

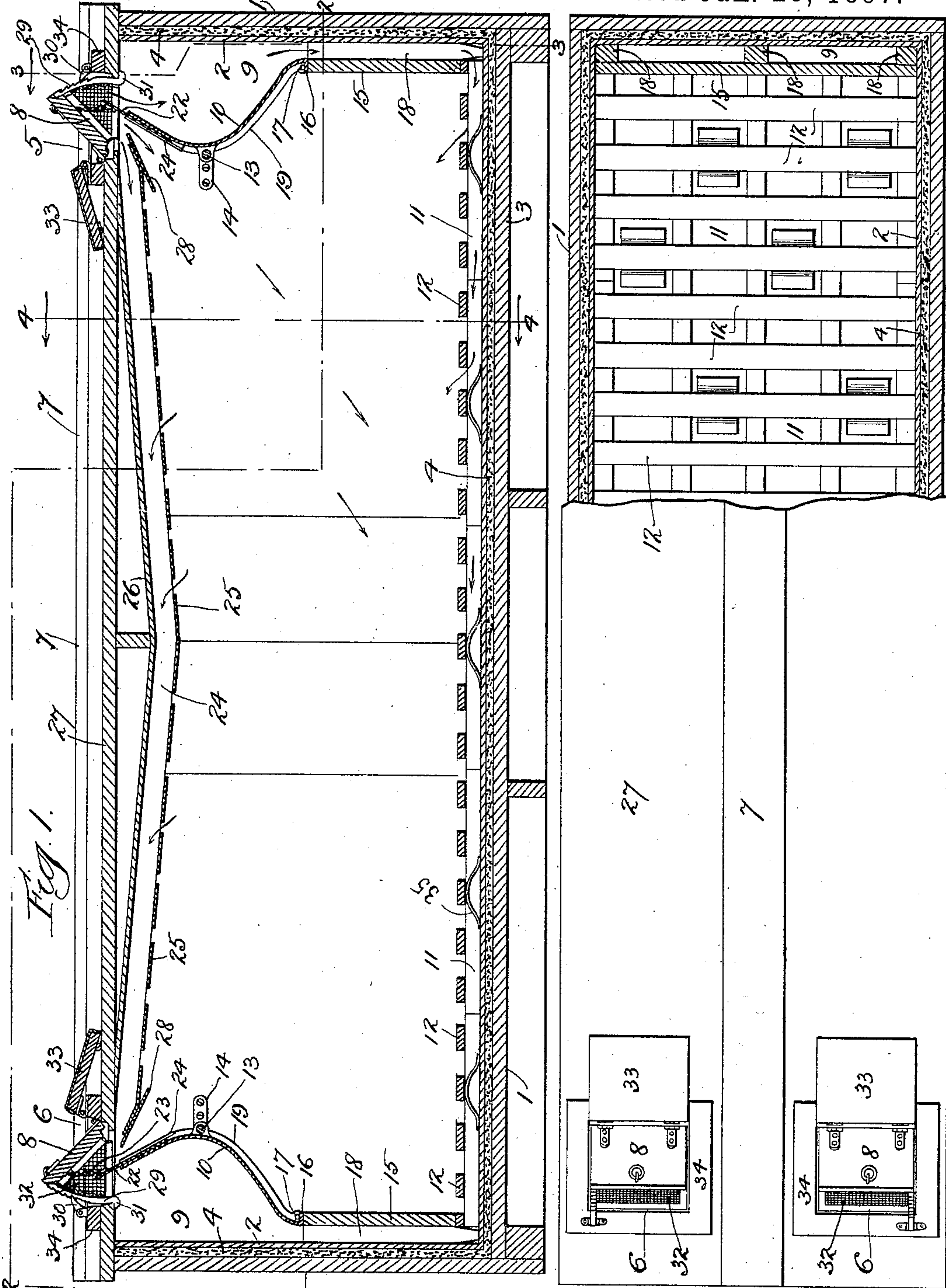
(No Model.)

2 Sheets—Sheet 1.

J. M. DALY.  
CAR VENTILATOR.

No. 575,704.

Patented Jan. 26, 1897.



Witnesses  
Wm. F. Hamming  
Ogna F. Johnson

Fig. 2. Inventor  
John M. Daly  
By Elliott & Hopkins  
Atty.



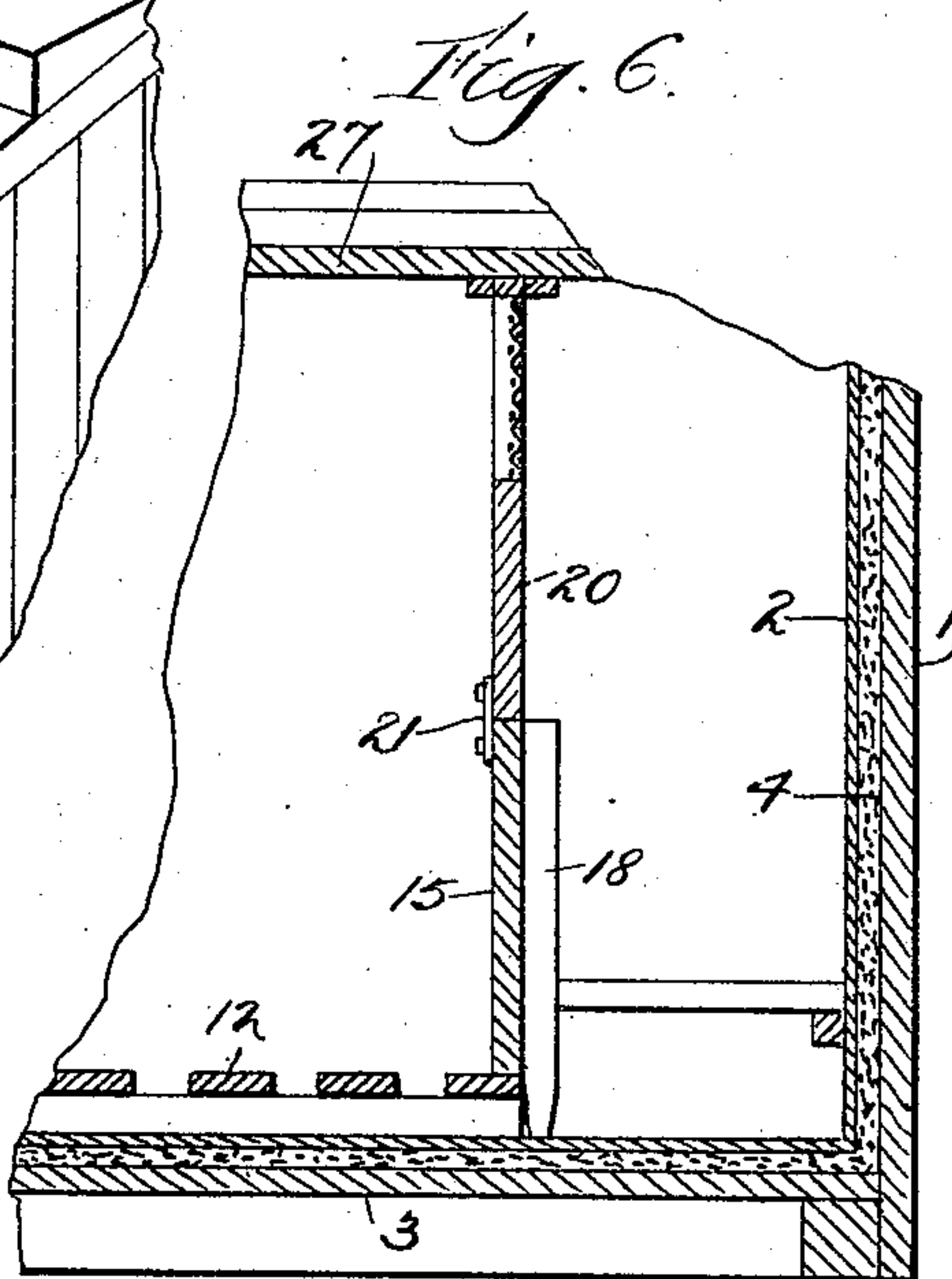
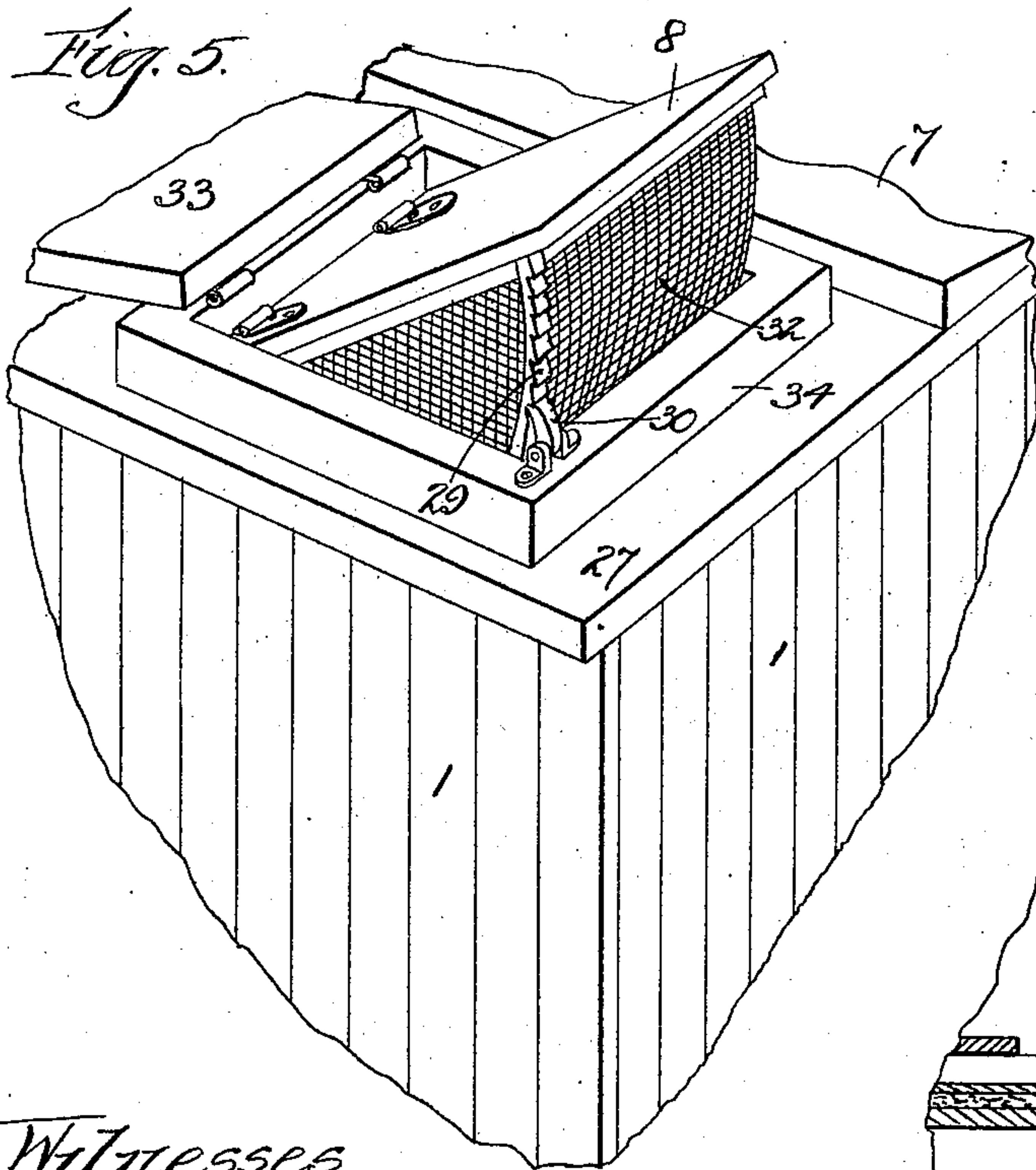
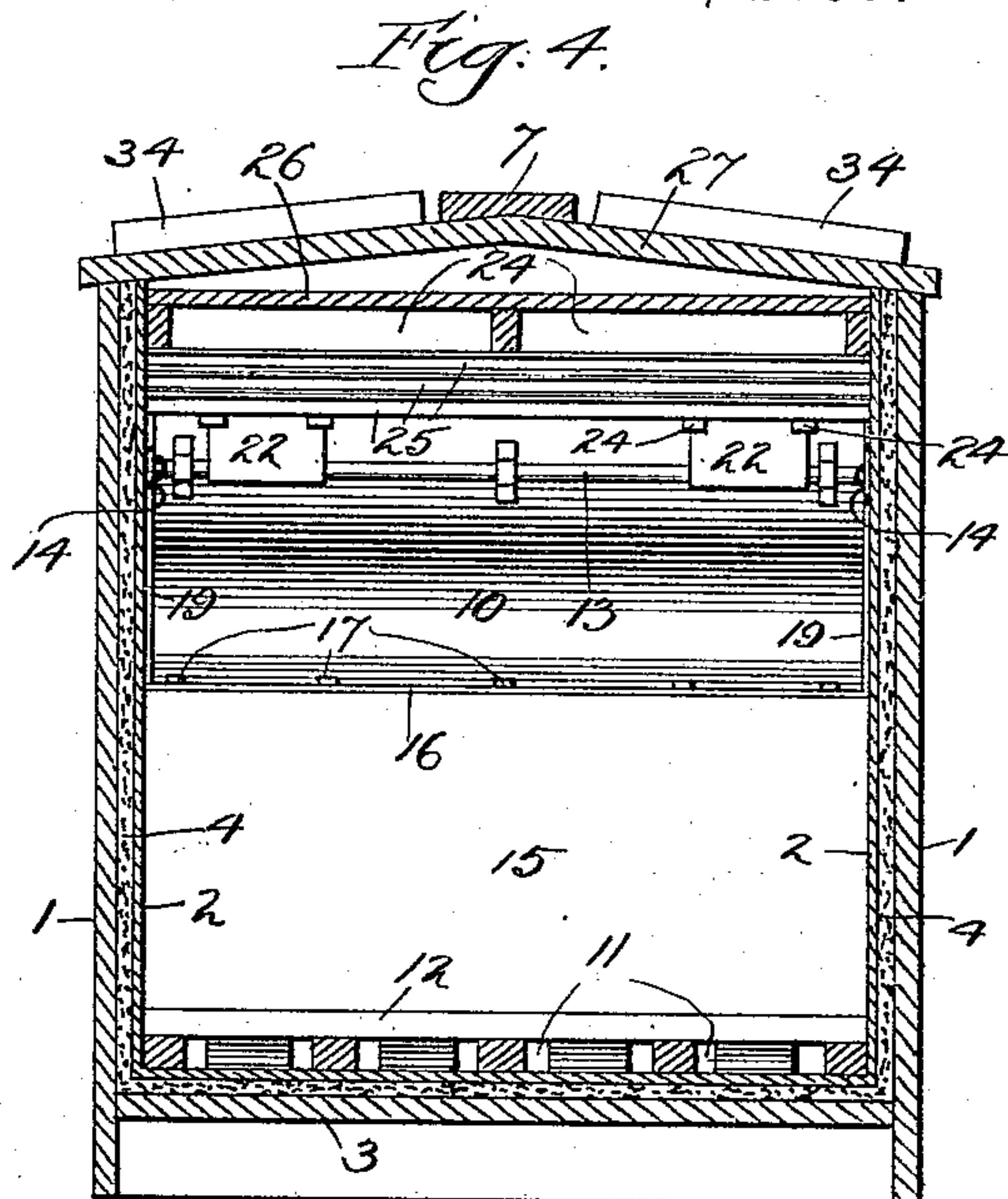
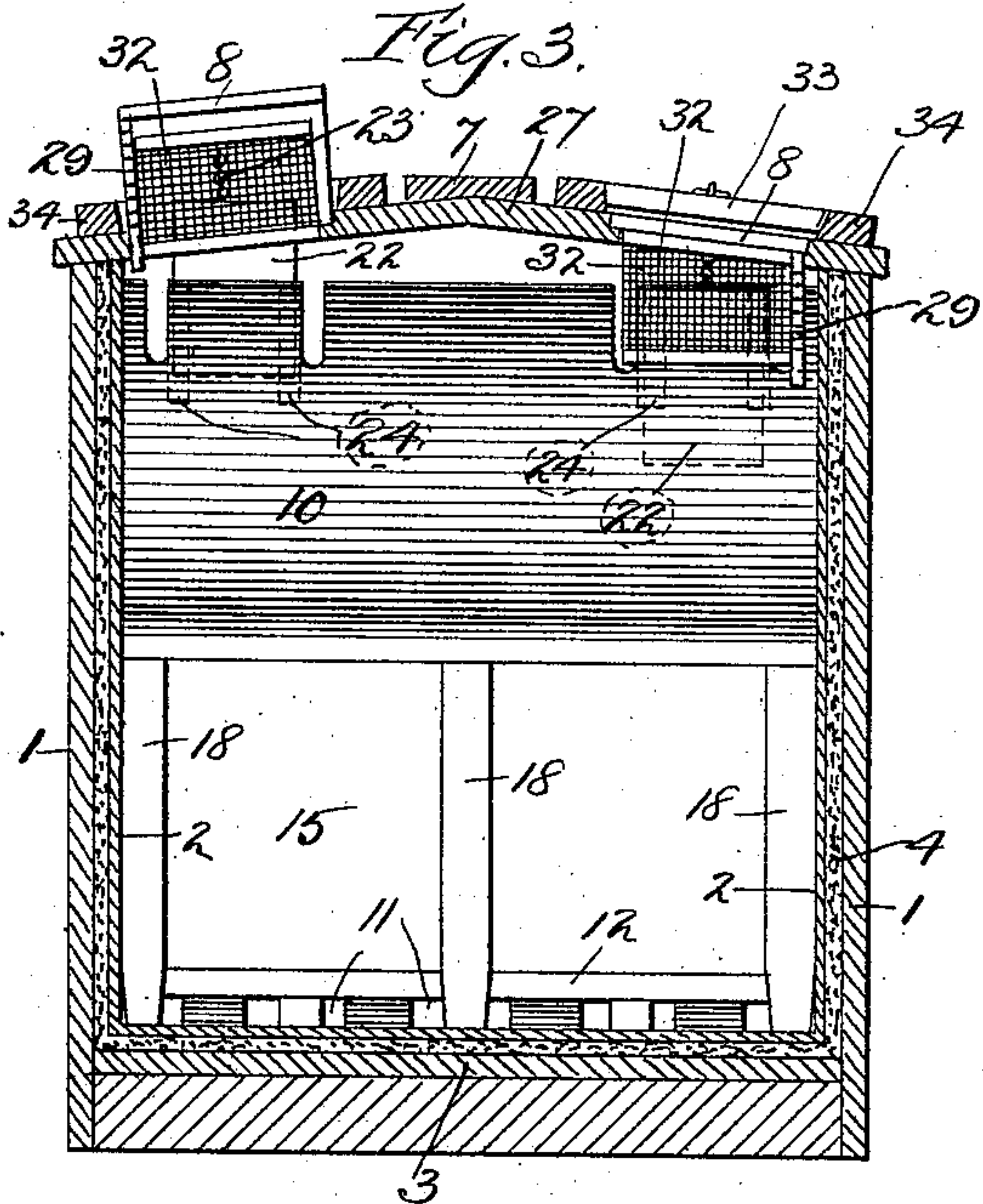
(No Model.)

2 Sheets—Sheet 2.

J. M. DALY.  
CAR VENTILATOR.

No. 575,704.

Patented Jan. 26, 1897.



Witnesses  
Wm. L. Fleming  
Edna B. Johnson

Inventor  
John M. Daly  
By Elliott H. Hopkins  
Attys



# UNITED STATES PATENT OFFICE.

JOHN M. DALY, OF CHICAGO, ILLINOIS.

## CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 575,704, dated January 26, 1897.

Application filed September 11, 1896. Serial No. 605,464. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. DALY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Ventilators, of which the following is a full, clear, and exact specification.

My invention relates more especially to that class of ventilators employed for ventilating freight-cars, and particularly refrigerators and fruit-cars, in which the air for ventilating the car is admitted at the top or near the top at or near each end and is forced through the car by the draft occasioned by its movement, the ends of the car being provided with deflectors or traps which catch the air as the car moves and causes it to descend into the body of the car and thence pass out through the trap or opening at the other end, the lower part of the car being provided with a false bottom, usually composed of slats, under which the air is supposed to descend and thence rise through the fruit or other freight resting thereon. One of the great defects of a ventilator of this description is that the air in entering the car only partially descends into the body thereof, and hence escapes at the other end without having descended into and permeated the goods with which the car is freighted. Another objection is that when the car is standing or motionless the dead air and heat rising from such freight as fruit, &c., collect under the roof and there stagnate without freely escaping and drawing in sufficient air, as is necessary for the thorough ventilation of the freight.

My invention therefore has for its primary object to provide simple means whereby the air upon entering the car will be forced or carried down to and through the freight, thoroughly ventilating the same top and bottom before rising and escaping at the other end.

Another object of my invention is to divide the current of air entering the car into separate currents for respectively carrying off the dead air lodging under the roof and for entering the space below the false bottom and permeating the lower portion of the freight, and in addition to provide a separate and independent current for entering the body of the

car above the freight or between the other two currents and siphoning and drawing off the warm air and gases rising in the car and also impinging directly against and refrigerating the upper portion of the freight.

Still another object of my invention is to make the end channels or passages of the car for carrying the air downward to the false bottom removable, whereby an ordinary ice-box may be placed in their stead, when desired; and a still further object of my invention is to utilize a portion of the ordinary ice-box interchangeably for the said ice-box and form a part of the wall of the said end channels or passages.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts whereby the said objects and certain other objects hereinafter appearing are accomplished, all as will now be fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical longitudinal section of a freight-car provided with my improved ventilator. Fig. 2 is a plan view thereof, partly in section. Fig. 3 is a vertical transverse section taken on the line 3 3, Fig. 1. Fig. 4 is a similar section taken on the line 4 4, Fig. 1. Fig. 5 is an enlarged perspective view of one corner of the car, showing the trap open for admitting air; and Fig. 6 is a vertical longitudinal section of a refrigerator-car, illustrating the manner of constructing the ice-box, whereby the same may be removed and a portion thereof utilized for constituting the end air-passages in my invention.

1 represents the usual outer wooden wall of the car-body, which, if desired, may be lined, as usual, with a false wall 2 and bottom 3, the space between the walls 1 and 2 and between the real and false bottoms being filled with any suitable insulation 4 in the ordinary manner. Each end of the car is provided with two openings 5 6, one of which at each end is preferably arranged on one side of the running-board 7, and each of these openings, at its inner end or side or end remote from the outer end of the car, is provided with an upwardly-inclined deflector or



trap 8, hinged to the roof of the car, as shown, so that when the car moves forward the air will be forced in under the trap 8 through the openings 5 at one end and will enter the car and escape through the openings 6 at the other end.

Arranged at each end of the car, and preferably extending from side to side thereof, is a passage 9, which is composed of a removable wall or plate 10, whose upper end terminates in the openings 5 6 at each end of the car, and is so disposed as to extend across such openings 5 6, and thus divide the air entering the car through these openings into two currents, one current passing down between the plate 10 and the end of the car and the other passing over the plate 10 into the main body of the car. This passage 9 leads downwardly at each end of the car to the air-space 11 under the false bottom 12, which latter is composed of a skeleton frame or number of slats, as usual, and hence it will be seen that as the car moves forward the currents of air, striking the under side of the trap or deflector 8, will be deflected downwardly through the opening 5 or 6 and directed to the air-space 11, whence it will rise through the slats 12 and permeate the plate resting thereon. In order that the current caught by the deflector 8 may be better entrapped and conveyed downwardly to the space 11, the upper end of the plate 10 is curved from the opening 5 rearwardly into the car and then carried toward the end of the car, so as to avoid abruptly arresting the current of air, but to first catch it and then gradually change its course from the horizontal to the perpendicular.

The plate 10 is supported transversely in the car-body by means of a transverse rod or bar 13, having flanges 14 removably secured to the walls of the car, while the lower edge of the plate rests upon the upper end of the wall 15, which constitutes the lower end of the passage 9 and to which the plate 10 is secured in any suitable manner, but preferably by providing the plate 10 with a flange 16, through which screws or other suitable devices 17 are driven into the upper edge of the wall 15. The inner side of the wall 15 is provided with a number of vertical ribs 18, which rest against the end wall 2 of the car, and thus prevent heavy freight that might be thrown against the wall 15 from crushing such wall in and destroying the air-passage 9. The lower ends of these ribs 18 are extended below the wall 15, so as to be inserted between the end slat 12 of the false bottom and the wall 2, and thus serve for holding the lower end of the wall 15 in place. The plate 10 is preferably constructed of thin sheet metal, and it may be retained in shape by upright ribs 19, curved to conform to the plate 10 and having their lower ends turned outwardly to form feet like the flanges 16, which are secured to the upper edge of the wall 15. This wall 15, which constitutes the lower por-

tion of the passage 9, is a part of the ice-box of an ordinary refrigerator-car, as shown in Fig. 6, the portion 15 of the wall of the ice-box being secured to the upper portion 20 by means of cleats 21 or other suitable devices, and the entire wall 15 20 being constructed in any suitable manner, so as to be removed when it is desired to provide the car with my improved ventilator.

In order that the current of air entering the car through the openings 5 or 6 may be more positively divided into two currents, one entering the passage 9 and the other the main body of the car and without interfering with the closing of the trap 8, when desired, I provide the upper edge of the plate 10, immediately under each of the openings 5 6, with a sliding deflector 22, whose upper edge is secured by a chain 23 or other suitable device to the under side of the trap 8, so that when the latter is opened the deflector 22 will be raised and projected upwardly through the opening 5 or 6, and when the trap is lowered such deflector will slide by gravity into the car out of the way of the trap, the deflector 22 being held on the side of the plate 10 by suitable flanges 24, as will be understood.

In order, however, that the dead air rising in the car, and which usually collects under the roof thereof, may be carried off and suction produced for drawing off the hot air in the body of the freight, I provide for a third current extending along under the roof and which also receives air through the passage 5 or 6, according to the direction in which the car is running. This third passage is shown at 24 and it is constituted by an apertured roof 25 or a roof composed of a number of slats, which constitute the lower side of the space 24, while the upper side is preferably constituted by a false roof 26, located below the main roof 27. This space 24 extends from end to end of the car, and the end of the roof 25 at each of the openings 5 6 is provided with a deflector 28, which projects upwardly into the space between the plate 10 and the inner edge of the opening 5, so as to catch a portion of the air and direct it into the space 24. Thus it will be seen that as the car moves forward the air entering the opening 5 or 6 will be divided into three currents, one passing directly under the roof, the other under the floor, and the third striking downwardly into the body of the car and cooling the upper part of the freight.

In order that the dead air, which usually collects under the roof of the car and ordinarily remains therein, may readily pass out through the openings 5 6 while the car is at rest, the air-space 24 is inclined toward at least one, but preferably both, ends of the car, so that the air rising at all points throughout the length of the car will, when striking the upwardly-inclined roof 26, have a tendency to continue on out through one or the other of the openings 5 or 6, and thus at all times



draw off the hot air and fumes rising from the freight. By this means the interior of the car and all portions of the freight therein may be quickly and thoroughly ventilated and the degree of refrigeration or ventilation readily controlled by regulating the degree of opening of the trap 8, so as to admit more or less air, as the occasion requires. In order that the trap 8 may be conveniently held at any desired degree of opening, it is provided with a rack-bar 29, which is engaged by a pawl 30, the lower end of the rack-bar, if desired, being provided with a catch 31 to prevent the trap 8 from being thrown entirely open and thus injuring the sliding deflector 22 or permitting the trap being carelessly placed in such position as to prevent it from directing the air into the car. As more clearly shown in Fig. 5, the trap 8 is provided with a surrounding screen 32 to prevent the admission of cinders and dirt to the interior of the car, the screen 32 being of segmental form and secured to the trap, so as to follow it upwardly, but without entirely emerging from the opening 5 or 6.

If desired, for the sake of sealing the openings 5 or 6 more hermetically a supplemental trap-door 33 may be arranged over the trap 8, whereby the openings 5 or 6 may be hermetically sealed when the car is used as a refrigerator-car. This door 33 is hinged to a surrounding frame 34, into which the door 33 is battened when closed over the trap 8.

Arranged under the slats 12 constituting the false bottom of the car is a number of deflectors 35, which are inclined upwardly at each end, so as to deflect the horizontal current of air upwardly between the slats 12. These deflectors, if desired, may be arranged at suitable intervals or disposed here and there throughout the length and breadth of the car-floor, as more clearly indicated in Fig. 2.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a car-ventilator, the combination of the car having an opening at each end and near the upper portion thereof, an air-passage extending under the roof of the car from one of said openings to the other and communicating with the interior thereof, an air-passage extending lengthwise of the car and adjacent to the floor thereof, an air-passage extending downwardly at each end of the car and communicating with said second air-passage, and means for trapping the air and directing it into said air-passages, substantially as set forth.

2. In a car-ventilator, the combination of the car having a false roof and a false floor, an air-inlet near the roof and end thereof and means for dividing the air entering said inlet into three separate currents one passing above said false roof, one entering the body of the car and the third passing along under the false floor of the car, substantially as set forth.

3. In a car-ventilator, the combination of a car having an air-inlet at its upper portion, a false roof provided with openings and forming an air-space, a false floor having openings and forming an air-space, and a passage leading down the end of the car to said false floor, and means for directing the air from said inlet into said passage and air-spaces, substantially as set forth.

4. In a car-ventilator, the combination with a car having an opening in or near the roof thereof at each end, a false roof forming an air-space extending from the opening at one end to the opening at the other end of the car, a false floor, an air-passage leading downwardly at each end of the car from each of said openings to said false floor, and means for directing the air through said openings and into said air-space and passages, substantially as set forth.

5. In a car-ventilator, the combination of a car having an opening in or near the roof at each end thereof, a false roof forming an air-space extending from said opening at one end of the car to the opening at the other end thereof, a partition or wall dividing the said opening at each end of the car and forming with said false roof three separate passages for the air, and a false floor forming an air-space having a communicating passage with said opening at each end of the car, substantially as set forth.

6. In a car-ventilator, the combination of a car having an opening at each end near the upper end thereof, a false roof forming an air-space extending from the opening at one end of the car to the opening at the other end, an air-passage leading downwardly from the opening at each end of the car, a false floor forming an air-space communicating at each end with one of said downwardly-extending air-passages and means for directing the air into said air space and passages, the downwardly-extending air-passage at each end of the car being located at a distance from the end of the air-passage under the roof whereby a third passage or current leading down into the interior of the car is formed, substantially as set forth.

7. In a car-ventilator, the combination of a car having an air-inlet at the end and upper part thereof, air-passages extending lengthwise of the car and adjacent to the roof and floor respectively and having communication throughout their length with the interior of the car, a partition or wall projecting across said opening and extending downwardly to the passage at the lower side of the car, said passage under the roof having its mouth arranged adjacent to said opening whereby air entering said opening will be divided into separate currents entering said passages respectively, substantially as set forth.

8. In a car-ventilator, the combination of a car having an air-inlet at the end and upper part thereof, air-passages extending lengthwise of the car and adjacent to the roof and



floor respectively, and having communication throughout their length with the interior of the car, a partition or wall projecting across said opening and extending downwardly to the passage adjacent to the floor, said passage under the roof having its mouth arranged adjacent to said air-inlet and said partition or wall being bowed or bent inwardly toward the center of the car and having its lower end carried outwardly toward the adjacent end of the car, whereby the air entering said inlet will be divided into separate currents entering said passages respectively, substantially as set forth.

9. In a car-ventilator, the combination of a car having an air-inlet at the end and upper part thereof, air-passages extending lengthwise of the car and adjacent to the roof and floor respectively and having communication throughout their length with the interior of the car, a partition or wall projecting across said air-inlet and extending downwardly to the passage adjacent to the floor, said passage adjacent to the roof having its mouth arranged contiguous to said air-inlet but at a distance from said partition whereby a third passage is formed for admitting air to the body of the car, substantially as set forth.

10. In a car-ventilator, the combination of a car having an air-inlet at the end and upper part thereof, air-passages extending lengthwise of the car and adjacent to the roof and floor respectively and having communication throughout their length with the interior of the car, a partition projecting across said air-inlet and extending downwardly to the passage adjacent to the floor, said passage adjacent to the roof having its mouth arranged contiguous to said inlet but at a distance from said partition, and a deflector arranged between its said mouth and said partition, substantially as set forth.

11. In a car-ventilator, the combination of a car having an air-inlet at the end and upper part thereof, the upwardly-inclined trap for trapping the air and forcing it into the said inlet, air-passages extending into the car and having their ends arranged adjacent to said air-inlet, an adjustable deflector for di-

recting the air into one of said passages and adapted to be extended upwardly into said air-inlet, substantially as set forth.

12. In a car-ventilator, the combination of a car having an air-inlet at the upper portion thereof and being provided with air-passages for distributing the air throughout the car, an adjustable deflector adapted to be projected upwardly into said air-inlet for directing the air into one of said passages, the hinged trap for trapping the air and forcing it into said inlet, and an operative connection between said trap and deflector whereby the deflector will be automatically raised with the trap, substantially as set forth.

13. In a car-ventilator, the combination of a car having an air-inlet at or near the top thereof, and a removable partition extending across said inlet and projecting downwardly into the car, substantially as set forth.

14. In a car-ventilator, the combination of a car having an air-inlet in its top or roof, the removable partition extending across said inlet and projecting downwardly into the car, the wall detachably secured to said partition and being removably secured in the car and having the ribs supported against the end of the car, substantially as set forth.

15. In a car-ventilator, the combination of a car having an air-inlet at each end thereof, an air-passage extending under and adjacent to the roof of the car and communicating at its opposite ends with said inlets respectively and being downwardly inclined toward the mid-length of the car and having communication throughout its length with the interior of the car, substantially as set forth.

16. In a car-ventilator, the combination of a car having a slatted false bottom, a number of deflectors secured to the under side of said bottom for directing the air upwardly into the car, and means for forcing an air-current under said false bottom, substantially as set forth.

JOHN M. DALY.

Witnesses:

EDNA B. JOHNSON,  
F. A. HOPKINS.