

# A. Hapgood, Car Ventilator.

N<sup>o</sup> 28,365.

Patented May 22, 1860

Fig. 3.

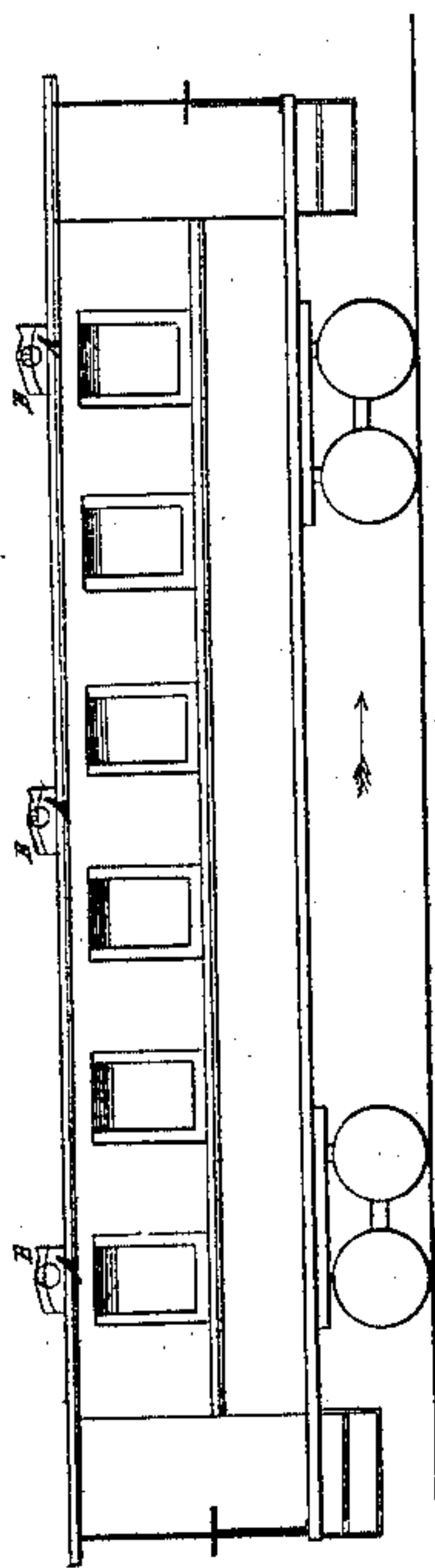


Fig. 2.

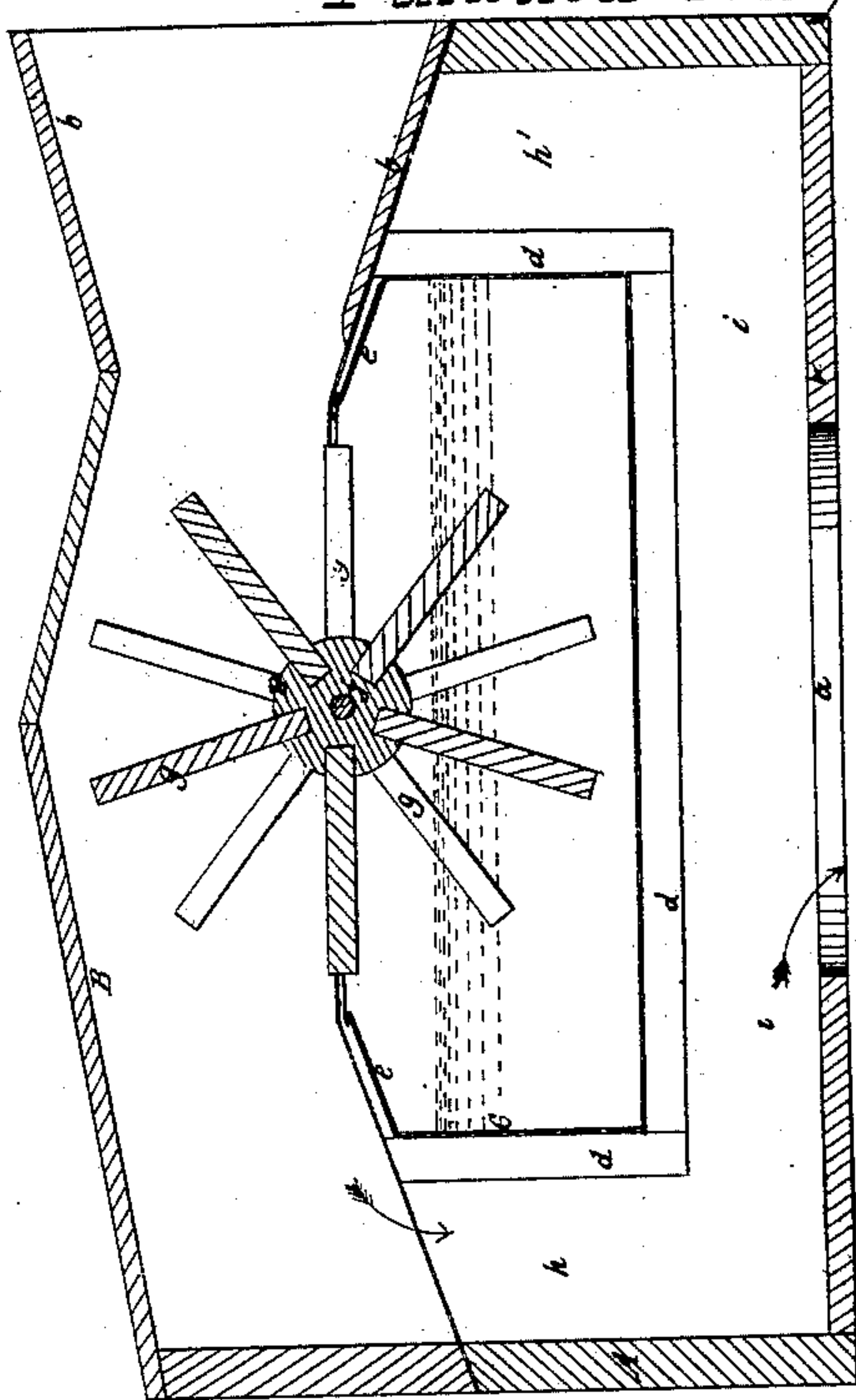
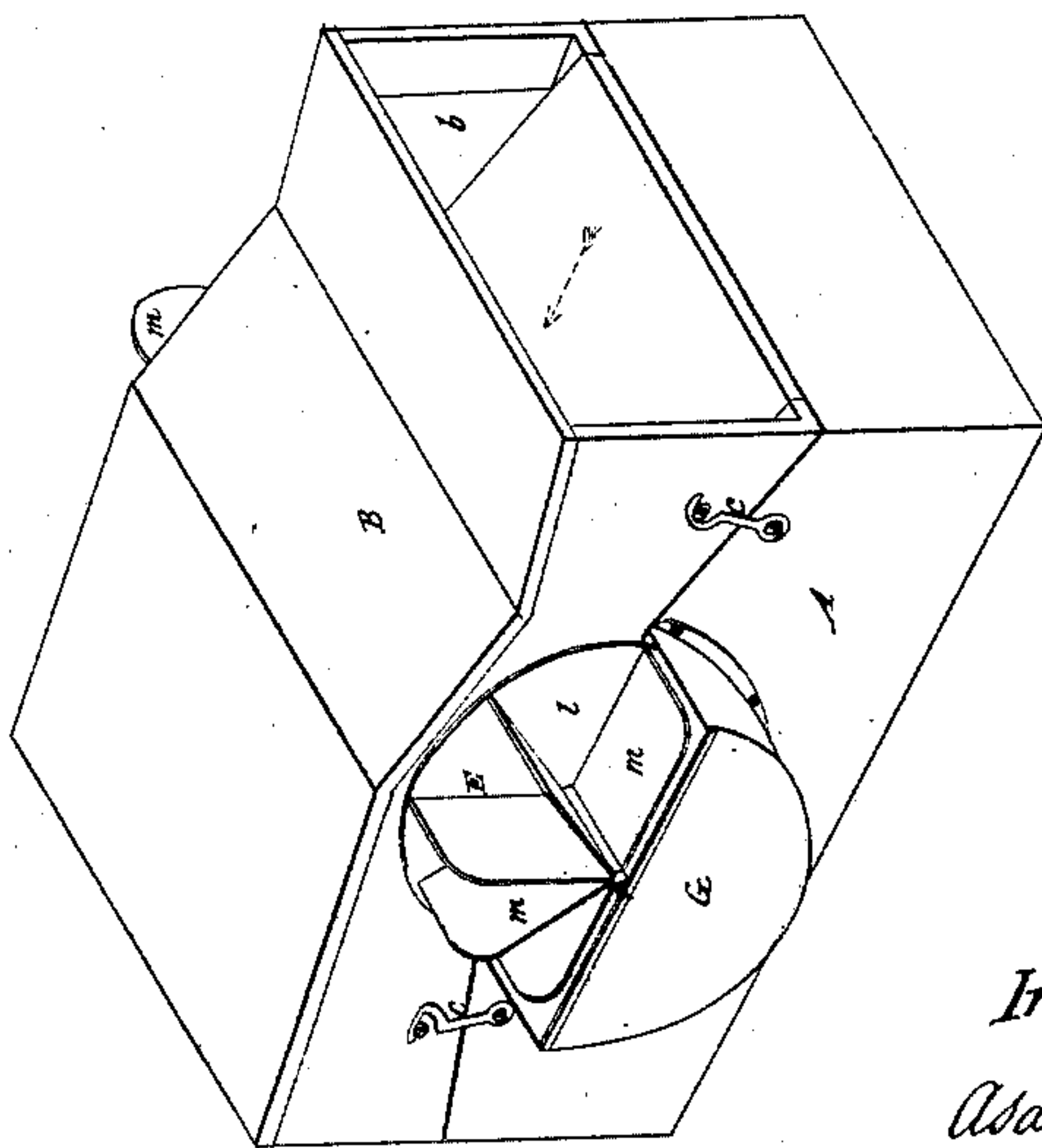


Fig. 1.



Witnesses:

Thos. R. Roach  
Edmund Nelson.

Inventor:

A. Hapgood.



# UNITED STATES PATENT OFFICE.

ASA HAPGOOD, OF WORCESTER, MASSACHUSETTS.

## VENTILATOR FOR RAILROAD-CARS.

Specification of Letters Patent No. 28,365, dated May 22, 1860.

*To all whom it may concern:*

Be it known that I, ASA HAPGOOD, of Worcester, on the county of Worcester and State of Massachusetts, have invented an Improved Railroad-Car Ventilator, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a perspective view of my "ventilator." Fig. 2, a longitudinal vertical section through the same enlarged. Fig. 3, a view of a railroad car with the "ventilator" attached.

The object of my present invention is to produce a simple and efficient "ventilator" for introducing fresh air into railroad cars, and for separating the dust from the air before the air is admitted to the car.

I am aware that various devices have been employed for this purpose, among others a current of air has been driven by a fan (operated by the running gear of the car) through or over a wheel which revolved in water contained in a suitable box, the dust being thus deposited on the wheel, as the air passed through or over it. The air has also been driven through a screen which was kept wet by being revolved in or passed through water. These devices have been objectionable from their complication, necessitated by their connection with the running gear, and in order to make this connection more simple they have been placed at the bottom of the car where they received a larger proportion of dust than they would if placed at the top of the car.

These objections I have overcome by my present invention which consists in the employment of a light wheel composed of a shaft in which is inserted a large number of rods or spokes placed close together, the wheel being so arranged in a suitable casing or box that it will be revolved by the current of air passing through the box and impinging on the spokes of the wheel which are exposed to the current, while the spokes as the wheel revolves are kept wet by being dipped into water to purify the air.

That others skilled in the art may understand and use my invention I will proceed to describe the manner in which I have carried out the same.

In the said drawings A, is a wooden box which is placed on top of the car (as shown in Fig. 3) and communicates with the inte-

rior of the car by a circular opening *a*. On top of this box is placed a hood B, having an open funnel-shaped mouth *b*, which is fixed to point in the direction in which the cars are going, so that the current of air caused by the motion of the cars will enter this mouth and passing around and through the box, as indicated by the arrows in Fig. 2, will enter the car through the opening *a*. The hood B, is attached to the box A, by hooks *c*, and is made removable that its position on the box may be reversed, that is with its mouth *b* pointing in the opposite direction when the car is to be run with its other end foremost.

I may here mention that I prefer to make the box A stationary and the hood B reversible, instead of making the box to revolve on the pipe or connection at *a* as the attendant when he changes the hood will always notice if the water box (which will be presently described) is supplied with water.

A water box C of sheet tin or other suitable material occupies the middle of the box A, in which it is supported by cleats *d* attached to each side of the box A. A lip *e* projects a short distance inward at each end of the box C, to prevent the water from being splashed over its edges. A wheel D has its bearing on each side of the box A and revolves in the box C, which is partially filled with water as shown in Fig. 2, so that the spokes of the wheel as it revolves are constantly wetted. This wheel consists of a stout wooden hub *f* of as great a length as the width of the box will allow, which is filled with spokes *g* placed close together in rows, the spokes in one row being opposite the spaces of the adjoining one and the diameter of the wheel being as great as can be conveniently admitted by the depth of the box C and the height of the hood B, so that the current of air which enters the mouth *b*, must pass through and in contact with the wet spokes *g* before it reaches the outlet *a* by which means its force is employed to revolve the wheel, at the same time that the air is divested of the dust which it usually contains, before it is passed into the car. The position of the box C in the box A, forms air passages *h h'* at each end, and *i* at the bottom, but as one of the passages *h*, or *h'* is always covered by the bottom of the mouth piece *b*, the air will be forced through the box in the direction indicated by the arrows Fig. 2 through the passage *h* when



the hood is in the position shown, and when the hood is reversed it will pass through the space  $h'$  to the outlet  $a$ .

As the currents of air which enter the mouth piece  $b$  and operate the wheel D, are varied by the normal direction of the wind and the turns in the road, they will sometimes strike laterally on the "ventilator" and will not enter the mouthpiece  $b$ , with sufficient force to operate the wheel D. To provide for this and to render the action of the "ventilator" more certain, I have attached to each side of it a fan E, of sheet metal which is connected with the wheel D, in the following manner: From each end of the hub  $f$  projects a metal rod or spindle  $r$ , which rests in suitable boxes or bearings placed on the edge of the box A, this spindle extends beyond the side of the box A, and carries the fan E, Fig. 1, (which is a disk of sheet metal with blades  $m$ ) which revolves freely with the wheel D. It has its lower half protected by a metal box G attached to the side of the box A, while its upper half is exposed to the action of the currents of air.

With the above described self acting "ventilator" I am enabled to admit a sufficient supply of fresh air to the car while the dust is excluded, the operation of the ventilator being independent of the running gear of the car is less complicated and less liable to derangement than others so

connected; and as each "ventilator" is intended to replace the comparatively useless metal pipe ventilator which now projects from the top of most of the cars in use, the car itself will require no material alteration in adapting my improved ventilator to it.

Instead of the wheel D being composed of series of spokes G, as above described, it may be made of a series of light frames covered with wire cloth or other suitable material but the first plan is that which I prefer. The resistance which the water in the box C offers to the spokes  $g$ , prevents the wheel D, from being revolved too rapidly.

I would recommend in connection with the use of ventilators for the admission of fresh air into the car, such an arrangement of the windows or other openings at the sides and ends of the car, that there may always be sufficient exit space for the foul air, such openings being placed out of the control of the passengers.

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

The above described ventilator consisting of the box A, hood B, wheel D, and water box C, arranged and operating in the manner described for the purpose specified.

ASA HAPGOOD.

Witnesses:

THOS. R. ROACH,  
EDMUND MASSON.