(No Model.) 2 Sheets—Sheet 1.

C. B. HUTCHINS.

FREIGHT CAR ROOF.

No. 343,173. Patented June 8, 1886.

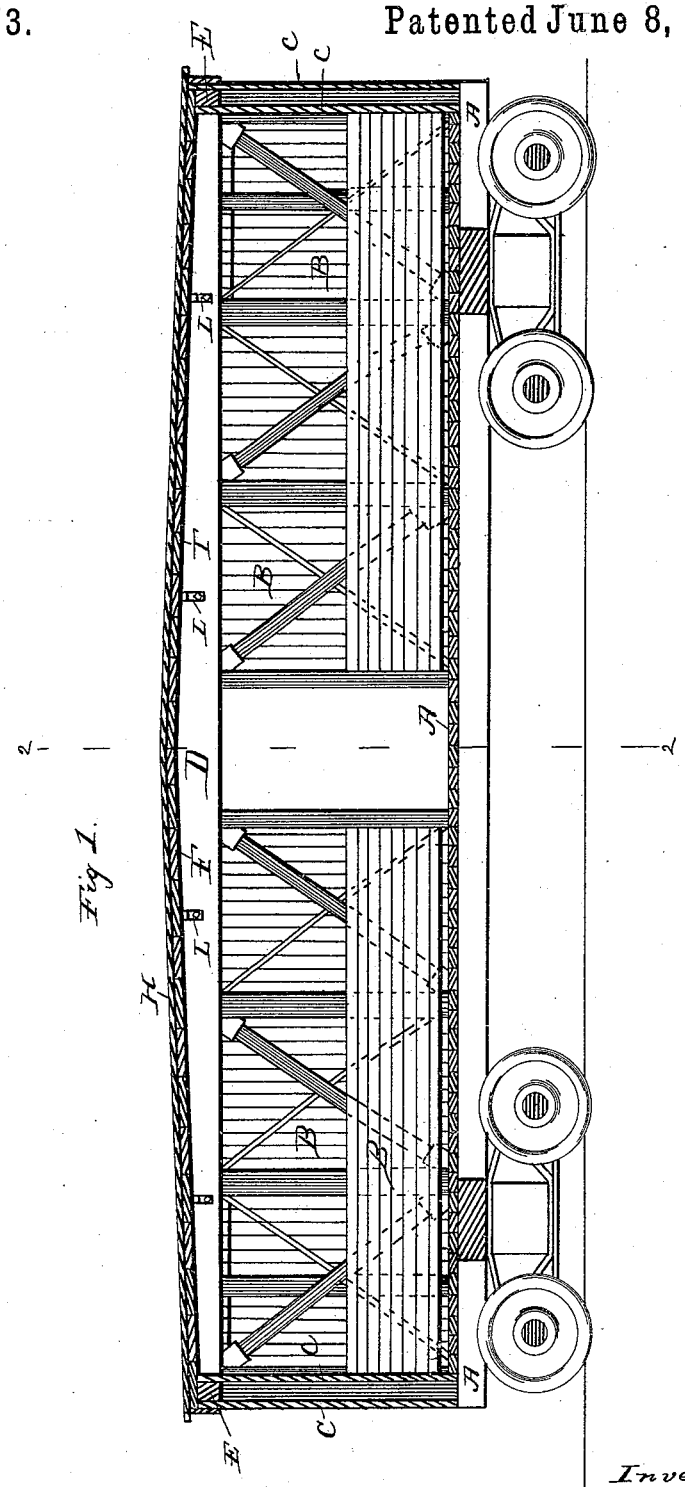

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

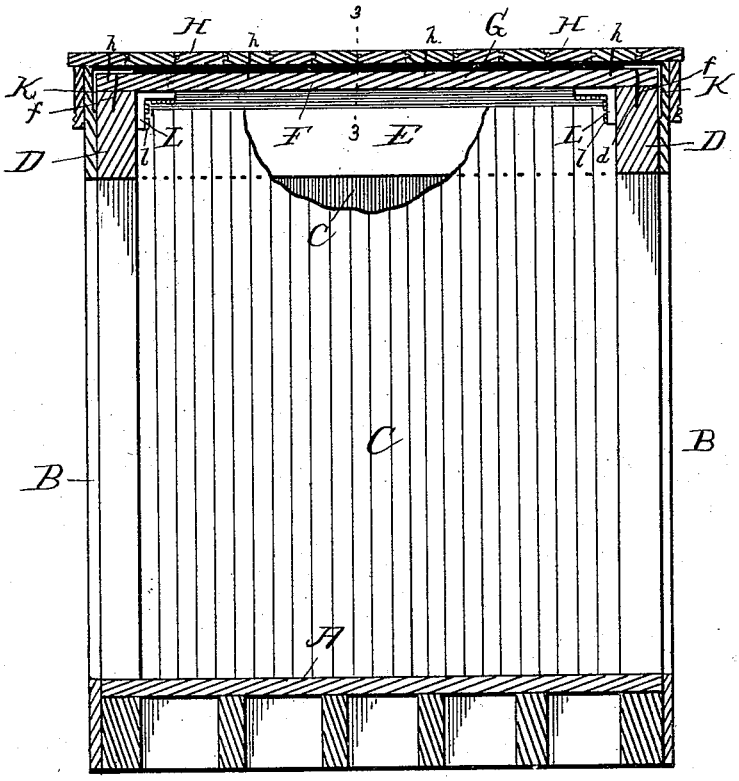
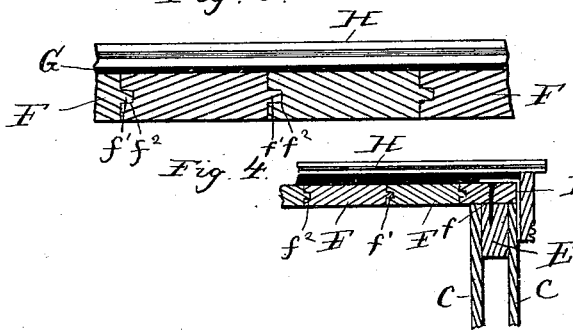


Fig. 3.



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Inventor:
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UNITED STATES PATENT OFFICE.

CARLETON B. HUTCHINS, OF DETROIT, MICHIGAN.

FREIGHT-CAR ROOF.

SPECIFICATION forming part of Letters Patent No. 343,173, dated June 8, 1886.

Application filed March 15, 1886. Serial No. 195,237. (No model.)

To all whom it may concern:

Be it known that I, CARLETON B. HUTCHINS, a citizen of the United States, residing in Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Freight-Car Roofs, of which the following is a specification.

My invention relates to the construction of roofs for freight and other cars.

Heretofore freight-car roofs have usually been constructed with a regular frame-work by and upon which the roofing-boards or roof proper is supported, and by which the roof is given a pitch from the longitudinal center line of the roof to each side. This frame-work ordinarily consists of a number of transverse beams or rafters mortised or notched at each end into the top longitudinal plates or beams at each side of the car, in connection with suitable purlins or longitudinal pieces resting on these transverse rafters, and upon which the roofing-boards are laid, the pitch of the roof to each side being given by tapering these transverse rafters from the middle to each side. These transverse beams or rafters, being ordinarily six or eight or more inches in depth at their middle, occupy considerable space in the top of the car, which cannot be utilized for any purpose, and being left exposed in the interior of the car they offer obstructions to sliding or moving articles of freight, like furniture, lumber, boxes, &c., to the ends of the car, so that it is in fact impracticable to fill the car even within several inches of these rafters. This transverse rafter construction of roof thus makes it necessary to build the car several inches higher than would otherwise be required. These exposed transverse beams or rafters, projecting down six or eight inches from the roofing-boards of the car, are peculiarly objectionable in cars used for transporting live stock—such as horses, for example—by reason of the heads or other parts of the animals being knocked or bumped against the same, and thus often occasioning serious injury, and as the transverse beams or rafters cannot be secured to the longitudinal side beams or plates of the car by the gains or notches cut in said plates with sufficient firmness and strength it is with this construction of roof found necessary to employ iron transverse tie-rods with threaded ends and nuts to tie and bind the two side walls of the car together, thus materially increasing the cost of manufacture. The gains or notches cut into the longitudinal side plates of the car also materially weaken them; and this construction of roof also requires in its manufacture a great deal of skilled labor or carpenter work, as well as the use of expensive lumber (usually hard wood of first quality is employed) for the transverse beams or rafters and other frame-work of the roof, and such roofs are also peculiarly liable to leak over the rafters, and thus cause decay.

It is the object of my invention to provide a roof for freight-cars of a simple, cheap, strong, and durable construction, the use of which will reduce the height of the car several inches without diminishing its capacity, which will have no transverse or other beams projecting down from the roof of the car in its interior, and which will obviate or overcome other objections or difficulties incident to the frame-work of freight-car roofs heretofore in use; and to this end or object my invention consists, in connection with the ordinary bottom and side walls or frame-work of a freight or other car, of a roof therefor composed of transverse plank or boards, preferably notched, and about two inches in thickness, extending across the car from side to side and laid flat upon and spiked at each end to the top longitudinal side plates or beams of the car, and longitudinal roofing-boards extending from end to end of the car laid crosswise upon and nailed to said transverse boards or plank. The pitch of the roof extends from the middle of the car to each end, and preferably is given by tapering or curving the upper face of the longitudinal plates or beams at each side of the car upon which the transverse boards rest. Where my roof is being applied to old cars, however, a very convenient way of giving the requisite pitch toward each end of the car is simply to spike on top of the longitudinal side plates tapering boards or pieces of timber. The preferable degree of pitch is about two inches—that is to say, the longitudinal side plates should be about two inches higher at the middle than at each end. Suitable roofing compound or other means of making the roof water-tight is interposed between the transverse boards and the longitudinal roofing-boards.

The transverse boards or plank should be either matched or composed of two thinner layers laid so as to break joints, and spiked together.

To protect the ends of the transverse boards, and prevent any water or moisture getting in between the same and the longitudinal side plates upon which they rest, I provide strips of canvas, drilling, or other suitable fabric, saturated with roofing compound or other waterproofing material, which strips lap over the edges of the roof and down over the ends of the transverse boards and the sides of the top plates or beams of the car. This fabric strip should extend in upon the transverse boards about fifteen inches from the edge of the roof, all around, or both at sides and ends of the car, and should lap down two or three inches upon the outer side or face of the top plates of the car both at sides and ends. This water-proof fabric strip will thus serve to keep the top plates or beams of the car, as well as the ends of the transverse boards, perfectly dry and secure against decay.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a central longitudinal section of a freight-car embodying my invention. Fig. 2 is an enlarged cross-section on line 2 2 of Fig. 1. Fig. 3 is an enlarged partial longitudinal section on line 3 3 of Fig. 2; and Fig. 4 is a section through the end corner of the car.

It should be observed that the drawings are not made to scale, and that the thickness of the boards and size of the frame-timbers, &c., of the car are somewhat exaggerated in relation to the dimensions of the car for sake of clearness of illustration of those parts to which my invention particularly relates.

In said drawings, A represents the bottom or base frame-work of the car; B B, its sides, and C C its ends. These parts of the car are or may be of any ordinary or suitable construction.

D D are the top longitudinal plates or beams of the car, and E E are the like top end beams or timbers, suitably framed or mortised with the former, and with the vertical studs or posts and diagonal braces composing the side and end frames or structures, B B and C C. The side plates, D, are preferably tapered or curved on their upper face from their middle *d* toward each end to give a pitch to the roof from the middle toward each end. The extent of this taper or pitch should preferably be only about two inches. For clearness, however, it is considerably exaggerated in the drawings. The pitch may also be produced by other suitable substitute or equivalent means than by tapering the upper face of the side plates, D D, and some of the advantages of my invention may be had, even though the roof be given no pitch whatever. The upper face of the plates D D should be left flat, excepting the slight curve or taper toward each end, and the transverse boards F F are laid directly thereon and are securely spiked thereto at each end by the spikes *f f*. These transverse boards or planks should be matched together—that is, furnished with tongues *f'* and grooves *f²*—to render the joints tight. A water-proof coating, G, preferably composed of two or more layers of felt and a suitable roofing compound—such, for example, as that described in my Letters Patent of December 29, 1885, and numbered 333,467—applied to each layer of felt, is laid down upon the upper surface of the transverse boards F F. The liquid or semi-liquid compound, being applied hot in the ordinary manner, fills the joints or interstices between said boards.

H H are longitudinal roofing-boards, extending from end to end of the car. These roofing-boards are preferably matched or tongued and grooved together, and being laid down upon the coating G before the roofing compound cools or hardens, said compound will enter and fill the joints between said boards and make the roof perfectly water-tight.

K is a marginal strip of canvas or drilling or other suitable fabric, saturated with roofing compound, which overlaps the corner of the car all around, and which extends or should extend about fifteen inches from the edge of the car on the transverse boards F F, and between the same and the water-proof coating G. The lower edge of these fabric strips K projects down over the edge of the transverse boards F F, and should lap down two or three inches on the outer face of the plates or beams D D and E E all around. This water-proof fabric strip K thus overlapping the corner of the car securely protects the outer ends and edges of the boards F F, as well as the plates or beams D D and E E.

Knees or angle-plates L L may be secured at the exterior corners by bolts *l l*, extending through the plates or beams D D and the boards F F, to add stiffness and rigidity, if desired. The transverse boards F F, being securely spiked to the plates or beams D D, render the car much stronger and more rigid than the cars provided with the ordinary frame-roofs heretofore in use.

It will be observed that my roof is of a very cheap and simple construction and requires no special framing and very little labor to make or apply it, the transverse boards F F being simply spiked down upon the plates D D, and the outer roofing-boards, H H, being simply laid and nailed down upon the transverse boards F F. The nails *h h*, by which the roofing-boards H H are secured in place, should not be long enough to extend through the coating G and the boards F F. The roofing compound, with which the coating G is saturated or in part composed, prevents any water or moisture from following the nails or rusting them.

My improved roof is peculiarly applicable to use upon refrigerator and other freight cars; but it may also be used upon other kinds of cars.

I claim—

1. The frameless car-roof consisting of transverse boards F F, secured at each end to the side walls of the car, in combination with longitudinal roofing-boards H H, extending from end to end of the car, substantially as specified.

2. The frameless car-roof consisting of transverse boards F F, secured at each end to the side walls of the car, in combination with longitudinal roofing-boards H H, extending from end to end of the car, and a water-proof coating, G, between said transverse boards and said roofing-boards, substantially as specified.

3. The frameless car-roof consisting of transverse boards F F, secured at each end to the side walls of the car, in combination with longitudinal roofing-boards H H, extending from end to end of the car, said roof having a pitch from near the middle toward each end, substantially as specified.

4. In a car, the combination of top longitudinal side plates or beams, D D, of transverse boards F F, spiked to said plates or beams D D, and longitudinal roofing-boards H H, substantially as specified.

5. In a car, the combination of top longitudinal side plates or beams, D D, of transverse boards F F, spiked to said plates or beams D D, and longitudinal roofing-boards H H, and water-proof coating G, substantially as specified.

6. In a car, the combination of top longitudinal side plates or beams, D D, of transverse boards F F, spiked to said plates or beams D D, longitudinal roofing-boards H H, and water-proof fabric strip K, overlapping said boards F F at the corner, substantially as specified.

7. In a car, the combination of top longitudinal side plates or beams, D D, of transverse boards F F, spiked to said plates or beams D D, and longitudinal roofing-boards H H, said plates or beams D D having a curve or taper from near the middle toward each end, substantially as specified.

8. The combination, with a car, of a water-proof fabric strip, as K, overlapping the corner of the car and lying under the outside roofing-boards, substantially as specified.

9. The combination, with a car-roof, of top plates or beams, D D and E E, a water-proof fabric strip, K, nailed to the outer face of said plates or beams and overlapping said car-roof under the outside roofing-boards thereof, substantially as specified.

10. The combination, with the vertical walls of a car, of transverse boards F F, secured thereto, longitudinal roofing-boards H H, and angle-plates L L, substantially as specified.

11. The combination of plates or beams D D and E E with transverse boards F F, longitudinal roofing-boards H H, water-proof coating G, and angle-plates L L, substantially as specified.

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Witnesses:

EDMUND ADCOCK,

H. M. MUNDAY.