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FURNACE.

No. 436,283. Patented Sept. 9, 1890.

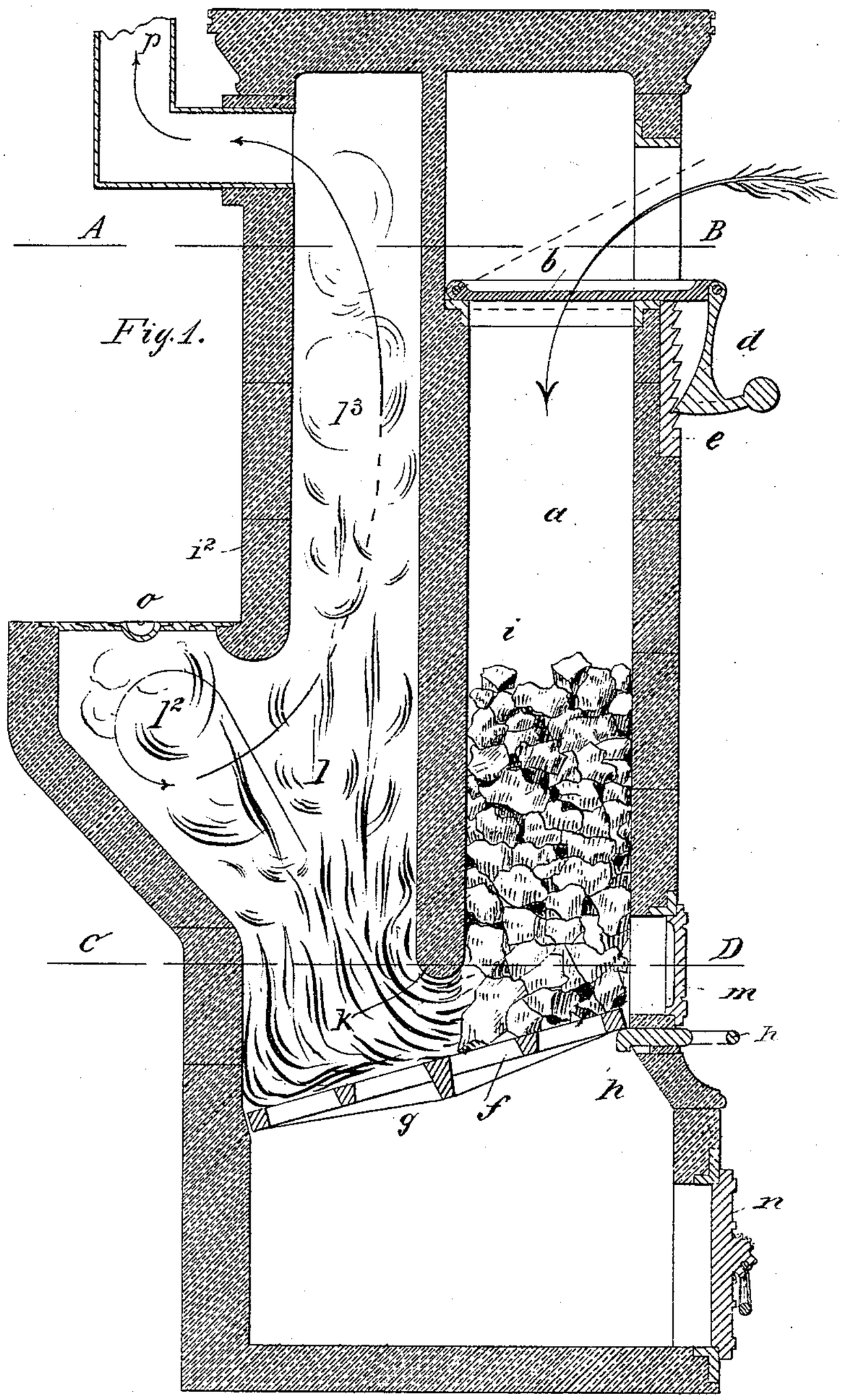

Fig. 1.

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Fig. 2.

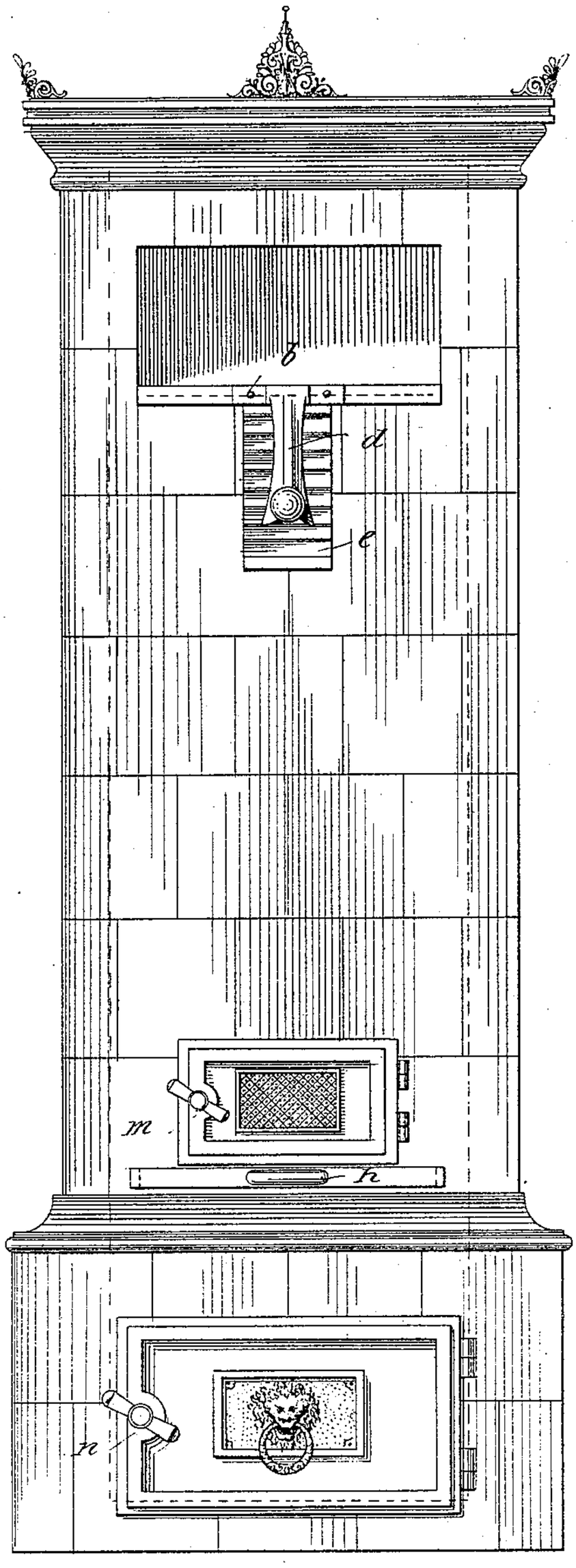

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Fig. 3.

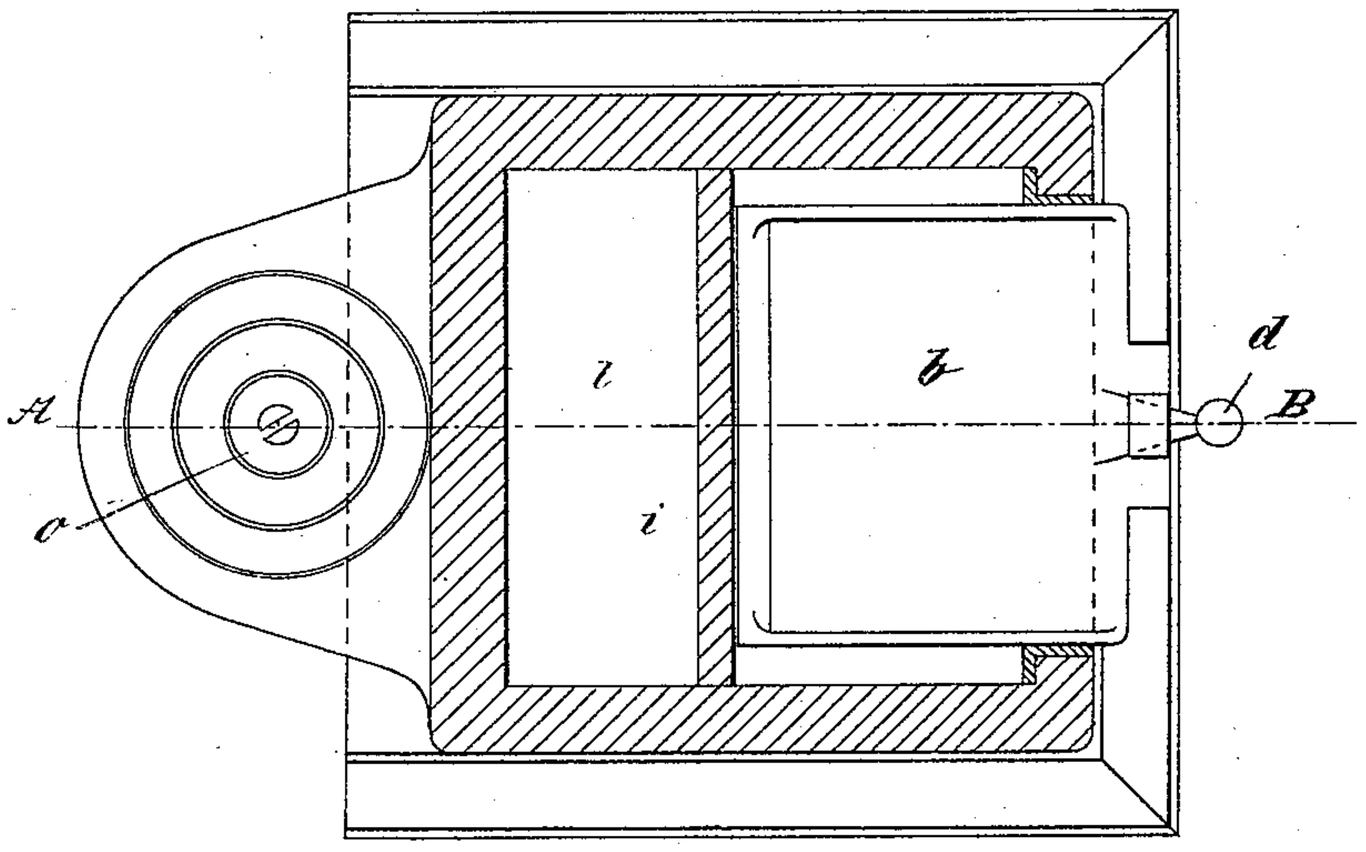

Fig. 4.

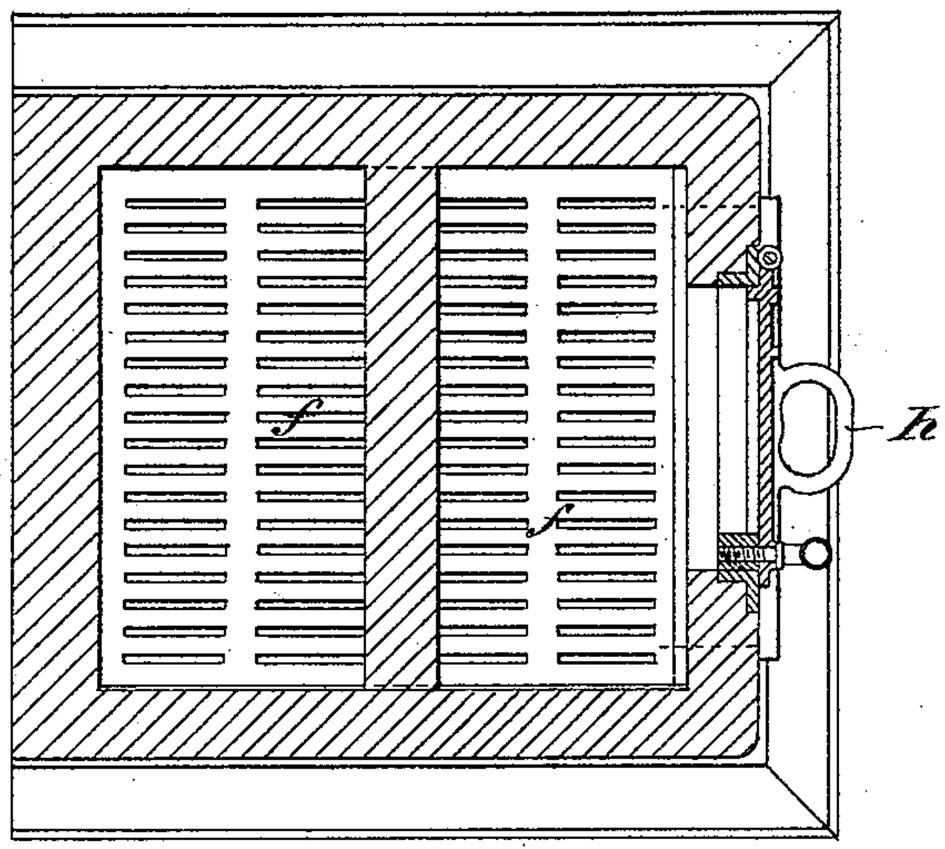

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Fig. 5.

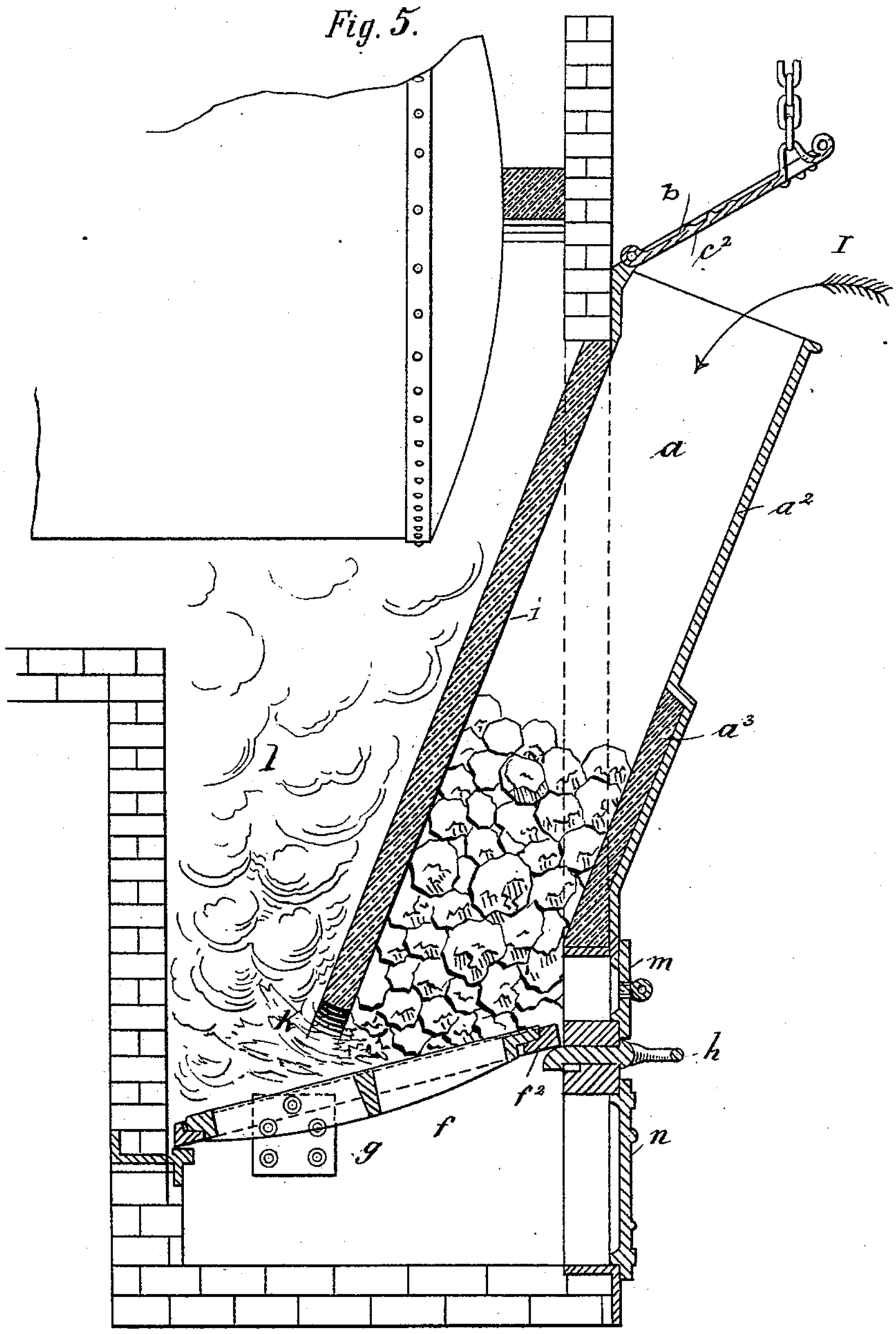

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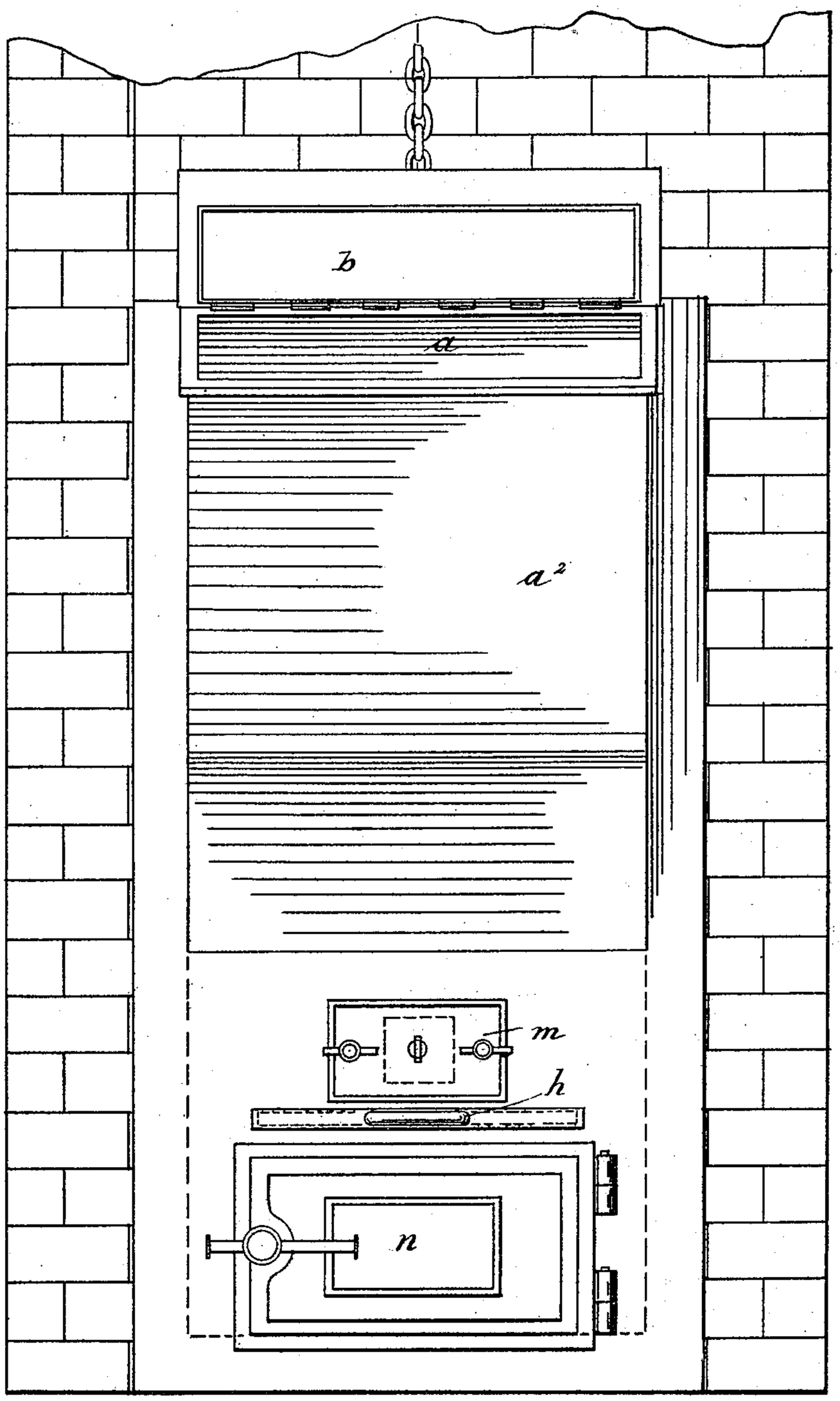
Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHANN BIELENBERG, OF CHEMNITZ, GERMANY.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 436,283, dated September 9, 1890.

Application filed March 30, 1889. Serial No. 305,473. (No model.)

To all whom it may concern:

Be it known that I, JOHANN BIELENBERG, manufacturer, of Chemnitz, in the Kingdom of Saxony and German Empire, have invented new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention, which relates to domestic and other stoves and to furnaces for heating steam-boilers and for other purposes, has for its object to so arrange the part of the stove or furnace through which the fuel is fed that all the air for supporting combustion is introduced through the same chute or hopper as the fuel, and passing through the fuel to the point of combustion is thereby heated, whereby the formation of slag or clinker in the stove or furnace is lessened or prevented, greater heat is developed, the production of smoke is also prevented, and the firing requires less attention. The improved arrangement has also the advantages that in opening the chute or hopper to fill it with fuel no smoke arises, and that it is easily adapted to all classes of stoves, whether for heating or cooking purposes, as well as to furnaces generally.

In the accompanying drawings, Figures 1 to 4, inclusive, illustrate the invention as adapted to an ordinary room-heating stove, Fig. 1 being a vertical section, Fig. 2 a front elevation, Fig. 3 a horizontal section on the line A B, and Fig. 4 a like section on the line C D, Fig. 1, of the stove. Fig. 5 shows in vertical section, and Fig. 6 in front elevation, the adaptation of the invention to the furnace of a steam-boiler.

Referring to Figs. 1, 2, 3, and 4, the feed chute or hopper *a* is provided at its upper end with a hinged cover-plate *b* for regulating the draft, the plate having a pawl *d* engaging with a rack *e* and by the position of which in the rack the supply of air is increased or diminished.

The feed chute or magazine *a* has a fire-grate or bars *f* at its lower end; or, instead of a grate, it may have a solid plate for the fuel to rest upon; but a grate is preferred, as it allows the spent fuel, reduced to ashes, to fall through into the ash-pit. The grating *f* turns on a pin *g*, and its front end rests on a sliding bolt *h*, which can be drawn back to allow the grate to swing downward when the feed chute or magazine requires clearing. The inner wall *i* of the feed-chute forms at its lower end an arch, which serves as a fire-bridge *k* for the actively-burning fuel, the combustion taking place at that point. This inner wall *i* extends to the top and from side to side of the furnace, so as to form on the one hand, in conjunction with the outer wall i^2 of the furnace, a throat l^3, leading upward from the combustion-chamber, and on the other hand the entire inner wall of the combustion-chamber. The gases of combustion rise in the combustion-chamber *l* and heat the walls of the stove, the front wall of the combustion-chamber being formed by the inner wall *i* of the feed-chute. At its lower end and above the bolt *h* the chute *a* has a hermetically-closing door *m*, through which refuse can also be removed, and the ash-pit underneath the grate *f* has also a hermetically-closing door *n*, so that through neither of the doors *m* or *n* can air enter the stove. *o* is the warming-plate, and *p* the pipe leading to the chimney. The warming-plate is arranged over and closes an offset or chamber l^2 of the combustion-chamber.

Referring to Figs. 5 and 6, the walls of the feed chute or hopper *a* are placed somewhat obliquely. The grating *f*, which rests on a special plate f^2, turns on the pin *g* and can, on withdrawing the sliding bolt *h*, be tilted downward. The doors *m* and *n* have the same arrangements and serve the same purposes, as indicated in the stove, Figs. 1 to 4, and the front wall a^2 of the feed chute or hopper is lined at a^3 with refractory material to increase its durability. The cover *b* of the chute is furnished with a damper c^2 to regulate the draft, and in feeding fuel it is raised by a chain having a counter-weight or by other means. As the air entering in the direction of the arrow I is sucked in by the gases generated in combustion and there is always a surplus of draft to the chimney, there can be no back smoke.

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

1. In a furnace, the combination, with the grate and closed ash-pit, of a fuel-magazine

and combustion-chamber arranged substantially parallel above said grate, and a draft-regulator at the upper end of said magazine, said magazine and combustion-chamber being separated solely by the single inner wall *i*, extending completely across the furnace, so as to form the entire inner wall of the combustion-chamber, and having an arch over the fire-grate, so as to form the fire-bridge, substantially as set forth.

2. In a furnace, the combination, with the grate and closed ash-pit, of a fuel-magazine and combustion-chamber arranged side by side above said grate, and a draft-regulator at the upper end of said magazine, said magazine and combustion-chamber being separated solely by the single vertical inner wall *i*, extending from the extreme upper side of the furnace downward, and having an arch over the grate and forming with the outer wall i^2 of the furnace a throat l^3, leading upward from the combustion-chamber, said inner wall also extending completely from side to side of the furnace and forming the entire inner wall of the combustion-chamber, substantially as set forth.

3. The combination, with the closed ash-pit and a grate arranged over said pit, of the fuel-magazine and combustion-chamber arranged over said grate, the combustion-chamber being provided with the offset l^2, and the warming-plate *o*, arranged over and closing the top of said offset, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOHANN BIELENBERG.

Witnesses:
W. B. MURPHY,
RICHARD E. JAHN.