

(No Model.)

C. E. LUCAS.  
VENTILATING CARS.

No. 338,850.

Patented Mar. 30, 1886.

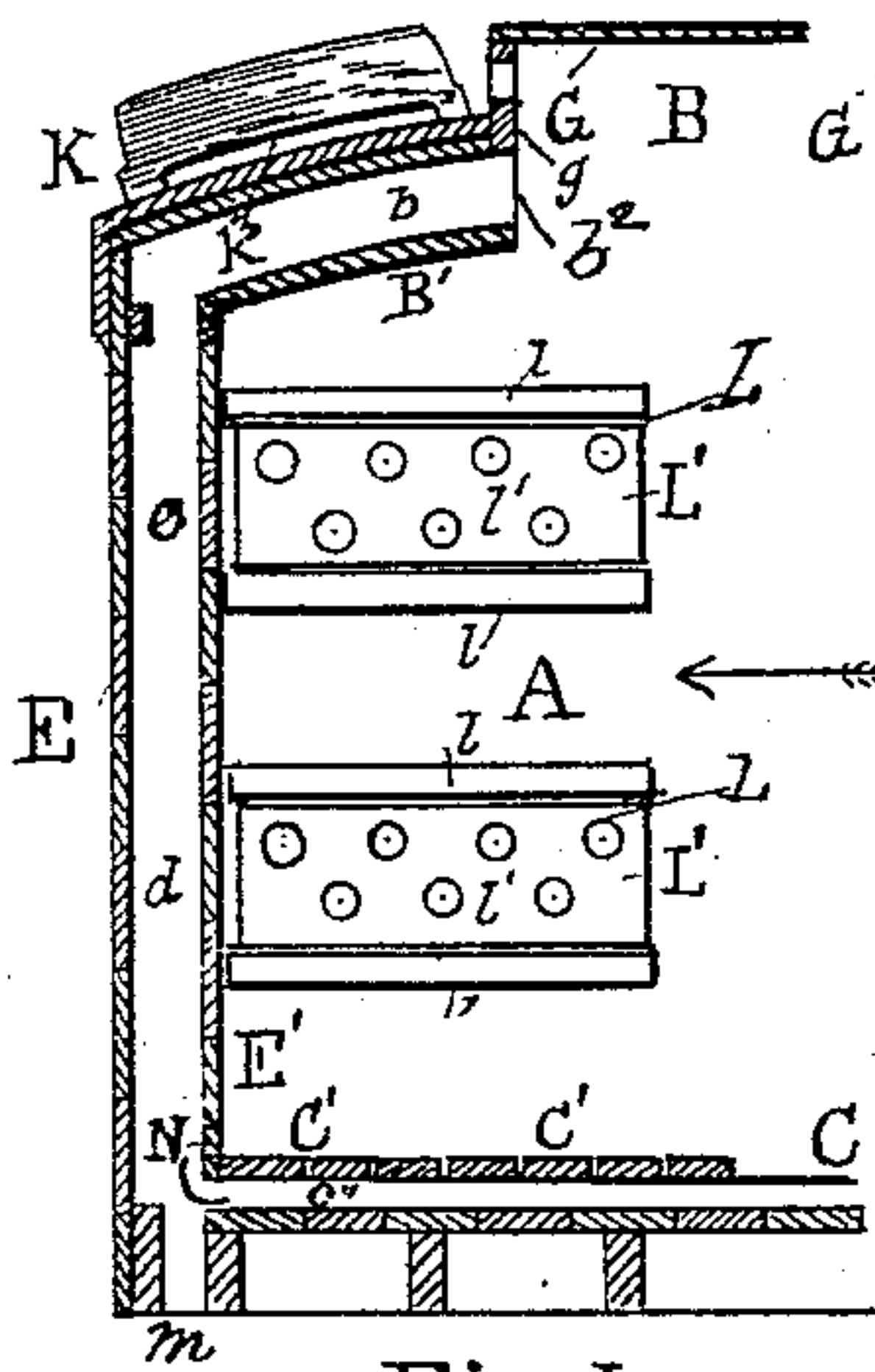


Fig. I.

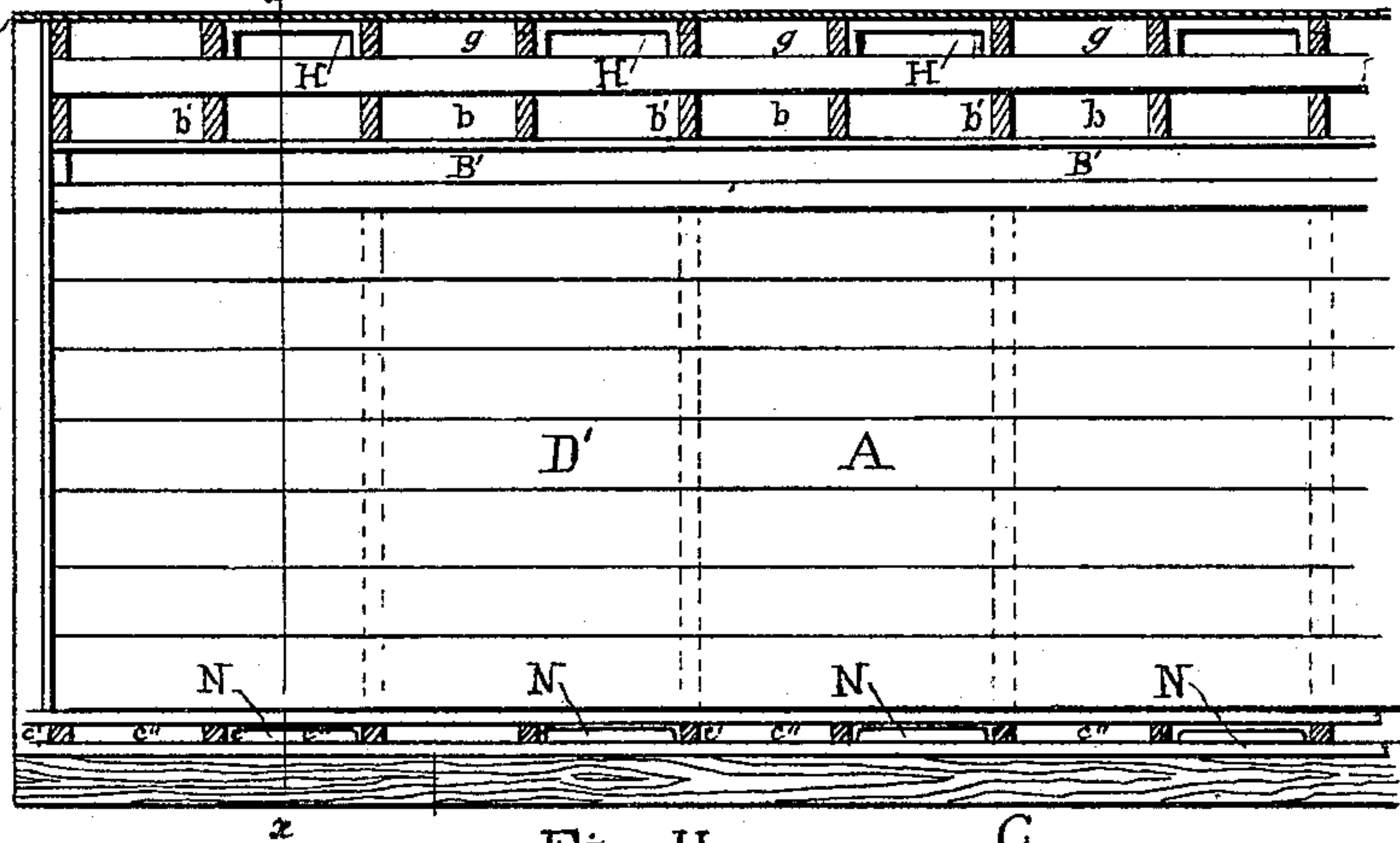


Fig. II.

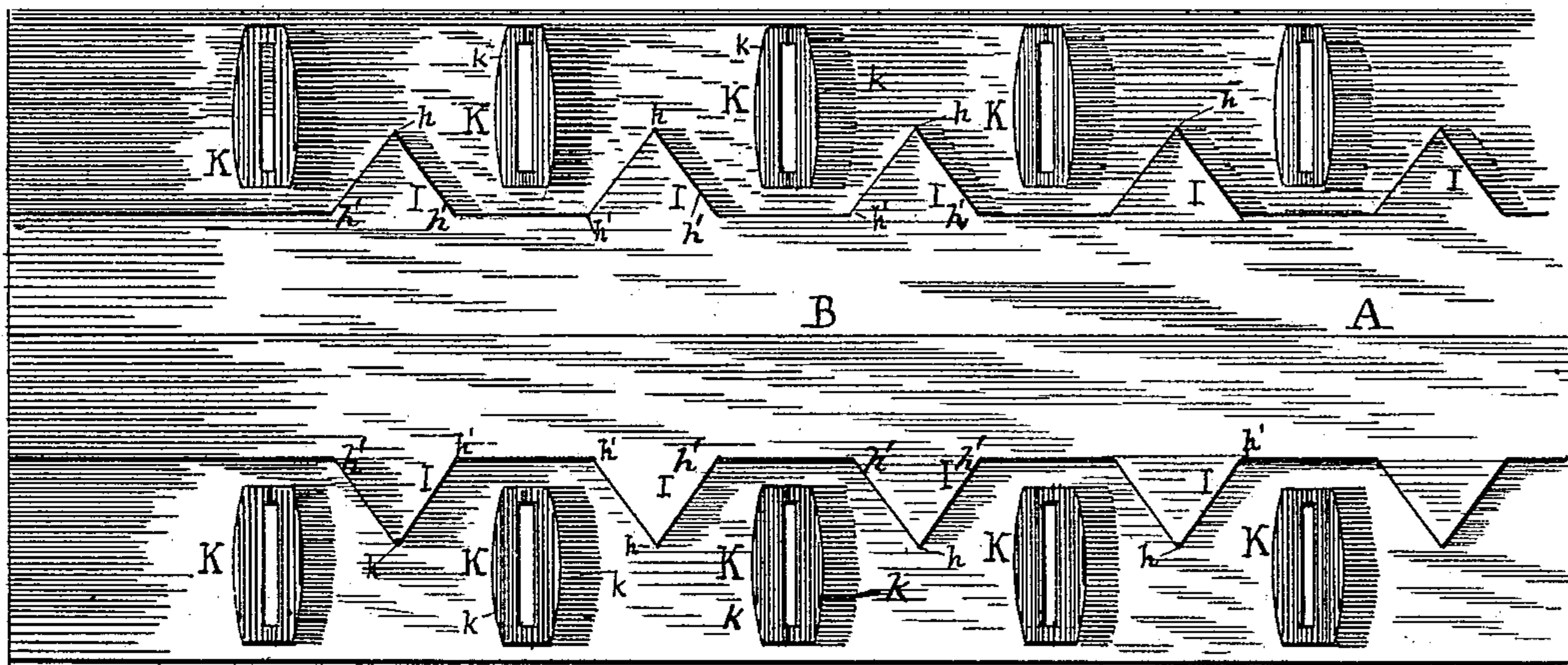


Fig. III.

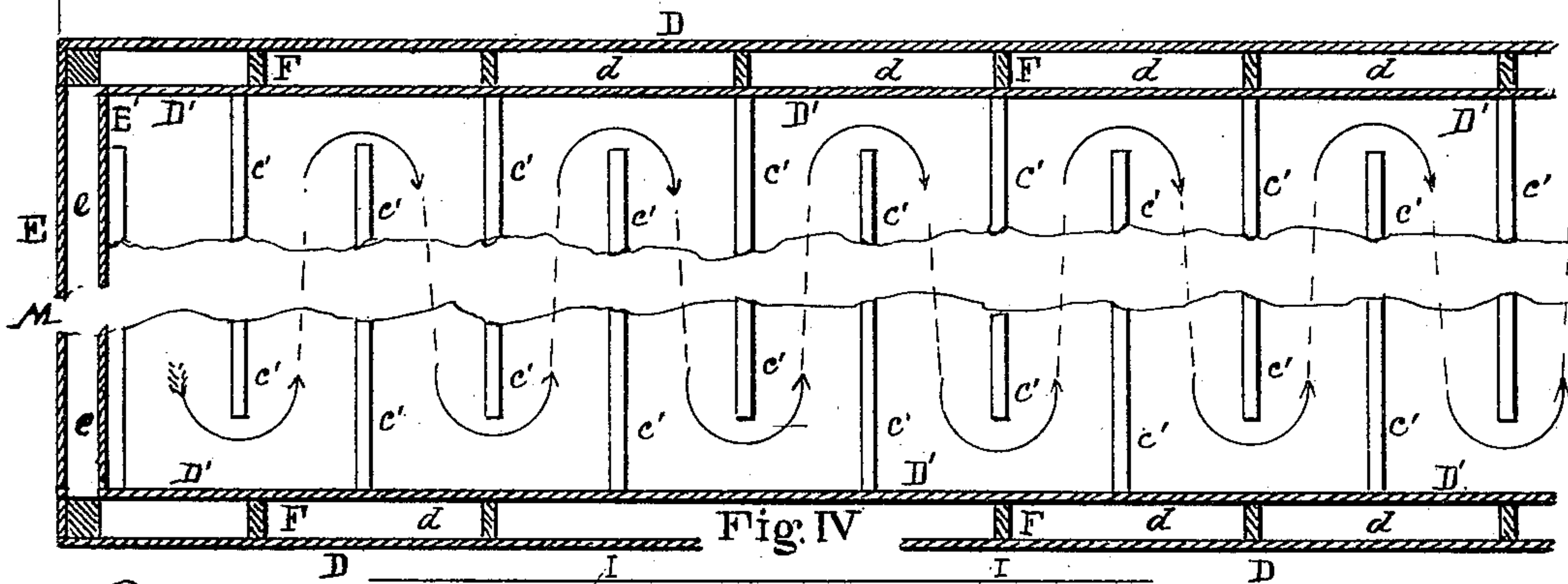


Fig. IV.

Witnesses

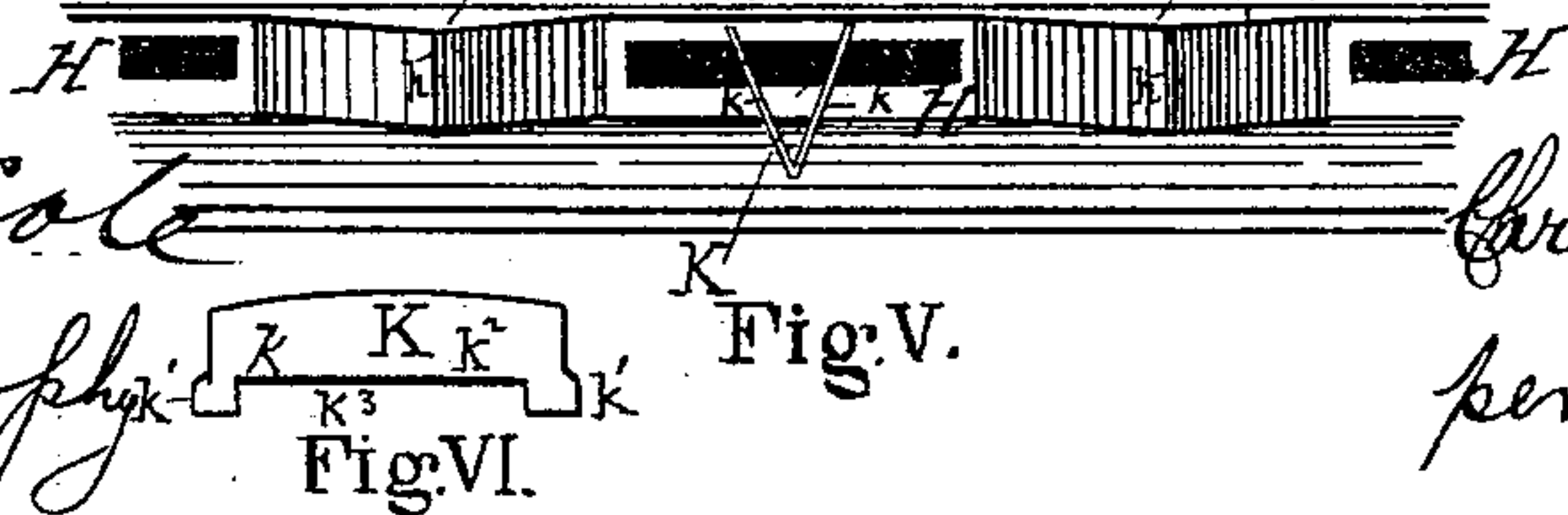


Fig. VI.

Inventor

Christian E. Lucas  
per M. Singleton.  
att'y



# UNITED STATES PATENT OFFICE.

CHRISTIAN E. LUCAS, OF ATLANTA, GEORGIA.

## VENTILATING CARS.

SPECIFICATION forming part of Letters Patent No. 338,850, dated March 30, 1886.

Application filed December 29, 1885. Serial No. 186,980. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN E. LUCAS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Ventilating Cars; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-  
10 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon which form a part of this specification.

Figure I is a transverse section, line *x x*,  
15 Fig. II. Fig. II is a longitudinal section, looking in the direction of the arrow, Fig. I. Fig. III is a top view of the car-roof. Fig. IV is a bottom view of the car, looking down on the floor, with the floor-boards removed.  
20 Fig. V is a detail side view, looking at the side of the roof. Fig. VI is a side view of one of the current-inducing plates.

This invention relates to improvements in railway-cars designed for the transportation  
25 of fruits, vegetables, and other substances liable to be injured by confinement in a close car.

The object is the production of a car where-  
30 in there shall be a thorough ventilation, close air being forced out and a constant supply of fresh air introduced in and around the car.

The invention consists in the construction hereinafter set forth and claimed.

In the annexed drawings, the letter A indi-  
35 cates a car constructed according to my invention. This car is a complete doublestruc-  
ture, with a continuous and unobstructed air-space all around between the inner and outer shells.

The car A has the usual top, B, bottom C,  
40 sides D, and ends E, constructed in the ordinary manner, and put together in the ordinary way, only modified, as hereinafter stated, to adapt the car to the present invention.

Studding F are placed against the outer  
45 sides, D, and secured to such studding are the inner walls, D', forming an air-space, *d*, between. The ends are constructed in the same way, having inner walls, E', and air-space *e*. The roof on each side of the middle or run-  
50 ning boards has the linings B' B' secured to the rafters *b'*, and forming the air-spaces *b*,

opening into the interior of the car at *b*<sup>2</sup>. Transverse the bottom C are secured, on top, cleats *c'*, spaced, as shown, each cleat starting from one side and stopping short of the other  
55 side, the alternate ones starting from the same side. On these are placed boards, forming a supplemental flooring, C', with air-space *c''* between the two floors. In the side supports, *g*, of the running-boards G are made at inter-  
60 vals openings H, leading into the interior of the car at the top. Between the openings, on each side, are made wedge-shaped projections I, having their points *h* away from the open-  
65 ings, so that the facing sides *h' h'* of two pro- jections converge toward the openings H. Secured to the roof on each side of the run-  
ning-boards G are pairs of plates, K, one pair being opposite each opening H. The pair K  
70 of plates consists of two plates, *k k*, placed about on a line with the middle of an open-  
ing, H, and at right angles thereto. These plates *k* are made as shown in Fig. VI, having  
75 the ends *k' k'* extending below the body *k*<sup>2</sup>. These plates are fastened to the roof by their  
ends *k' k'*, there being a space, *k*<sup>3</sup>, between such plates and the roof, and the two plates  
of each pair diverge upwardly, as shown in Fig. V.

In the lining or inner walls, E', of the ends  
80 are made suitable openings, L, which are closed by shutters L', working in guides *l*, such shut-  
ters having openings *l'* to register with those in the wall E.

An opening, M, may be made in the end of  
85 the car, to facilitate draft.

Between the floorings C C' the inner sides, D', have openings N in them leading from the interior of the car into the air-space *c*. These openings may be closed by any suitable slide  
90 or board.

All around the bottom of the car the outer and inner shells are not connected, so that there is a free connection between the air-space around the car with the air outside, as  
95 shown at *m*, Fig. I.

As the car thus constructed is loaded and in motion, striking against the atmosphere, the air at the top above the car meeting the front  
100 plate, *k*, of each pair K is, by the flare of said plate, caused to dip downward, and passes under both plates *k* at the spaces *k*<sup>3</sup>. This



induces a steady current on each side of the running-boards along the top of the car and past the points  $h$  of the projections I. These currents, by the power of cohesion, exert a pull on the air which lies between each pair K of plates and the next succeeding projection I in the direction of the flow of the current. This pull tends to draw the air from this space and to create a vacuum there. This tendency is prevented by the air in the car rushing out from the openings H, a continual supply coming in from below, as will be described. As this pull takes place, the air from beneath the car forces itself up the openings  $m$  into the air-spaces around the car, and through the openings N into the interior of the car at the bottom and at the top at  $b^2$ . If desired, the openings L may be uncovered. By this means a complete current is induced through the car and its contents, keeping the latter cool and carrying off any heat which may be therein, and effectually preventing decay. At the same time there is a free current passing along the bottom between the two floorings among the cleats, as shown in Fig. IV.

If desired, the inner flooring,  $C'$ , may be removable, so that the car can be used for any kinds of freight.

Having described my invention, what I claim is—

1. A car having double top, bottom, sides,

and ends, the spaces between them being connected all around the car, forming a complete and connected air-chamber around the entire car, as set forth.

2. The car A, having the openings H at its top and the wedge-shaped projections I between such openings, in combination with the plates K, placed between such projections.

3. The car A, having the openings H at the top and the wedge-shaped projections I between such openings, in combination with the plates K, arranged in pairs at each opening I, as set forth.

4. The car A, having the openings H at the top and the wedge-shaped projections I between such openings, in combination with the plates K, arranged in pairs at each opening H, such plates diverging from each other upwardly, and having a space,  $k^3$ , beneath them, as set forth.

5. A car provided at the top with the openings H, in combination with the plates K, located at such openings, such plates consisting of the bodies  $k^2$  and ends  $k'$ , forming a space,  $k^3$ .

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN E. LUCAS.

Witnesses:

R. HUESTON,  
MACON D. SHARP.