

M. T. Hitchcock,

R.R. Car Ventilators,

Nº 98,965,

Patented Jan. 18, 1870.

Fig. 1

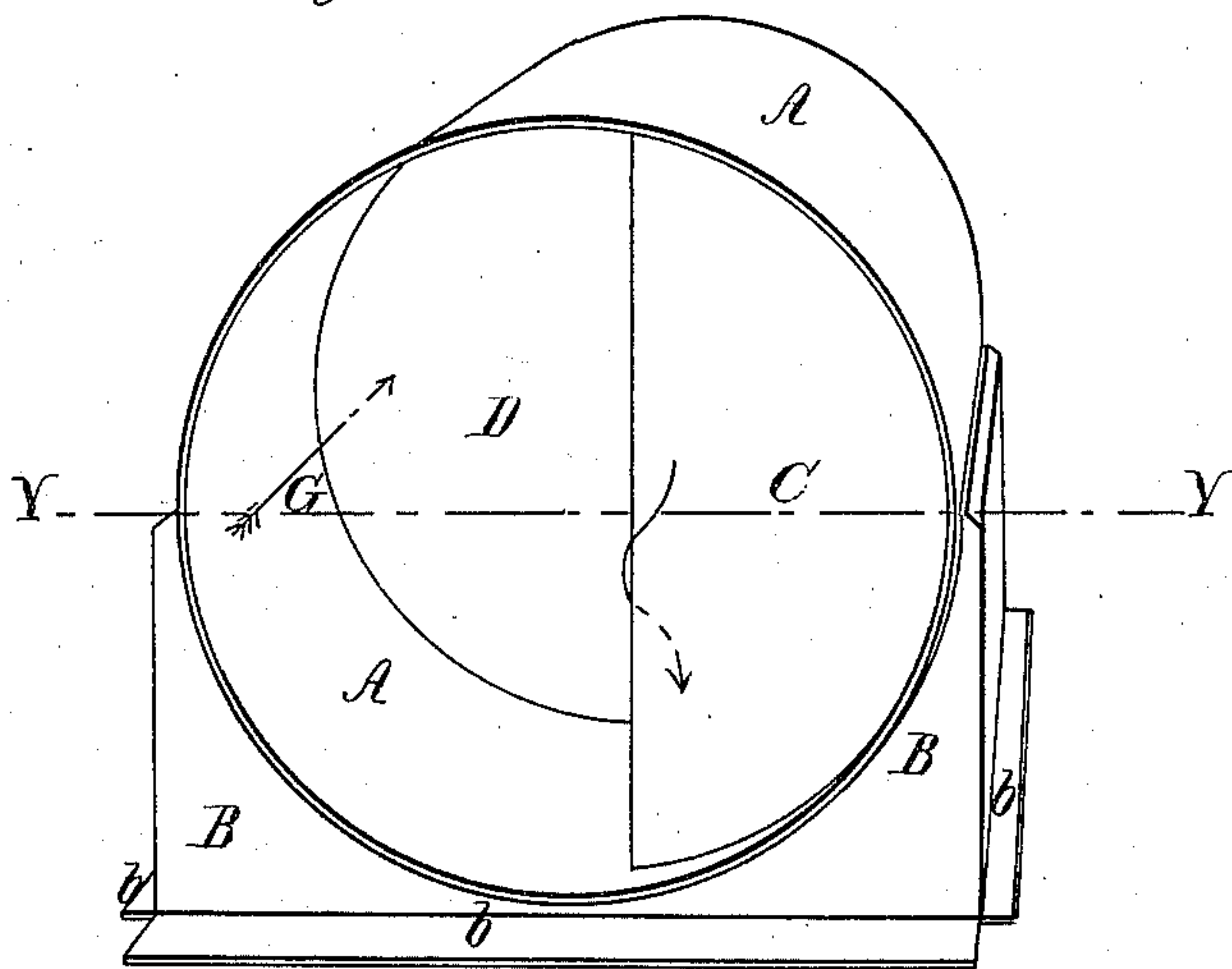


Fig. 2

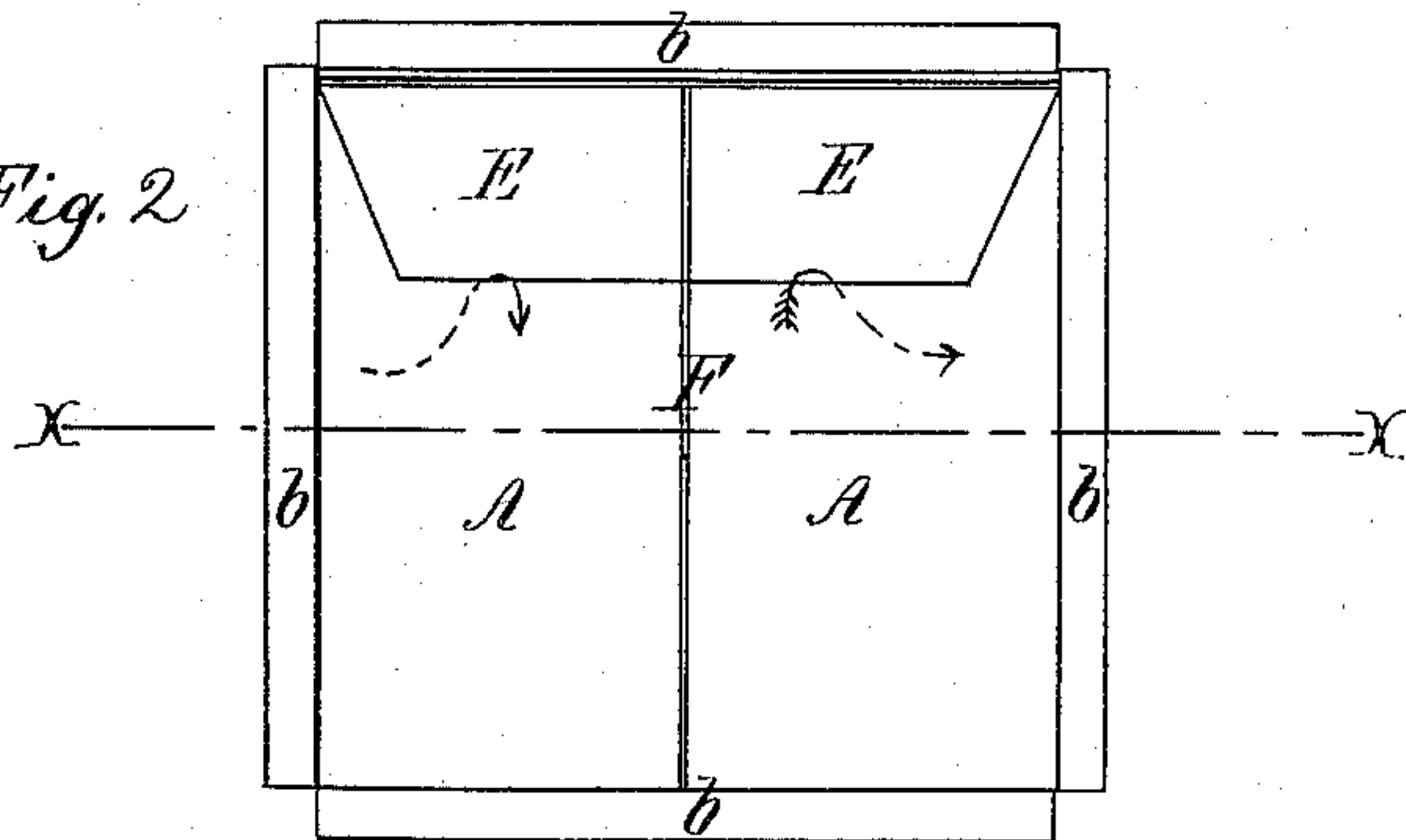
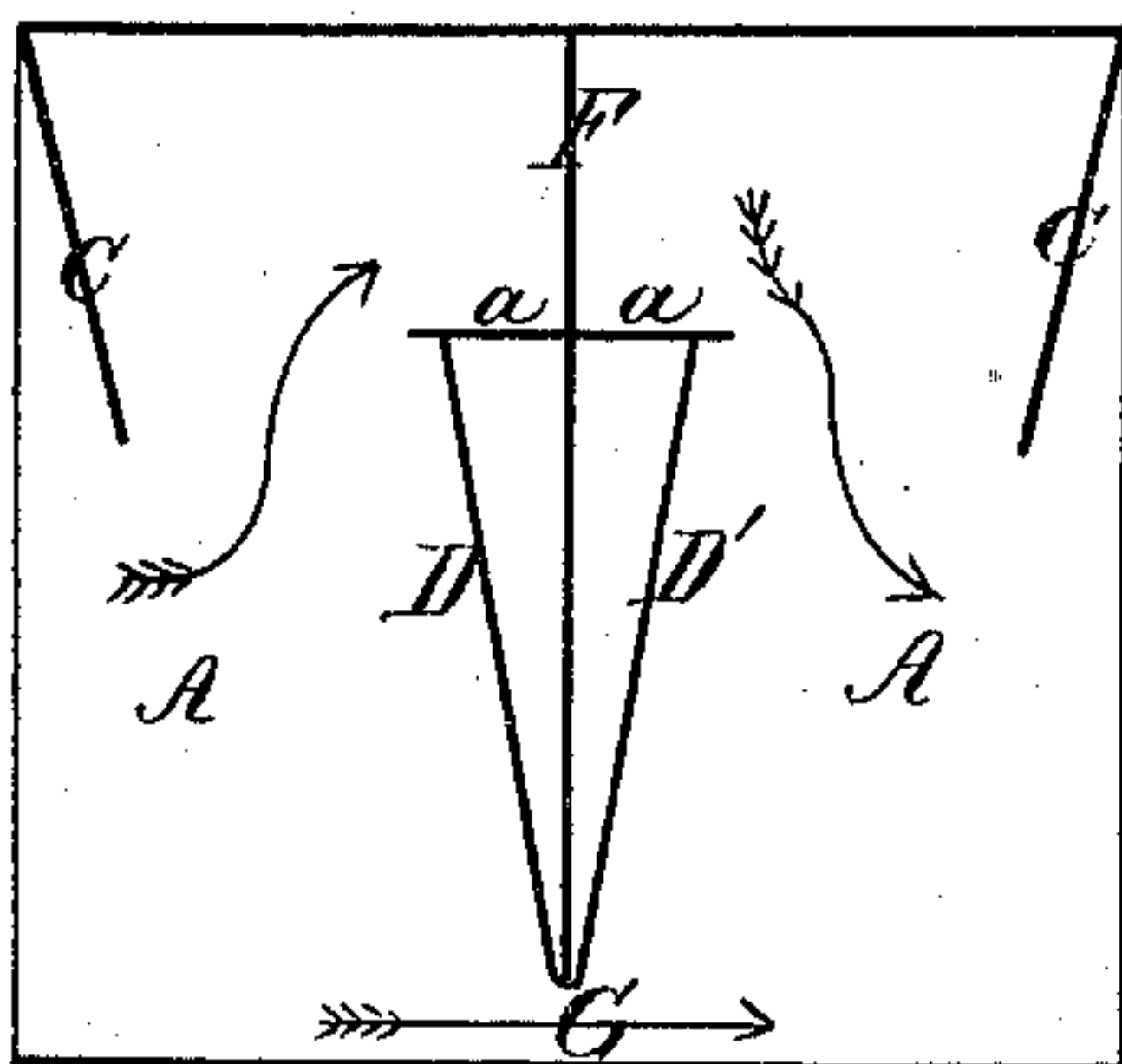


Fig. 3



Witnesses
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Inventor
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United States Patent Office.

M. T. HITCHCOCK, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND J. W. LABAREE, OF SAME PLACE.

Letters Patent No. 98,965, dated January 18, 1870.

RAILROAD-CAR VENTILATOR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, M. T. HITCHCOCK, of Springfield, in the county of Hampden, and Commonwealth of Massachusetts, have invented a new and improved Ventilator for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a perspective view of said ventilator;

Figure 2 is an elevation of the same, showing the side which is applied to the car; and

Figure 3 is a sectional view, the plane of section being indicated by the line *y y* in fig. 1.

My invention relates to that class of ventilators used for changing the air in railroad-cars; and consists of a shell or case, having at each end a curtain, closing the upper part of the end of the shell, and inclining inward as it extends downward, and at about the middle of the shell is a partition, extending from the top downward to nearly the lower side of the shell, say, to within three-fourths of an inch, or an inch, of the bottom.

Upon each side of this partition is a deflector, placed transversely within the shell, and sufficiently inclined, so that as the cinders or coarser particles of dust strike the deflector, they are guided downward, and pass underneath the deflector and partition, and are carried out the rear end of the shell by the current of air constantly passing through.

An air-passage is made in one side of the shell, connecting with a quadrangular portion, upon which are flanges, by means of which the ventilator is secured to a car.

This shell is precisely similar, in its construction and arrangement, to that designed for the side of "Monitor" cars, shown in Letters Patent granted to me, bearing date the 18th day of February, A. D. 1868, and numbered 74,534; my present application being for an improvement in the arrangement of parts used within the same shell, whereby air is taken into and out of the car, through the same ventilator, and the amount of air either taken in or out may, if desirable, be regulated to any desired degree.

That others skilled in the art may be able to make and use my invention, I will proceed to describe its construction and the mode of its operation.

In the drawings—

A represents a shell or case, which is cylindrical, or partially so, and having an opening, E, and upon one side of the shell, and communicating with the opening E, is a prismatic or quadrangular portion, B, upon the end of which are made the flanges *b*.

Within the upper part of the shell A, and made to

fit properly the interior form of it, are the curtains C, at or near each end, and extending downward nearly to the line of axis of the shell, and inclining inward toward the middle partition F, at an angle of, say, ten degrees.

Nearly parallel with the curtains C are the deflectors D and D', which may be secured to the sides of the shell, and the upper edges of which are a little higher than the lower edges of the curtains C, so that no body, passing in the line of the axis of the shell, can pass both the curtain and deflector, without striking either the one or the other.

A plate, *a*, is attached to the partition F, and also to the top of the deflector, in each compartment of the shell, said plate projecting a little over the top of the deflector, to form a guard, to prevent any portion of the cinders from passing upward into the car.

The opening E may be of any desirable form and size, to give a sufficiently free passage for the air, and that side of the shell through which the opening E is made may be straight, instead of cylindrical, and parallel with the side of the car to which it may be attached, and be equally operative; that is to say, there should be some kind of partition between the cylindrical part of the shell and the rectangular part B, and the opening E should be made in the upper part of this partition; but it is immaterial whether this partition is straight, or whether it is curved and forms a continuation of the cylindrical part of the shell; and the opening E, which should be made in the upper part of said partition, may be made longer or shorter, as the case may be, as the amount of air passing into and out of the car, through the said opening, may be regulated by the space G, between the lower edge of the deflectors D, or partition F, and the lower side of the shell. If this space is larger, more air is taken out of the car; if it is smaller, more air is forced into the car, as will be hereafter explained.

The operation of the invention is as follows:

The ventilator may be attached to the side of the "deck" of a "Monitor" car, the rectangular portion B covering one of the openings made for ventilating-purposes, and be attached by means of a frame, metallic or wood, just large enough to pass over the cylindrical shell and rectangular portion B, and force the flanges *b* against the side of the deck, said frame being secured to the car by screws; the axis of the shell being nearly or quite longitudinal, with reference to the car.

As the car is moved rapidly, the air enters the front end of the shell, a part passing up, as indicated by the red arrow at the left, in fig. 3; a great portion, however, passing under the partition and deflectors D D', as indicated by the arrow at G, and out the rear end of the shell.

This current passing under the deflectors, tends to create a vacuum in the upper part of the rear end of the shell, or to create a draught of air out of the car through the opening E, communicating with the rear compartment of the shell, as indicated by the red arrow at the right hand, in figs. 2 and 3.

If the space G under the deflectors D be larger, a greater quantity of the air which enters the shell passes directly through, and a less proportion of it is checked by the deflector D and made to enter the opening E in the front compartment; while the greater body of air passing through the said space G, operates to create a more perfect vacuum just behind the deflector D, and causes a stronger outward suction through the rear opening E.

The space G, however, should not be too small, as the effect would then be to check too much of the air, preventing it from passing through the space G, and causing too much of it to pass into the car, through the opening E in the front compartment of the shell, without taking out a sufficient quantity through the opening in the rear compartment.

I find that in practice it is better that the lower edges of the deflectors D, or the lower edge of the partition F, should be about seven-eighths of an inch above the lower part of the shell, said space decreasing as it extends around and up the inside of the shell, until it is entirely closed by the attachment of the ends of the deflectors to the inside of the shell.

It is evident the ventilator is equally operative, in whichever direction the car may be moving, the front compartment, as the car moves in one direction, becoming the rear compartment as the car moves in an opposite direction.

As thus constructed and arranged, an equal, or nearly equal amount of air is taken out as is put into the car, and by the same shell, and the opening into the car may be supplied with doors or slides, by which to close the apertures when desirable, and if there are two doors at each aperture, that is, one upon each side of the partition F, the draught into or out of the car, either one or both, may be partially or entirely checked, as may be desired.

An opening might be made in the shell, underneath

the deflectors, to permit the cinders and dust to fall through, but I prefer not to do this, as it would interfere with the direct current of air through the space G, and impair, more or less, the draught of air out of the car, through the opening in the rear compartment.

As the cinders and heavier particles of dust are carried into the shell, they are deflected downward by striking against the curtain C, or deflector D, or both, and the current of air passing through the space G carries them through also, and out the rear end of the shell.

It will be seen that I do not use water, in connection with the above-described ventilator, as a means of disposing of the dust and cinders; while the cinders are as effectually driven out, or prevented from entering the car, as they are by the use of the more elaborately-constructed ventilators requiring the use of water, while my apparatus is cheap, simple in construction, and is effective.

I am aware that various devices have heretofore been used for supplying air to the interior of railway-cars, and for arresting or preventing the entrance of cinders and dust, by means of interposing plates used in connection with a stratum of water, as shown in Letters Patent granted to George Spencer, November 8, 1853, and numbered 10,216, and others, and I do not claim the said devices, nor any part of them, irrespective of my arrangement and construction; but, having described my invention,

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

The shell or case A, having the opening E therein, and the prismatic portion B upon one side, in combination with the partition-plate F, curtains C, and deflectors D, all constituting a railway-car ventilator, constructed and operating substantially as and for the purposes herein described and specified.

In witness whereof, I have hereunto set my hand, this 31st day of August, A. D. 1863.

M. T. HITCHCOCK.

Witnesses:

J. P. BUCKLAND,

E. J. SOMMER.