

(No Model.)

4 Sheets—Sheet 1.

W. D'ALTON MANN.
CAR VENTILATOR.

No. 327,289.

Patented Sept. 29, 1885.

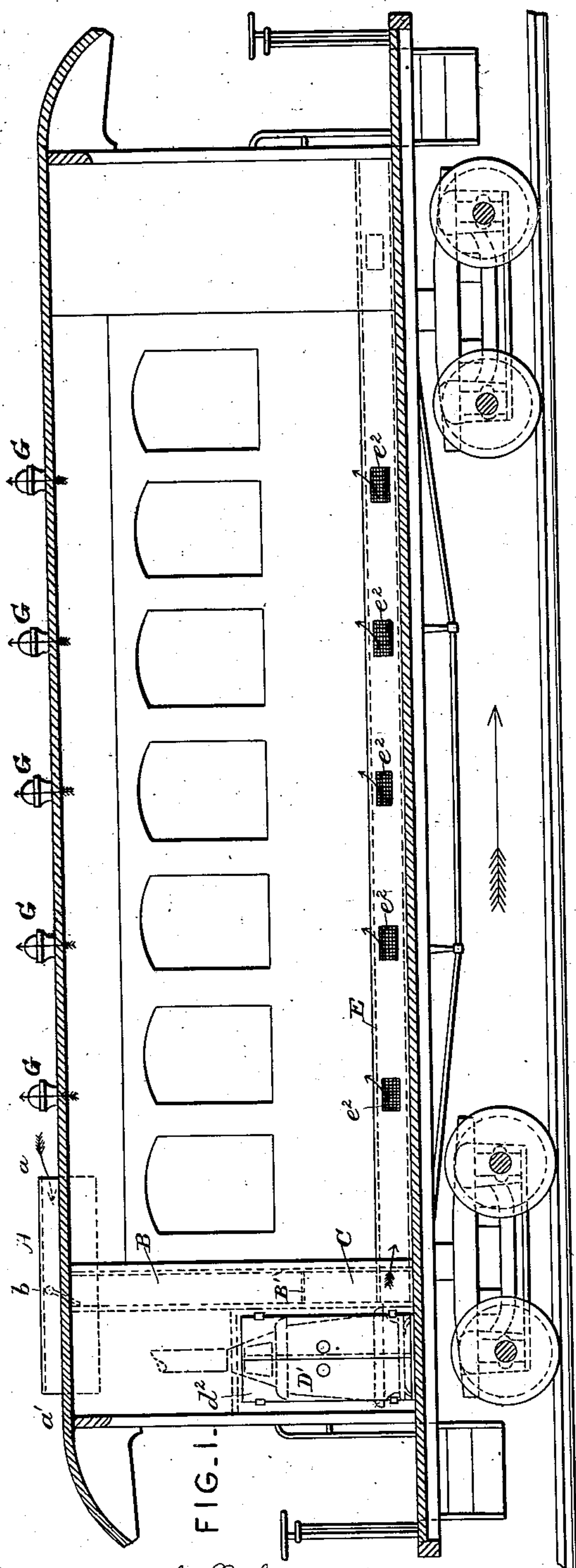


FIG. I.

ATTEST.

Geo. P. Smallwood,
Edmund Star.

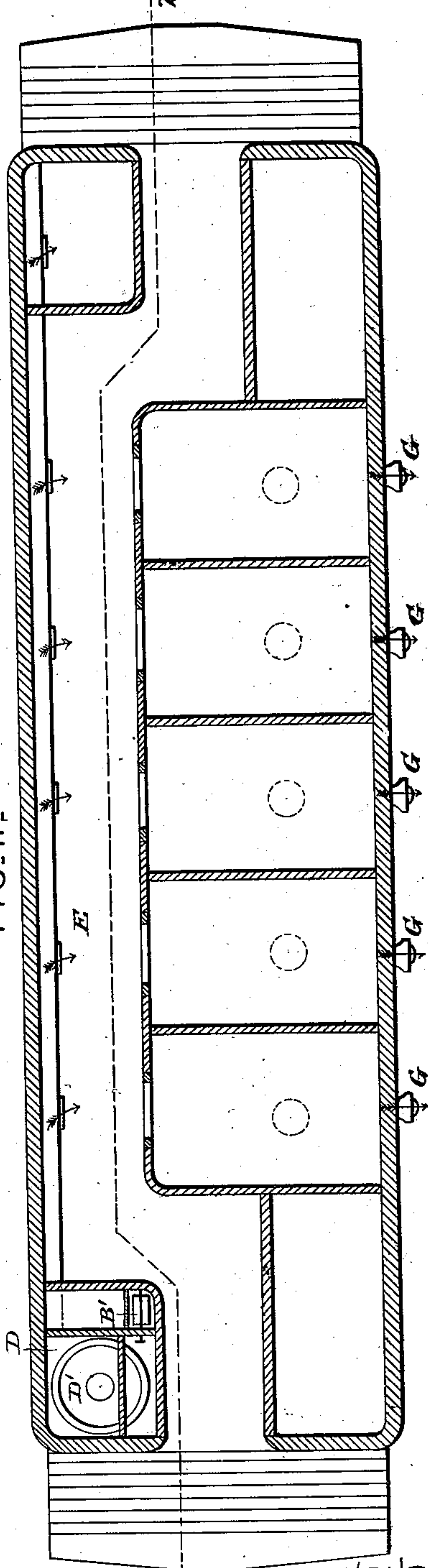


FIG. II.

INVENTOR.

William D. H. Mann.
By Knight Bros.
attys

(No Model.)

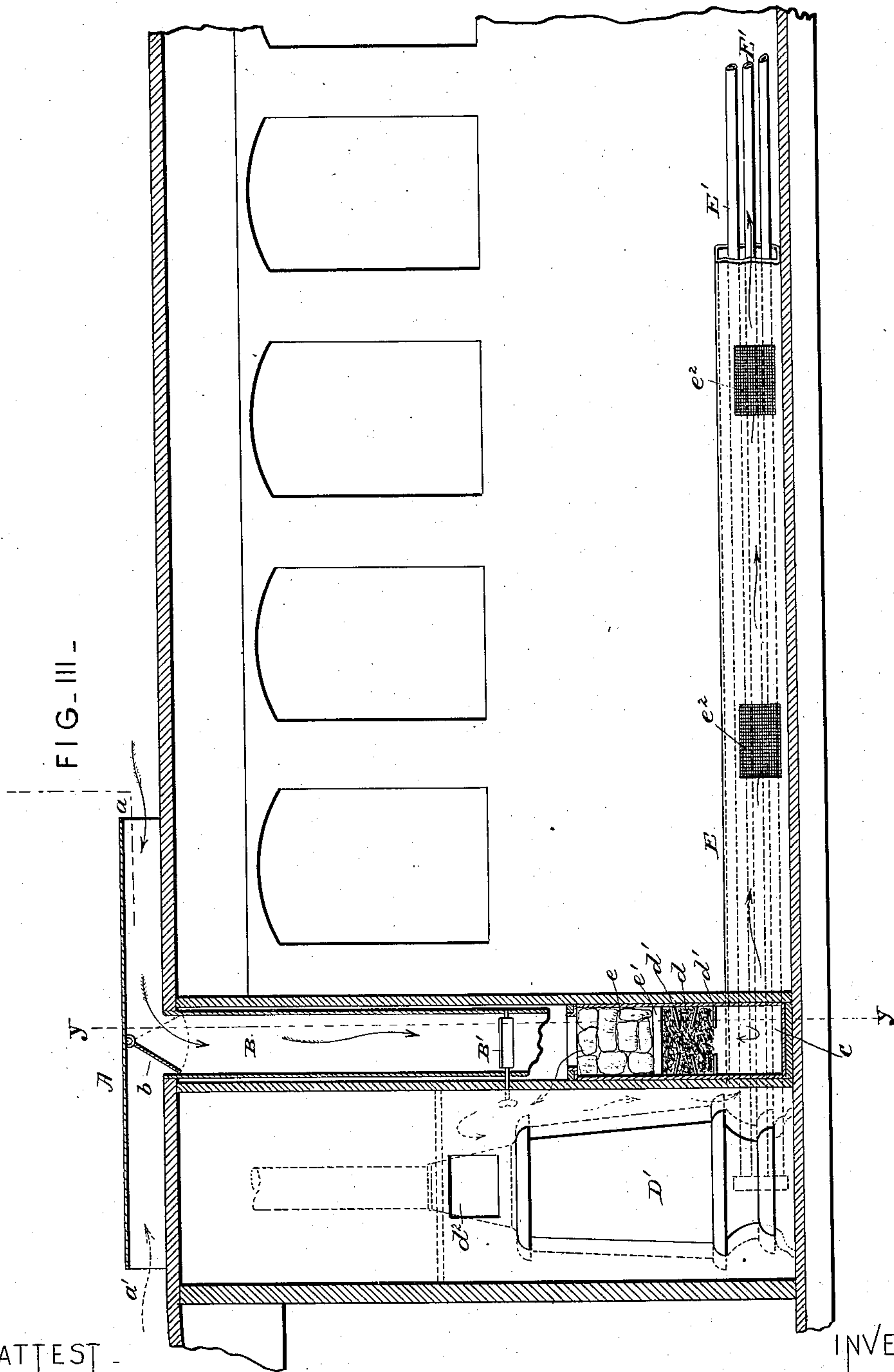
4 Sheets—Sheet 2.

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FIG. III—



ATTEST—

Geo. P. Smallwood,
Edward Stern

INVENTOR—

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(No Model.)

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FIG. IV.

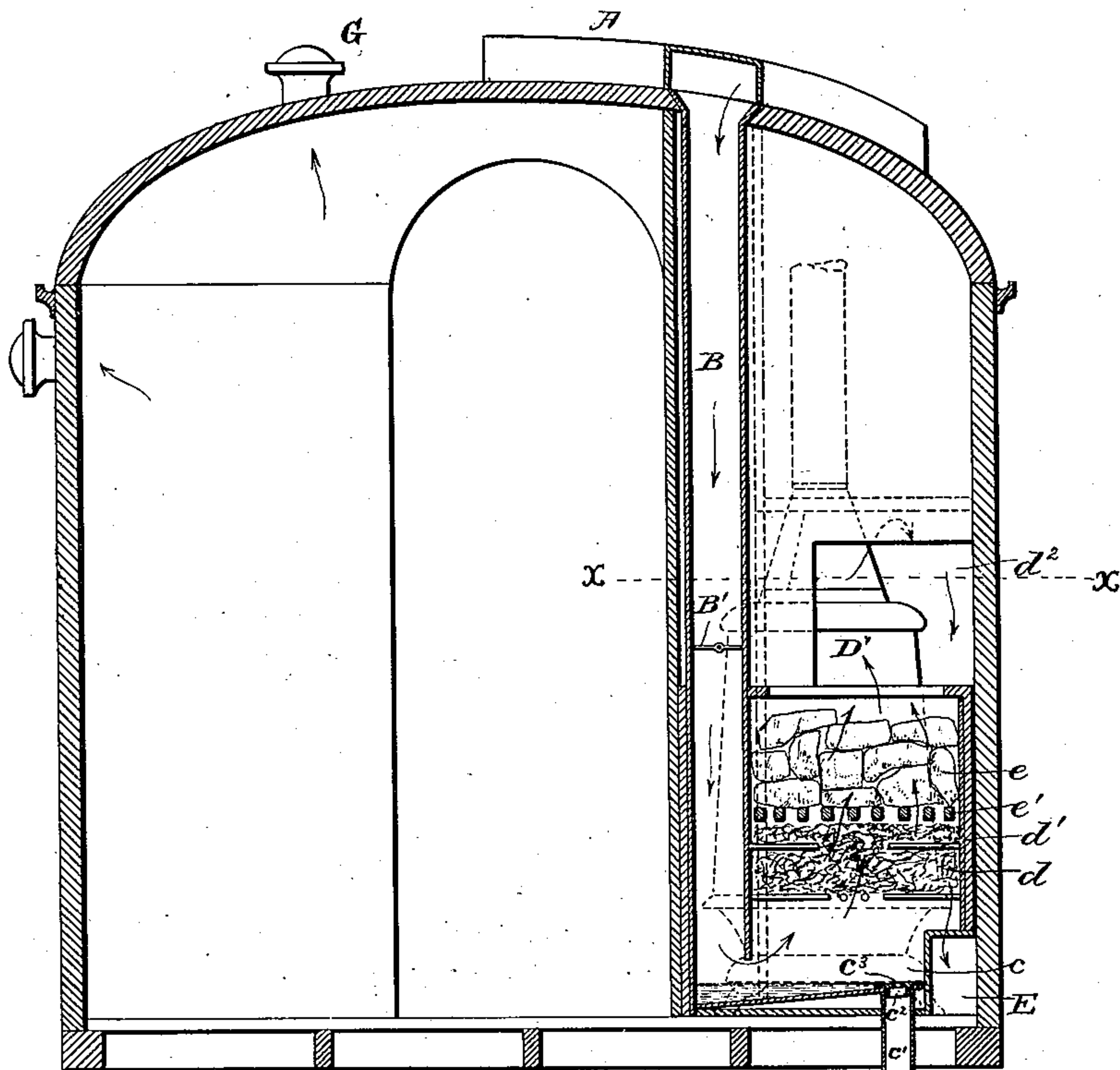
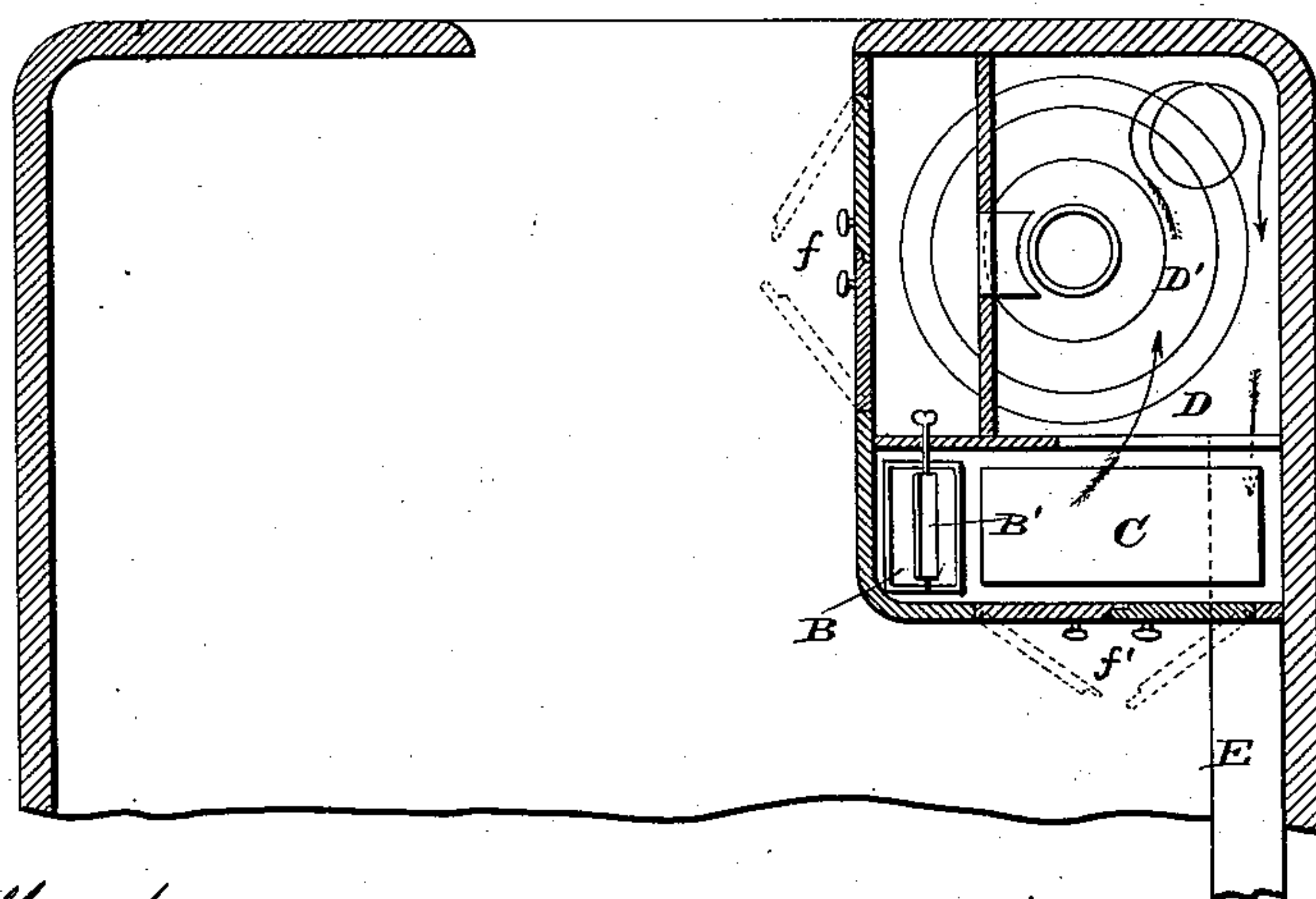


FIG. V.



ATTEST.
Geo. P. Smallwood.
Edward Stear

INVENTOR.
William D'Alton Mann.
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(No Model.)

4 Sheets—Sheet 4.

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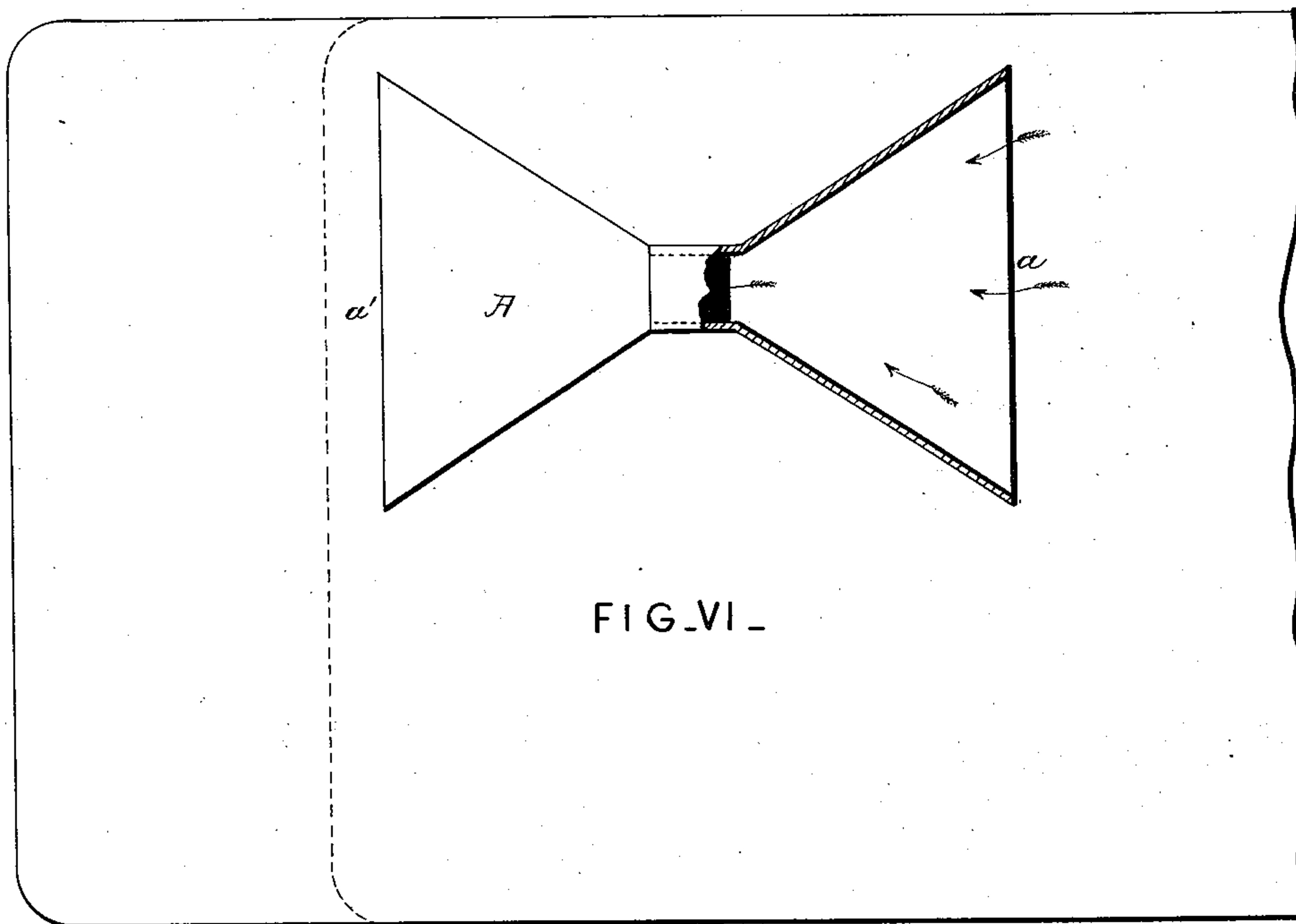


FIG. VI.

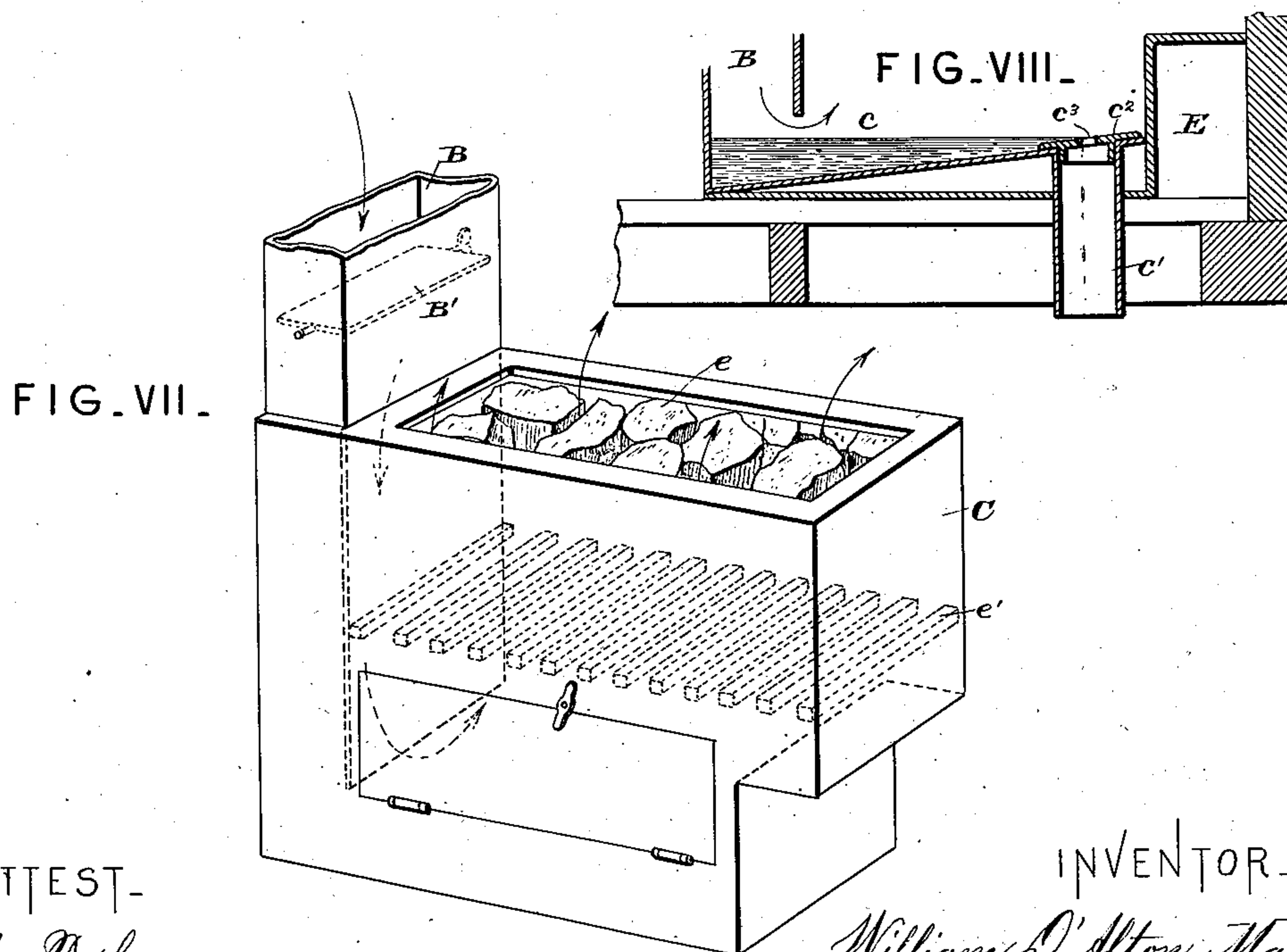


FIG. VII.

FIG. VIII.

ATTEST-
Geo. P. Smallwood,
Edward Stein

INVENTOR-
William D'Alton Mann.
By *Knight Bros.*
attys.

UNITED STATES PATENT OFFICE.

WILLIAM D. MANN, OF NEW YORK, N. Y., ASSIGNOR TO MANN'S BOUDOIR CAR COMPANY, OF SAME PLACE.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 327,289, dated September 29, 1885.

Application filed April 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D'ALTON MANN, of the city of New York, in the county and State of New York, have invented a certain new and useful Improved System and Apparatus for Ventilating Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object to provide a cheap, simple, and efficient system for ventilating railway-cars, which shall effect the following desirable results: First, a constant and even supply and exhaust of fresh air without danger of draft; second, a perfect supply of pure air, from which all dust and impurities have been removed; third, in warm weather an atmosphere both pure and agreeably cool; fourth, in cold weather a warm atmosphere of pure air.

The invention consists in certain novel devices, combinations, and arrangements hereinafter set forth in detail and specifically claimed. For full comprehension, however, of my improved system and apparatus, reference must be had to the accompanying drawings, in which similar letters of reference indicate like parts, and where—

Figure I is a longitudinal vertical sectional elevation of a car embodying my invention. Fig. II is a sectional plan of same, showing the line of section Z Z, on which Fig. I is taken. Fig. III is an enlarged longitudinal section of a part of a car, showing flues and refrigerating and heating chambers. Fig. IV is a transverse vertical section of same on line Y Y, Fig. III. Fig. V is a sectional plan taken on line X X, Fig. IV. Fig. VI is an enlarged plan of air-funnel on top of car. Fig. VII is a perspective view of refrigerator and part of air-conduit. Fig. VIII is an enlarged view of the dust-arresting tank and overflow.

In Figs. I, III, IV, and VI letter A represents a large double-mouthed flattened air-funnel located on the exterior of the car-roof, near one end, the two mouths *a a'* pointing in opposite directions toward each end of the car, and being by preference covered with wire-gauze to prevent the entrance of sparks and large cinders.

B is a pipe or air-conduit leading down from the cavity of this funnel to the interior of the car, a swinging door or damper, *b*, being hinged at the junction of the funnel with the conduit, and arranged so as to close connection of the latter with either mouth, as shown in Fig. III.

B' is a damper, which may be of any suitable construction, located in the pipe B, and adapted to regulate the strength of the draft of air passing therethrough.

Within the car, on or near the floor of same, and adjoining the lower end of the air-conduit B, I arrange a filter and cooling-chest, C, made up of what may be called "three divisions" or "chambers," *c d e*, that marked *c* containing water of desired depth, the one marked *d* above it containing a quantity of wood shavings, "excelsior," or like substance, which is loosely supported by pins *d'*, projecting inward from the sides of the chamber; (or this filtering medium may be a number of fine wires bunched together and "staggered" so as to leave interstices through which the air can pass,) and the division *e* containing lumps of ice supported on a grill or grate, *e'*, the whole interior of the chest C being lined with metal which will be corrugated or provided with projections, so that the ice will not pack too closely to the sides and prevent a free upward circulation of air.

The floor of the chamber *c* is inclined, and has opening into it from below, and at an elevated portion thereof, a waste-pipe, *c'*, which is covered by a flanged cap, *c''*, having a minute overflow-orifice, *c'''*. This cap *c''* is preferably formed of thin sheet metal, so that the heat of the furnace will prevent the water from freezing on the under side thereof, and thereby rendering it inoperative. The formation of ice on the outside of this orifice is also prevented, or rather, the prevention thereof aided, by the water-pipe *c'*, of larger area, into which it empties and by which it is effectually protected from cold drafts. It is found in practice that the accumulation of cinders in the tank *c* is so considerable as to render it necessary to remove them quite frequently. This is greatly facilitated by inclin-

ing the floor and providing the waste-pipe c' . It can be accomplished very quickly by simply removing the cap c^2 and pushing them up the incline toward the waste-pipe, whereby they are carried off.

D is a closet containing the heater D' , and located adjacent to the filtering-chest, and d^2 represents a large aperture in the division-wall between said chest and heater-room, located just above the ice-chamber e , through which aperture air can pass from the former to the latter. This closet D is lined with any metal or substance which will protect the adjacent walls from superheating.

E represents a flue or conduit extending from the closet D along the entire remaining length of the car. In the drawings I have shown this flue occupying the interior angle of the floor and side-wall; but I do not limit myself to this arrangement, as the flue may pass along under the floor, which will then have registers, or in any other convenient way, said flue being of sufficient size to contain the hot-water or steam pipes E' , when such are used for heating the car, and also to have ample space for the free movement of an air-current along and about said pipes E' , said flue E being also provided with a number of apertures, e^2 e^2 , of suitable size and form, and situated at suitable intervals throughout its length, pointing toward the interior of the car.

The refrigerating and heating chambers C and D are provided with suitable doors, f f' , as shown in Fig. V.

G G represent a number of outlets or exhausting-chambers, which are distributed at convenient points throughout the car for carrying off the air after it becomes vitiated.

Having thus described the construction and arrangement of the different parts of my invention, I will now set forth the manner in which it operates. Supposing the car to be traveling in the direction indicated by the large arrow in Fig. I, a large volume of air will be drawn into the funnel A through the forward mouth, a , and the force of this air causes the swinging door or damper b to close against the rear aperture, which will compel the current to find its way downward along the air-conduit B and into the filter-chest C at a point just above the surface of the water contained in the lower chamber, c , as seen in Fig. IV. The air being thus forcibly projected against the water, most of the coarser dust and cinders will be caught. Passing upward in the chest the air finds its way through the bunches or meshes of fiber, shavings, wire, &c., contained in the chamber d , which, being constantly wet by the drippings from the ice carried by the grate e above, will complete the process of filtering. If desired, part of the fiber may depend into the water below and be wet by capillary attraction. After being thus deprived of all impurities the air passes still upward around and about the lumps of ice contained in the chamber e (its passage being facilitated by the ribbed

sides or projections before mentioned) and becomes thoroughly cooled. The cool filtered air now passes through the aperture d' into the closet D, from whence, by the constant pressure from the funnel, it is compelled to find an outlet along the flue E, and passes into the body of the car through the apertures e^2 e^2 . When the air thus supplied to the car becomes vitiated, it passes out through the outlets G G, (which will be constructed of any pattern which will produce the proper suction,) and in this manner a constant circulation is kept up.

The above description applies to the operation of my invention in a car traveling in warm weather.

In cold weather I omit the ice from the filtering-chest, (or use but a little for the purpose of keeping the filtering medium wet as it melts and drops down,) and a fire being kept up in the heater D' , the air brought in through the conduit in the manner described becomes heated in the closet D and during its passage around the heater-pipes contained in the flue E, and in this manner is brought to the required temperature before entering the car through the apertures e^2 .

When the car travels in the opposite direction to that shown by the arrow in Fig. I, the operation of my system is precisely the same, the damper b assuming, however, the position shown in dotted lines in Fig. III.

I am aware that railway-cars have been provided with dust-arresting tanks having flat bottoms and elevated overflow-orifices for carrying off the superfluous water; but such a device is not the equivalent of my invention.

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

1. In combination with the fresh-air conduit B, the filter d , and the ice chest e , having an open bottom and located above said filter, whereby the filtering material is kept saturated with water, as explained.

2. In combination with the vertical fresh-air conduit B, through which the air descends, the dust-arresting tank c , placed at the bottom of said conduit, whereby the air is forcibly projected against the surface of the water, the filter d , located above said tank, and the ice-chest e , located above said filter, all adapted to operate substantially as set forth.

3. The combination of the fresh-air conduit B, the filter d , an ice-chest, e , located above said filter, and the closet D.

4. In combination with a fresh-air conduit, a dust-arresting tank into which said conduit discharges, having an inclined bottom, and a waste-pipe leading from an elevated portion of said bottom, as and for the purpose set forth.

5. The combination, with a fresh-air conduit, of a dust-arresting tank having an elevated overflow-orifice of small area and a waste-pipe of larger area with which said overflow-orifice communicates, as and for the purpose set forth.

6. In combination with a fresh-air conduit,

5 a dust-arresting tank having an elevated discharge-opening of large area, a thin cap covering said opening, and a minute orifice in said cap for permitting the excess of water to escape, substantially as set forth.

10 7. In a railway-car, a fresh-air conduit, a dust-arrester, a closet, and a flue running from the closet through the car, and provided with registers, as described, in combination with a heater located within said closet, and heating-pipes located within said flue, all constructed and arranged as and for the purposes set forth.

8. The combination, with a fresh-air conduit

and a vertical air-passage, of a filter and a superposed ice-chest located in said air-passage and having open bottoms, substantially as set forth.

9. In combination with a fresh-air conduit, a dust-arresting tank, a filter located above said tank, and ice-chest located above said filter, said ice-chest and filter having open bottoms, as and for the purpose set forth.

W. D. MANN.

Witnesses:

W. L. DANIELS,
E. D. MANN.