

**GEORGE A. HINES.**  
**Improvement in Railroad Car Ventilators.**  
 No. 119,982.                      Patented Oct. 17, 1871.

Fig. 1

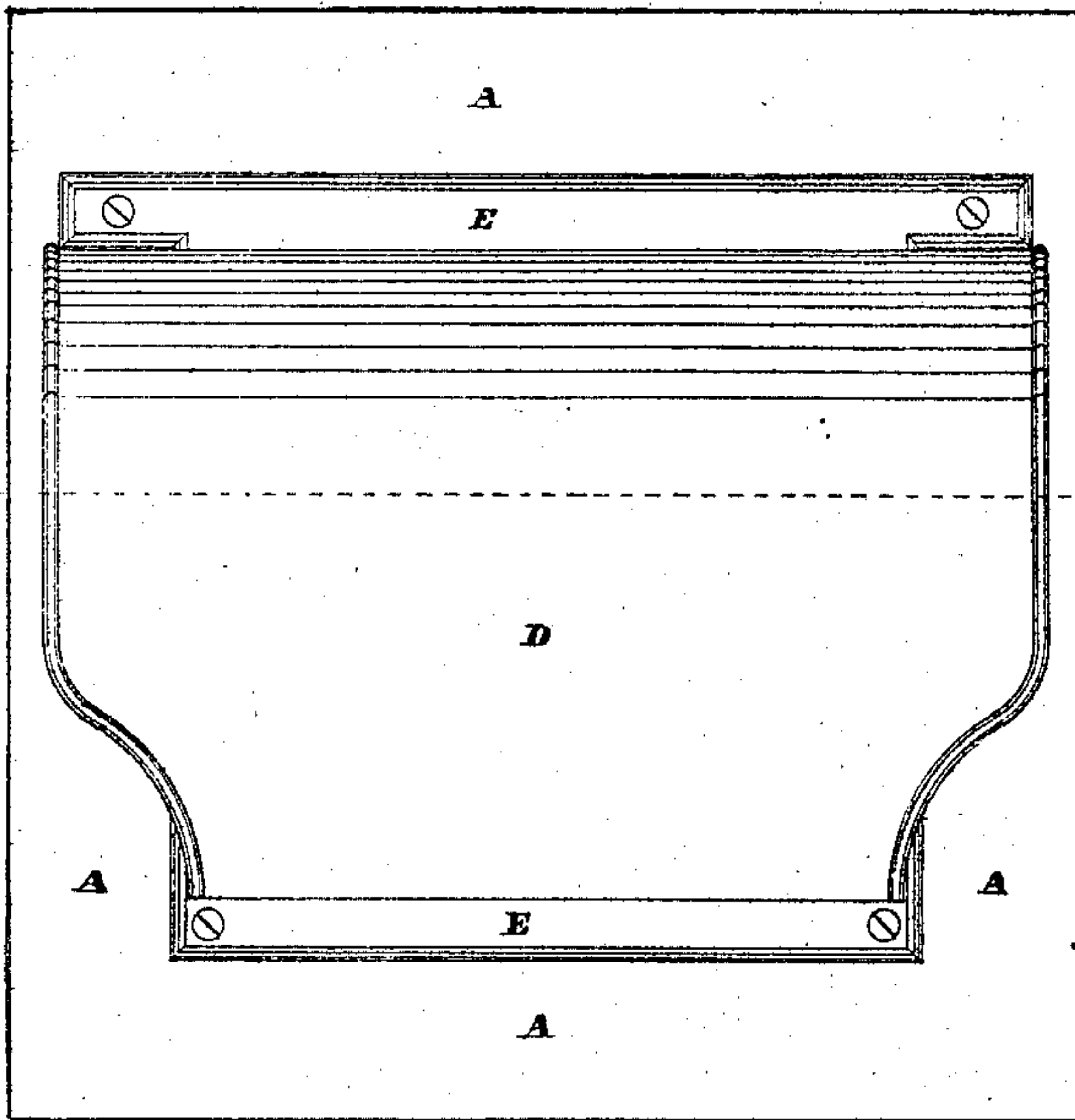


Fig. 2

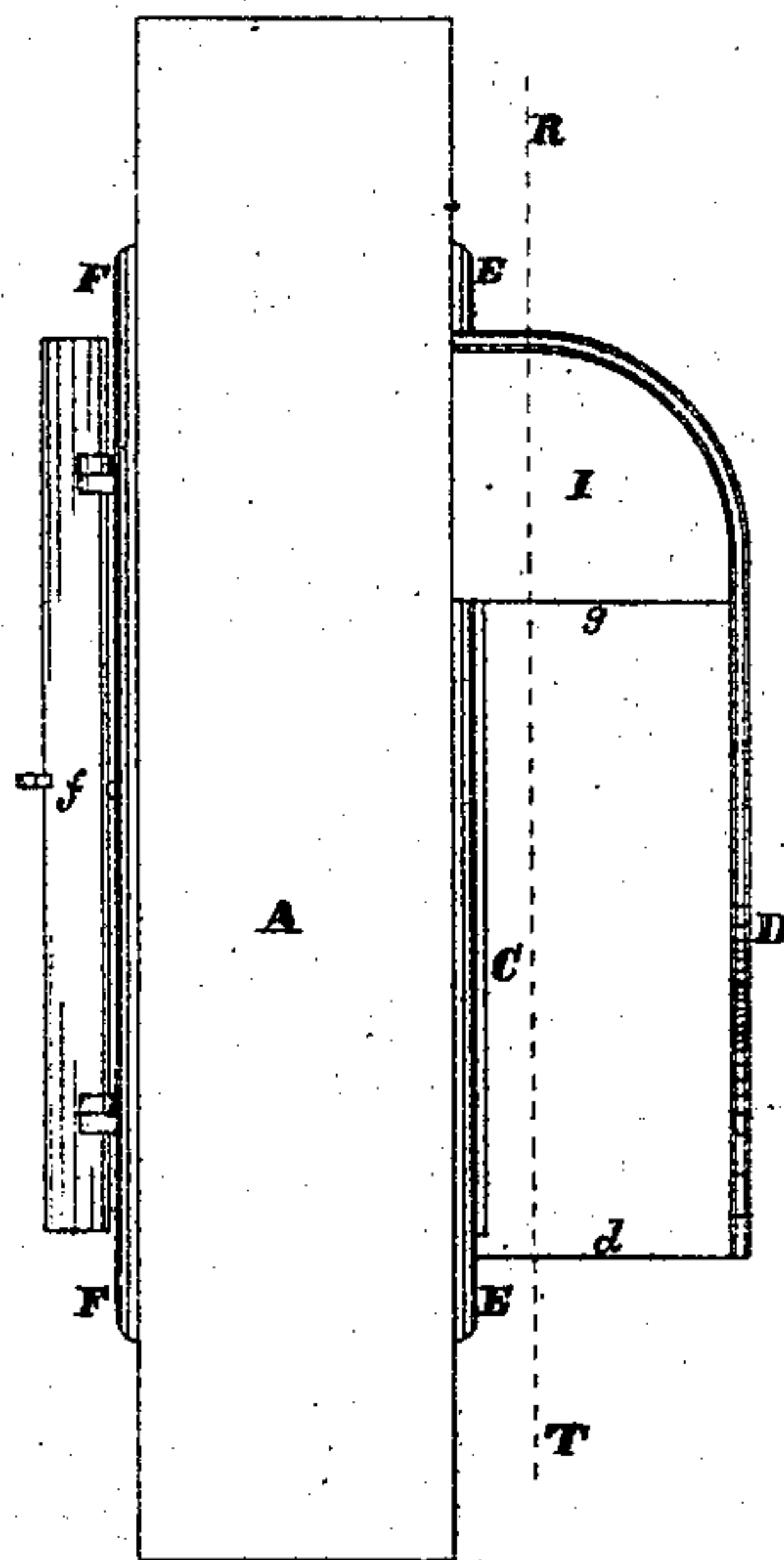
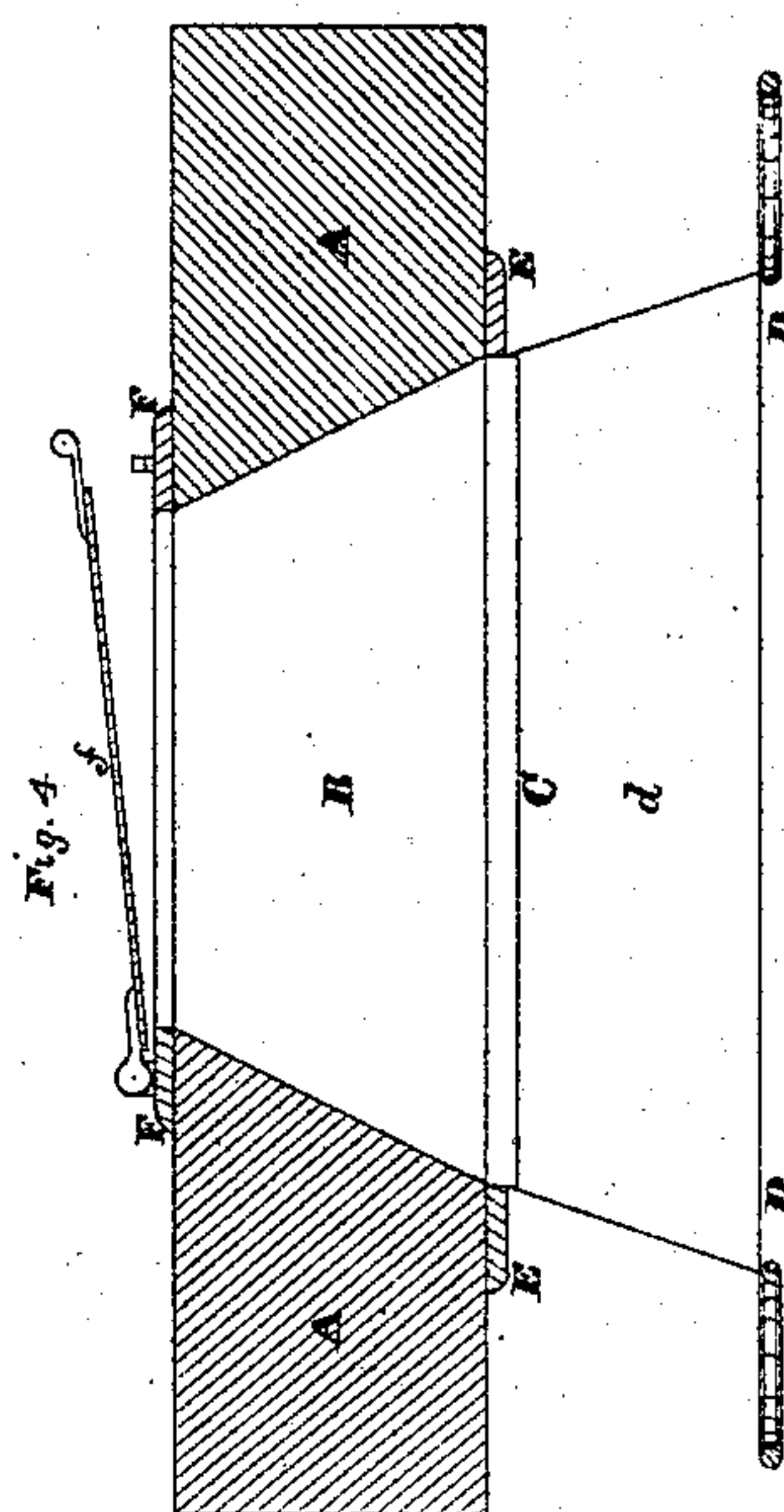
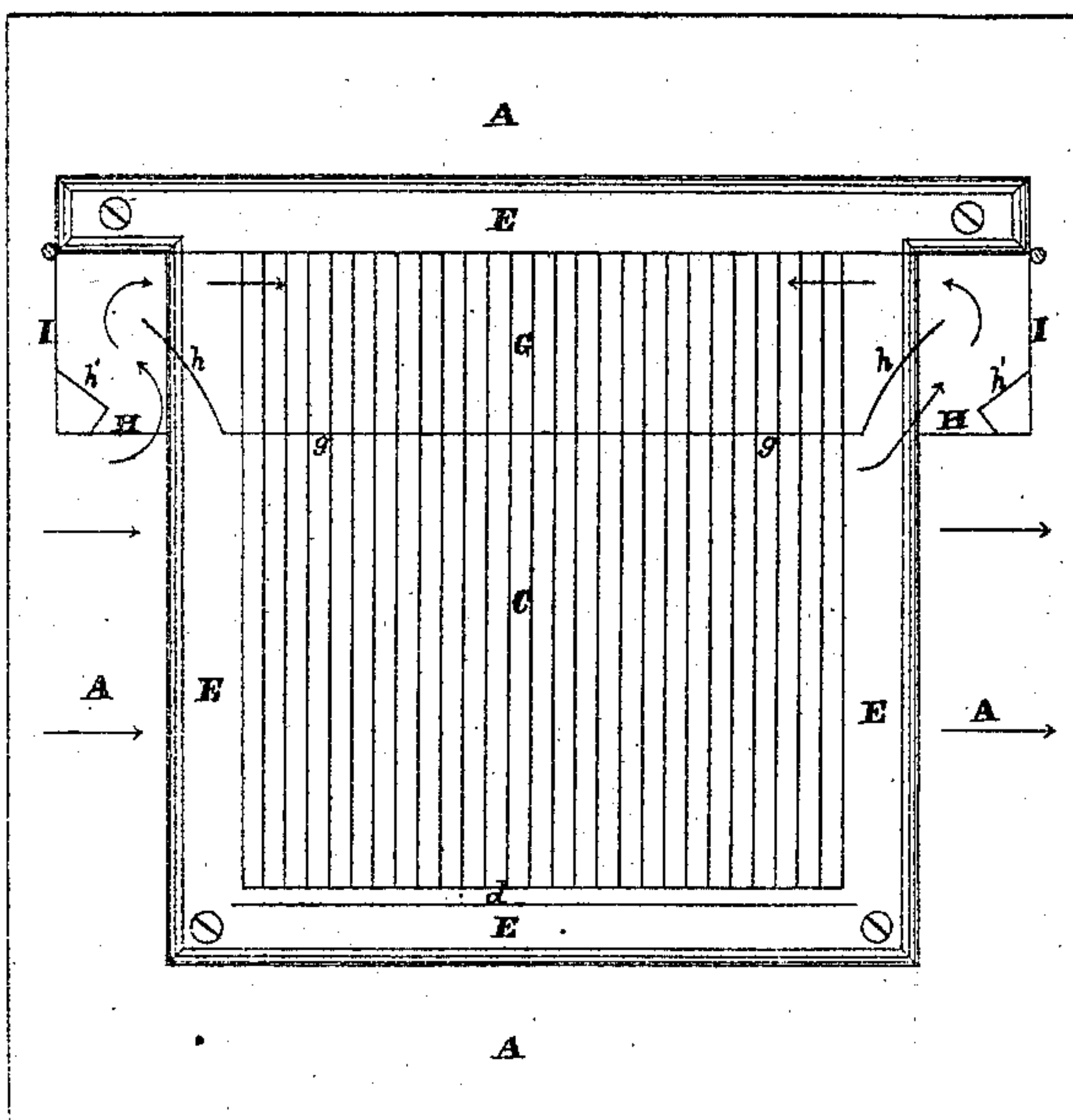


Fig. 3



Witness:

George P. Cook  
 William S. Newton.

George A. Hines

# UNITED STATES PATENT OFFICE.

GEORGE A. HINES, OF BRATTLEBOROUGH, VERMONT, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN F. VINTON, OF SAME PLACE.

## IMPROVEMENT IN RAILROAD-CAR VENTILATORS.

Specification forming part of Letters Patent No. 119,982, dated October 17, 1871.

*To all whom it may concern:*

Be it known that I, GEORGE A. HINES, of Brattleborough, in the county of Windham and State of Vermont, have invented a new and Improved Method of Ventilation, of which the following is a specification:

My invention relates to the creating of a draught or current for the purpose of removing vitiated air from any transient or permanent habitation, and in the following description I have taken its application to a railroad car for its illustration.

Figure 1 is a side elevation embodying my invention. Fig. 2 is a end elevation of the same. Fig. 3 is a vertical transverse section, showing those parts which are to the left of the line R T, Fig. 2. Fig. 4 is a horizontal transverse section, showing the parts which lie under the line L M, Fig. 1.

A A A A is the wood-work of the deck of a car. B, Fig. 4, is the cell or opening through A A. C, Figs. 2, 3, and 4, is the ventilating-plate having minute apertures cut through it vertically. D, Figs. 1, 2, and 4, is the shield for protecting the plate C from the weather. E E E E is the clamping plate or frame, which is secured on the outside of the wood-work A A, &c., and holds firmly to it the cell B, the ventilating-plate C, and the shield D by means of lips turned out on their edges and coming under said plate. F F, Figs. 2 and 4, is the covering or finish plate or frame, around the inner edge of the cell B. It is screwed onto the inside of the wood-work A A, and to it is hung the door *f*. G, Figs. 3, is the ingress reservoir. *g*, Figs. 2 and 3, is the line of the bottom surface of G. H H, Fig. 3, are ingress apertures. *h h*, Fig. 3, are concave deflecting surfaces. *h' h'*, Fig. 3, are inclined deflecting surfaces. I I, Figs. 2 and 3, are the ends of the reservoir G. The ventilating-plate C is turned down at its sides sufficient to bring

its surface out beyond the clamping-frame E, as seen in Fig. 2. The bottom of the shield D is made a little lower than the bottom edge of the plate C, as seen at *d*, Fig. 2, in order to conduct away any water which may come in under the shield.

The operation is as follows: The current of air across the surface of the ventilating plate C, caused by the rapid motion of the car, creates a draught from the inside of the car out and carries with it the vitiated air; the air also passes up the ingress apertures H H and over the concave plates or surfaces *h h* into the reservoir G, as shown by the direction of the arrows, Fig. 3, from whence it passes through the apertures of the upper portion of the plate C into the inside of the car to restore the loss. The cinders and dust are turned from the reservoir G by the deflecting surfaces *h h* and *h' h'*, and the surfaces I I. The constant draught out and the smallness of the apertures prevent dust and cinders from entering the ventilating-plate C.

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

1. The ventilating-plate C combined with hood D, and so divided longitudinally as to afford an induction and eduction-draught, substantially as shown.

2. The induction-ports H, in combination with hood D and chamber G or their equivalents, substantially as shown.

3. The deflecting surfaces *h*, *h'*, and I, or their equivalents, in the combination shown and described.

4. The combination, with the foregoing ventilating apparatus, of the door *f* or its equivalent.

GEORGE A. HINES.

Witnesses:

GEORGE P. COOK,  
WILLIAM S. NEWTON.

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