

(No Model.)

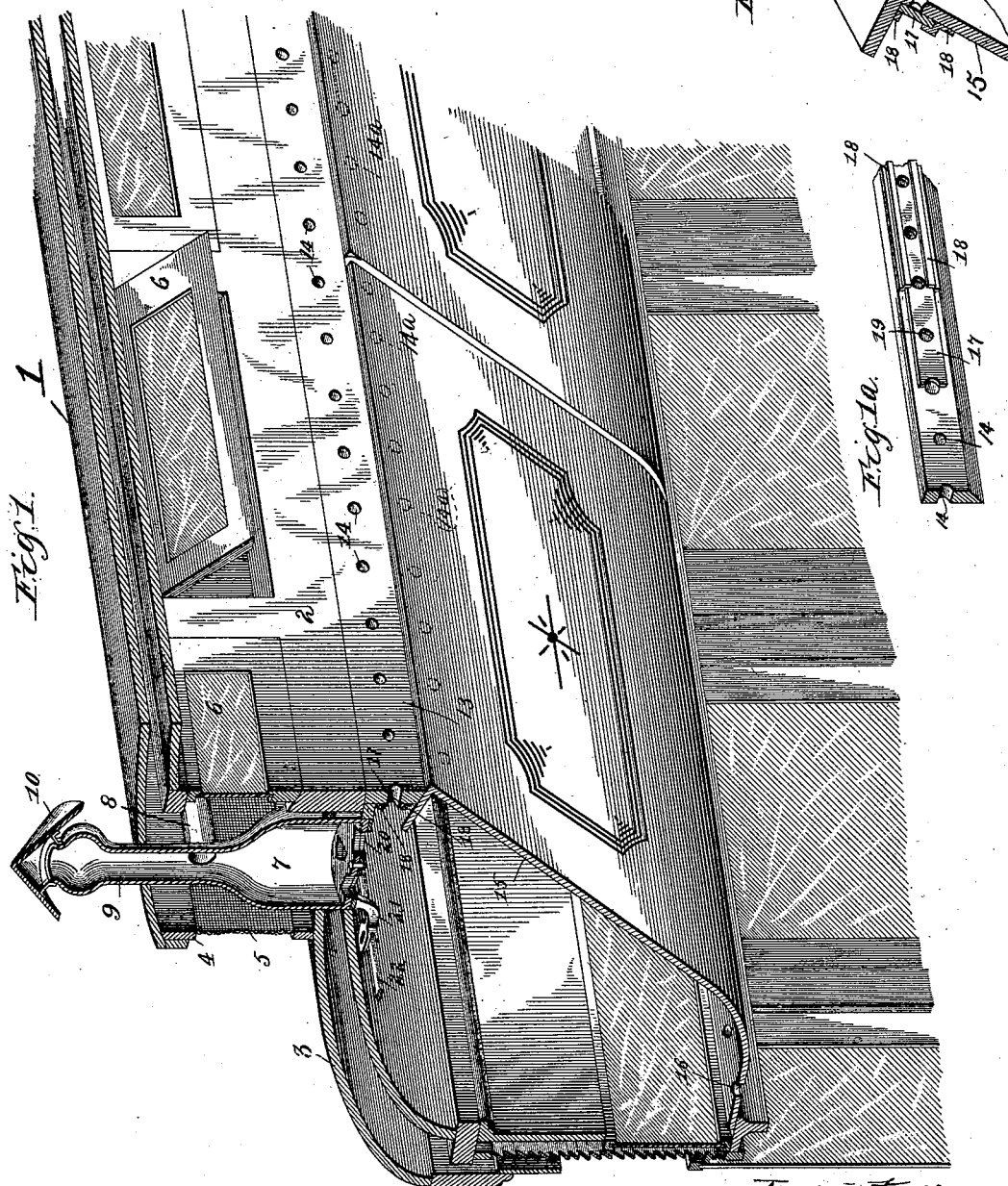
2 Sheets—Sheet 1.

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CAR VENTILATOR.

No. 491,068.

Patented Feb 29 1893.



Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

G. W. BANCROFT & C. R. HAWCROFT.

CAR VENTILATOR.

No. 491,068.

Patented Feb. 7, 1893.

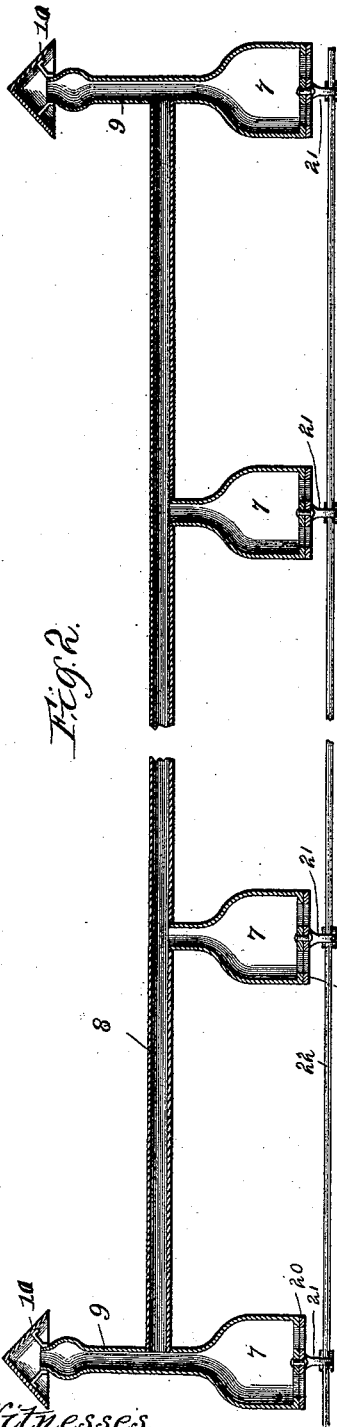


Fig. 2.

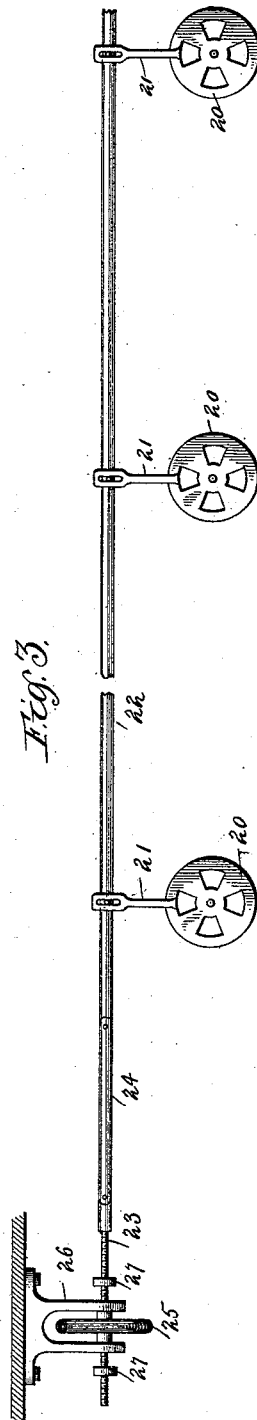


Fig. 3.

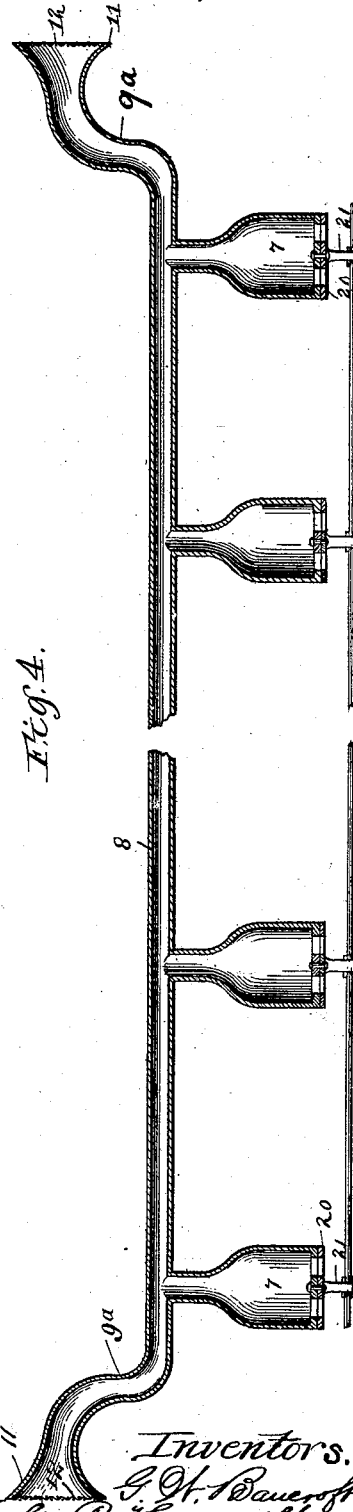


Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE W. BANCROFT AND CHARLES R. HAWCROFT, OF CHICAGO,
ILLINOIS.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 491,068, dated February 7, 1893.

Application filed July 12, 1892. Serial No. 439,755. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. BANCROFT and CHARLES R. HAWCROFT, citizens of the United States, residing at Chicago, in the
5 county of Cook and State of Illinois, have invented new and useful Improvements in Car-Ventilators, of which the following is a full, clear, and exact specification.

Our invention relates more particularly to
10 a system of ventilation for sleeping cars, and our improvements are designed for ventilating the bunks or berths of said cars, but as will hereinafter appear, our improvements are equally adapted for ventilating the berths or
15 bunks of any other vehicle or vessel.

The necessity for economizing space within the car makes it essential to employ folding berths, and to fold such berths up in as close and compact a form as possible, as soon as
20 as vacated; and incident to the employment of such folding berths or bunks and the described manner of using them, is the well known, but heretofore unavoidable evil that the bedding has but little or no opportunity
25 to become aired or ventilated, the berths frequently being folded up in the middle of a run, and the same cars immediately started out on the return trip as soon as their destination is reached. From a hygienic point of
30 view, this is a matter of the utmost moment, and it is an evil to which the attention of the railroad fraternity has long been directed, with a view to successfully overcoming it, for it must be clear to every one that bedding
35 which is repeatedly used without ventilation in the interim, by hordes of persons of all classes and conditions, will inevitably and in a short time become objectionable and repulsive from a standpoint of cleanliness, even if
40 not a ready means for propagating infection and disease.

The primary object of our invention, therefore, is to provide means for the ventilation of the bedding while closed in the bunk or
45 berth; our invention also has for its object not only to subject the bedding to the action of fresh air while closed up in the bunk or berth, but to impel or force the air there-through at such time.

50 Another object of our invention is to provide for the ventilation of the interior of the

car and bunk independently of the ordinary transom lights or ventilators, whereby the necessity for closing the transoms during a storm will not interfere with the ventilation of the
55 car or bunks.

A further object of our invention is to provide each bunk with its individual ventilator, and improved means for actuating all of the ventilators simultaneously.
60

A still further object of our invention is to so arrange the ventilators and ventilator flues as to be excluded from view from both the interior and exterior of the car.

With these ends in view, our invention
65 consists in certain features of novelty in the construction, combination and arrangement of parts by which the said objects and certain other objects hereinafter described are attained, as fully explained, with reference to
70 the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a sectional perspective view of one side of a sleeping car provided with our improvements, the bunks being shown in their folded up position, and the bedding being omitted. Fig. 1^a is a detail perspective view of the rear side of the
75 apron hereinafter described, showing the valve for closing the ventilating apertures therein. Fig. 1^b is a detail sectional view of a modification hereinafter explained. Fig. 2 is a detail sectional view of the ventilators and their connecting flue. Fig. 3 is a detail
80 view, showing the mechanism for actuating the ventilators; and Fig. 4 is a view similar to Fig. 2, but of a modification hereinafter explained.

In these drawings, wherein like signs of reference indicate like parts, throughout the
90 several views, 1 is the upper deck, or roof, which projects a short distance beyond the transom wall, 2, over the lower deck or roof, 3, and is provided at its outer edge or eave with a wall, 4, having a number of ventilating
95 apertures covered with wire screening, 5, to prevent the admission of sparks and cinders while permitting the escape of air from the interior of the car through the transom lights or ventilators, 6, arranged in the transom
100 wall, 2; all of which may be of usual or of any suitable construction. The lower deck

3, it will be understood, extends under the wall, 4, and meets the wall, 2, according to the ordinary construction, and fitted accurately within openings formed in the lower deck 3, between the walls 2 and 4, and directly over each bunk, is a ventilating chamber or box, 7, whose lower side or bottom is in communication with the interior of the car, while its top or upper side is suitably connected to a horizontal flue or draft pipe, 8. This draft pipe, 8, preferably extends throughout the length of the car on each side, under the upper deck, 1, between the walls 2 and 4, and is connected with all of the ventilating chambers, 7, so that the current or draft passing therethrough will induce an upward current from the interior of the car through such ventilating chambers.

Each extremity of the draft pipe, or flue, 8, is provided with a flue or chimney, 9, leading to the outer atmosphere, preferably through the upper deck, 1. These chimneys, 9, may be provided with any suitable rain and cinder guards, 10, and one of them serves as an inlet for the air, while the other serves as an outlet for the discharge of the vitiated air arising in the chambers 7 and passing along the flue, 8. These chimneys, 9, may be of the ordinary form shown in Fig. 2, but it is preferable to employ the form represented in Fig. 4, which consists of a pipe, 9^a, extending upwardly through the roof from the flue, 8, and provided with a flaring mouth, 11, arranged in a horizontal position, and covered with a wire screen or netting, 12, to guard against the admission of sparks and cinders. These flaring mouth pieces, 11, are preferably turned in opposite directions and permanently fixed, so that one of them will serve to catch the air as the car moves in one direction and force the same along the pipe or flue 8, whence it will discharge *via* the flaring mouth of the chimney at the other end, and in its course along the flue, 8, will induce a strong upward current or draft through all of the ventilating chambers, 7, and in this way carry off from each bunk or berth the vitiated air arising therein, without in the least manner inconveniencing the occupant of the berth, or producing the slightest draft that would be objectionable to such occupant.

It will of course be understood that the ordinary method of ventilation is through the transom lights, or windows, 6, and the wire netting 5, in the outer wall, 4, but during a storm it is of course impossible to keep the transom light, 6, open, without admitting rain and sleet to the interior of the car, and therefore, according to such prior method of ventilating, the car is entirely without ventilation during stormy weather. In order to avoid this objection, we provide the depending apron, 13, into which the locks or latches (not shown) on the bunks usually engage, with a number of ventilating apertures, 14, arranged throughout the length of the car, or at least a suitable number of them throughout the length of each

berth or bunk. These ventilating apertures, 14, it will be seen permit the discharge of the vitiated air from the interior of the car into a space formed by the wall and roof of the car and the berth or bunk, 15, when the latter is in its uppermost or folded up position, as shown in the drawings, and hence provide for the ventilation, through the air chamber, 7, of not only the interior of the car, but of the space confined by the bunk, 15; and this ventilation, it will be seen, will be entirely independent of the transom ventilators, 6, and the described construction by which it is accomplished will completely preclude the entrance of cinders or rain to the interior of the car or bunk, inasmuch as the only open communication is through the guarded pipes or chimneys 9 or 9^a. This means of ventilation, however, does not fully ventilate or air the bedding confined in the space between the bunk 15 and the wall of the car, inasmuch as the air passes directly from the openings 14 to the ventilating chambers 7, and simply comes in contact with a slight portion of the upper side of the bedding, leaving dead air confined in the lower part of the bunk and in the bulk of the bedding, and therefore in order that the fresh air may thoroughly permeate the entire bulk or mass of the bedding, and impel or force the vitiated air and impurities therefrom, we provide preferably the extreme lower side of the bunk, or that side which is nearest to the wall of the car, with a number of air holes, 16, through which the air is drawn, through the medium of the bedding, by the draft induced through the chambers 7 and draught flue, 8. In order that this draft or circulation through the air holes 16 may be more positive, or of greater strength, we provide the apron 13 with a slide valve, 17, which is preferably arranged in suitable guides, 18, on the inner side of such apron and adapted to close the ventilating holes 14, thus compelling the current to pass through the perforations 16 and the bedding, to supply the suction induced in the chambers 7.

The valve 17 may be provided with perforations, 19, adapted to coincide or register with the perforations, 14, when it is desired to ventilate through the depending apron, 13, and such valve may be operated in any convenient manner. It may extend throughout the length of the car, so that the porter or other attendant will be enabled to open or close all the perforations, 14, simultaneously, by imparting a slight endwise movement to the valve 17.

The perforations 16 will of course ventilate the interior of the car to a considerable degree, even when the perforations 14 and transoms are closed, but it will of course be understood that when the perforations 14 are closed, it is desirable to open the transoms, 6, to provide for the ventilation of the extreme upper interior of the car, and this manner of using our system is entirely feasible, because the transoms need be closed only during a storm,

at which time ventilation may be had by opening the perforations 14, and the perforations, 14, may be closed immediately the storm is over, again establishing a forced circulation through the bedding, *via* the perforations 16. It will also be seen that the use of the transom lights for ventilating purposes cannot interfere with or retard the force of the current induced through the perforations 16 by the suction in the chambers, 7, and hence at such times as the transoms may be left open, the ventilation of the interior of the car as well as the thorough ventilation of the bedding in the folded bunk may be accomplished simultaneously.

For convenience in closing the ventilating chambers, 7, should it be desired to do so, we provide them with suitable valves, 20, which are connected in any suitable manner, as by means of a slotted crank arm, 21, to a longitudinal, reciprocating operating rod, 22, that preferably extends throughout the length of the car, and is adapted to operate all the valves simultaneously. This rod, 22, may extend to some suitable point or place in the car, convenient to the porter, or attendant, where it is provided at one end with a screw, 23, connected to the rod by means of a link, 24, and passing through the interiorly threaded hub of a hand wheel, 25, by means of which the rod may be reciprocated back and forth the required distance for opening and closing the ventilators, 7. This wheel, 25, may be provided with any suitable support for holding it stationary while permitting of its rotation, such, for instance, as the bracket, 26, secured to the wall or some other fixed part of the car. The threaded stem, 23, may be provided on each side of the bracket, 26, with stop nuts, 27, adapted to limit the movement of the rod 22, and avoid injury to the ventilators. The advantage of this mechanism for operating the rod 22 is that it not only lessens the effort required to actuate the ventilators, but it enables the ventilators to be set at any degree of opening without danger of accidental movement during the jolting of the cars.

In some instances the apron 13 is not employed in the construction of the car, and in such event we form the air holes 14 for the escape of the air at the upper side of the bunk, directly in the upper edge of the bunk itself as shown in dotted lines at 14^a; thus providing for the ventilation of the upper part of the car independently of the transom lights. When the apron is dispensed with, each bunk may be provided with one of the valves 17, arranged on the back thereof for closing the holes 14^a, as shown in Fig. 1^b, and provided with any suitable operating stem 17^a, projecting through a slot, 28, in the bunk.

With a ventilating system constructed according to our invention, it will be seen that the interior of the car is not obstructed or occupied by the unsightly flues and chambers, yet such parts are excluded from view from

the exterior as well as from the interior of the car.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is:

1. In a car, the combination of a folding bunk or berth having an air inlet at the side thereof which is lowermost when the bunk or berth is folded, and an air outlet arranged above said inlet, between the side of the car and the bunk or berth when the latter is folded, substantially as set forth.

2. In a car, the combination of a folding bunk or berth having an air inlet at the side thereof which is lowermost when the bunk or berth is folded, and a suction device arranged above said inlet between the side of the car and the bunk or berth when the latter is folded, substantially as set forth.

3. In a car, the combination of a folding bunk or berth having an air inlet at the side thereof which is lowermost when the bunk or berth is folded, an air escape or outlet formed in the roof over said bunk or berth, between the side of the car and the bunk or berth when the latter is folded, substantially as set forth.

4. In a railway car, the combination of the transom wall, the bunk or berth hinged to the side of the car and adapted to be folded up adjacent to the transom wall, air inlets at the lower side of said bunk, and air outlets arranged between the side of the car and said transom wall, above said air inlets, substantially as set forth.

5. In a railway car, the combination of the upper and lower decks or roofs, the transom wall 2, and an outer wall 4, air chambers set in the lower deck between said outer wall and transom wall and communicating with the interior of the car and with the external atmosphere, substantially as set forth.

6. In a railway car, the combination of the upper and lower decks or roofs, the transom wall and the outer wall, a number of air chambers disposed at intervals between said outer wall and transom wall, and having communication with the interior of the car, a draft flue arranged between said walls and decks and communicating with said chambers and the external atmosphere, substantially as set forth.

7. In a railway car, the combination with the upper and lower decks, the transom wall and the outer wall 4, air chambers located between said decks and walls and communicating with the interior of the car, a draft pipe located between said decks and walls and communicating with said chambers, and pipes leading from said draft pipe, and provided with horizontally arranged openings in the external atmosphere, substantially as set forth.

8. In a railway car, the combination of a bunk or berth having air or ventilating holes at its upper and lower sides, the said upper holes communicating with the interior of the car, and a ventilator arranged above the bunk

and communicating with the external atmosphere, substantially as set forth.

9. In a railway car, the combination of a bunk or berth having air or ventilating holes at its upper and lower sides, a valve for closing said upper ventilating holes, and a ventilator arranged above the bunk, and communicating with the external atmosphere, substantially as set forth.

10. In a railway car, the combination of a bunk or berth having air or ventilating holes at its upper and lower sides, the upper holes

communicating with the interior of the car, the transom ventilators near the roof of the car, a ventilator communicating with the interior of the bunk when the latter is closed and with the external atmosphere, and a valve for closing the said upper air holes, substantially as set forth.

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