Oct. 6, 1936. E. E. ADAMS ET AL 2,056,228

RAIL CAR

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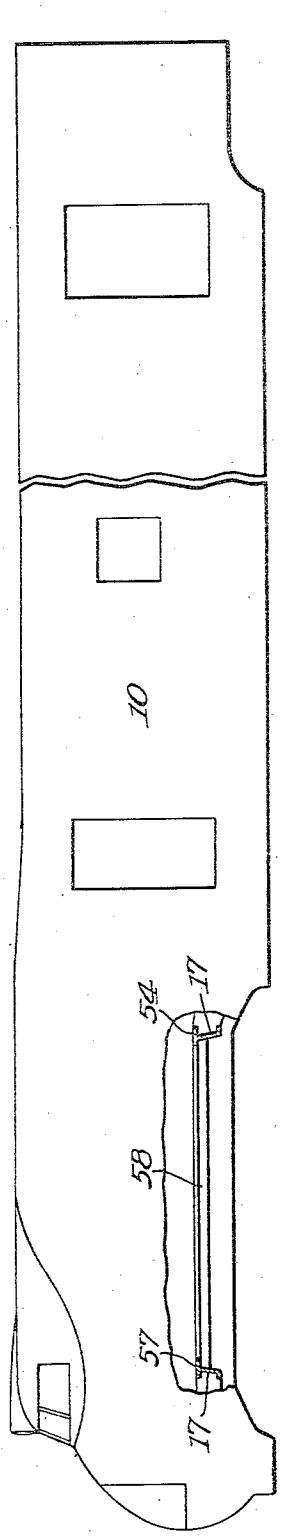


Fig. 2

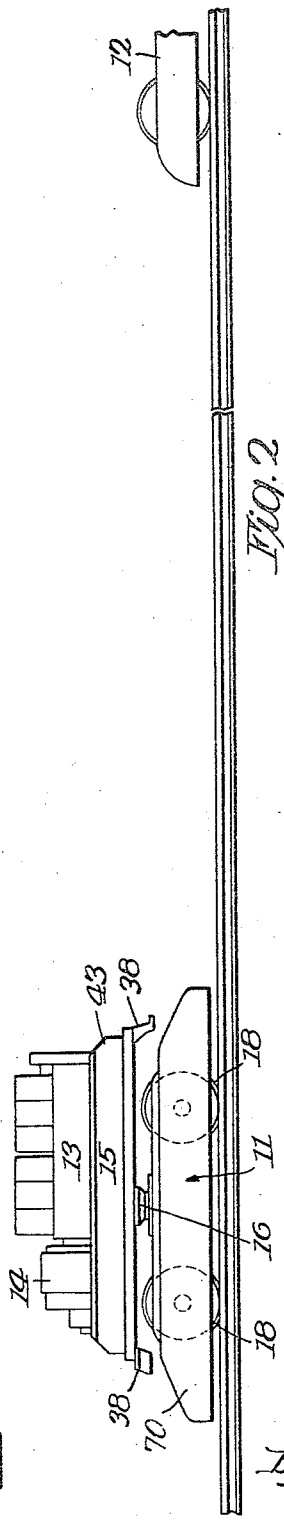
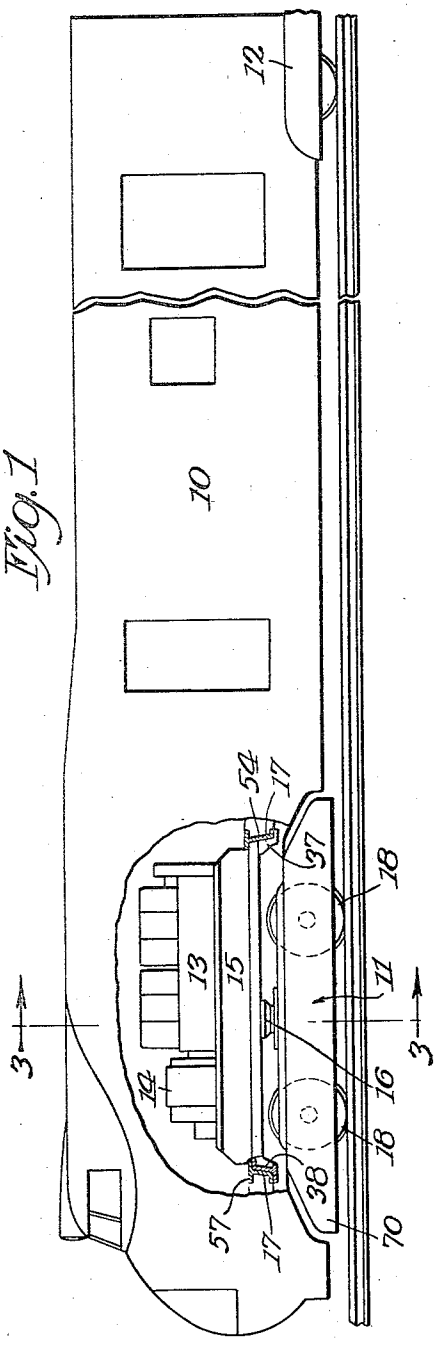


Fig. 1



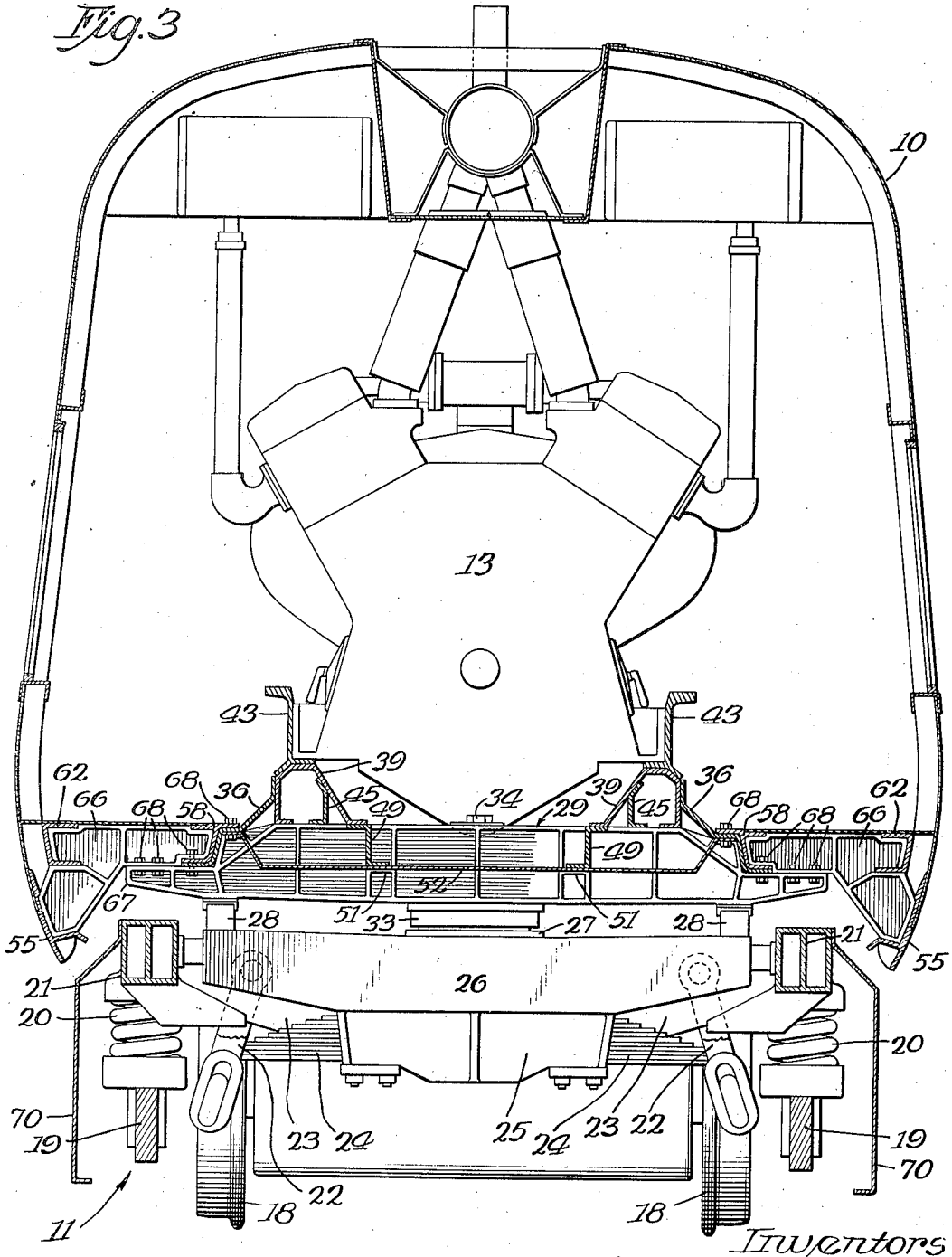
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Fig. 3



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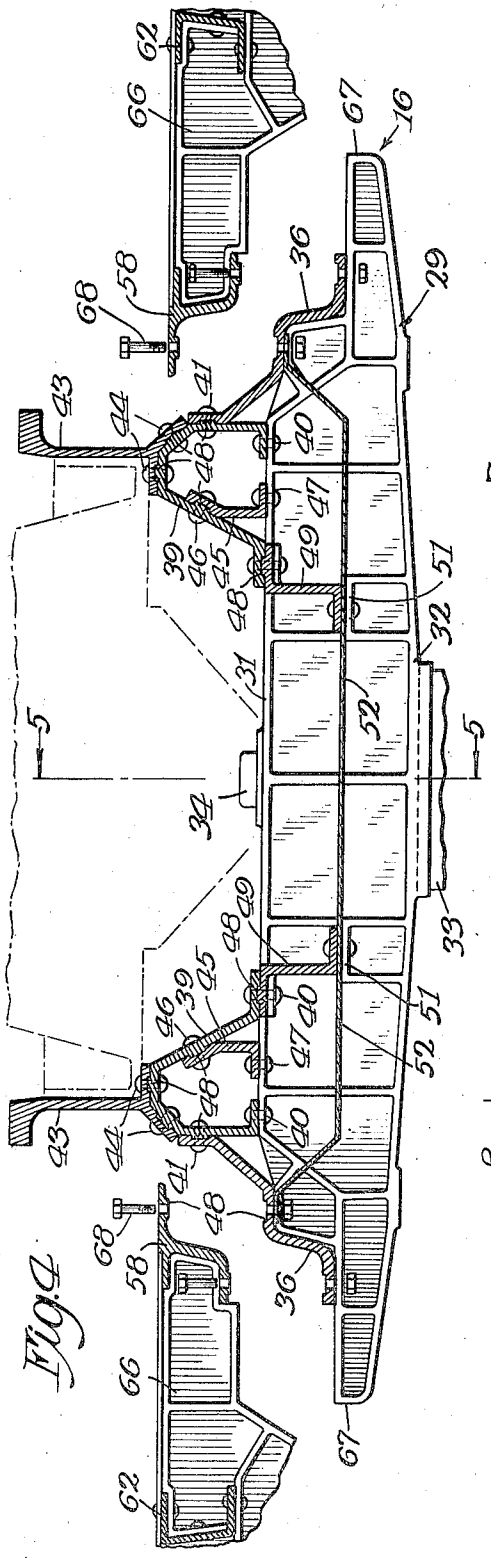


Fig. 4

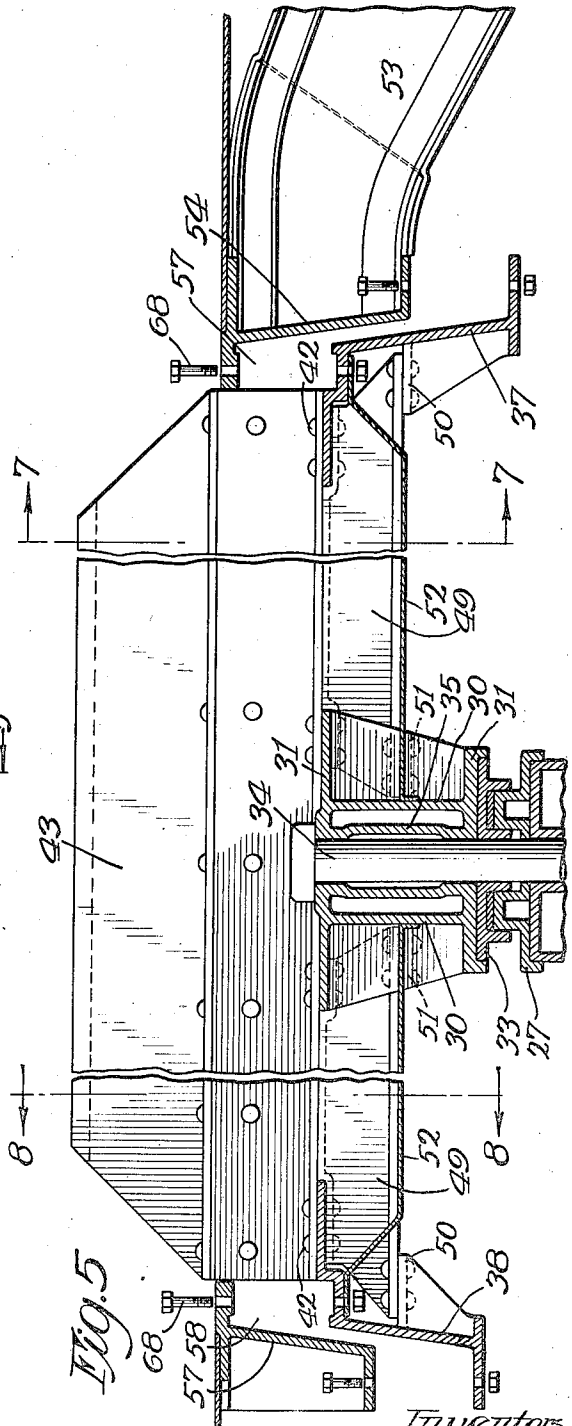


Fig. 5

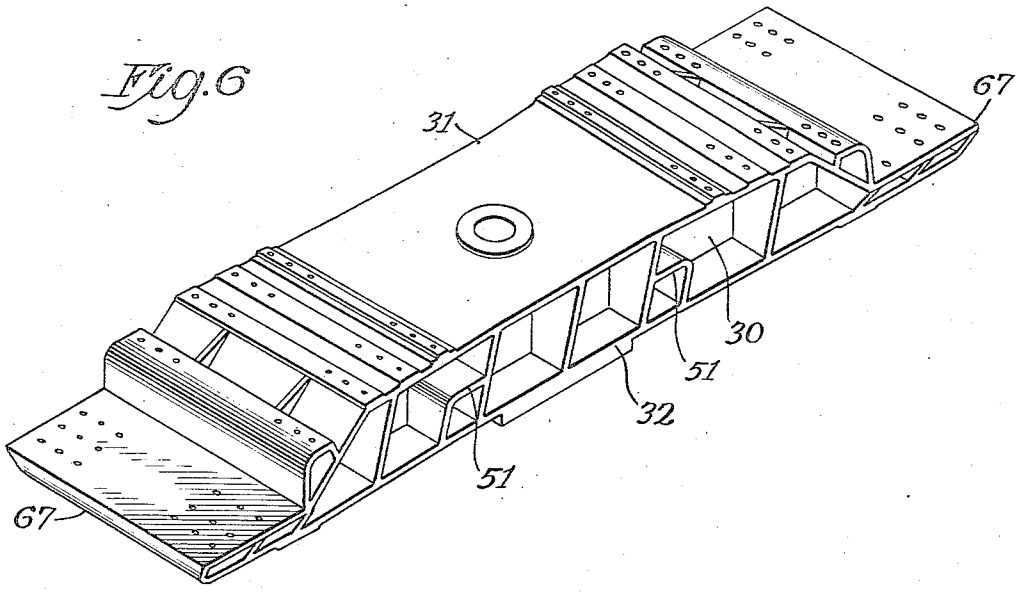
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Fig. 6



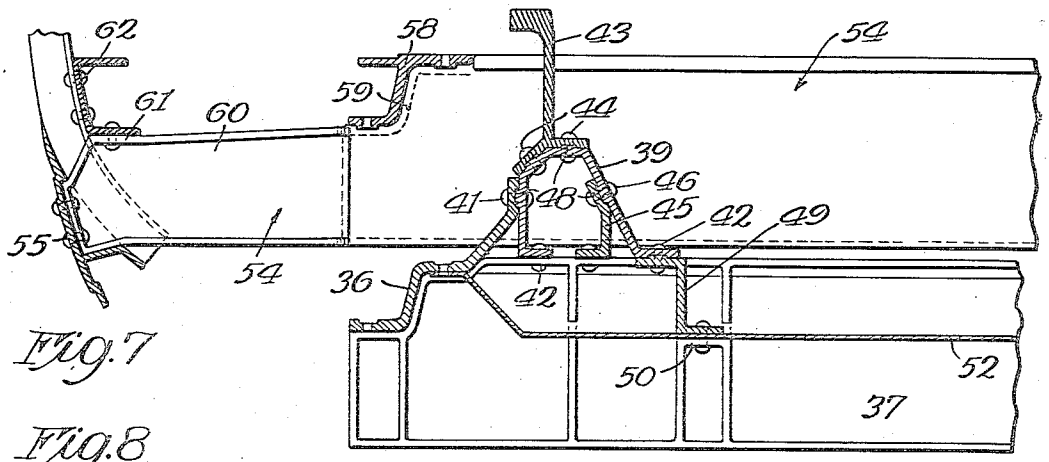
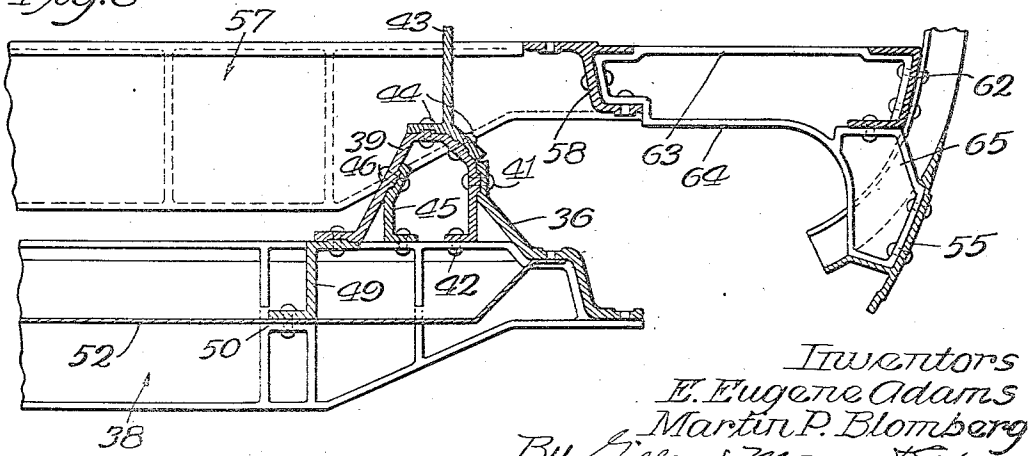


Fig. 7

Fig. 8

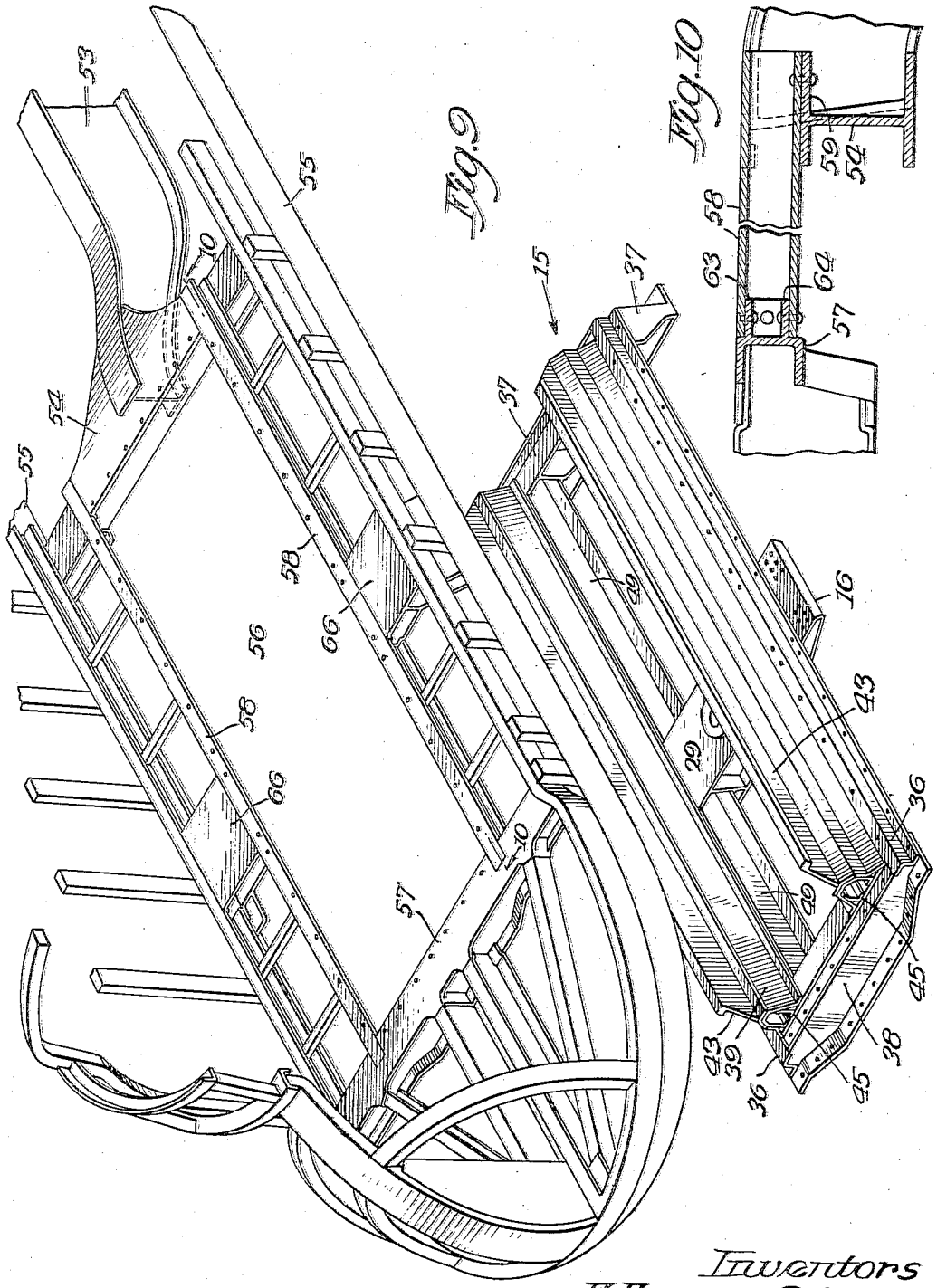


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RAIL CAR

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UNITED STATES PATENT OFFICE

2,056,228

RAIL CAR

Everett Eugene Adams and Martin P. Blomberg, Chicago, Ill., assignors to Pullman-Standard Car Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application March 26, 1934, Serial No. 717,422

14 Claims. (Cl. 105—133)

This invention relates to rail motor cars, and has for its principal object to relieve the framework of the car body from the main load of the power plant and place it (and, therefore, the center of gravity of the whole) nearer to the ground, but above the supporting springs in fixed relation to the car body in operation.

This is accomplished in the present embodiment by providing the body bolster with a special framework (for convenience, called a motor bed) which supports the motor directly and also forms a means of connection between the body bolster and the frame of the car body that transmits and distributes the stresses to advantage and makes the truck and motor removable from the car as a subassembly for inspection, repair and replacement.

Fig. 1 is a side elevation of the front section, or car body of an articulated car, parts being broken away;

Fig. 2 is a similar side elevation with the car body raised from the trucks;

Fig. 3 is a transverse vertical section taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged transverse section through the motor bed and adjacent portions of the car frame illustrating the relations they assume as the car body is lowered onto the trucks;

Fig. 5 is a longitudinal section taken on the line 5—5 of Fig. 4;

Fig. 6 is a perspective view of the body bolster;

Figs. 7 and 8 are enlarged fragmentary sections taken on the lines 7—7 and 8—8 of Fig. 5;

Fig. 9 is an enlarged perspective view of the body bolster, motor bed and adjacent portions of the car frame, slightly displaced to indicate how they are brought together; and

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9 with parts broken away.

The car body 10 is mounted on a leading or motor truck, generally indicated by 11 and an articulating truck, generally indicated by 12. The motor 13 and generator 14 are carried by a motor bed 15 forming a framework or extension of the body bolster 16 of the truck 11.

The motor bed 15 is a generally rectangular frame (see Fig. 9) inclined at its sides and ends to correspond with the flaring walls 17 (Figs. 1 and 2) surrounding an opening in the frame of the car body which permits the motor to be entered to the position shown in Fig. 1, or withdrawn to the position shown in Fig. 2.

The truck, generally indicated by 11 in Figs. 1 and 2, includes conventional wheels 18 (Fig. 3) fixed on axles supporting journal boxes, which carry the ends of the equalizer bars 19 equipped with seats for the springs 20, bearing the truck frame 21. Hangers 22 hinged to the truck transom 23 support the free ends of cantilever springs 24, fixed in the housings 25 of the truck bolster 26, having a center bearing 27 and side bearings 28 for the body bolster 29.

The body bolster is a steel casting, in the main composed of spaced webs 30 (Figs. 5 and 6), extending between top and bottom flanges 31 and 32. At the center, the bolster is fitted to a body center plate 33 cooperating with the truck center plate 27 and receiving a king pin 34 passing through the tubular boss 35 (Fig. 5).

The motor bed comprises a fabricated structure, made up chiefly of the extruded aluminum sections. At each side (Figs. 4, 7, 8 and 9) there is a longitudinal bar 36 laid crosswise to the body bolster 29 and extending between and riveted to end castings 37 and 38. Just inside of each bar 36 is a bar 39, somewhat arch shaped in cross section, riveted at 40 to the top flange 31 of the body bolster 29, riveted at 41 to the bar 36 and riveted at 42 to the end castings 37 and 38. Each bar 39 is surmounted by a sort of rail 43, riveted in place at 44.

The inner side of each member 39 is supported lengthwise by a sort of angle 45 riveted to it at 46, and to the body bolster at 47. Each of the joints between the several extruded sections of aluminum is reenforced by a tongue and groove, indicated at 48 in the general line of the rivets.

The inner flanges of the bars 39 are reenforced by Z-bars 49 (Figs. 4 and 5) which rest on steps 50, carried by the end castings 37 and 38, and steps 51 carried by the body bolster, and are riveted top and bottom.

A sheet of metal 52 extending beneath the Z-bars 49 and between the body bolster and each of the end castings 37 and 38 serves to close the bottom of the motor bed.

The motor bed in this instance is built to bear a Diesel motor driving the generator 14, and it is arranged on the body bolster to place the center of mass approximately over the king pin 34.

The car frame includes a center sill 53 (Fig. 9) the front end of which is fixed to the center of a cross sill 54 extending between the side sills 55 just to the rear of the opening 56 for the motor or power plant. At the front of this opening there is a cross sill 57, also extending between the side sills 55, and the two cross sills are connected by longitudinal stringers 58.

A partial elevation of the sill 54 is shown in Fig. 7, where it will be seen that the stringer 58 rests on and is secured to a stepped seat 59, by

which the major depth of the sill is reduced to a shallow end portion 60, which is riveted to the side sill 55 and has a pad 61 to receive the channeled floor stringer 62. This construction is duplicated at the opposite side of the car.

A partial elevation of the cross sill 57 is shown in Fig. 8, where it will be seen that the depth is reduced where the stringers 58 are fitted over and riveted to offset portions of the top and bottom flanges 63 and 64 (Fig. 10) beyond which the end portion 65 is given a peculiar shape to fit the side sill 55 and the channeled floor stringer 62.

Turning to Figs. 4 and 5, which are transverse and longitudinal sections, respectively, it will be seen that the outer side walls of the motor base slope upwardly and inwardly and that the corresponding inside walls of the car frame surrounding the opening 56 are inclined in the same way. Thus, the frame of the car telescopes over and fits tightly on the motor base, as shown in Fig. 3.

From Figs. 3 and 4 it will be seen that the extreme ends 67 of the body bolster 29 extend beyond the stringers 58, and are bolted to cast brackets 66 of peculiar shape, which connect the stringers 58 with the inside sills 55 and the floor stringer 62.

This scheme of construction makes a strong connection between the body bolster and the body that distributes the stresses due to driving, braking and side thrust, and it makes the power plant for the most part independent of the body so far as support is concerned, but fixed with respect to the body for control.

The car body is made fast to the motor bed and body bolster by bolts 68. Removing these and disconnecting the controls, the water hose 69 (Fig. 3) etc., leaves the car body free to be raised, as shown in Fig. 2, when the motor and truck can be readily removed and replaced.

The particular form of the invention here shown was built as part of a three-section articulated car for fast rail service. The body bolster 16, the cross sills 54 and 57 and the brackets 66 are of steel, but the remainder of the framework is aluminum.

The peculiar shape is to reduce air resistance in furtherance of which metal masks 70 secured to the truck frames approximate conformity with the body lines.

The sides of the engine bed, made up as they are in box-like fashion, not only serve as girders in supporting the engine load, but in addition, they serve to transmit the energy of engine inertia to the nose structure in the event of collision, and thus assist in clearing the track of obstacles.

We claim—

1. In a device of the class described, a truck, including a bolster, a body bolster mounted to rotate thereon, a motor bed carried by the body bolster, a motor on the bed, a car body having a motor opening in the bottom side of its frame of such dimensions that the plan projection of the motor will fall within the opening for permitting the motor to project upwardly into the car body, and means for detachably securing the bed to the frame.

2. In a device of the class described, a truck, including a bolster, a body bolster mounted to rotate thereon, a motor bed carried by the body bolster, a motor supported wholly on the bed, a car body having a motor opening in the bottom side of its frame receiving the motor bed and detachable means for securing the frame on the body bolster.

3. In a device of the class described, a truck, including a bolster, a body bolster mounted to rotate thereon, a motor bed carried by the body bolster, a motor supported wholly on the bed, a car body having a motor opening in the bottom side of its frame supported on the motor bed for permitting the motor to project upwardly into the car body.

4. In a device of the class described, a truck including a bolster, a body bolster mounted to rotate on the truck bolster, a motor bed on the body bolster having downwardly diverging walls, a car body including a frame cooperating with said diverging walls of the bed and detachably secured to the bed.

5. In a device of the class described, a truck including a bolster, a body bolster rotatably mounted thereon, a car body having a downwardly and outwardly flaring opening in its under side and a motor bed on the body bolster wedged into the flaring opening.

6. In a device of the class described, a truck including a bolster, a body bolster rotatably mounted thereon, an elongated motor bed mounted on the body bolster extending fore and aft over the truck and having downwardly diverging walls, and a car body having a frame including similarly diverging walls mounted on said walls of the motor bed.

7. In a device of the class described, a motor bed supported on wheels and having inclined surfaces at its sides, a motor on the bed and a car body having a frame telescoped over the inclined surfaces of the bed, and means for securing the bed to the car body.

8. In a device of the class described, a car frame including side sills, cross sills connecting the side sills adjacent to one end and stringers spaced apart between the cross sills to form an opening, a motor bed in the opening, and a motor supported by the bed, said opening in the car frame being of such dimension that the plan projection of the motor falls within the opening.

9. In a device of the class described, a car frame including side sills, cross sills connecting the side sills adjacent to one end, stringers spaced apart between the cross sills to form an opening, a motor bed in the opening, a body bolster carrying the motor bed, and a motor on the bed, said opening being of such dimensions that the plan projection of the motor falls within the opening.

10. A car comprising a body frame, a motor support having seats thereon for removably receiving said frame for supporting the same, and means including members having inclined surfaces for guiding said frame to said seats when the same is lowered on said support.

11. In a car, a car body having an underframe, a truck beneath the underframe, a truck bolster, a body bolster member pivoted to said truck bolster, an engine mounted on said body bolster member and extending into said body, and means for detachably connecting said underframe to said member whereby the body can be lifted from the motor without disturbing the engine.

12. In a car, a truck, a body bolster mounted on the truck, a motor bed carried by the bolster, a motor on the bed, a car body carried by the bed, and releasable means for connecting the body and bed.

13. In combination, an engine bed for rail cars, each side member of which includes an inverted Y-section, one of the arms of each Y being ex-

tended downwardly and outwardly and having a plurality of horizontal portions in stepped relation, and a car body having stepped portions for engaging the cooperating stepped portions of said engine bed.

14. In a rail car, a body, an engine bed adapted to be supported by a car truck and be detachably secured to the body, said bed comprising side and end framing members, and an intermediate cross piece for connecting the side members intermediate their ends, said cross piece and end framing members having stepped portions supporting corresponding stepped portions on said car body, thereby supporting the body on the bed.

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