

(No Model.)

I. D. SMEAD.
VAULT HEATER.

No. 426,551.

Patented Apr. 29, 1890.

Fig. 1.

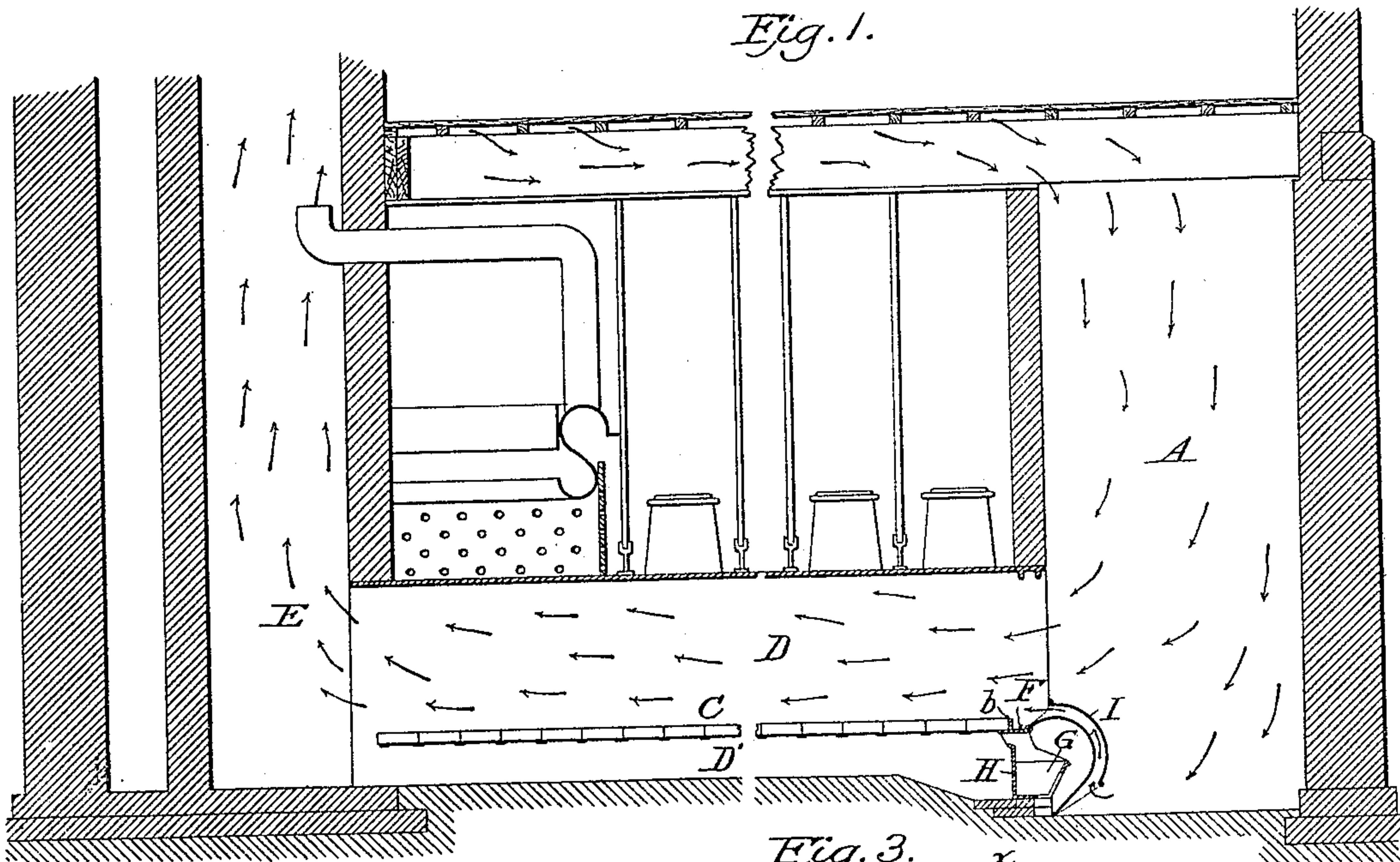
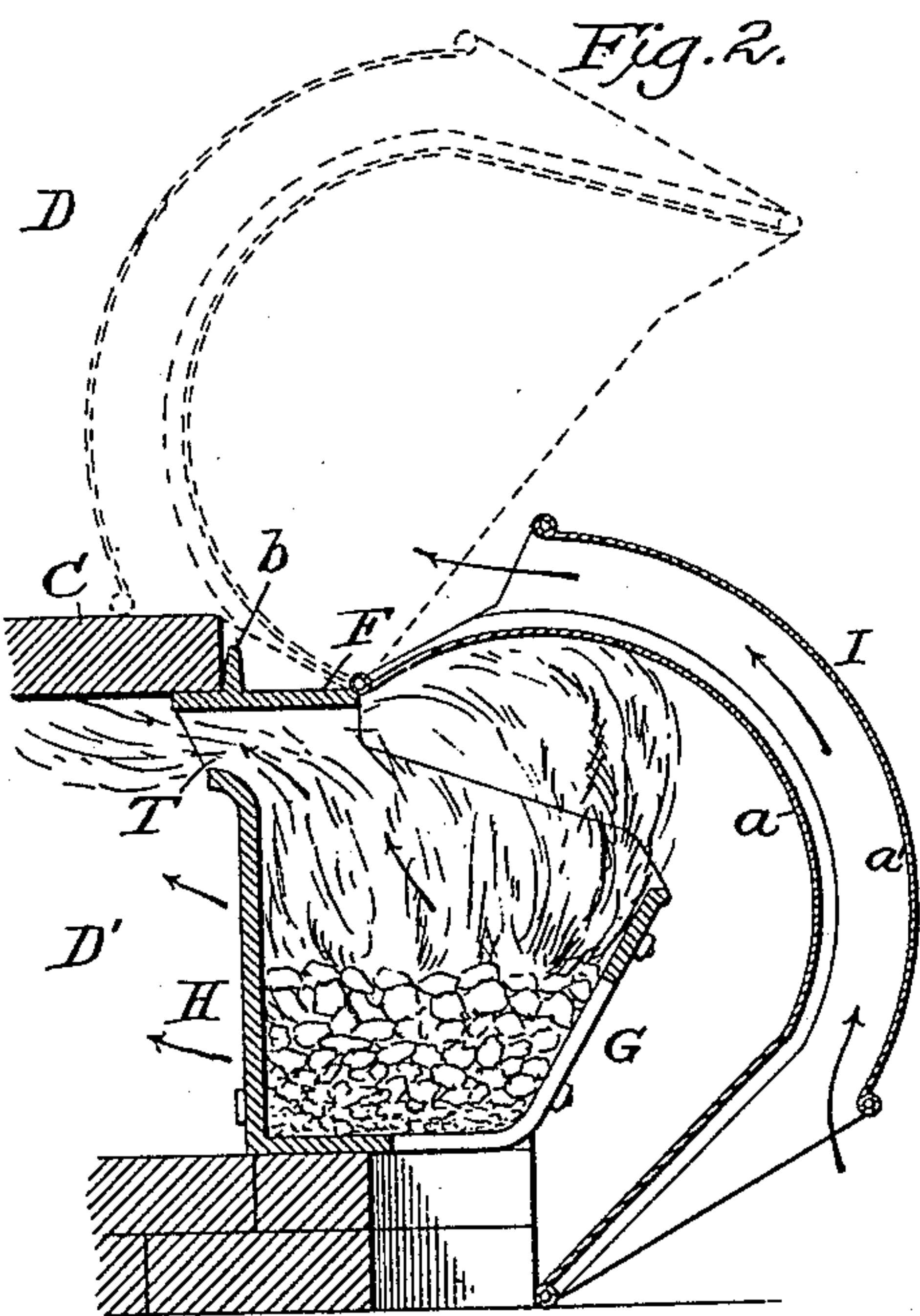
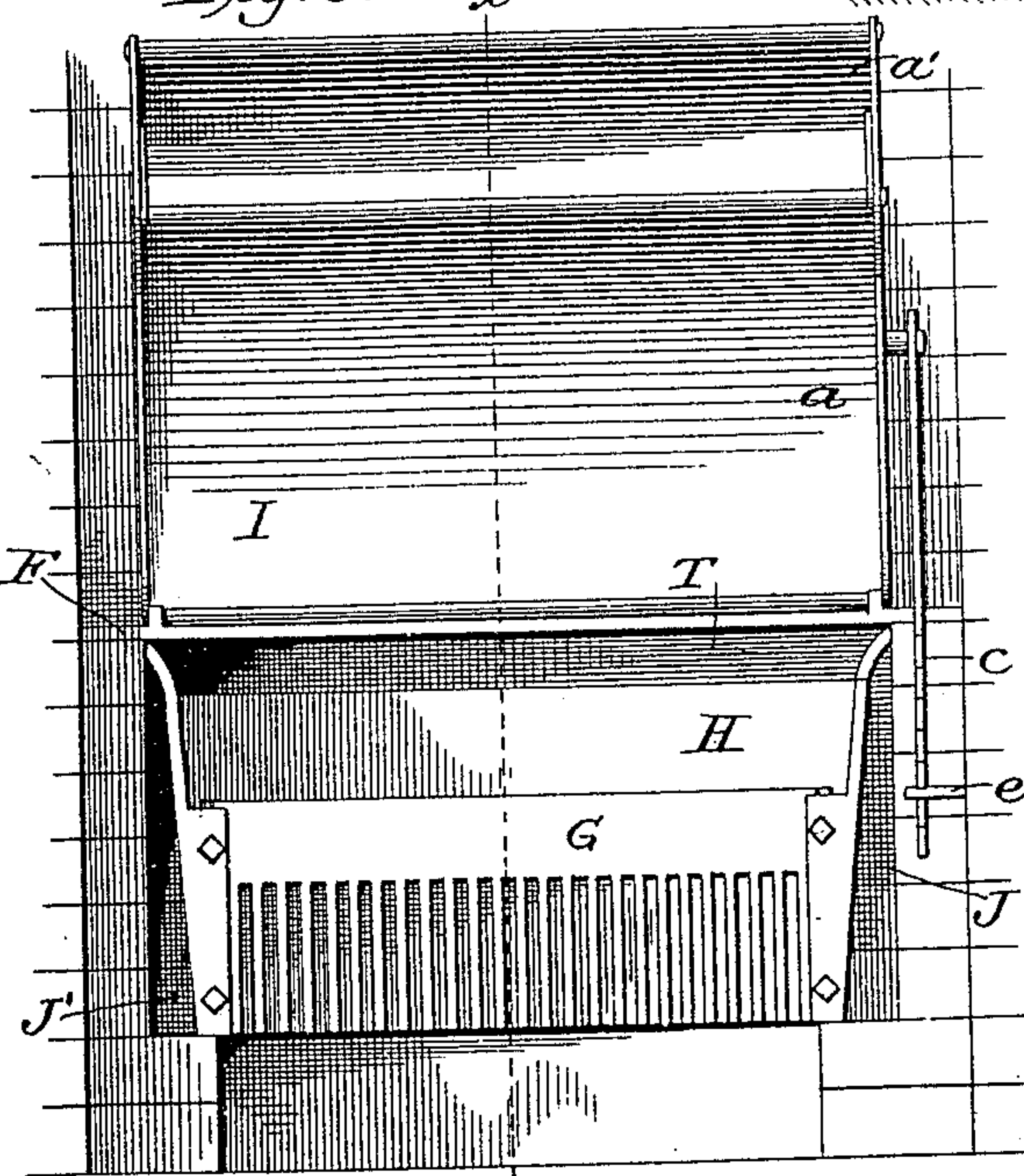


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ISAAC D. SMEAD, OF TOLEDO, OHIO.

VAULT-HEATER.

SPECIFICATION forming part of Letters Patent No. 426,551, dated April 29, 1890.

Application filed July 12, 1889. Serial No. 317,294. (No model.)

To all whom it may concern:

Be it known that I, ISAAC D. SMEAD, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful
5 Improvements in Vault-Heaters, of which the following is a specification.

My present invention relates to heaters for use in connection with the desiccating or dry closets for which various patents have heretofore been granted to me; and the invention
10 consists in the construction of the heater by which it is specially adapted for use in connection with the vaults of said closets, as hereinafter more fully described.

15 Figure 1 is a longitudinal vertical section through one of the dry closets with my heater shown in position ready for use. Fig. 2 is an enlarged central vertical section of the heater on the line $x x$ of Fig. 3, and Fig. 3 is a front
20 view of the heater in position.

The object of my present invention is to produce a cheap, simple, and effective heater that can be readily adapted to and used in connection with these desiccating or dry
25 closets, and which, when applied as shown, will greatly increase the desiccating operation of the closet, and also increase the draft of air through the vault, and consequently a more thorough ventilation of the rooms from
30 which the air is drawn to the vault and insure a positive draft or current of the air in the direction desired, and prevent any tendency to a reversal of the current.

In order to a complete understanding of the
35 mode of operation of the invention, reference is made to Fig. 1, in which D and D' represent the vault of a dry closet made on my plan, there being a transverse partition or floor C extending the whole length of the
40 vault, thus dividing it into an upper duct D and a lower duct D', as more fully described in my patent, No. 363,971, to which reference is hereby made for particulars. As shown by the arrows in Fig. 1, the air is drawn from
45 the rooms above down into an air-gathering room A, from whence it passes through the vault into a vent flue or shaft E, which extends above the roof of the building.

Heretofore it has been customary to locate
50 a small heater in the bottom of the vent-shaft E to create a draft, and in my patent, No. 387,263, I showed such a heater or small fur-

nace located at the opposite end or mouth of the vault, with its smoke-pipe connected with the lower duct D', and that at its opposite
55 end connected with a smoke-flue separate and distinct from the vent-shaft E. I now construct my heater for these closets, as shown more clearly in Figs. 1 and 2, it being made in the form of an open grate. The
60 back H with about one-half of the bottom and the ends are made solid, and preferably cast in a single piece. The front part G consists of a plate cast in the form of the ordinary grate-bars, which extend down the front
65 and about half-way backward across the bottom, as shown in Figs. 1 and 2. It has a top plate F, which extends from end to end across the top, and which is provided with a pro-
70 jection or flange b to fit against the partition C, which is usually made of brick-work, supported on metal bars. The back plate H extends up to within a few inches of the top
75 plate F and is curved backward at its upper edge, thereby forming a narrow throat T, which extends entirely across the top, as
80 shown in Figs. 2 and 3, the object being to cause the smoke and heat to pass from the grate in a sheet as wide as the vault, or practically so, thus spreading it out laterally the
85 full width of the partition, so as to heat and dry all parts of it as uniformly as possible.

The grate-body as a whole is made with its ends slightly inclining inward from the top
90 downward, the object being when it is set in position to leave a narrow space between its ends and the side walls for the entrance of air into the duct D', said spaces being indicated
95 by the letters J J in Fig. 3.

With the heater of the kind shown in my
90 patent, No. 387,263, it had necessarily to be set some little distance from the mouth of the duct D', and the heat arising therefrom had a tendency to rarefy the air in the gathering-room, thereby tending to reverse the
95 current, and hence it was necessary to set it within the vault proper, as there shown, and that rendered it impossible to utilize the full extent of the closet, making, as shown in said
100 patent, the number of seats at least one less. In order to overcome this difficulty, I provide the grate or heater in this instance with a hood I, constructed as shown in Fig. 2, to prevent the radiation of the heat into the air

room or inlet A. It consists of a frame provided with an inner wall *a* and an outer wall *a'* of sheet metal, these walls being separated by an open space several inches in depth or thickness, this space being closed at its ends, but open at front and rear, thereby forming a channel through which the air can pass freely, as indicated by the arrows in Fig. 2. As there shown, the outer wall *a'* of this hood is considerably shorter than the inner one at its lower end, thereby leaving an opening for the free entrance of the air, even when the blower or hood is entirely closed. This hood thus constructed is hinged to the top plate F, so it can be raised or lowered at will to regulate the draft, put on fuel, &c., as indicated in Fig. 2, and it is provided with means for adjusting and holding it at any desired position, as shown in Fig. 3, in which a notched bar *c* is shown pivoted to one end and arranged to engage with a pin *e*, set in the side wall. Its ordinary position, when the heater is in use, is with its lower edge raised about an inch from the floor to admit sufficient air to keep the fire burning. It will readily be seen that the current of air passing through this hood will absorb and carry along with it the heat radiated from its inner wall *a*, thus keeping its outer wall *a'* comparatively cool, and that by this means the radiation of heat from the heater backward into the air-room A is effectually prevented. Another advantage of this arrangement is that the heated air passing through the hood is delivered into the upper duct D, thus increasing the desiccating operation therein.

By the use of this heater and locating it at the mouth of the vault, as shown, I avoid the loss of the use of any portion of the closet, and what is far more important, all the heat is delivered directly into the vault, the main portion of it being delivered into the lower duct D', where it heats the partition or floor C, upon which the deposits rest, and which, with any fluid matter there may be, are therefore much more rapidly dried up. This heat in this way also secures a strong draft through the vault, and also prevents any tendency to a reversal of the current.

In Patent No. 387,263 I connected the duct D' with a smoke-flue distinct from the vent-shaft E; but in this case I dispense with the separate smoke-flue and permit the smoke, gases, &c., to pass out the vent-flue with the foul air from the building, and this also increases to some extent the draft of the flue and the ventilation of the rooms from which the air is drawn.

I am aware that a blower for a grate has

been made with double walls and with dampers arranged to conduct air direct to the fire or through the space into the chimney above the fire at will; also, that a furnace-door has been made with double walls to convey air to the fire, and that a grate or open stove has been made with a case at its sides, said case having holes for the ingress and egress of air to warm a room, and also that a privy-box has been patented showing a grate attached for drying and burning the contents of said box, and I do not claim either of these; but,

Having thus fully described my invention and the manner of using the same, what I claim is—

1. A vault-heater for dry closets, consisting of the oblong body H, grate G, and top plate F, with the elongated throat T at the top of the rear side and having the double-walled hood I at its front, substantially as and for the purpose set forth.

2. In combination with the vault of a dry closet having two air-ducts, one above the other, a vault-heater, substantially such as described, said heater being so located as to deliver the heat generated therein directly into the lower duct, substantially as shown and described.

3. The combination, in a dry closet, of a vault composed of two horizontal ducts, one over the other, a heater, substantially such as described, located in the mouth of the lower duct, and a hood interposed between said heater and the foul-air room or inlet, the combination and arrangement being substantially as herein shown and described.

4. In combination with the vault of a dry closet having two horizontal ducts, one over the other, a heater arranged to deliver its heat and smoke into the lower duct, and a double-walled hood located in front of said heater and arranged to convey a current of air from the foul-air room or inlet into the upper duct, substantially as and for the purpose set forth.

5. The combination of a vault for a dry closet, adapted to have a current of air passed through it from end to end; a heater located at the end at which the air enters said vault, and a hood or screen arranged in front of said heater or between it and the inflowing current of air, substantially as and for the purpose set forth.

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

ISAAC D. SMEAD.

Witnesses:

FREDERICK L. GEDDES,
A. C. KOEHLER.