(No Model.)

3 Sheets—Sheet 1.

A. T. PERKINS.

FRUIT CAR.

No. 474,998. Patented May 17, 1892.

Fig. 1.

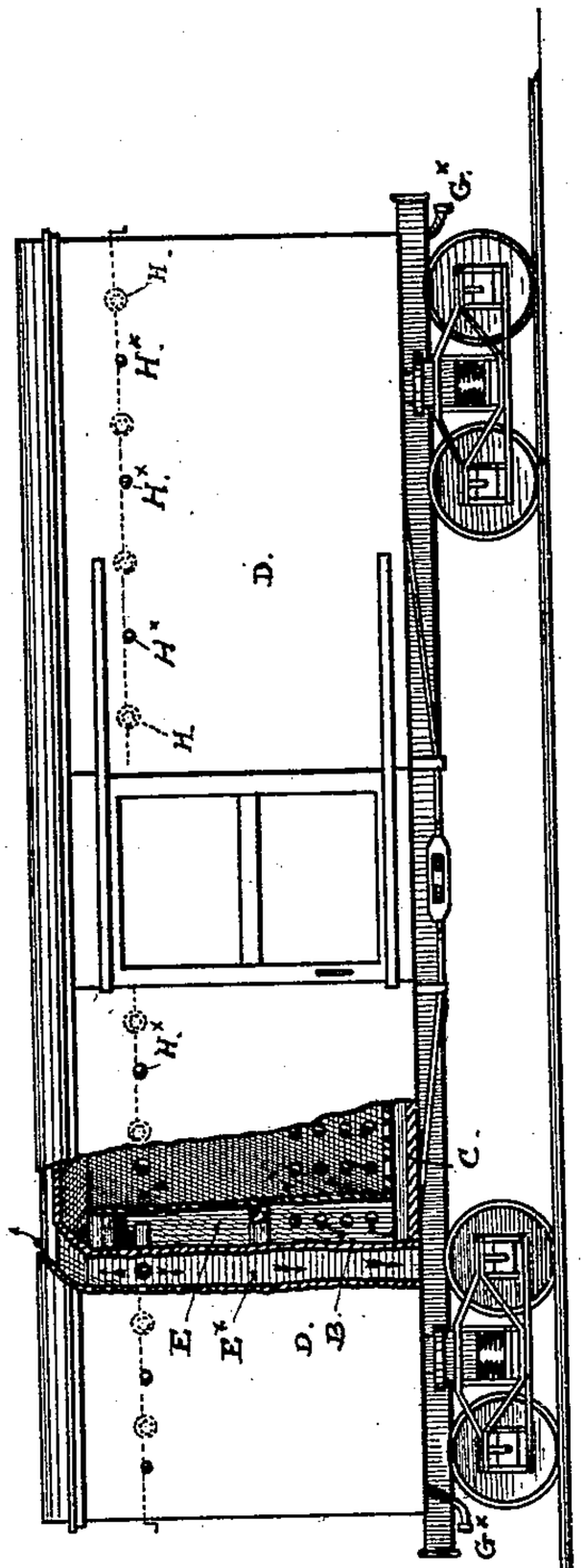
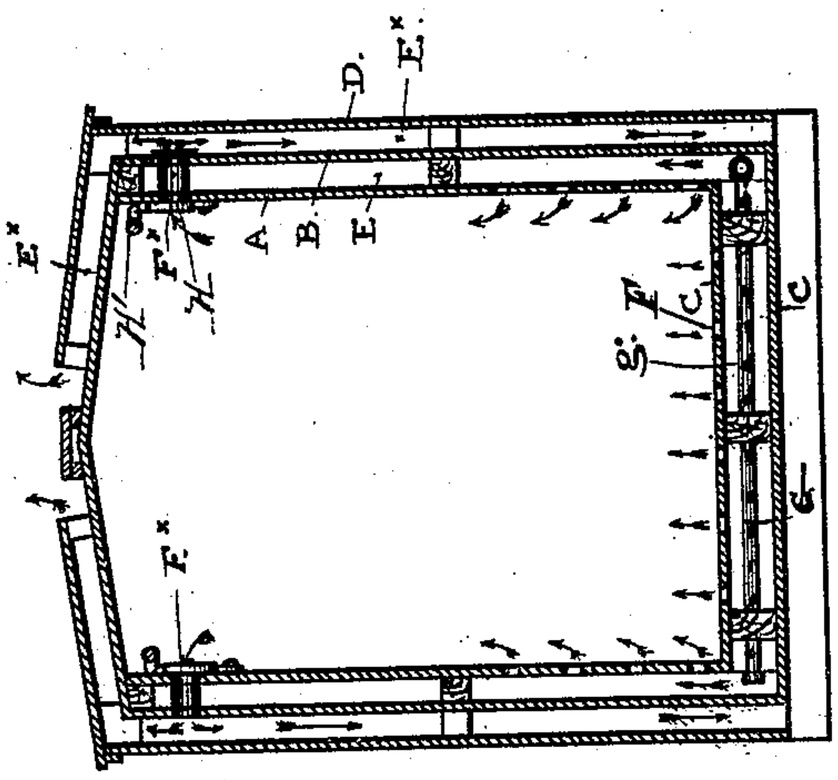


Fig. 2.



Witnesses:

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G. M. Charlot

Inventor:

Alfred T. Perkins

By Smith & Osborn

His Attys.

(No Model.) 3 Sheets—Sheet 2.

A. T. PERKINS.

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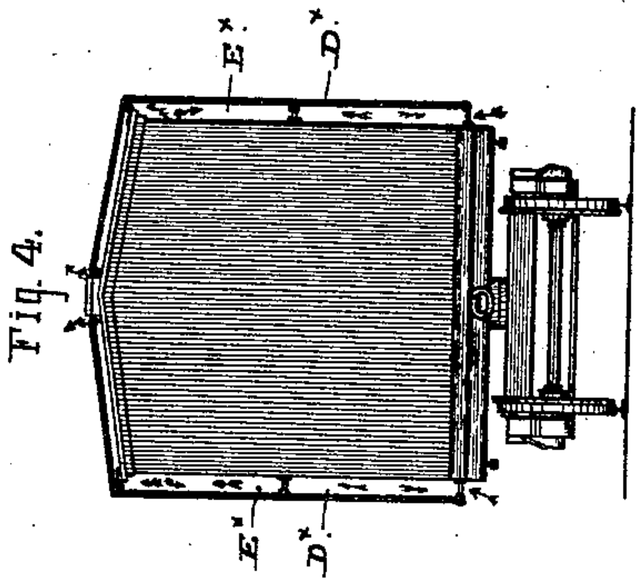

Fig. 4.

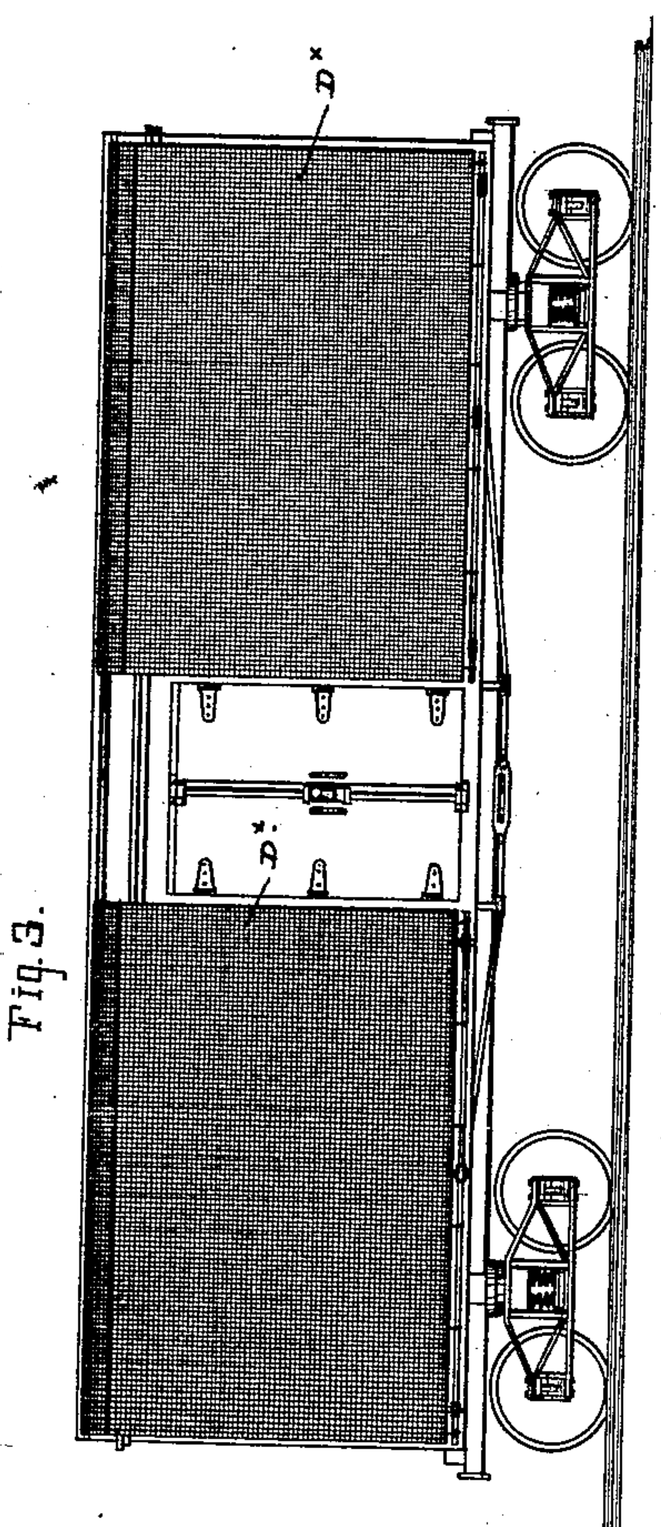

Fig. 3.

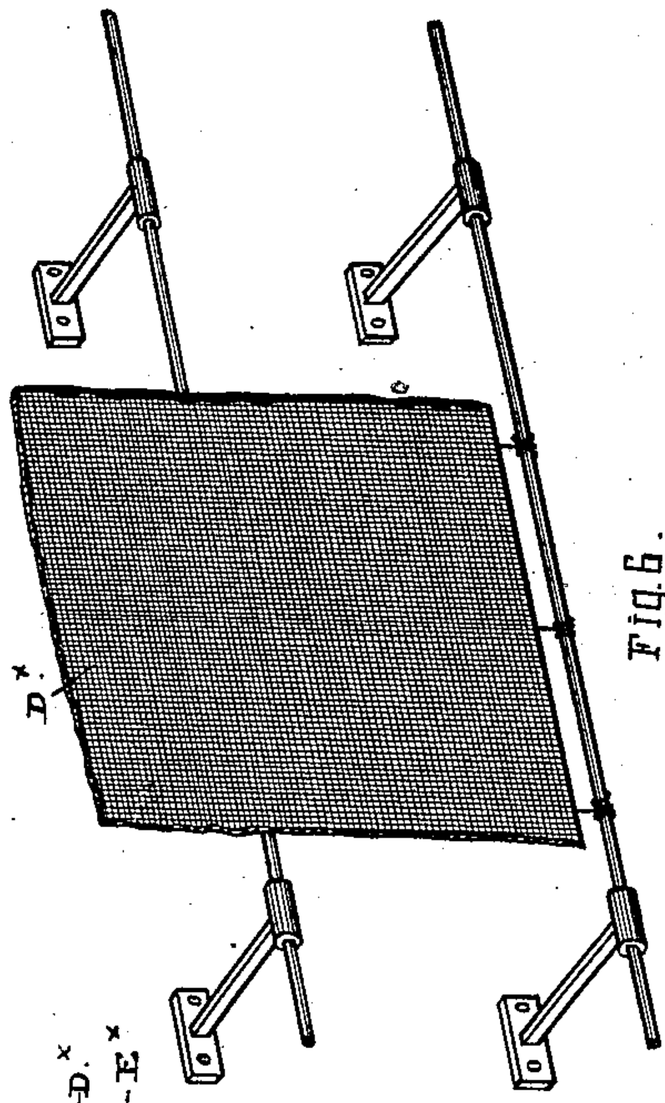

Fig. 6.

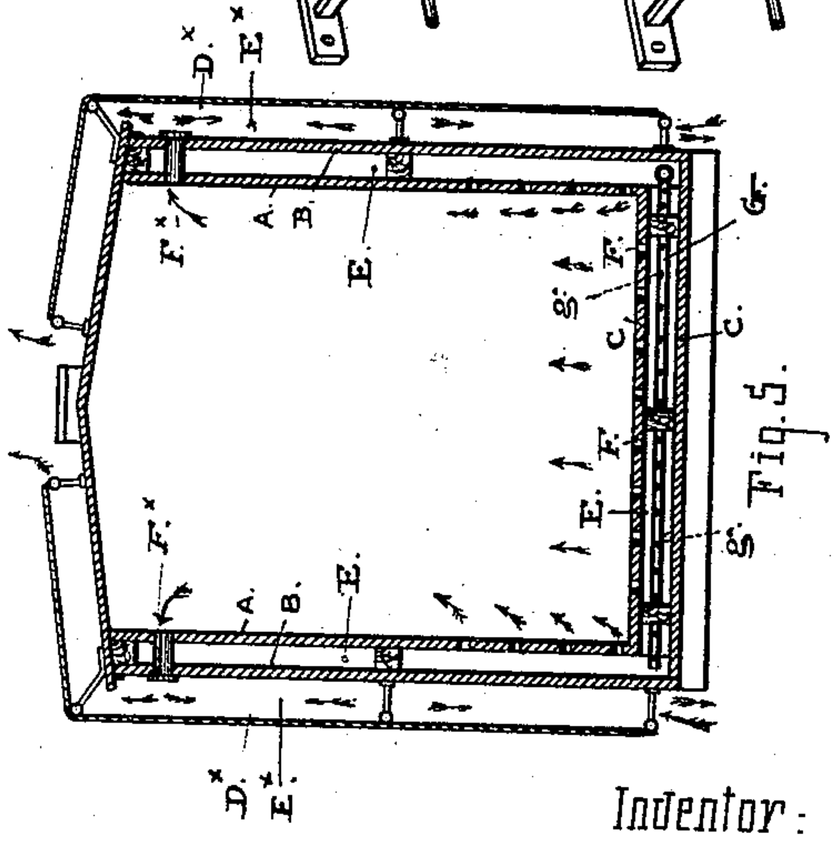

Fig. 5.

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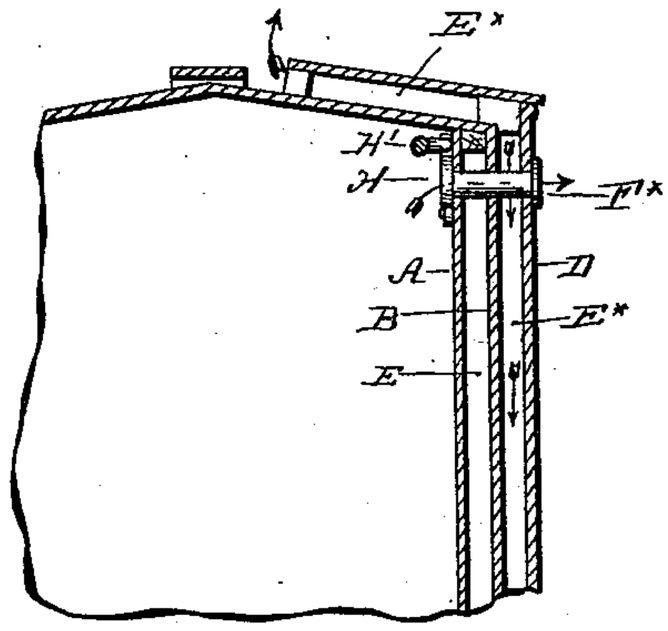
(No Model.) 3 Sheets—Sheet 3.

A. T. PERKINS.

FRUIT CAR.

No. 474,998. Patented May 17, 1892.

FIG. 7.



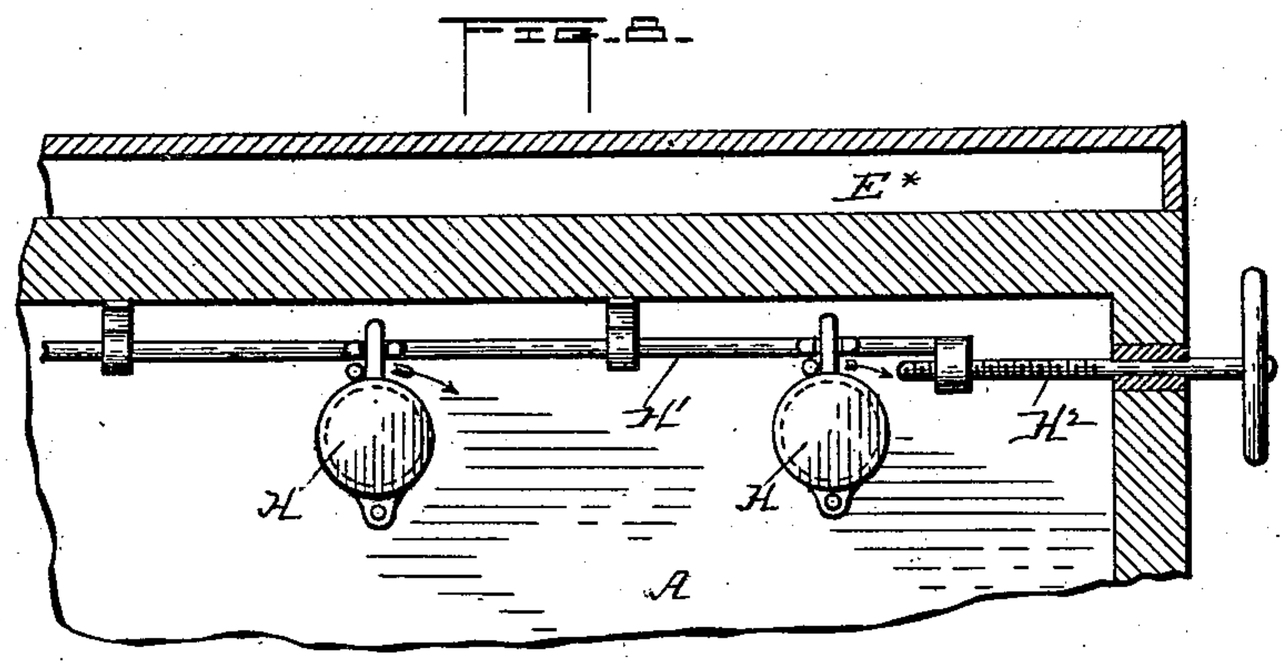
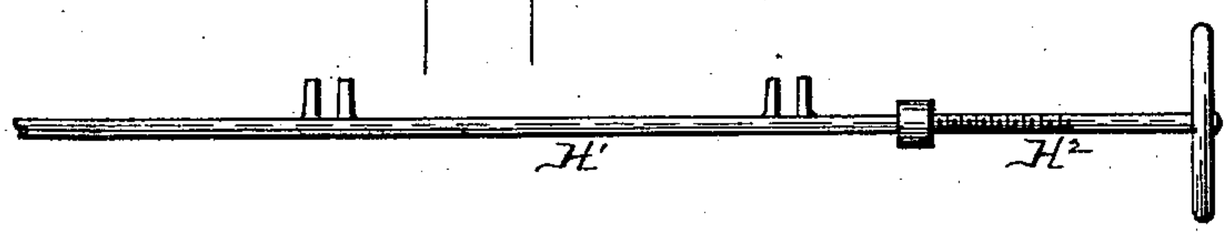


FIG. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED T. PERKINS, OF ALAMEDA, CALIFORNIA.

FRUIT-CAR.

SPECIFICATION forming part of Letters Patent No. 474,998, dated May 17, 1892.

Application filed July 10, 1891. Serial No. 399,072. (No model.)

To all whom it may concern:

Be it known that I, ALFRED T. PERKINS, a citizen of the United States, residing in Alameda, county of Alameda, and State of California, have invented certain new and useful Improvements in Fruit-Cars, of which the following is a specification.

This invention relates to improvements in railway-cars for transporting fresh fruit and other perishable articles and substances and for other purposes as well where a cool atmosphere is desired; and my improvements consist in a novel construction of storage chamber or compartment with two sets of channels, spaces, or passages in or between its walls, having communication separately with the interior space of the chamber and with the outer air and no direct connection with each other, in combination with an air forcing or blowing apparatus adapted to deliver and produce continuous currents of air through the inner space or set of spaces or channels, all as hereinafter fully described.

The following description explains the nature of my said improvement and the manner in which I proceed to construct and carry out the same, reference being had to the accompanying drawings that form part of this specification.

Figure 1 of the drawings is a side elevation of a fruit-car constructed according to my invention, with a portion of the side broken away. Fig. 2 is a vertical section taken transversely through the car-body at any point between the ends. Figs. 3 to 6, inclusive, represent a construction in which the outer shell or casing of the walls is of a temporary character and is removable. Fig. 3 is a side elevation. Fig. 4 is an end view, and Fig. 5 is a cross-section. Fig. 6 represents a portion of the temporary casing and its supports. Fig. 7 is a transverse section of a portion of a car, showing the ventilators going through all three walls. Fig. 8 is an interior elevation of a portion of a car, showing the valves and means for manipulating them. Fig. 9 is a detail view of the operating-rod for the valves.

The body of the car is constructed with double walls or sides A B and the floor or bottom C C, inclosing an inner space, passage, or channel E under the bottom and upward on the sides of the chamber. An outer shell or casing D, inclosing the sides and a portion of the top space, forms another and separate passage or channel $E^{\times}$, between the outer walls of the chamber E and the outer air. Apertures F in the bottom of the chamber connect the interior space of the chamber directly with the channel or passage E, and other apertures $F^{\times}$ at the top or upper portion of the chamber lead directly into the outer passage $E^{\times}$.

Within the space or passage under the floor is a pipe or conductor G, having outlet-apertures *g*, and a coupling $G^{\times}$ on the end outside by which to couple it with an air-conducting pipe from a source of supply provided on a separate car in the train or upon the car itself.

To furnish a constant supply of air under pressure, a pressure-blower and mechanical means to work it are arranged for operation in a separate compartment of the car, or air apparatus of suitable size and capacity can be mounted on a separate car to furnish air under regular pressure to a number of cars in a train by a single service-pipe carried through the train to which the supply-pipes of all the cars will be coupled. A regular pressure to any desired degree is obtained in each car separately by using an accumulator and taking it from that reservoir by the service-pipe. The individual supply-pipe of each car being provided with a pressure-regulating valve, each car can be controlled and regulated independently of the others on the line of service-pipe, and thus the pressure or the rapidity of circulation can be kept at any desired point or degree in each car.

The outlets from the chamber into the space $E^{\times}$ are furnished with gates or valves H, operated either from the outside or the inside of the car, to regulate the size of the openings, and thereby vary the tension or pressure in the rapidity of the outflow to the outside. The operation of the valves H may be accomplished by having them pivoted to move sidewise, as shown in Fig. 8, and providing an operating-rod H′, which connects the series of valves and which is moved as desired by a screw H^2 working in a nut on the operating-rod. The space $E^{\times}$, into which these outlets deliver, is open to the outer air at the ends and bottom and also at the top along the footboard, so that in their outflow and discharge the air-currents pass through the channel or space $E^{\times}$ to the outer air. In such flow and circulation therefore the air entering the chamber through the inner space and the

apertures F passes upward through the contents of the chamber. It is discharged into the outermost space $E^{\times}$ whence it finds exit to the outer atmosphere. By this means a constantly-moving body or stratum of air is maintained through the hollow spaces between the outer casing and the walls of the chamber, and the escaping air-currents are thus utilized to keep the exterior or exposed sides and top of the chamber cool.

Instead of arranging all the outlets to discharge from the chamber into the space $E^{\times}$ under the casing, I sometimes provide direct discharge-apertures $H^{\times}$ from the chamber directly to the outer air by carrying them across the space E′ to furnish more rapid discharge of the air-currents from the chamber and a ready means to increase the circulation as occasion may require. These direct outlets are provided with valves or dampers the same as the other outlets $F^{\times}$.

The construction illustrated in Figs. 3 to 6, inclusive, is intended to furnish a casing of a temporary character to be taken off and stowed away when not required for use. This casing $D^{\times}$ is made of some heavy cloth or fabric—such as duck or canvas—supported by a frame-work clear of the sides of the car to leave a space or passage $E^{\times}$ open at the ends at top and bottom.

Where the door of the chamber is located in the side of the car, as illustrated in Fig. 3, the cover is not carried over it; but in cars having openings in the ends the cover will be without break along the sides. It is not carried over the foot-board or top of the roof, where it is necessary or more convenient to leave that portion of the top uncovered for the train-hands to pass along the top from one car to another. This temporary cover or casing is constructed and applied to be readily detached to be taken off and stowed away—as, for instance, when the car is not carrying fruit and is being used for ordinary freight, as on the return trip from market or during cool weather, or in passing through cool climates, or on those parts of the road above the snow-line. At such times the casing can be removed and stowed in the car to protect it from the weather. At other times, however, as when the car is exposed to hot weather or on those parts of the road running through warm climates the cover is stretched in place and the currents of air are caused to circulate through the space between the car-body and the casing instead of being discharged directly into the atmosphere. In this manner the currents of air passing beneath the casing protect the sides of the car from the direct rays of the sun and form a non-conductor of heat and a cooling means for the body of the car. In the other and more permanent construction before described the circulation or passage of air is maintained in the same manner by the rapid movement of the car and by the forced draft or forced circulation of air from the chamber into and through the outside spaces or passages.

I have not shown or described any particular character of apparatus or means to produce and maintain the air-spaces between the outer sides of the car and the walls of the chamber, for the reason that any ordinary pressure blower or pump with an accumulator to furnish pressure and motor to work the blower can be arranged to supply the air for this purpose. These can be arranged for connection and operation with a number of fruit-cars coupled together in a train without the exercise of any special skill other than that of the intelligent mechanic acquainted with the construction, application, and management of the apparatus for supplying forced air-currents of continuous flow of air under pressure.

It is obvious that a stationary or a portable chamber of the same character can be readily constructed and set up for use in the field, orchard, or other location where it is desired to store fresh fruits and other products until they can be handled or sent to market.

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

1. A railway-car having air-conducting spaces or passages in its walls, with apertures opening into the interior space or chamber of the car, an air-conducting pipe extending across the bottom space of the car, adapted to deliver into the said spaces or passages currents of air under pressure when connected with a source of supply, and an outer casing or covering arranged to inclose between it and the sides or walls of the chamber a channel or passage, which is open to the atmosphere at the ends, and apertures connecting said outer channel or passage with the inner spaces or passages in the walls of the chamber, substantially as hereinbefore described.

2. The combination, with a fruit-storing chamber or compartment, of two sets of air spaces, channels, or passages, of which one set is in direct communication with the interior of the chamber at or near the bottom thereof and is connected with a source of supply of air under pressure and the other set is open to the outer atmosphere and is connected with the upper part of the chamber and the outer atmosphere, substantially as described, for operation as set forth.

3. In combination with a railway-car having air spaces or passages in its walls and apertures connecting the interior of the car with said passages, an outer casing covering the sides and top of the car, but open to the atmosphere at the ends, for operation as hereinbefore described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ALFRED T. PERKINS. [L. S.]

Witnesses:

JAMES L. KING,

EDWARD E. OSBORN.