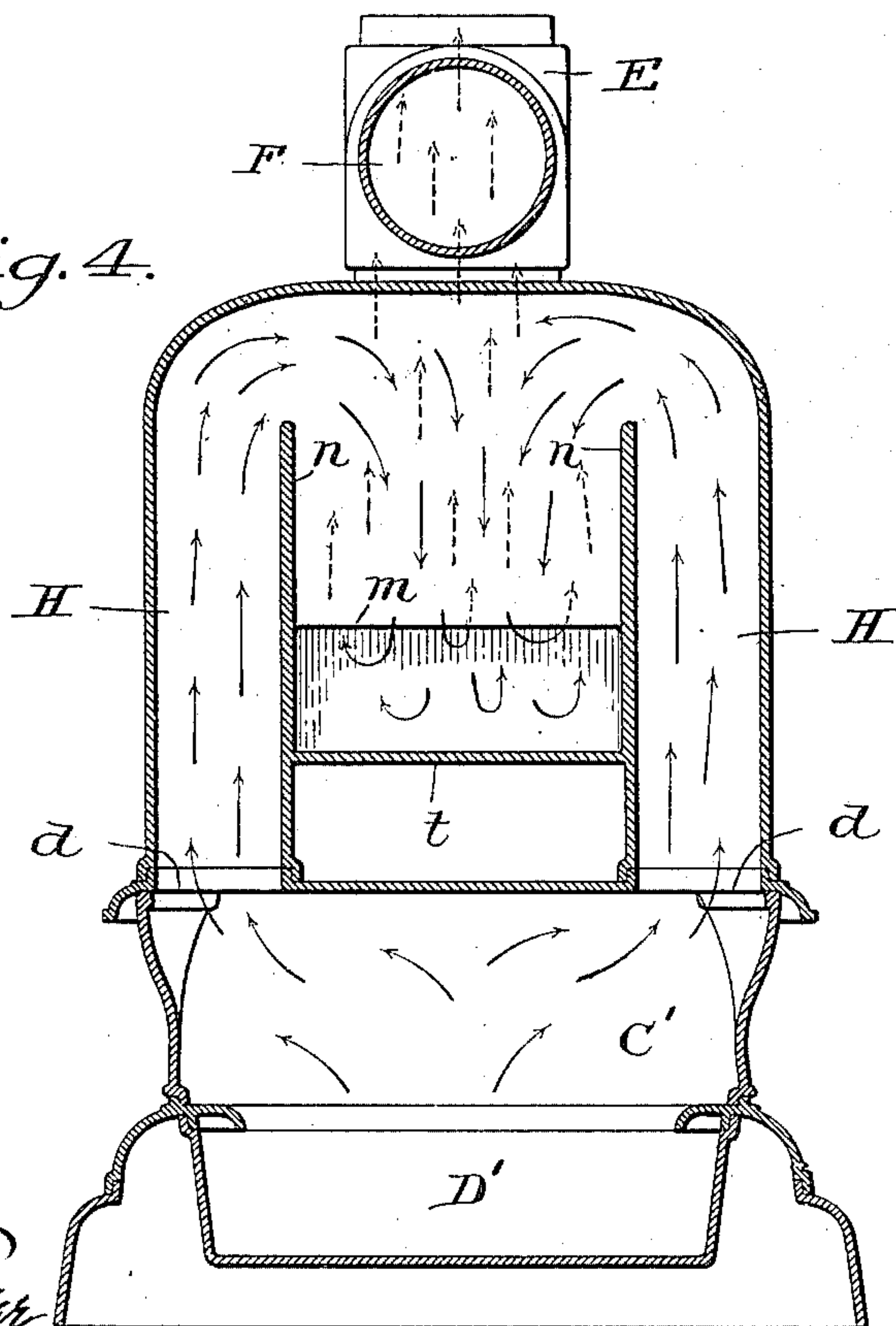


Fig. 4.



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UNITED STATES PATENT OFFICE.

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STOVE.

SPECIFICATION forming part of Letters Patent No. 661,257, dated November 6, 1900.

Application filed January 6, 1900. Serial No. 557. (No model.)

To all whom it may concern:

Be it known that I, ISAAC BROOKE, a citizen of the United States, residing at Pottstown, Pennsylvania, have invented certain new and useful Improvements in Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates generally to heating-stoves, and particularly to that class of them which involves the principle of downdraft.

The objects of my improvement in that class of stoves are by the provision of means hereinafter described to control the course of the indraft air through the fire-bed, increase the radiating-surface from the hot-air drums, and to reverse and control the draft and direction of the current of heated air through said radiating-drums at pleasure.

To these ends my invented improvements consist, first, in the combination, with a stove of the class named, of a chamber below the grate-bars provided with a rear extension beyond the casing forming the fire-chamber with a deflecting-plate therein; second, in the combination, with such an extension-chamber, of radiating-drums composed of a pair of drums communicating at the base thereof with said extension-chamber and at or near the top with another drum and a deflecting-plate in the latter, and, lastly, in the combination therewith of a communicating draft-box containing a pivoted damper controlling communication between said last-named drum and the casing or body of the stove above the fire-box.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a heating-stove constructed according to my invention; Fig. 2, a vertical section thereof; Fig. 3, a lateral section on the line *a b* of Fig. 1, and Fig. 4 a vertical section on the curved line *c d* of Fig. 3.

In said several views, A indicates the cylindrical casing of the stove, made of sheet-iron or other suitable material and forming at top a chamber A' and at bottom inclosing a fire-box, the open top of the casing A being provided with the usual capping A², having a removable cap-piece A³. Below this cham-

ber is the fire-box B, formed by a like cylindrical casing B' of appropriate material and containing the usual grate-bars B². These casings rest and are superposed upon a cast-iron frame C, preferably of the form shown in plan view in Fig. 3 and forming a draft-chamber C', the said chamber extending back a distance in the rear of the fire-box B, mounted thereon. Below said draft-chamber is a supporting-frame D, of cast-iron or other appropriate material and containing an ash-pit D', communicating directly with that portion of the draft-chamber C' which is directly below the fire-box B. At this point in the construction a feature of my invention is the provision of a deflecting-plate C², Fig. 2, extending downward, preferably in a vertically-inclined direction, from the base of the fire-box B into the draft-chamber C' and partially dividing off the rear extension or rear portion of said draft-chamber from the main or front portion thereof below the fire-box and grate-bars, the object being, as indicated by the arrows showing the direction of the draft, Fig. 2, to cause the descending column of air to pass through every part of the grate-openings rather than through a part only thereof.

At the rear of the casing A and communicating with the chamber A' therein is an opening F, to which the damper-box E is secured. The latter has a flanged opening E' at top to connect the device with a smoke and draft flue and a like opening E² at bottom to connect it with the radiating-drums hereinafter described. Within said damper-box E is provided a damper-plate E³, pivotally mounted to swing vertically and of such size and shape and so mounted that when swung vertically it will close the opening F to the chamber A' of the stove and when lowered on its pivotal bearing to a horizontal position it will cover the opening E² in the damper-box. In its lowered position it establishes communication, exclusively of the draft and smoke flue, with the fire-box of the stove above the grate-bars, while in the raised position it shuts off said communication and instead establishes communication with the fire-box below the grate-bars and through the radiating-drums. By reference to Fig. 3 it

will be observed that the draft-chamber C, below the fire-box, is much larger in superficial area than said fire-box B', which rests upon it. This is in order principally to provide an extended or rear portion to said draft-chamber casing C', in which two openings *d d* (see Fig. 4) are made therein to establish communication with the legs H H of the radiating-drum, (see Fig. 3,) said extended or rear portion of the draft-chamber casing C' thus supporting the radiating-drum largely in the rear of the fire-box B and casing A' and in vertical line with the damper-box E, this relative arrangement of said parts being more clearly delineated in Figs. 2 and 3.

The radiating-drum, which I will now describe, is the leading novel element in the device. It consists of two legs H H, arranged on opposite sides of a central large drum M, (see Fig. 3,) opening into each other at or near the top and united with and opening into the said drum M near the top of the latter. The bottom of said drum M is closed, and it is provided interiorly with a depending deflecting-plate *m*. (See Figs. 2 and 3.) Thus the parts H H and M constitute, in fact, one integral drum, the legs H H only communicating with the draft-chamber C and the part M only communicating with the damper-box E and flue E'. The said parts of the drum are so constructed and arranged relatively to each other that the inner wall *n* of each of the legs H, terminating at the point of union of said legs with the drum M, will therefore operate in each as a deflecting-wall. This is indicated by the line *n* in Fig. 2 and shown in section in Fig. 4, the depending deflecting-plate *m* being arranged within the drum M in such relation thereto and to the legs H H that the course of the draft will be upward through said legs H H, over the inner walls *n* of the same, into that portion of the drum M on one side of the depending deflecting-plate *m* thereof, downward and around the latter, and thence into that part of the drum M on the other side of the deflecting-plate *m*.

The door to the chamber below the fire-pot has the usual slide-openings to admit air, and so, also, has the door in the casing A, opening into the chamber above the fire-pot, and likewise the cap-piece surmounting the casing A may be so provided, as is frequently done.

The operation of the device is apparent from the description already given, namely: When the fire is started, the damper E³ is lowered, opening communication between the

draft and smoke flue E' and the fire-box B and closing communication through the radiating-drum. Afterward a raising of the damper E³ into the position shown in Fig. 2 reverses said course of the draft and communication of the passages mentioned, and the radiating-drum then becomes the medium of communication with the draft-flue.

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

1. In a heating-stove of the downdraft class, comprising a fire-box, a superposed fire-chamber, a damper-box opening into the latter, and a damper therein adapted to open and close such communication at pleasure, the combination therewith of a draft-chamber below the fire-box and having a rear extension, a radiating-chamber having communicating passages leading from said draft-chamber to the damper-box, and a deflecting-plate in said draft-chamber, arranged therein in such manner as to deflect and control the course of the downdraft through the grate-bars; substantially as described.

2. In a heating-stove of the class described, having a damper-box with suitable openings and a damper therein operating to reverse the direction of the draft through the fire-box, and a draft-chamber below the fire-box, the combination therewith of a radiating-drum arranged between said draft-chamber and the damper-box, said drum consisting of a pair of pipes or legs H, H, and an intermediate drum M closed at bottom the parts H, H, opening into each other and into said drum M, and a depending deflecting-plate in the latter; substantially as described.

3. In a heating-stove of the character described, having a damper-box with suitable openings and a damper therein operating to reverse the direction of the draft through the fire-box, the combination therewith of the draft-chamber C' below the fire-box, a deflecting-plate C² therein, and a radiating-drum consisting of the hollow legs or pipes H, H, intermediate drum M, and deflecting-plate *m* in said drum; said parts being constructed, combined and operating substantially as described.

In testimony whereof I have hereunto affixed my signature this 27th day of December, A. D. 1899.

ISAAC BROOKE.

Witnesses:

MERIT M. MISSIMER,
HUZINGA G. MISSIMER.