

H. KING.

VENTILATING RAILWAY CARS.

No. 187,390.

Patented Feb. 13, 1877.

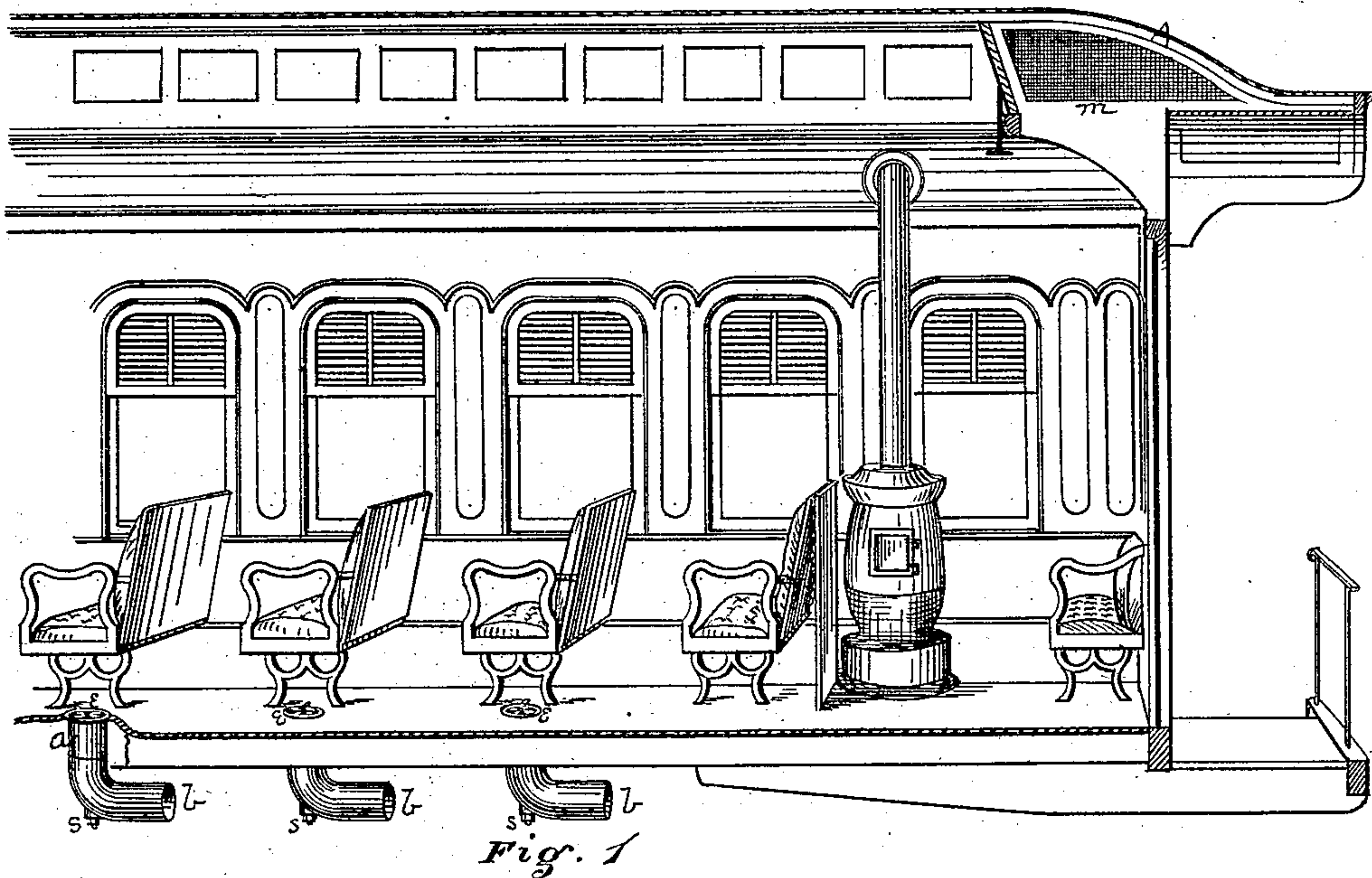


Fig. 1

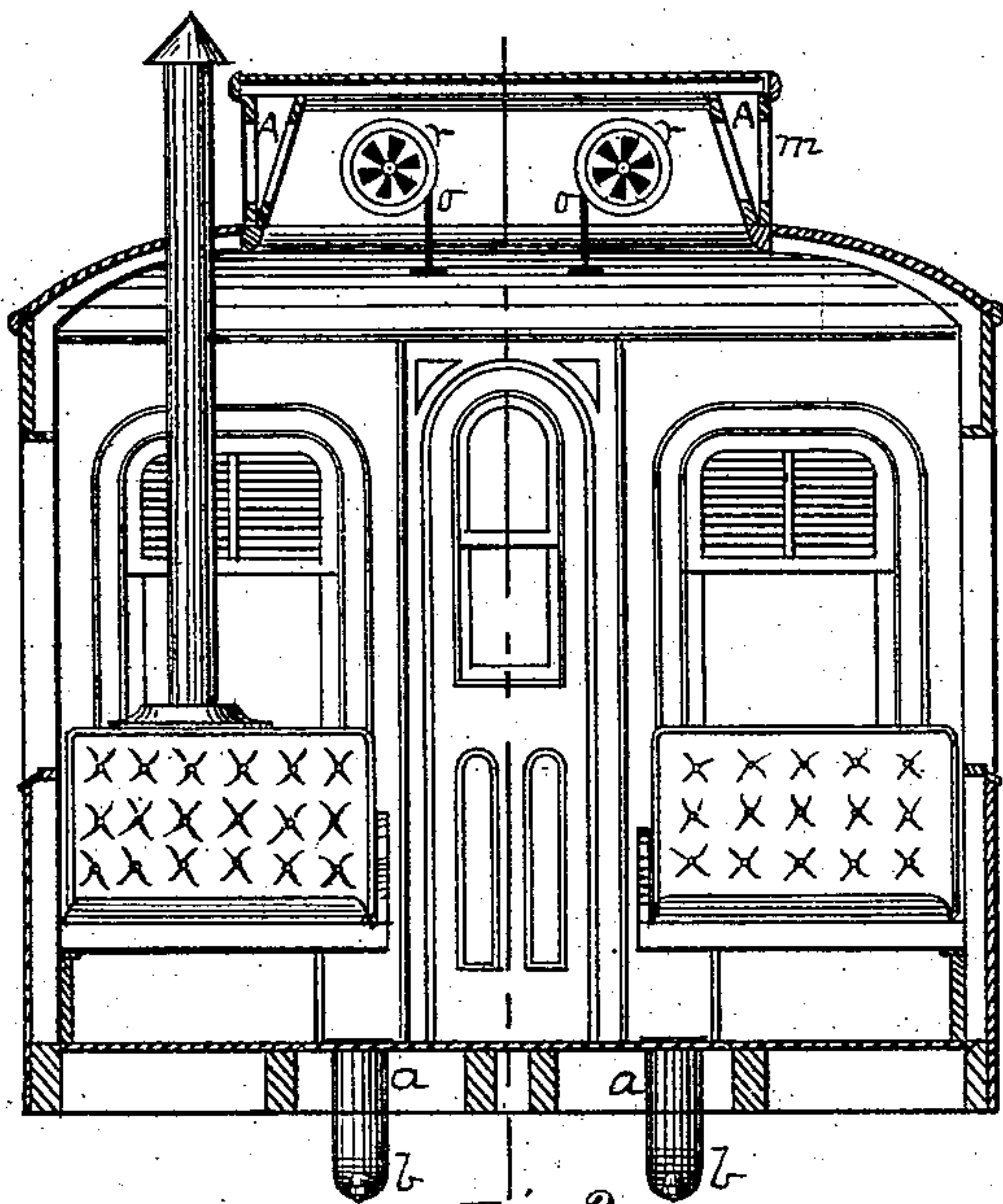


Fig. 2.

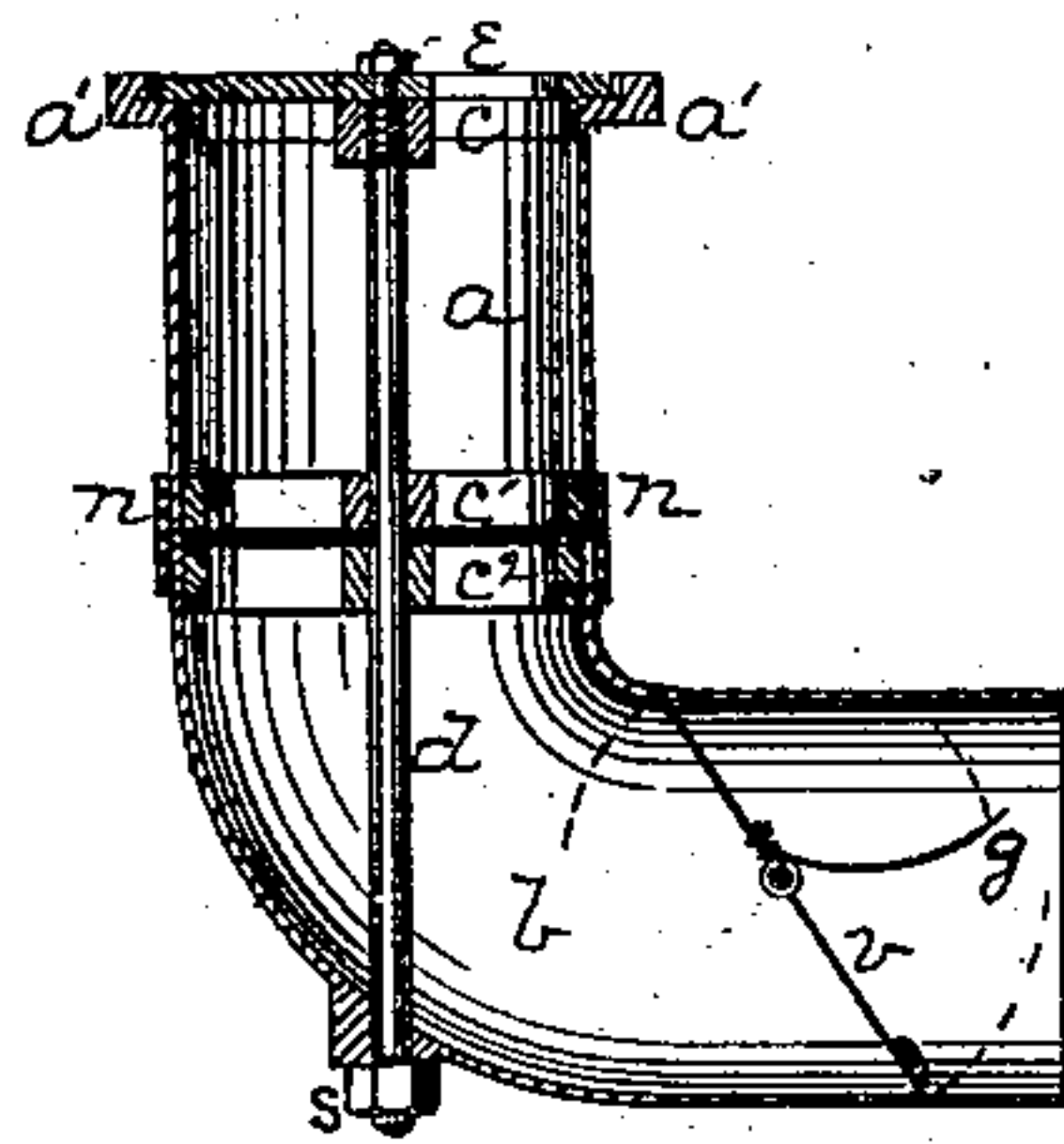


Fig. 3.

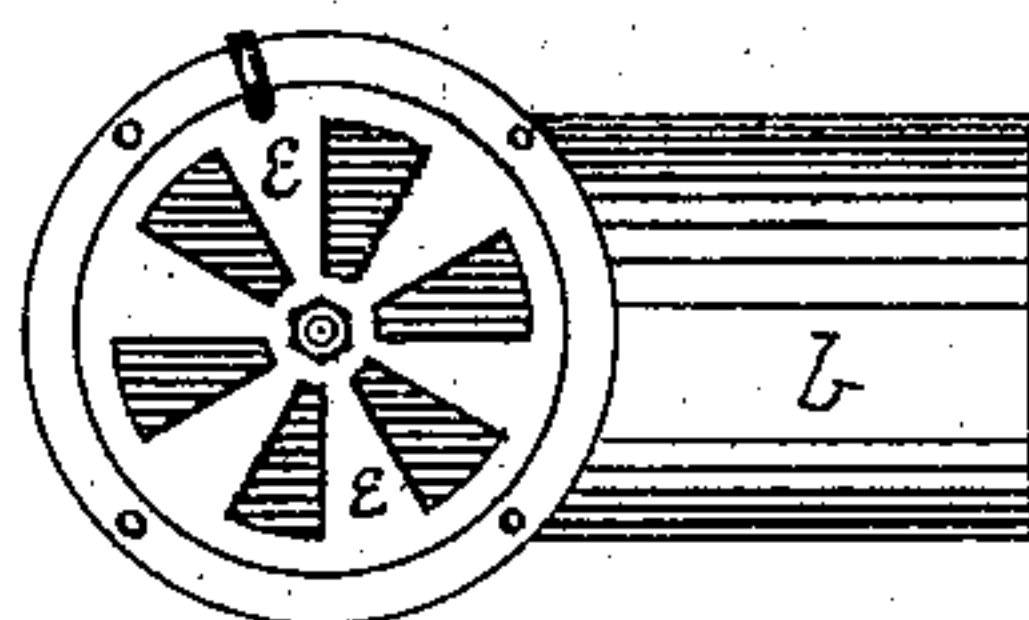


Fig. 4.

Witnesses  
Henry M. Petersen  
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Inventor Henry King,  
By Attorney George H. Christy



# UNITED STATES PATENT OFFICE.

HENRY KING, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR TO HIMSELF  
AND ALLAN C. MILLIKEN, OF SAME PLACE.

## IMPROVEMENT IN VENTILATING RAILWAY-CARS.

Specification forming part of Letters Patent No. **187,390**, dated February 13, 1877; application filed  
December 26, 1876.

*To all whom it may concern :*

Be it known that I, HENRY KING, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Ventilating Railway-Cars; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which like letters indicate like parts.

Figure 1 represents a longitudinal sectional view, slightly in perspective, of one end of an ordinary railway passenger-car body with my improved ventilating apparatus fitted thereto. Fig. 2 is a transverse sectional view of the front end of such car-body, showing the device for admitting in-draft. Fig. 3 shows an enlarged vertical section of the apparatus for securing out-draft; and Fig. 4 is a top-plan view of such device, showing the register for regulating the draft.

It is a well-known fact that many gases deleterious to health, whether proceeding from respiration or other forms of combustion, are heavier than atmospheric air, and, consequently, are found at or near the bottom of rooms or apartments where they exist.

My invention relates to an improved ventilating device for securing the complete and perfect out-draft in cars having a floor-exhaust, and also for more perfectly preventing in-draft at the exhaust-opening.

This ventilating device in the floor is constructed as follows: A pipe or flue, *a*, is placed in an opening in the floor, and supported therein by the shoulder or flange *a'*, Fig. 3. Any desired form of register-gate *e*, Fig. 4, is placed at the inner opening of this flue, on a suitable seat in the flange *a'*, or on the spider-frame *c*, Fig. 3. The one shown is the ordinary rotary register. To the part *a* is jointed, by a kind of swivel or socket connection, the elbow-flue or vane *b*. A flange or socket, *n*, is made on the lower end of the piece *a*, of suitable size and form to receive the adjacent end of the vane *b*. A spider-frame, *c'*, is placed at or near the base of the socket *n*, against the periphery of which the end of

the vane *b* may abut, if desired, and preferably a like spider-frame, *c''*, is placed in the adjacent end of the vane. The two parts *a* and *b* are then connected by the rod *d*, which passes through the centers of the spiders *c* *c'* *c''*, to the lower angle of the elbow or vane *b*, and by a nut, *s*, on the end of the rod the two parts *a* and *b* may be held at the proper tension to permit the elbow or vane to turn freely in the socket *n* upon the rod *d* as an axis. The nut *s* may be locked in any convenient way to prevent unscrewing. At or near the open end of the vane *b* I pivot a light butterfly-valve, *v*, with its axis or pivoting-points a little above the center, or more remote from the edge of the valve nearest the discharge or mouth of the flue, so that an outgoing current will open the valve and permit discharge by its excess of pressure on one side of the pivots or axis, and an ingoing current will, in like manner, close the valve. An arm, *g*, is secured to the valve in such manner as to prevent the valve from opening too far to perform its proper function. The vane *b* being free to turn, as described, the action of the outside air upon it when the car is running will cause the vane to turn its mouth or open end toward the rear, and the forward motion with the car will tend to create a vacuum in the flue, and when the register *e* is open, a corresponding current from the inside of the car to supply such vacuum. The tendency to form a vacuum in the flue, or at its mouth, will vary with the speed of the car, and the current from the car through the flue may be regulated at pleasure by the register *e*. This current from the car will carry out such gases as may have settled to the floor much more thoroughly than can be done by other systems of ventilation, and the action of the valve *v* will prevent any dust or outside air from entering the car through such flues.

In order to introduce fresh air into the car, I provide an air-chamber, *A*, at each end of the car, between the ceiling and top or roof, with wire-gauze, *m*, at the sides to admit air, and exclude dust, cinders, &c. Ordinary rotary registers, *r* *r*, operated by tangent-

screws *o o*, or other suitable ventilating devices, open from the chamber *A* to the inside of the car, and supply fresh air as desired. Besides these end registers, others of any suitable kind may be placed along the side of the car, near the top, in any desired number, and also the usual flues may be provided through the top, if so desired, for discharging heated air and other light gases.

I claim herein as my invention—

1. A ventilating device for car-floors, consisting of register *e*, barrel *a*, vane *b*, swiveled

thereto by flange and socket-joint, spiders *c c'*, rod *d*, and valve *v*, combined and arranged substantially as set forth.

2. In combination with the swinging vane *b*, the valve *v* and stop-arm *g*, arranged substantially as set forth.

In testimony whereof I have hereunto set my hand.

HENRY KING.

Witnesses:

J. J. McCORMICK,

CLAUDIUS L. PARKER.