

M. A. CUSHING.

Improvement in Base-Burning Stove.

No. 132,389.

Patented Oct. 22, 1872.

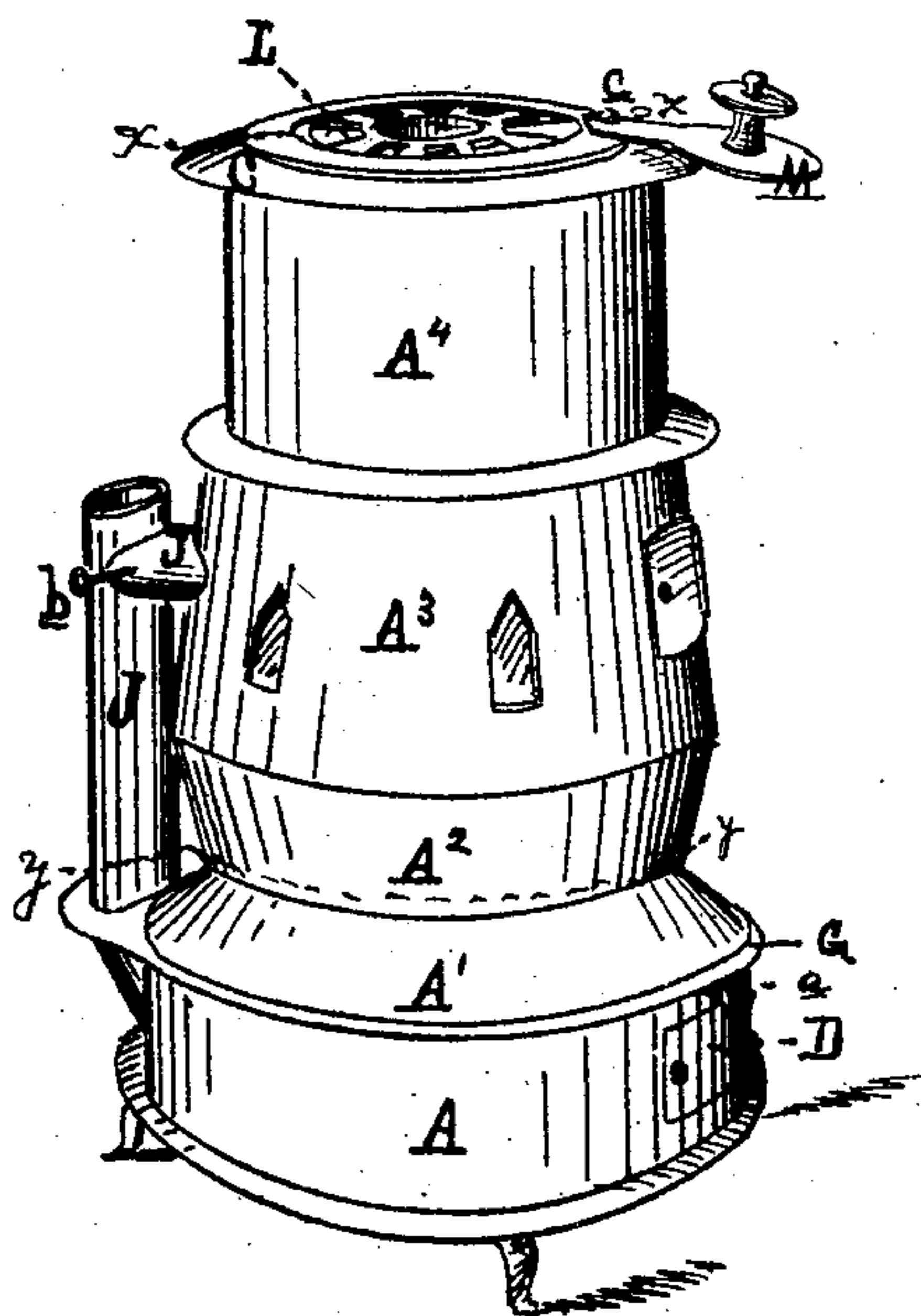


Fig. 1.

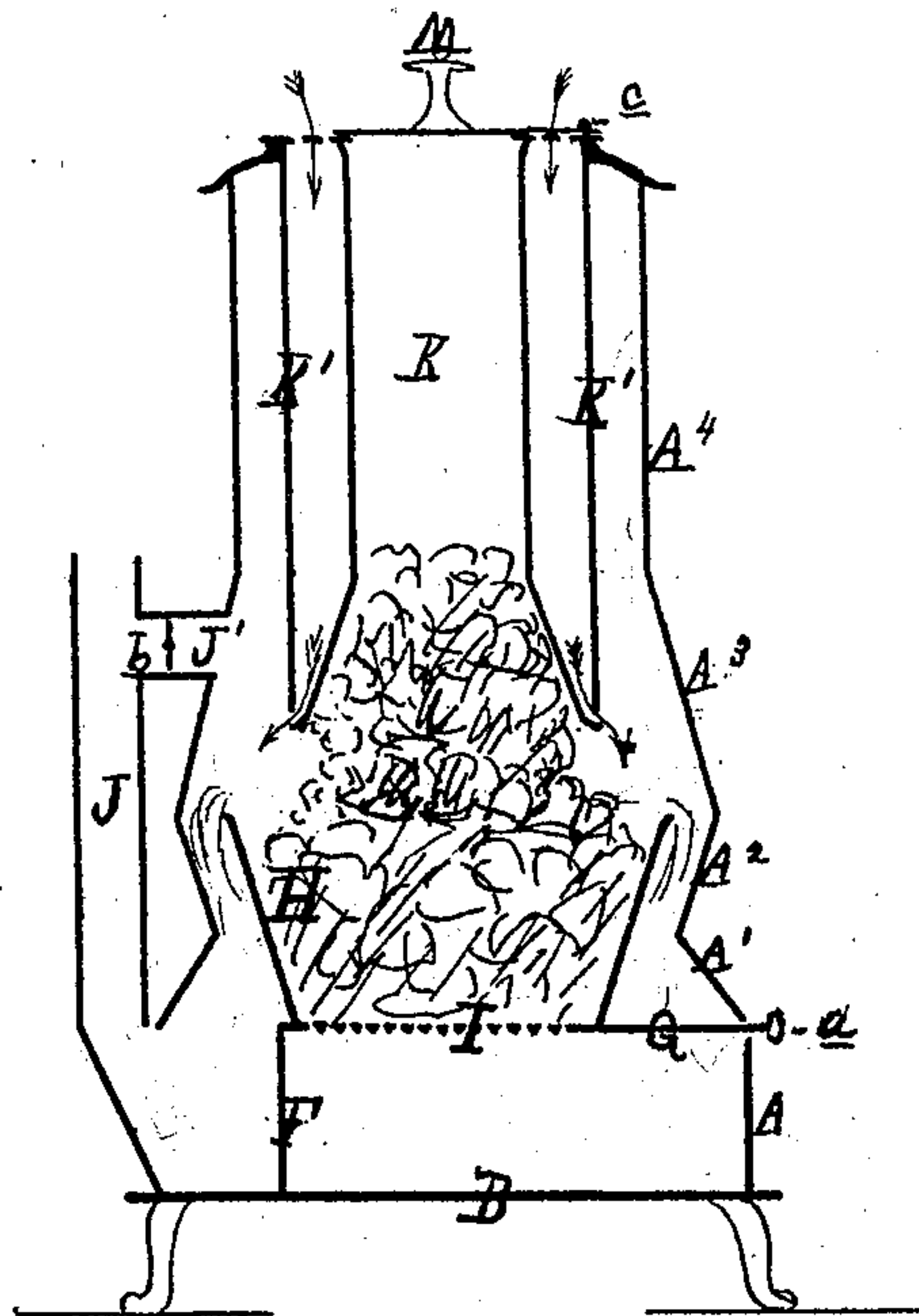


Fig. 2.

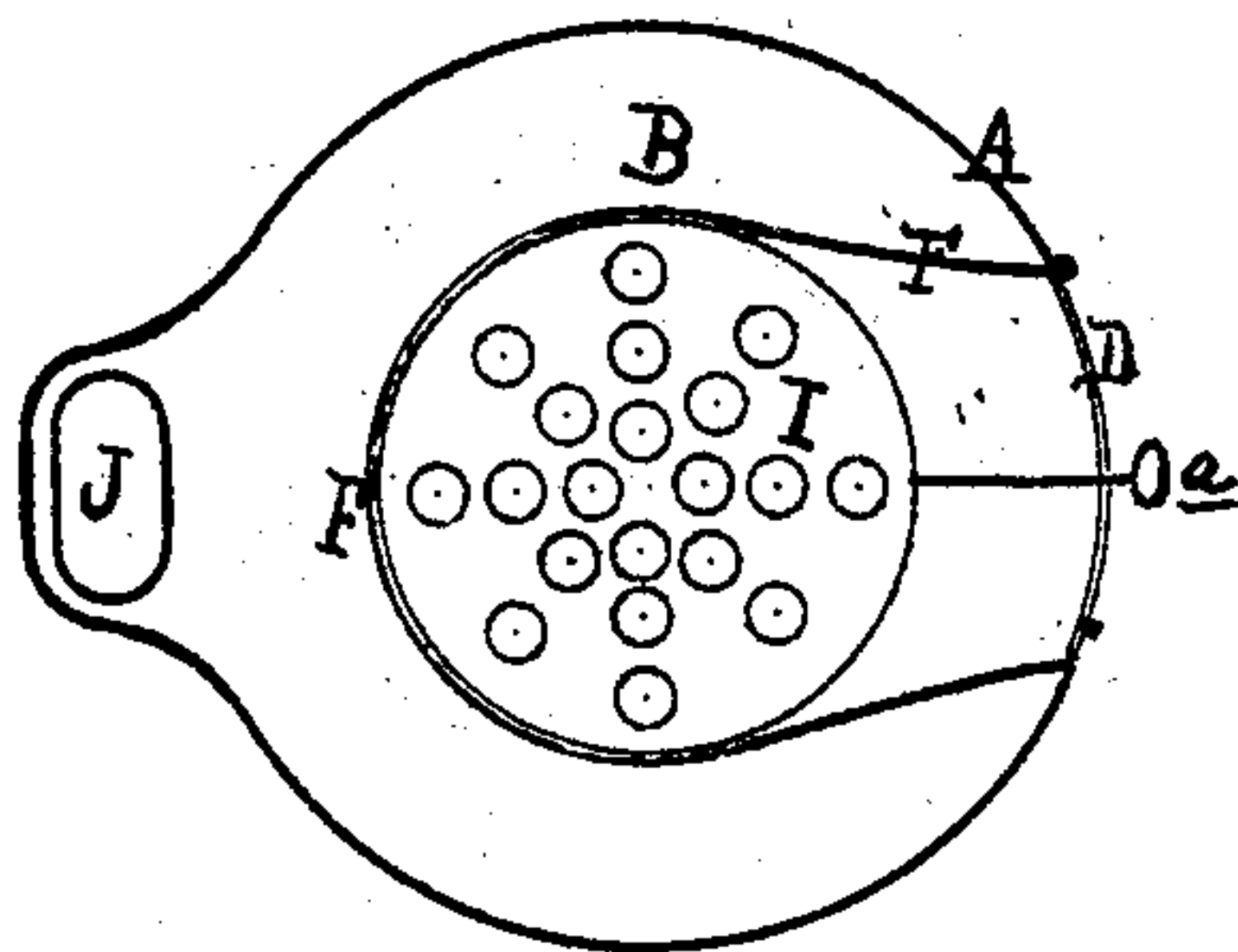


Fig. 3.

ATTEST:
H. S. Sprague.
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IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. 132,389, dated October 22, 1872.

To all whom it may concern:

Be it known that I, MARK A. CUSHING, of Aurora, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Heating-Stoves; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a perspective view of my stove with the magazine uncovered; Fig. 2 is a vertical section of the same on the line *xx* in Fig. 1; and Fig. 3 is a horizontal section on the plane *yy* in the same figure.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of this invention relates to an improvement in that class of revertible-draft stoves which are provided with a magazine for supplying coal to the fire-pot as required in the progress of combustion, and is especially designed to insure the perfect combustion of bituminous coal therein. It consists of a double-walled magazine, the inner shell of which is constructed with a flaring lower end which approaches closely to the lower end of the outer shell, by which means an open ring is formed, through which a current of air is discharged directly in contact with the products of combustion, as will be fully described hereinafter.

In the drawing, A represents the lower or ash-pit section of my stove, circular in form, and surmounted by the sections A¹, A², A³, and A⁴ of the form shown. B is the base-plate, and C the top plate, of the stove. The sections A¹, A², and A³ may be cast in one piece and fitted to the other sections with flanges or collars, and the whole securely fastened with rods or bolts. D is a door in the ash-pit, and E is a door in the section A³, which may be provided with mica windows around the entire circumference. F is a U-shaped partition in the ash-pit section, its open part forming the ash-pit proper. G is a diaphragm resting on top of this partition, and on it rests the flaring fire-pot H, at the bottom of which a tilting grate, I, is pivoted in an opening in the diaphragm, its shaft *a* extending through the front of the ash-pit section, so that the grate

may be operated thereby. The top of the fire pot extends close to the lower part of the section A³, and the diaphragm is cut away or left open between the partition and the base-section, from the back part of which the vertical flue J issues and is joined by a horizontal direct-draft flue, J', issuing from the section A³, said flue J' being provided with a damper or valve, *b*. The magazine, which constitutes the novel feature of my improvement, is made in two parts, both pendent from the cover; the inner one K flares rapidly at the bottom, while its shell K' is cylindrical, leaving a small annular space at the bell-mouthed edge of the magazine proper, and an annular air-space between them extending to the top. The top plate C is perforated at regular intervals in the space over the air-space inclosed by the shell, over which openings is fitted a revolving annular draft-register, L, over which swings a cover, M, for the magazine, pivoted at *c* to the top plate.

The operation of this stove is as follows: The fire is kindled and started with the direct-draft damper and ash-pit door opened, as in stoves of similar character. When the coal is thoroughly ignited, close the doors and direct-draft damper and fill the magazine, opening the draft-register L, which will allow a current of air to be drawn down between the magazine and its shell or jacket issuing at their lower ends, and brought into immediate contact with the surface of the incandescent coal, whence it passes over the surface of the mass, mingling with its gases, which it ignites, passing with the flames over the edge of the fire-pot; thence down into the space outside the ash-pit partition into the lower end of the flue J; thence up to the chimney. The draft of air passing down in contact with the magazine keeps the latter comparatively cool, preventing the coal contained therein from coking, except immediately at the bottom, and throwing off noxious gases, and prevents the rapid burning away of the metal at the bottom of the magazine—a very general objection to stoves of this class. Nevertheless, the air is heated by the time it issues from the jacket, so that it is ever ready to ignite the gases evolved from the coal on mingling therewith, so that it thus insures a perfect surface com-

bustion, the rate of which is accurately determined by adjusting the draft-register. Bituminous coal, under the application of heat, expands in bulk; hence the necessity of making the magazine flaring toward the bottom to prevent the coal from clogging therein and to insure its feeding down as the coal in the fire-pot burns away.

I do not claim, broadly, a double-walled magazine; but

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

In a stove having its base and exit-flues constructed substantially as described, the double-walled magazine K K, having the bell-shaped mouth and air-space arranged as described, for the purpose set forth.

MARK A. CUSHING.

Witnesses:

IRA H. FITCH,

FRANK BARCLAY.