

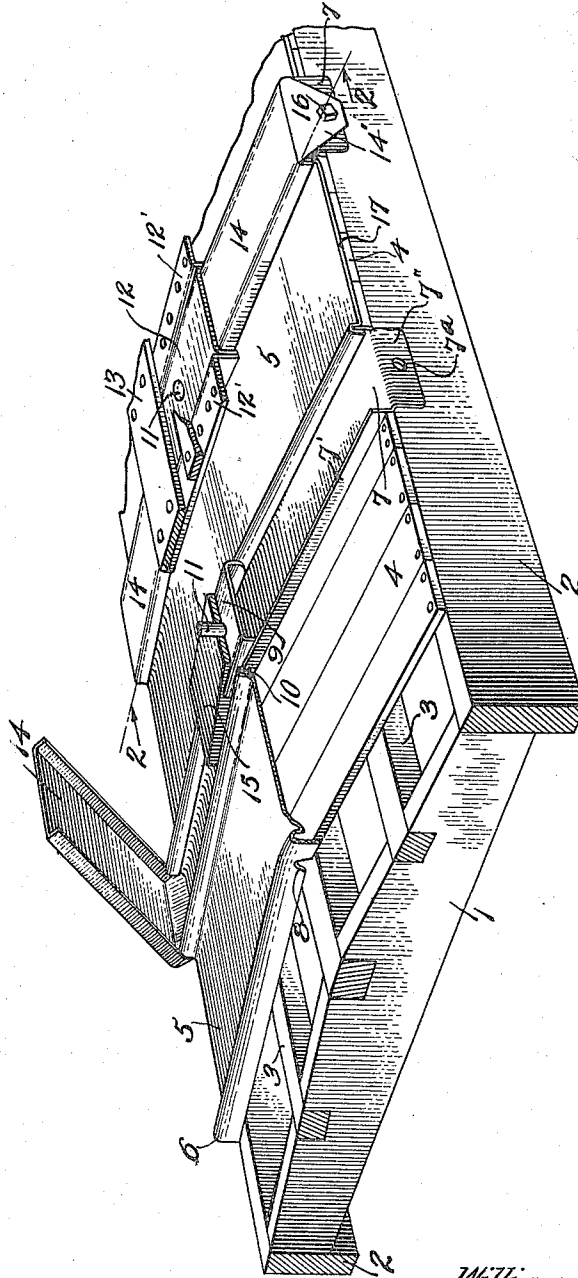
W. H. SLATTEN & W. F. NOLAN.
CAR ROOF CONSTRUCTION.
APPLICATION FILED JULY 6, 1914.

1,145,708.

Patented July 6, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
E. H. Wagner,
D. R. Partello.

Inventor
William H. Slatten
William F. Nolan

By

Robert Robb

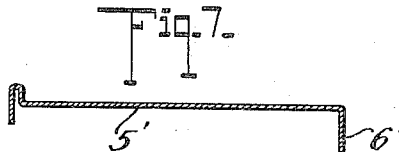
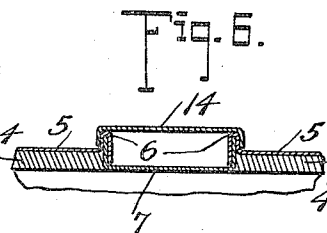
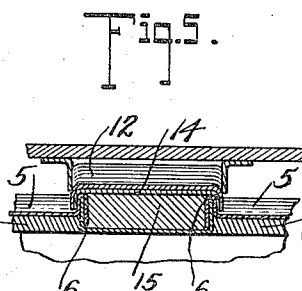
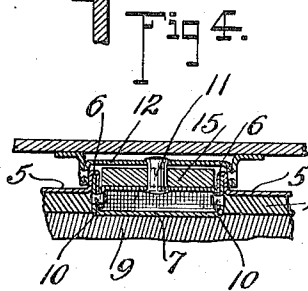
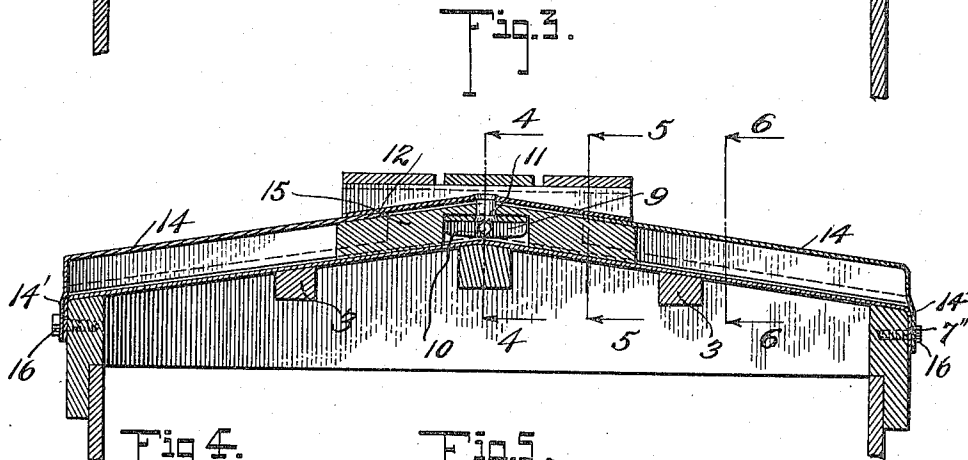
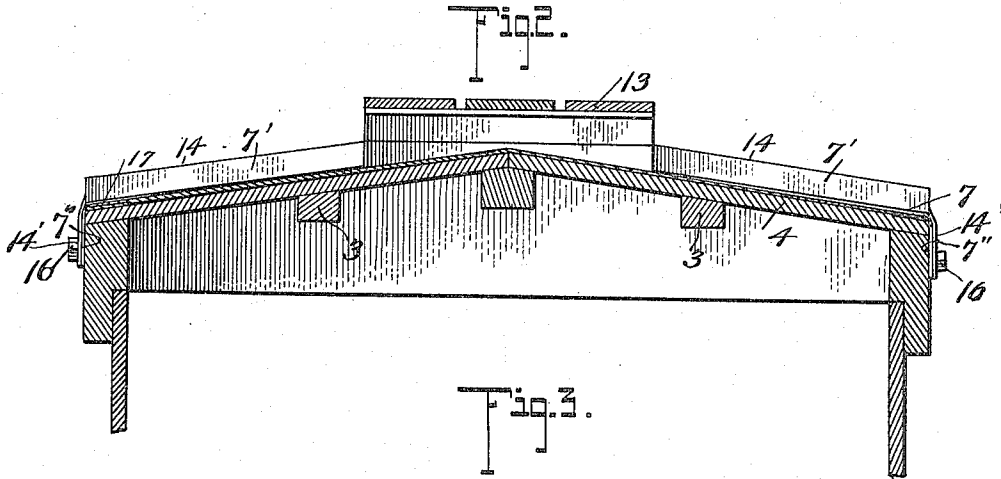
Attorney

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2 SHEETS—SHEET 2.



Witnesses
E. H. Wagner,
D. R. Partello.

Inventor
William H. Slatten
William F. Nolan

By *Robert Robb*

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. SLATTEN AND WILLIAM FRANK NOLAN, OF CHICAGO, ILLINOIS.

CAR-ROOF CONSTRUCTION.

1,145,708.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM H. SLATTEN and WILLIAM FRANK NOLAN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Roof Construction, of which the following is a specification.

The present invention appertains to improvements in car roof construction, particularly of the metallic type, with the main object in view of providing for maximum amount of flexibility under distorting stresses to which rolling stock is usually subjected, while at the same time enabling and facilitating the attachment of the roof to the car in a most effective manner without any opening to the interior of said car.

To this end the construction comprises a plurality of roof sections or sheets of metal intermediate pairs of which are disposed carlines or channel plates for imparting rigidity to the structure, which plates are provided with fastening means adapted to cooperate with running board saddles so as to effect a clamping together of the roof sections, the cap members for the channel plates, and the running board, by common means.

It is further contemplated to use peculiar connecting means intermediate the channel plates and the running board by means of which relative longitudinal movement of the connected parts transversely of the car is permitted.

Figure 1 is a fragmentary perspective view of an embodiment of this invention, parts being broken away and shown in section, and a cap member for a channel plate being illustrated in elevated position, to show more clearly the details of construction and assembling. Fig. 2 is a transverse sectional view of the car roof taken about on the line 2—2 of Fig. 1. Fig. 3 is a transverse sectional view taken through the longitudinal center of one of the channel plates. Figs. 4, 5 and 6 are enlarged vertical sectional views taken on the lines 4—4, 5—5, and 6—6, respectively, of Fig. 3, and Fig. 7 is a transverse section of an end roof section.

Referring to the drawings and specifically describing the embodiment of our invention the numeral 1 indicates the roof or car framing including the side plates 2 and the pur-

lins 3. This framing is of the usual type and preferably provided with the wooden sheathing boards secured transversely on the roof frame as indicated most clearly in Fig. 1 of the drawings. Upon the framing is disposed a plurality of roof sections 5 of metallic material, each section consisting of rebent locking flanges 6 formed on its longitudinal edges, it being understood of course that the end roof section designated 5' and shown in Fig. 7 is provided at one edge with a plain downwardly extending flange 6' for securing the plate to the end of the car, its other edge, however, having the interlocking flange conforming to those of the remaining plates.

Intermediate each pair of roof sections above described is disposed a carline or channel plate 7 of U-shape in cross section, its lateral edges being bent upwardly to form single flanges 7' with which the rebent flanges of the roof sections interlock when assembled as contemplated by our invention. The extremities of each of these channel plates are bent downwardly to form depending flanges 7'' each having an opening 7^a through which extends fastening means as will hereinafter be pointed out. It will be noted by reference to the drawings that the channel plates 7 as well as the roof sections 5 are bent intermediate their length along a central longitudinal line of the car roof to provide for the usual sloping construction of roofs of this type. The bending of the roof sections in this manner is facilitated by notches 8 cut in each rebent flange 6 and this notch performs a special function which will be more apparent as this description proceeds.

Substantially at the central portion of each channel plate is secured thereto a U-shaped connecting plate 9, these connecting plates being pivotally secured to the channel plates by rivets or similar fastening members 10. Each plate is provided with a central aperture through which extends upwardly a fastening member 11, said fastening member also passing through the running board saddle 12 which straddles the channel plate and constitutes an element of clamping means for securing the roof sections to the channel plates as well as forming supporting means for the usual running board 13 riveted or otherwise secured thereto. These saddles consist of a central U-

shaped plate to the sides of which are attached in any desired manner angle plates 12' as most clearly seen in Fig. 1 of the drawings.

Each of the channel plates is provided with cap members 14, one for each side of the car and each cap member extends slightly beyond the end of the saddle member toward the center of the roof passing beneath said end so as to be clamped by means of the saddle against a filler block 15. The longitudinal edges of these cap members are bent downwardly so as to fit over the interlocking flanges of the roof section at each side of the channel plates so that a water proof structure is provided when the parts are properly assembled. The outer end of each plate is bent downwardly to form attaching flanges 14' having an opening therethrough through which extends a lag screw or similar fastening member 16 which also passes through the opening 7^a at the corresponding end of the channel plate 7, securing thereby the cap member and the channel plate to the side plates 2 of the car frame by common means. Referring to Figs. 1 and 3 it will be noted that the filler block 15 is provided with a central transverse notch into which the connecting plate 9 fits and interlocking the block with the channel plate. Also the fastening member 11, it will be observed, passes through the block and the superposed running board saddle which is connected thereby to the channel plate with which it coöperates. By reason of the coaction of the angle plates 12' of the saddles 12 with the interlocking flanges of the roof sections and the channel plates as well as with the filler blocks 15, both the coöperating roof sections and the cap members for the channel plates are clamped together by the common fastening members 11. This peculiar coöperation, it will be obvious, greatly facilitates the assembling of the roof elements and it will also be apparent that the fastening of the roof elements is done exteriorly of the car frame which is of particular advantage in this art.

One of the important features aside from the foregoing is the peculiar pivotal connection of the connecting plate 9 for each channel plate, this pivotal connection allowing a relative movement of the roof elements which is found to be an essential thing in car construction to prevent the permanent distortion of the car roof. That is to say, practically the only positive rigid connection of the metallic members of the roof construction with the car frame being through the fastening members 16, when said frame is disturbed by unequal stresses due to swaying of the cars from side to side, or buckling from draft stresses, the sections 5, the cap members 14, and the running

board through its pivotal saddle connection, may all move relatively through the coöperating channel plates to accommodate the distortion but are yet capable of assuming proper initial position when strains are only along normal lines; therefore the distortion does not become permanent as in the case of the usual wooden roof construction which in the latter results in leaks. Obviously the metal roof sections 5 as well as the cap members may move longitudinally relative to the channel plates in expanding or contracting by reason of the fact that these parts are clamped as hereinbefore described. We have thus provided an extremely flexible roof while at the same time through the employment of the channel plates of rigid metallic material obtained a desirable amount of rigidity of the structure.

The notches 8 in the rebent flanges 6 of each roof section are interlocked with the rivets 10 of the connecting plate as shown most distinctly in Fig. 4 and this adequately prevents any displacement of the sections 5 and eliminates necessity of providing any special attaching member for these sections alone. For this reason the ends of each roof section 5 are bent back upon themselves as shown at 17 in Figs. 1 and 2 and the effect of this arrangement is merely to enhance the flexibility of our roof construction.

Having thus described the invention what we claim as new is:

1. In car roof construction, the combination of a plurality of spaced roof sections, channel plates intermediate each pair of roof sections for imparting lateral rigidity to the roof, a running board, a saddle member straddling each channel plate for supporting the running board, a connecting plate pivotally secured intermediate the length of each channel plate, a fastening member attached to the connecting plate and connected with the saddle member whereby to movably clamp the roof sections to the channel plates, and roof sections having interlocking connection with the adjacent connecting plate pivot.

2. In car roof construction, the combination of a plurality of spaced roof sections, channel plates intermediate each pair of roof sections for imparting lateral rigidity to the roof, a running board, a saddle member straddling each channel plate for supporting the running board, a connecting plate pivotally secured intermediate the length of each channel plate, a fastening member passing through the channel plate and connected with the saddle member whereby to movably clamp the roof sections to the channel plates, a filler block intermediate the channel plate and the saddle member having interlocking connection with the connecting plate aforesaid, and thereby movable relative to the channel

plate, and cap members covering the channel plate and clamped between the filler block and the saddle member.

3. In car roof construction, the combination with a car frame of a plurality of spaced roof sections the longitudinal edges of which are formed with rebent flanges having interlocking notches therein, channel plates intermediate each pair of roof sections, said channel plates having end flanges coöperating with the car frame, a saddle member straddling each channel plate and having flanges coöperating with the interlocking connections between said plates and adjacent roof sections, cap members for each channel plate comprising downwardly bent lateral flanges straddling the flange connections between the channel plates and the adjacent roof sections at each side of the saddle members, said cap members having end flanges extending over the end flanges of the channel plates, common fastening means securing the end flanges of the cap members and the channel plates to the car frame, clamping means pivotally connected at one end to the channel plates and to the saddle members at the other end for holding the roof elements together, and a running board secured to the saddle members, said notches of the roof sections engaging the pivots of the clamping means whereby to prevent longitudinal displacement of the roof sections.

4. In car roof construction, the combination of a plurality of roof sections, channel plates intermediate adjacent roof sections, anchoring means for the ends of said plates, a connecting plate pivotally mounted upon each channel plate, cap members snugly fitting over each channel plate, means associated with the connecting plate engaging the cap members intermediate the ends of the channel plate and coöperating to hold said cap members in place, and a filler block extending over said pivoted connecting

plate and interposed between the central portions of each channel plate and its coacting cap members.

5. In car roof construction, in combination, a channel plate having extensions at its ends adapted to be anchored to the sides of a car, a connecting plate disposed at the central portion of said channel plate, pivots connecting said connecting plate with the channel plate, a fastening member projecting upwardly from the connecting plate, a cap member fitting over the channel plate and held in place by the fastening member aforesaid, and roof sections at opposite sides of the channel plate in engagement with the cap member of the same and having interlocking connection with the pivots of the connecting plate.

6. In car roof construction, in combination, a channel plate having extensions at its ends adapted to be anchored to the sides of a car, a connecting plate disposed at the central portion of said channel plate, pivots connecting said connecting plate with the channel plate, a fastening member projecting upwardly from the connecting plate, a cap member fitting over the channel plate and held in place by the fastening member aforesaid, roof sections at opposite sides of the channel plate in engagement with the cap member of the same and having interlocking connection with the pivots of the connecting plate, and a filler member interposed between the cap member and its coöperating channel plate and provided with a recess on its under side receiving said connecting plate.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. SLATTEN.
WILLIAM FRANK NOLAN.

Witnesses:

F. C. DOWN,
GEO. J. TENNISON.