J. M. AYER.

Roof for Railway Cars and other Structures.

No. 197,071. Patented Nov. 13, 1877.

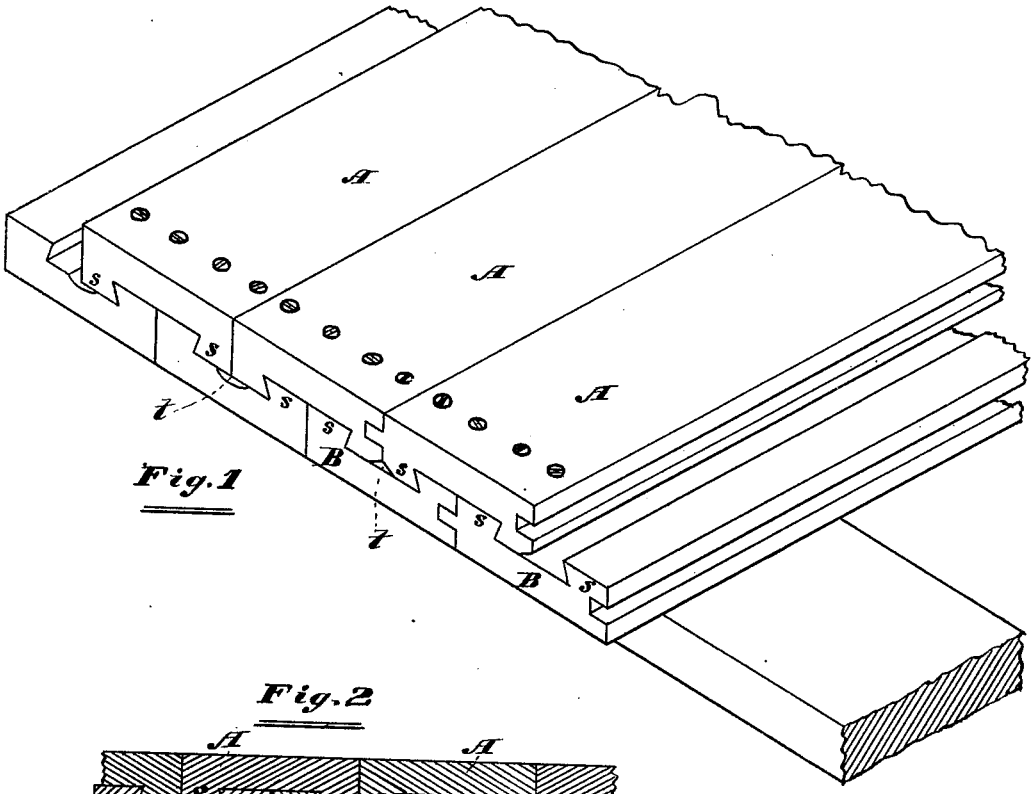
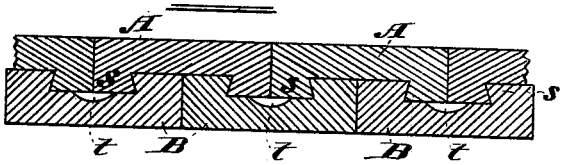


Fig. 1

Fig. 2



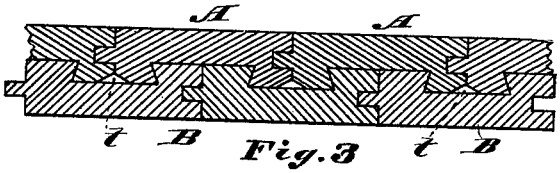


Fig. 3

Attest:

W^m. F. Baker

Charles Wourst

INVENTOR:

John M. Ayer

UNITED STATES PATENT OFFICE.

JOHN M. AYER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ROOFS FOR RAILWAY-CARS AND OTHER STRUCTURES.

Specification forming part of Letters Patent No. **197,071**, dated November 13, 1877; application filed October 8, 1877.

To all whom it may concern:

Be it known that I, JOHN M. AYER, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Roofs for Railway-Cars and other Structures; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, of which—

Figure 1 is a perspective view, showing two modes of construction, either of which may be adopted; and Figs. 2 and 3, sections, showing these two modes separately.

My invention relates particularly to box or freight car roofs; but it is also highly valuable for other structures, as will hereinafter be shown.

My object is to construct a roof which shall be absolutely water-tight; which shall be almost wholly incapable of warping by reason of the expansion and contraction of the material, whether induced by water or other causes; which shall, hence, be exceptionally effective and durable; and which (and this with an especial view to its adaptability to railway-cars) shall be very much lighter than any effective double-board roof hitherto in use.

To these ends my invention consists in constructing the said roof of a double course of boards, so placed that the line of junction of any two boards is covered by the one above or below it, as the case may be, and in having the said two courses dovetailed together, face to face, so as to form practically one solid piece upon each slant of the roof, all as hereinafter more fully set forth.

Referring to the drawings, A A are the boards forming the upper course, and B B those forming the lower course. These boards are all equal in size, and similar in point of construction, each having a dovetail channel extending longitudinally throughout its whole length. These channels extend laterally to the same distance each way from the center of the board, whereby the remaining part *p* of the face, on each side of the channel, forms one-half of a dovetail tenon, so that when two such boards are laid together, edge to edge, the dovetail tenon to fit into the channel is complete.

It will be seen from the foregoing description that the roof must be perfectly water-tight, it being manifestly impossible for any wet which may pass between the boards of the upper course to find its way through the lower course; but, in order to give this water a ready outlet, I prefer to form troughs *t t* below the lines of junction in the upper course, either by means of grooves of any suitable breadth along the centers of the dovetail channels in the lower course, as shown in Figs. 1 and 2, or by cutting away the corners of the boards forming the upper course, as shown in Figs. 1 and 3, or both.

It will be seen, also, that the boards forming the separate courses are so bonded together that they mutually both sustain and restrain one another, serving to render the roof not only strong and firm throughout, but also incapable of warping and springing to any material degree under the influence of changes in the weather, for only a comparatively narrow portion is left at each side of the channel, so that the tendency to warp is small, and this is controlled by the bevel of the other dovetail tenon; but, in order still further to guard against this tendency, I fasten the two courses firmly together by means of screws or nails, as shown in Fig. 1; and, finally, it will be seen that my roof is more than one-third lighter than ordinary roofs, in which a double course of boards is used, the thickness being to that extent reduced as a necessary consequence of the mode of construction.

The lumber used may be either common, as shown in Fig. 2, or matched, as shown in Fig. 3; and I find the former to be in every respect as effective as the latter, and in some respects even more so—for instance, in having less liability to warp at the edges, being thicker—while its cost is only about one-half that of matched lumber.

As the boards are placed in position they should be thoroughly coated on all sides with asbestus or some other mineral paint, in order to preserve them and render them water-repellent, as well as to improve the joints.

While my roof is designed with an especial view to its application to railway-cars, I nevertheless deem it to be almost, if not quite, as valuable for houses, sheds, and the like, being far preferable in every way to shingles, battens, or to double boards laid in the ordinary way.

What I claim as new, and desire to secure by Letters Patent, is—

1. A roof composed of two courses of boards, arranged so that each board in either course covers the line of junction of two boards in the other course, and dovetailed together, face to face, substantially in the manner and for the purpose set forth.

2. A roof consisting of the upper and lower pieces, dovetailed together in the manner described, and provided with the gutters *t t*, substantially as specified.

JOHN M. AYER.

In presence of—
D. P. HATHAWAY,
CHARLES DOWST.