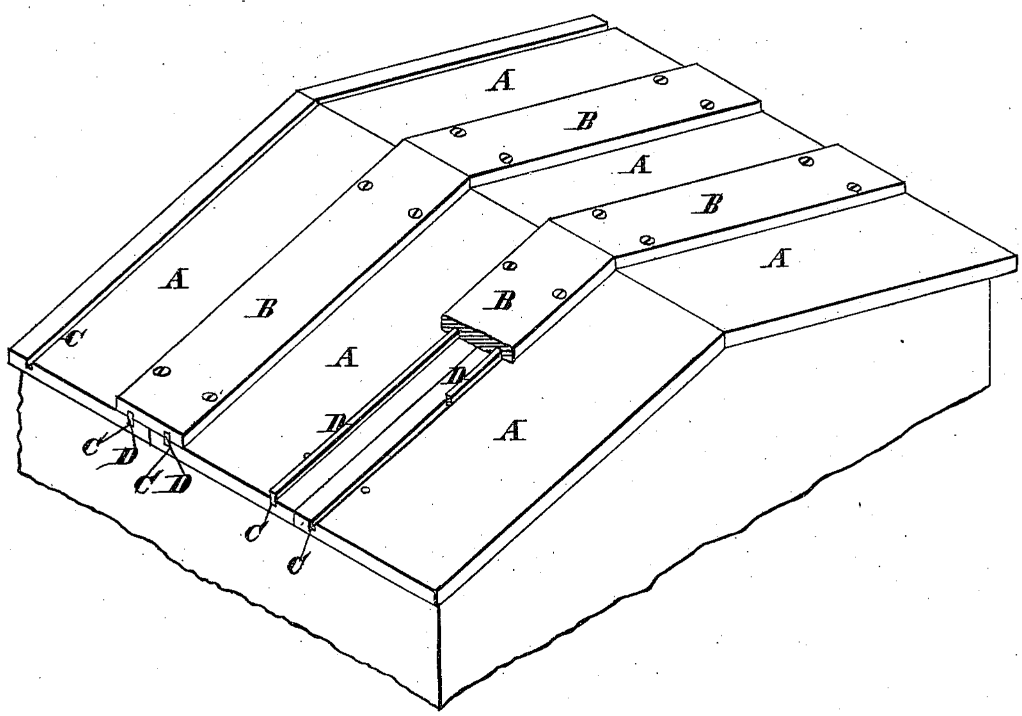
E. U. BENEDICT.

CAR-ROOFS.

No. 195,254. Patented Sept. 18, 1877.



Witnesses.
Jac. Scheitlin
Penn Halsted

Inventor.
Elias U. Benedict
per John J. Halsted
Atty.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ELIAS U. BENEDICT, OF AURORA, ILLINOIS, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO EDWARD T. PRINDLE, OF SAME PLACE.

IMPROVEMENT IN CAR-ROOFS.

Specification forming part of Letters Patent No. **195,254**, dated September 18, 1877; application filed July 31, 1877.

To all whom it may concern:

Be it known that I, ELIAS U. BENEDICT, of the city of Aurora, county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Roofs for Railroad-Cars and other structures; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

The drawing is a perspective view of my invention as it appears upon an ordinary box or house railroad-car, ready for use.

Letters of like name and kind refer to like parts in the figure.

It is well known that a great number of different kinds of roofs are in use upon railroad-cars and other structures, and they are constructed entirely or in part of metal, wood, canvas, rubber, &c., the design of which is, of course, to protect the contents within from damage by rain; but, in consequence of the great weight of many of them, also the torsional strain to which railroad-cars especially are subjected, all have been found to be more or less objectionable, and none, except the common double board roof, is now in general use, and even this absolutely fails to produce the desired result.

To remove these objections, and also the difficulties heretofore experienced, and to produce a light, cheap, and absolutely water-tight and durable roof, is the object of my invention; and it consists in a single course of boards vertically grooved on their upper faces, near their edges, combined with battens, similarly grooved on their under sides or faces, and with rubber tongues placed in such grooves and tightened up by the battens, as hereinafter more fully set forth.

In the annexed drawing, A and A represent a single course of boards, laid and fastened upon the "carlins" or rafters of an ordinary box or house railroad-car. They are preferably made of one-inch stuff, dressed, and fastened in the usual manner to the carlins. Narrow strips of boards or battens B B are placed centrally over the space between each two boards A and A, to which latter the battens B and B are firmly fastened, preferably by means of wood-screws. Grooves C and C are previously cut in the boards A and A, and similar ones in the battens B and B, in such a manner as that when the latter are laid upon and fastened to the former the grooves C and C, both in the boards A and A and in the battens B and B, will coincide in character, as well as in position, one with the other.

The grooves C and C are provided with tongues of any suitable elastic or resilient material, but preferably of rubber, and are to be made of sufficient width and thickness, so that when the battens B and B are firmly fastened down to and upon the boards A and A the tongues placed within the grooves C and C will nearly or quite fill the latter by compression.

The several parts being constructed and put together as shown and described, it will be readily seen that the result is an absolutely water-tight roof. I prefer to paint both boards and battens before and after they are laid and fastened. If, by reason of accident or otherwise, any of the boards A and A should become split or injured so as to cause leakage, it is only necessary to remove two of the battens to substitute a new board for the injured one.

I do not by any means confine or limit myself to the shape of the tongues and grooves as shown in the drawing, because it is obvious that a tongue and groove made round, square, octagonal, or any other shape, put in similarly, would effectually prevent the passage of water through between the boards A and A. Neither do I confine or limit myself to the use of rubber for the tongue, for it is evident that a variety of other impermeable but compressible substances would answer the purpose; but I prefer rubber because of its elasticity, lightness, and cheapness, and because the tongues are so readily made, simply by cutting them off from sheet rubber.

One of the advantages of employing india-rubber, or equivalent elastic and impervious material, is, that when the battens or boards shrink under the action of the sun or weather, or in seasoning, the grooves will tighten upon the rubber, and make the joint tighter and closer still; but when metal strips have been used it has been found necessary to make the

grooves wider than the thickness of the strips, to allow for such shrinkage. This is liable to two objectionable results, viz: that until such such shrinkage actually takes place the joint is not a perfect one; and when it does take place an excessive shrinkage tends to split the batten or the board, as the metal strip cannot yield in obedience to this contraction of the wood. Besides this, a warping of the wood tends to give a permanent bend to the metal strip, and a bend in the metal tends to warp and split the wood. I employ no bent pieces of metal connecting the groove of one board with that of the other board, and hence do not weaken the boards by cutting away any of their material other than sufficient for the rubber strips, and the grooves in the battens can be made precisely similar to those in the boards, and by the same tool.

I am aware that the joints of roofs have been covered by metallic strips having downwardly-curved edges entering grooves in the boards, such strips being used in conjunction with metal tongues entering the same grooves in the boards; and I am also aware that paperboard or vulcanized fiber has been placed in horizontal grooves made in the adjacent edges of roof-boards. These, therefore, I disclaim.

What I claim is—

In combination, the single course of boards, grooved as shown and described, the battens B, similarly grooved, and the vertical india-rubber elastic tongues, placed within such grooves, and compressed and tightened to fill the grooves by the act of fastening the battens to place.

ELIAS U. BENEDICT.

Witnesses:

E. T. PRINDLE,

C. H. ADAMS.