

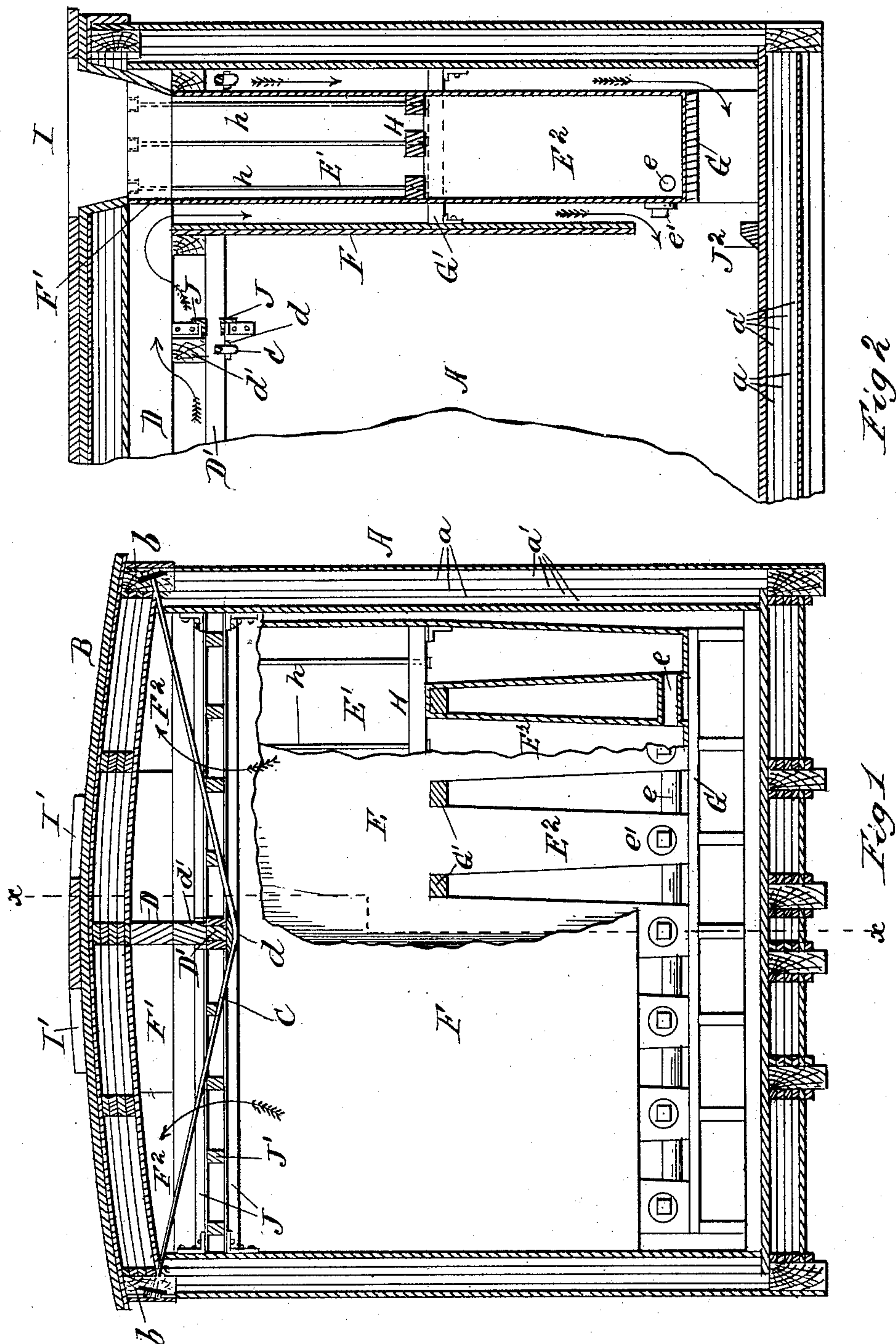
(No Model.)

2 Sheets—Sheet 1.

D. W. RIORDAN.  
REFRIGERATOR CAR.

No. 363,543.

Patented May 24, 1887.



Witnesses  
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Irene Miller.

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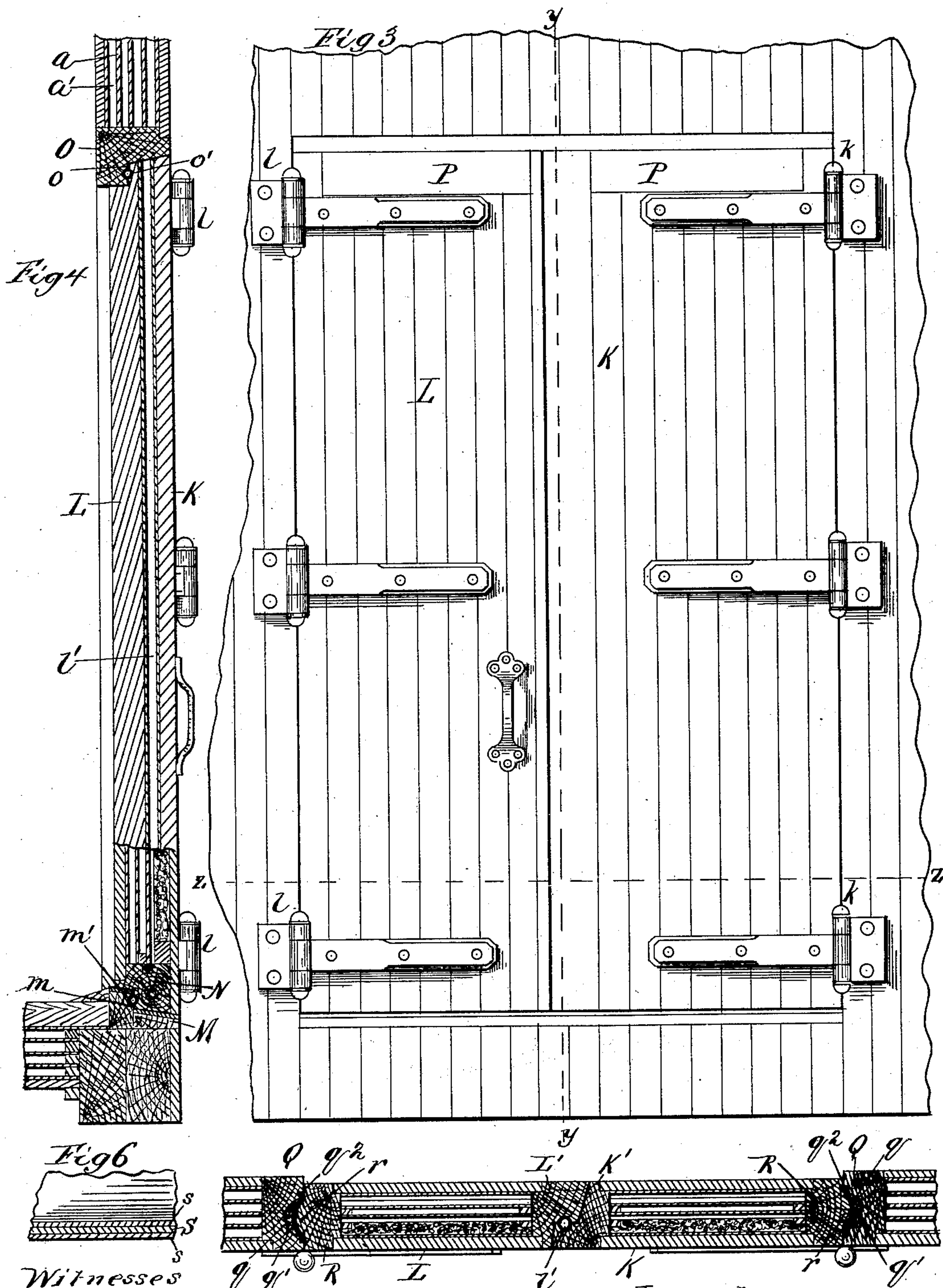
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# UNITED STATES PATENT OFFICE.

DENNIS W. RIORDAN, OF CHICAGO, ILLINOIS.

## REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 363,543, dated May 24, 1887.

Application filed Ju'y 17, 1886. Serial No. 202,310. (No model.)

*To all whom it may concern:*

Be it known that I, DENNIS W. RIORDAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Refrigerator-Cars, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a central vertical transverse sectional view of a refrigerator-car embodying my invention; Fig. 2, a sectional view of one end of the same, taken on the line *xx* of Fig. 1; Fig. 3, a front elevation of the car-doors; Fig. 15 4, a sectional view of the same, taken on the line *yy* of Fig. 3; Fig. 5, a sectional view taken on the line *zz* of Fig. 3, and Fig. 6 a detail sectional view of the insulating material.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to refrigerator-cars, and has for its object to produce a more thorough cooling of the interior of the car, and to prevent more effectually the outer atmosphere 25 from affecting the temperature of the interior.

It also has for its object to produce an improved roof structure, as will be hereinafter more fully pointed out.

To these ends my invention consists in certain novel features, which I will now proceed to describe, and will then particularly point out in the claims.

In the drawings, A represents the car-body, which is in its general construction of any approved form, and is provided with a series of layers of insulating material, *a*, to prevent the internal temperature from being affected by the outer air, these layers being separated by any suitable means, so as to form air-spaces *a'*.

40 The car-body A is provided with a roof, B, of any approved construction, resting upon the top sills, *b*, of the car. In order to additionally strengthen and support this roof, I employ a series of truss-rods, C, the ends of which pass through the top sills, *b*, of the car, and are secured thereto in any suitable manner. These truss-rods are V-shaped in their general form, the two branches extending downward to about the central line of the car, at which 50 point they serve to support the roof, which rests centrally upon a central support, which in turn bears upon the truss-rods. This cen-

tral support is preferably constructed of a longitudinal central beam, D, upon which the roof rests, and a lower longitudinal beam, D', which 55 rests upon the saddle-blocks *d*, shaped to conform to the bend of the truss-rods, at which point they rest upon said truss-rods. Between the longitudinal beams D and D', at a point immediately above each truss-rod, is arranged 60 a series of blocks, *d'*, which serve to complete the central support. By reason of the construction just described I provide an exceedingly light, and at the same time strong, roof structure, and obtain a continuous insulation, 65 there being no break of the latter by cross-beams or rafters.

The ice-tanks E are located at each end of the car, being partially separated from the central portion thereof by means of shields or partitions F, arranged in front of each tank and 70 extending from side to side of the car. These partitions do not extend either to the top or bottom of the car, thus leaving an open space both above and below the said partitions, by 75 means of which the air may pass to and from the ice-tanks, as hereinafter described.

Each tank rests upon a suitable support, G, the support being in the nature of a bench to permit the air to circulate freely under it. 80 Each tank consists of an upper portion, E', open throughout, and a lower portion consisting of a series of separate pockets, E<sup>2</sup>, opening into the upper portion, E'. Supports G', secured to the car-body and to the partition F, 85 and passing between the pockets, serve to give additional support to the tank. The pockets are connected at their lower ends by means of pipes *e*, and are provided with hand-holes *e'*, closed by suitable plugs, by means of which 90 access may be had to their interior to clean them, when desired. A grating, H, is arranged at the bottom of the upper portion, E', of the tank, extending over the mouths of the pockets E<sup>2</sup> and resting partially upon the bot- 95 tom of the upper portion, E', being additionally supported, however, by means of rods *h*, secured to the upper timbers of the car, which rods relieve the tank of the strain of the load upon the grating.

Access is had to the tanks for the purpose of filling them by means of openings I in the roof, closed by suitable covers, I', the cover being shown applied in Fig. 1 and removed in Fig. 100



2 of the drawings. A partition,  $F'$ , extends across the center of the car, at the top of each tank, leaving an open passage,  $F^2$ , at each side, by means of which the air has access to the space surrounding the tanks.

The purposes of the construction just described are as follows: If small ice forms a portion of the charge to be placed within the tanks, the small ice may be placed within the pockets  $E$ . The large ice will be placed in the upper portion,  $E'$ , of the tank, resting upon the grating  $H$ . In any case the water formed by the melting of the ice will pass down into the pockets, thus leaving the larger cakes of ice in position upon the grating, instead of allowing them to be carried against the walls of the tank by the washing of the water while the car is in motion. The melted-ice water passes freely from one pocket to the other, and may be withdrawn from the tank by means of a suitable discharge-pipe to any one of these pockets. The warm air at the top of the car will pass over the shield or partition  $F$  at each end of the car, and thence down in front of the tank, a portion of it passing through the openings  $F^2$  to the rear of the tank and down behind the same. That portion of the air which passes back of the tank descends as it cools, and passes out between the pockets  $E^2$ , and also underneath the bench support  $G$ , where it is joined by that portion of the air which has passed down in front of the tank. The cooled air then passes underneath the shield or partition  $F$  and into the body of the car. By this means a constant circulation of the air in the car is kept up, the warm air rising and passing to the tanks, around which it circulates very thoroughly, and is exposed to the large refrigerating-surface thereof, passing thence into the car again to maintain a low temperature therein.

Angle-irons  $J$  extend across the car within the same, near its top, being arranged in pairs, as shown, to receive between them longitudinal bars  $J'$ , upon which the meat or other article to be transported is suspended in the usual manner. A transverse strip,  $J^2$ , extends across the floor of the car, immediately in front of each of the tanks, to prevent any leakage from these latter from overrunning the floor of the body of the car.

In order to effectually prevent access of the warm exterior air to the interior of the car, I have devised a novel construction of car-doors, which is illustrated in Figs. 3, 4, and 5. The doors  $K$  and  $L$  are hinged to the body of the car by means of hinges  $k$  and  $l$ . The door-sill  $M$  is rabbeted, as shown at  $m$ , a suitable groove being formed in the face of the rabbet to receive a rubber tube,  $m'$ , while the lower rails,  $N$ , of the doors are similarly rabbeted and grooved. The lintel  $O$  is also rabbeted at  $o$ , the face of the rabbet being grooved to receive a rubber tube,  $o'$ , and the top rails,  $P$ , of the door are correspondingly rabbeted and grooved. The lock-stiles  $L'$  and  $K'$  of the

doors are rabbeted, as shown in Fig. 5, to fit one upon the other, the adjacent faces of the rabbets being grooved to receive a rubber tube,  $l'$ , arranged in one of the other of the grooves. The jambs  $Q$  are each provided with a groove,  $q$ , filled with a packing,  $q'$ , of hair felt or other suitable material, a facing of rubber,  $q^2$ , being placed over the whole, while the hinge-stiles  $R$  of the doors are provided with a longitudinal rib,  $r$ , of smaller depth than the grooves  $q$ . It will thus be seen that every joint of the doors is provided with a rubber packing, which, when the doors are closed, will effectually seal these joints and prevent any escape of the air from within the car or any entrance of the air from without. It will of course be understood that the rubber packings may be attached to either one of the members, although I prefer to attach them in the manner hereinbefore described. The doors themselves are constructed of the usual framework, as described, with the usual inner and outer sheathings and intermediate layers of insulating material and hair felt.

The insulating material which I prefer to use is illustrated in detail in Fig. 6 of the drawings, and consists of a central layer,  $S$ , of canvas, to each side of which one or more layers,  $s$ , of papers are glued or pasted, the whole forming a tough and strong material, well calculated to prevent the passage of the air in one direction or the other.

It is obvious that various modifications in the details of construction and arrangement of the parts may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the drawings.

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

1. The combination, with the ice-tanks  $E$ , composed of the upper portion,  $E'$ , and pockets  $E^2$ , of the grating  $H$ , arranged within the tank at the bottom of the upper portion, and supported by means of rods  $h$ , attached to the car-body, substantially as and for the purposes set forth.

2. In a refrigerator-car, the combination, with the car-body, of the shields  $F$ , extending across the same, and having air-passages above and below, and the tanks  $E$ , arranged between the said shields and the ends of the car, and provided with pockets  $E^2$ , between which the air may circulate, substantially as and for the purposes set forth.

3. In a refrigerator-car, the combination, with the ice-tanks  $E$  and the central filling-openings,  $I$ , of the partitions  $F'$ , extending across the center of the car and forming the side air-passages,  $F^2$ , substantially as and for the purposes set forth.

4. The combination, with the car-body  $A$  and partitions  $F$ , of the ice-tanks  $E$ , mounted



on bench-supports G, and the additional supports, G', secured to the shields and car-body, and passing between the pockets which form the lower parts of the tanks, substantially as  
5 and for the purposes set forth.

5. In a refrigerator-car, the combination, with the doors K and L, provided with rabbeted frames, of the correspondingly rabbeted door-way-frame, grooves in the rabbets, and rubber tubing arranged within the said grooves  
10 to form a packing, substantially as and for the purposes set forth.

6. The combination, with the hinge-stiles R of the doors, provided with longitudinal  
15 ribs r, of the jambs Q, having grooves q, provided with packings q', and rubber facing q<sup>2</sup>, substantially as and for the purposes set forth.

7. The combination, with the car-roof B and

the top sills, b, to which it is secured, of the V-shaped truss-rods C, having their ends se- 20 cured to the top sills, and the central support resting upon the truss-rods to support the roof, substantially as and for the purposes set forth.

8. The combination, with the roof B and top 25 sills, b, of the V-shaped truss-rods C, having their ends secured to the top sills, and the central support consisting of the longitudinal beams D and D' and blocks d', and the saddle-blocks d, constructed to conform to the 30 bend of the truss-rods, substantially as and for the purposes set forth.

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Witnesses:

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