

(No Model.)

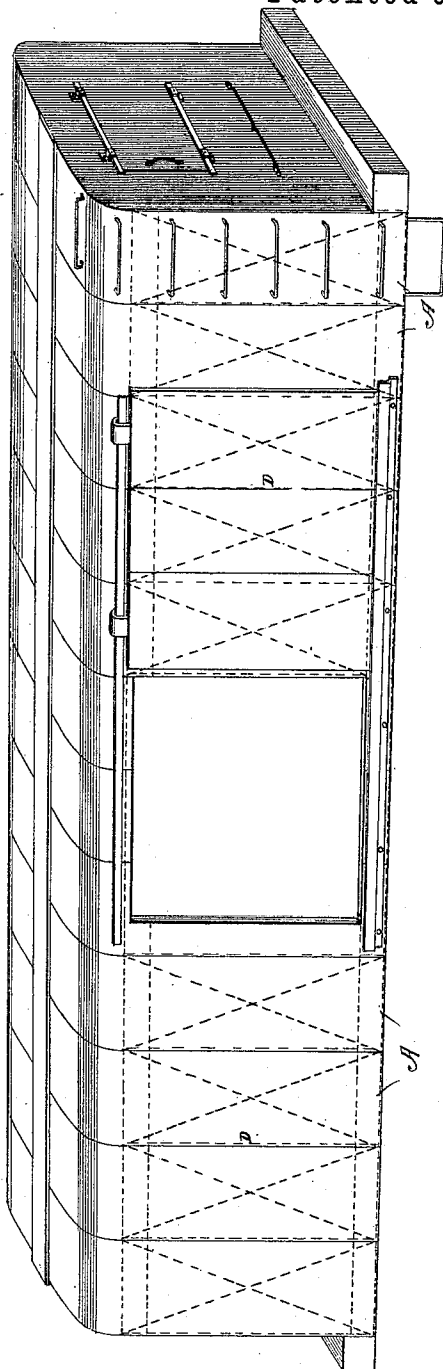
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G. L. HARVEY.
CAR CONSTRUCTION.

No. 432,272.

Patented July 15, 1890.

Fig. 1.



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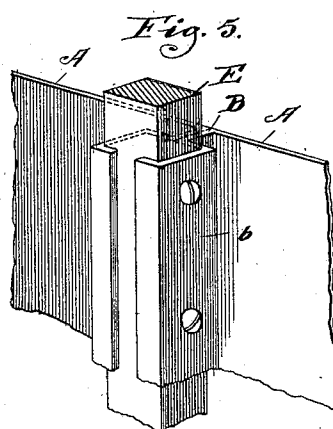
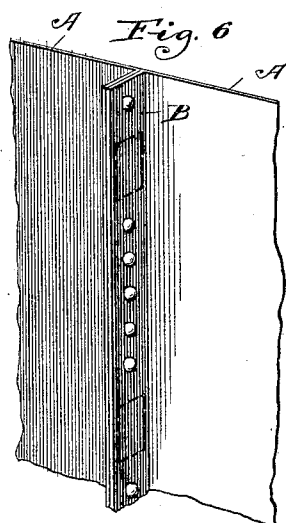
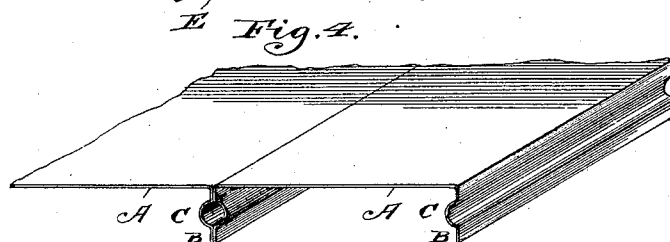
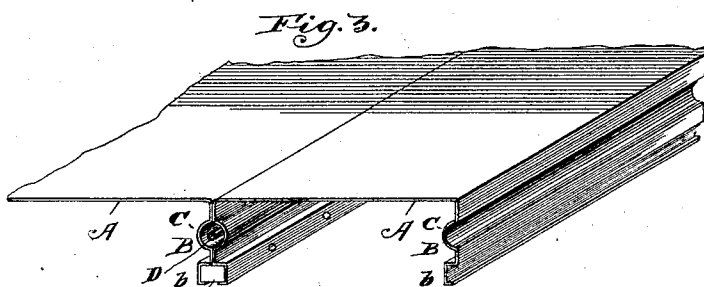
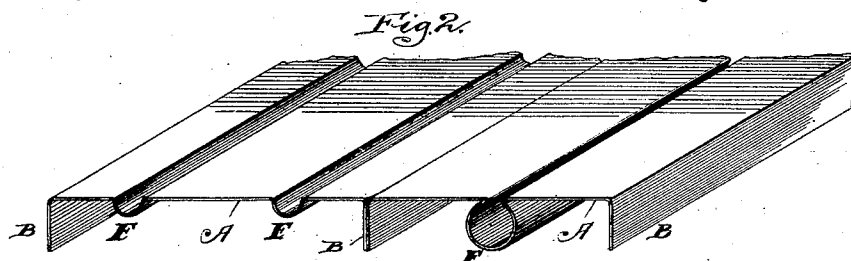
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UNITED STATES PATENT OFFICE.

GEORGE L. HARVEY, OF CHICAGO, ILLINOIS.

CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 432,272, dated July 15, 1890.

Application filed February 25, 1890. Serial No. 341,683. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. HARVEY, a citizen 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 Constructions, of which the following is a specification.

My invention relates to that class of railway-cars whose side walls and roof are constructed from a plurality of sections, each section composed of a metal plate or plates; and my invention consists in certain improvements in the methods of joining said plates, to certain improvements in means for preventing the opening of the joints due to expansion and contraction of the metal, and to means for stiffening or bracing the metal sections.

A radical defect in metal cars as constructed at present is due to the opening of the joints between the sections, and is caused by the contraction and expansion of the metals and the racking effect upon the joints from the oscillations of the car in travel. This racking produces a shearing effect upon the rivets, bolts, or other metal fastenings used to connect the abutting edges of the plates, and the principal object of my invention is to so connect the edges of the metal plates as to prevent any movement of the parts upon each other, and thereby avoid the injurious consequences above pointed out. Incidental to this principal object of my invention I am enabled to materially cheapen the cost of construction and to provide a strong car capable of sustaining great strains and shocks.

In carrying out my invention I take a metal plate of any convenient length, but preferably of a length to form a section of the car-body—that is to say, the side walls and roof thereof—and pass it through suitable rolls or manipulate it by dies, so as to provide flanges at each of the margins thereof, whereby it may be secured to an adjoining section similarly formed, and then to secure the flanges together I employ, instead of the usual bolts or rivets or as supplemental thereof, welding, which may be performed in any convenient manner and throughout the abutting or overlapping portions of the sections, or at intervals, and supplement this

welded joint in some instances by the employment of rivets or bolts, in the usual manner. The welding not only secures the closest adhesion of the parts at the point of weld and forms a strong joint, but also prevents effectively any lateral movement of the plates upon each other, even when applied only at intervals along the joint-line, and this obviates the shearing effect of such lateral movement upon the bolts or rivets where employed.

In order to provide for contraction and expansion of the metals and to obviate the weakening effect thereof on the joints, I preferably corrugate the metal pieces of each section. In the simplest form of construction I turn the margins of the metal plates which are to form the sections whereof the car are constructed at right angles to the body of the plate so as to provide flanges to which the welding and riveting, when employed, may be applied; but in some forms of construction I prefer to corrugate these flanges longitudinally, so as to impart additional strength thereto, and also to provide for the passage through the aperture formed by the corrugations when two of these flanges are mated of a stiffening-rod or tie-bar, and also to provide for the reception of a wooden strip, to which the interior sheathing or lining of the car may be fastened. In some instances these corrugations will be semicircular in form and in others angular in cross-section; and I may embody in the same structure the semicircular corrugations and the angular forms of bends, so as to provide by the former for stiffening the flanges and passage of the tie, and by the latter for the passage of the wooden strip. These corrugations not only serve the above purposes, but they reduce to some extent the area to be welded without impairing the security of the joint, and these flanges or offset portions provide a deep frame, which, in passenger-cars, may be filled with non-conducting material, or when used in freight-cars may receive a lining for the purpose of adding strength to the structure and adapt them for the carriage of grain, &c.

In the accompanying drawings, Figure 1 is a perspective view of a freight-car constructed according to my invention. Fig. 2 is a perspective view of two plates having

right-angular marginal flanges and longitudinal corrugations to provide for expansion and contraction of the metal. Fig. 3 is a similar view showing the plates with their flanges having a longitudinal semicircular corrugation and at the margins of the flange angular bends, the mating flanges being adapted to provide an aperture for a tie-rod and a second aperture rectangular in cross-section to receive the inside lining or sheathing stud. Fig. 4 is a similar view in which the sheathing-aperture is omitted. Fig. 5 is a perspective view from the inside of the plate at the joint, and showing the sheathing-timber in the aperture of the flanges. Fig. 6 is a similar view showing the joint formed partly by welding and supplemented by rivets.

Referring to the drawings, A represents the metallic plates, which may be of a length sufficient, when bent to the proper form, to form a section of the side walls and the roof of the car, as shown in Fig. 1 of the drawings. These plates, in order to the better securing of them together, have their longest edges bent at right angles to provide the flanges B, which will be of a width corresponding to the desired thickness of the wall of the car. In order to add strength to these flanges, they will be preferably corrugated or fluted, as shown at C, and when the flanges are mated these longitudinal corrugations will provide an aperture through which a tie-rod D may pass. In order to still further strengthen the flanges and to provide for the reception of a wooden strip to which the interior finish of the car may be secured, these flanges may be bent at their margins, as shown at b, to provide a rectangular aperture for the wooden strips E. The adjoining edges of the metal plates are sufficiently separated to permit the passage of the securing nails or screws. In securing the flanges of the sections together I weld them in any convenient manner, and preferably throughout the entire length of the impinging surfaces.

The welding alone forms the most secure joint; but where the character of the joint or the cost of the welding would make it cheaper to rivet than to weld I may perform the welding at intervals only, and supplement it by the use of rivets or bolts. Corrugations to compensate for contraction and expansion of the metal are shown at F.

I do not of course limit my invention to the structural features of the plates or flanges illustrated in the accompanying drawings.

The invention is applicable to the construction of all sorts of railway-cars. The preferred metal is steel plate, and the flanges may be conveniently formed by passing the plates through rolls or by swaging.

I claim—

1. A car having its body constructed from a plurality of metal-plate sections having flanges at the margins thereof, said flanges secured together by welding or by welding and riveting, substantially as described.

2. The improvement in car construction which consists in forming the body of the car of a plurality of metal-plate sections, each section having flanged edges, the flanges provided with longitudinal corrugations and the sections secured together by welding or by welding and riveting the flanges, substantially as described.

3. The improvement in car construction which consists in forming the body of the car of a plurality of metal-plate sections, each section provided with flanged edges having longitudinal corrugations therein to provide an aperture for the passage of a tie-rod and a second aperture to receive a lining-stud, and the flanges being secured together by welding or by welding and riveting, substantially as described.

GEORGE L. HARVEY.

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