

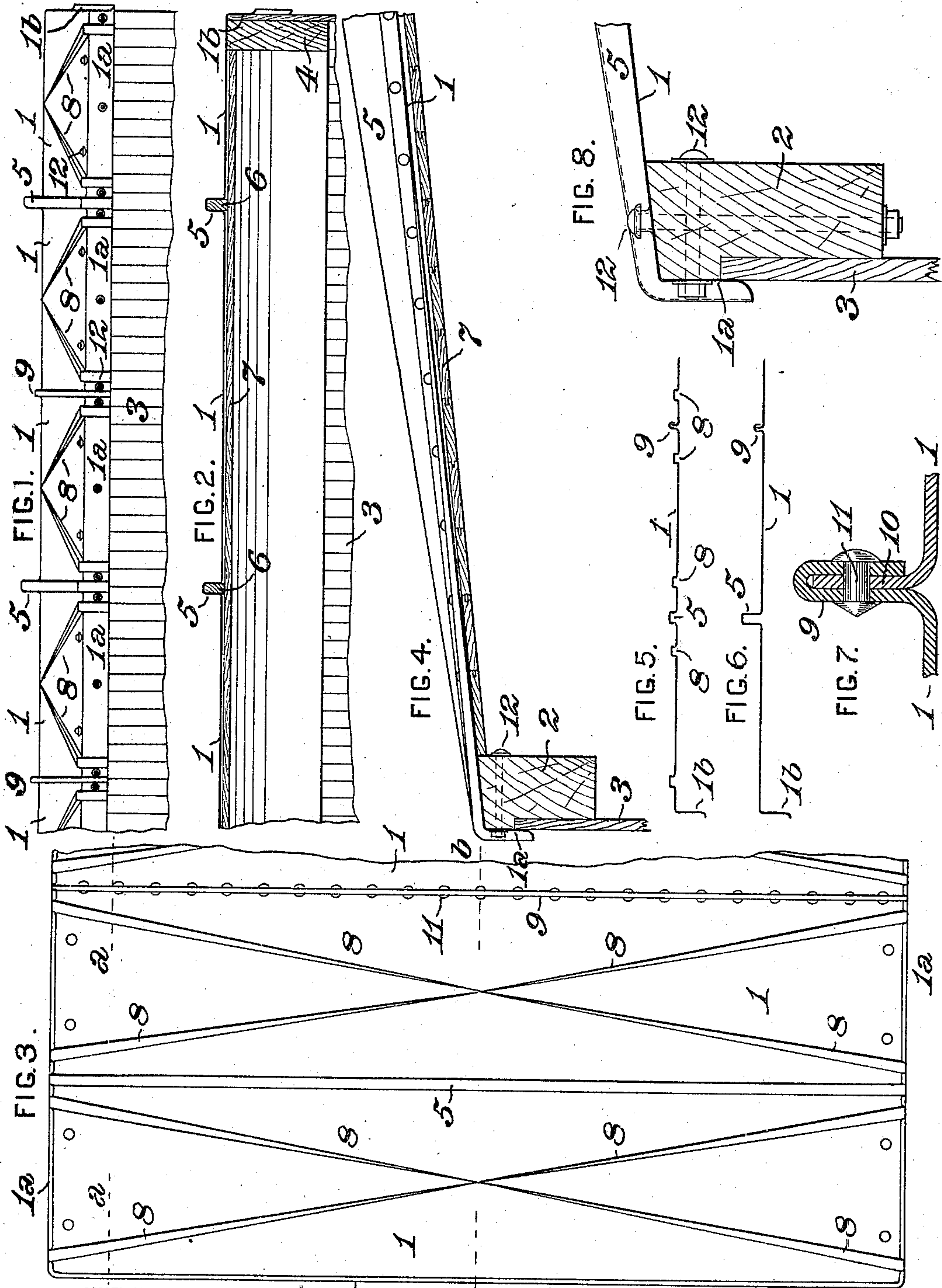
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G. B. MALTBY.
CAR ROOF.

(Application filed Aug. 10, 1901.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

SPECIFICATION forming part of Letters Patent No. 687,843, dated December 3, 1901.

Application filed August 10, 1901. Serial No. 71,618. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. MALTBY, of Saginaw, in the county of Saginaw and State of Michigan, have invented a certain new and
5 useful Improvement in Car-Roofs, of which improvement the following is a specification.

The object of my invention is to provide a car-roof which shall embody the qualities of being strong, light, practically self-support-
10 ing, and capable of shedding water which may fall upon it without the employment of accessories for that purpose.

The improvement claimed is hereinafter fully set forth.

15 In the accompanying drawings, Figure 1 is a partial side view in elevation of a car-roof, illustrating an application of my invention; Fig. 2, a vertical longitudinal central section; Fig. 3, a plan or top view; Fig. 4, a
20 half-vertical transverse section on an enlarged scale; Figs. 5 and 6, longitudinal sections on the lines *a a* and *b b*, respectively, of Fig. 3; Fig. 7, a vertical transverse section, on an enlarged scale, through one of
25 the joints of the roof-plates; and Fig. 8, a similar section through one of the roof-plates and a portion of the side frame of the car to which it is secured.

In the practice of my invention I provide a
30 plurality of wrought-metal roof-plates 1, each of which is of sufficient length to extend from the outer face of one of the side plates 2 of a car-frame to the other and is downwardly inclined at the angle selected for the pitch of
35 the roof from its middle toward each of its end portions, which are bent downwardly, forming flanges 1^a, adapted to abut against the outer face of the side plates 2 and adjoining siding or sheathing 3 of the car-body,
40 the bottoms of the side flanges being turned outwardly to shed water from the car. A downwardly-extending flange 1^b, having its bottom projecting outwardly, is turned upon the outer side of each of the two roof-plates
45 1, which are placed at the ends of the roof, said flanges abutting against the end plates 4 of the car-frame or the end sheathing of the car, as may be preferred.

50 A longitudinal central rib or corrugation 5, of inverted-U or channel section, is formed in each of the roof-plates 1, said rib extending

completely along the plate from the bottom of one of the end flanges 1^a thereof to that of the other and being of maximum depth at the middle of the plate—that is to say, on
55 the longitudinal central line of the roof, from which it gradually diminishes in depth to each end of the plate. The rib 5 serves, primarily, to impart strength and rigidity to the roof-plate and also serves for the recep-
60 tion of a wooden nailing-strip 6 for the attachment of the longitudinal ceiling 7 of the car. The nailing-strips 6 are secured to the ribs 5 by bolts or rivets, and the ceiling-boards are nailed to the bottoms of the strips. 65
The roof-plates 1 are further strengthened and stiffened by inclined ribs or diagonal braces 8, of inverted-U or channel section, which are formed in the plates in pairs on opposite sides of their central ribs 5, the two
70 members of each pair of inclined ribs 8 meeting and terminating on or near the longitudinal center line of the roof and thence extending and gradually increasing in depth to one of the end flanges 1^a of the plate. 75
The ribs 8, in addition to strengthening the roof-plates, provide spaces for the circulation of air between the roof-plates and the ceiling of the car.

As before explained, the two end roof-plates 80 are provided with downwardly-extending flanges 1^b on their outer sides, which abut against the outside of the car-body. The opposite sides of said roof-plates are turned first upwardly and then downwardly into flanges 85
9, of inverted-U section, which fit against and over upwardly-extending flanges 10 on the adjacent sides of the adjoining roof-plates and are secured thereto by rivets 11. The roof-plates intermediate between the two end
90 plates are similarly connected one to the other—that is to say, each plate is provided with a double or lapping flange 9 on one side and a single upward flange 10 on the other, said flanges interlocking and being connect- 95
ed by rivets 11, as above described. If preferred, all the flanges may be single, similarly to the flanges 10, and separate connecting-plates, of similar section to the flanges
9, may be fitted over them and similarly se- 100
cured by rivets 11. The side flanges 9 and 10 impart additional strength and rigidity to

the roof, and the connection of the roof-plates as above described effectually prevents access of water or other foreign matter to their inner sides. The roof-plates are secured at proper intervals to the side plates 2 and end plates 4 of the car-frame by vertical and horizontal bolts 12.

It will be seen that my invention enables the ridge-pole, carlines, and purlins, which are essentials of the constructions heretofore employed, to be wholly dispensed with, as the roof-plates are so stiffened by their longitudinal and diagonal ribs and their side and end flanges as to present amply sufficient resistance to any strains that can be imposed upon them, the roof thus being a self-supporting one. The construction also effectually prevents the ingress of water into the car and freely sheds or diverts water therefrom without necessitating the use of frieze or crown moldings.

I claim as my invention and desire to secure by Letters Patent—

1. A sheet-metal car-roof section consisting of a roof-plate in which is formed a longitudinal rib of **U** or channel section, said rib being of maximum depth at the middle of the plate and decreasing in depth therefrom toward each of its ends.

2. A sheet-metal car-roof section consisting of a roof-plate in which are formed inclined or diagonal ribs of **U** or channel section, said ribs being of maximum depth at the ends of the plate and decreasing in depth therefrom toward the middle thereof.

3. A sheet-metal car-roof section consisting of a roof-plate which is downwardly inclined, in opposite directions, from its middle toward its ends, and which is provided with a longitudinal stiffening-rib of **U** or channel section.

4. A sheet-metal car-roof section consisting of a roof-plate which is downwardly inclined, in opposite directions, from its middle toward its ends, and which is provided with downward flanges on its ends and upward flanges on its sides, and with a longitudinal stiffening-rib of **U** or channel section.

5. A sheet-metal car-roof section consisting of a roof-plate which is downwardly inclined, in opposite directions, from its middle toward its ends, and which is provided with downward end flanges having outwardly-projecting bottoms, and with upward side flanges and a longitudinal stiffening-rib of **U** or channel section.

6. A sheet-metal car-roof section consisting of a roof-plate in which is formed a central longitudinal rib of **U** or channel section, and pairs of inclined or diagonal stiffening-ribs of similar section, the members of each pair meeting on one side of the central rib, at or

near the middle of the roof-plate, and extending therefrom to one end of the plate.

7. A sheet-metal car-roof section consisting of a roof-plate in which is formed a central longitudinal rib of **U** or channel section, and pairs of inclined or diagonal stiffening-ribs of similar section on opposite sides of said central rib, and having upward side flanges for connection to adjoining roof-sections and downward end flanges for connection to the sides of a car.

8. A sheet-metal car-roof end section consisting of a roof-plate which is downwardly inclined in opposite directions from its middle toward its ends having downward flanges on its ends, a downward flange on one of its sides, an upward flange on its opposite side, and a longitudinal stiffening-rib of **U** or channel section.

9. The combination of a car-frame, a plurality of roof-plates which are downwardly inclined in opposite directions from their middles toward their ends having downward end flanges adapted to abut against said frame, upward side flanges adapted to abut one against another, and longitudinal stiffening-ribs of **U** or channel section, connections securing the end flanges of the roof-plate to the car-frame, and connections securing the adjoining side flanges one to another.

10. The combination of a car-frame, a plurality of roof-plates which are downwardly inclined in opposite directions from their middles toward their ends having downward end flanges adapted to abut against a car-frame, upward side flanges which are alternately single and doubled into **U** or channel section and adapted to interlock, and longitudinal stiffening-ribs of **U** or channel section, connections securing the end flanges of the roof-plates to the car-frame, and connections securing the adjoining side flanges, when interlocked one to the other.

11. The combination of a car-frame, a plurality of roof-plates which are downwardly inclined in opposite directions from their middle portions to their ends, and which are provided with downward flanges on their ends adapted to abut against a car-frame, upward side flanges which are alternately single and doubled into **U** or channel section and adapted to interlock, and longitudinal stiffening-ribs of **U** or channel section, connections securing the end flanges of the roof-plates to the car-frame, and connections securing the adjoining side flanges, when interlocked, one to the other.

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