Jan. 12, 1937. H. M. PFLAGER 2,067,579

RAILROAD CAR STRUCTURE

Filed Dec. 15, 1933

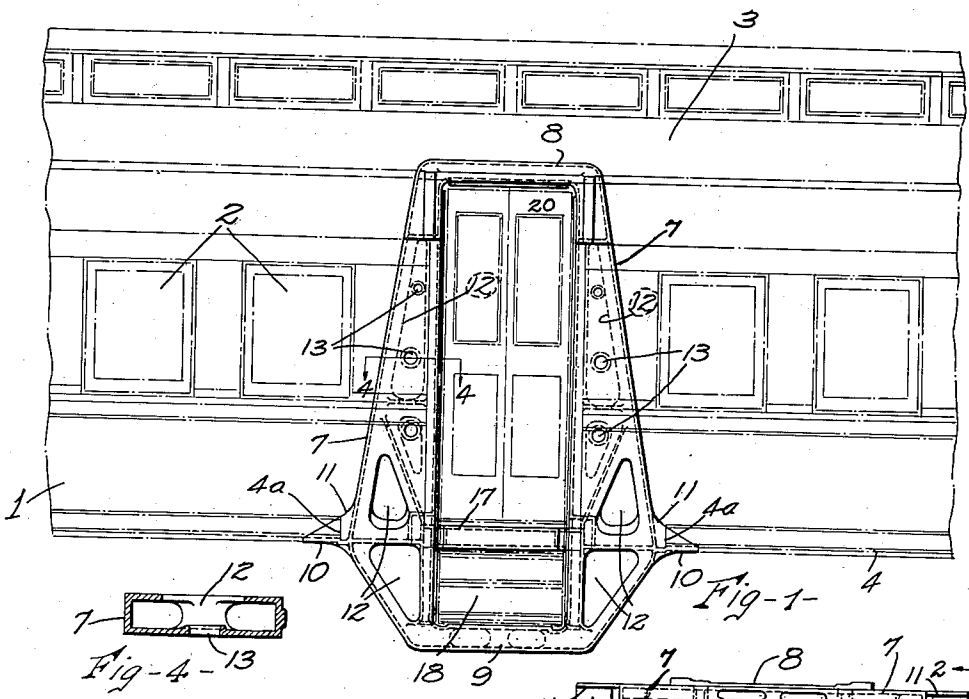


Fig-1-

Fig-4-

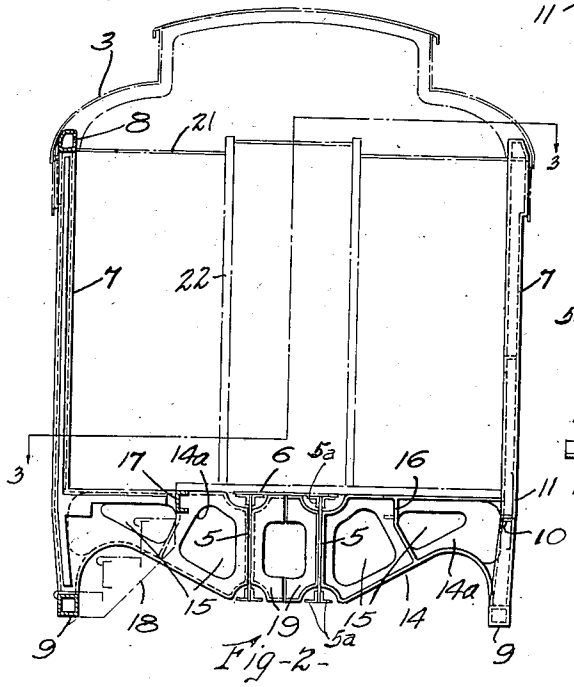


Fig-2-

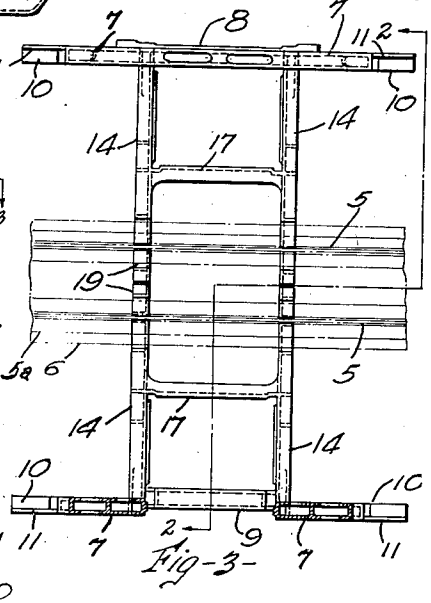


Fig-3-

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Patented Jan. 12, 1937 2,067,579

UNITED STATES PATENT OFFICE

2,067,579

RAILROAD CAR STRUCTURE

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Application December 15, 1933, Serial No. 702,436

5 Claims. (Cl. 105—398)

The invention relates to railway vehicles and particularly to passenger cars having side doors intermediate their ends.

The usual railway passenger car is provided with a platform at each end overhanging the truck in order to provide space for an end vestibule with steps leading outwardly and downwardly. The provision of a vestibule with doors and steps at the middle of the car instead of at the end eliminates one-half of the space required for vestibule doors and steps in the usual construction and increases the available space within a car of given length. Also such construction makes it possible to move the center of the trucks nearer to the ends of the car which decreases the extent of lateral pull on the drawbars, kingpins, wheel flanges and rails. Moreover, the center door arrangement is particularly advantageous when applied to cafe-lounge cars, passenger-baggage cars, and other similar combination cars in which portions of the car are partitioned off from each other.

In order to provide space for the steps and the doorway in a center door car, portions of the car side wall, side sills and other underframing adjacent the doorway must be cut away or recessed and the inserted doorway framing must be of sufficient strength to safely transmit the vertical and horizontal loads ordinarily carried by the omitted portions of the underframe.

The main object of the present invention is to provide novel doorway framing construction for center door cars which is adapted to adequately compensate for the structural parts of the car body and underframe cut away to provide space for the doorway.

Another object is to provide novel doorway frame and underframe construction of the above type which is adapted to be applied to cars previously in service in converting them from end door to center door types.

Still another object is to construct doorway and step supporting framing integral with portions of the car underframe in a manner to form a rigid substantially unitary bracing structure extending across the car between the doorway openings.

These objects and others are attained substantially in the accompanying drawing, in which—

Figure 1 is a side view of the door frame device and indicating the application of the same to a railway passenger car body.

Figure 2 is a vertical transverse section and end view of the device and is taken substantially on the line 2—2 of Figure 3.

Figure 3 is a horizontal section and top view taken on the line 3—3 of Figure 2.

Figure 4 is a detail horizontal section taken on the line 4—4 of Figure 1.

The details of the car body and underframe illustrated in broken lines in the drawing form in themselves no part of the present invention except as related to the novel doorway frame and transom structure described hereafter. The car body shown includes side walls 1, with windows 2 and roof structure 3 of any suitable form. The underframe includes side sills 4 and deep girder center sills formed of transversely spaced vertical webs 5, top and bottom chords 5a and a top plate 6. The underframe will preferably be braced at points spaced longitudinally of the center doors by suitable transverse and longitudinal structural members, not shown.

To provide space for the side doorway structure, portions of each side wall 1 and the corresponding side sill 4 at the center of the car are cut away as shown. Within this space is secured the novel doorway frame structure including door posts 7 of box-section and substantially triangular in elevation, a box-section lintel 8 at the top, and a box-section tie 9 at the bottom for supporting the bottom doorway step. Projecting laterally from the widest portions of the door posts 7 are the horizontal brackets 10, reinforced by ribs 11, which are secured to the cutaway ends 4a of the side sill 4 and cooperate with adjacent strut structure to form side sill elements. The broad inner and outer webs of the door posts are provided with suitable openings 12 and 13 for facilitating casting and lightening the structure.

Projecting laterally from the lower portions of the door posts 7 and formed integral with the doorway framing structure are a pair of transom members 14 of channel section and of substantial depth. The web portions 14a of the members 14 are provided with cored openings 15 and are reinforced by ribs 16. Connecting portions of the transom members 14 spaced substantially inwardly of the doorway framing is a longitudinal strut or tie 17 which adds rigidity to the structure and cooperates with bottom doorway tie 9 to support the steps 18. The transom members 14 extend inwardly to the nearer upright web 5 of the center sill.

The car preferably will be provided with the pair of the center doorway structures, as shown in Figures 2 and 3, in which case the correspond-

ing transom members 14 on each side of the center sill will be transversely alined. Located between and bracing the center sill webs 5 are filler members 19 secured together and to the webs 5 between the alined transom members 14 by welding or other suitable means.

A door 20 and a swing platform floor (not shown) of conventional form preferably will be mounted on the doorway and transom structure. A pair of partitions 21 with center doorways 22 may be provided between the side doorways for defining a center vestibule and dividing the car into separate sections.

The doorway framing and transom members described are of substantial construction throughout and form rigid truss-like structure well adapted to brace the car body at the center and to safely transmit vertical and horizontal loads. The doorway frames with the integral pairs of transom members 14 cooperate with the filler members 19 to form a continuous, substantial underframe structure extending from side to side of the car and rigidly tying the side sills and center sill and, accordingly, other bracing members may be omitted from the affected portion of the underframe.

The integral formation of the center portions of the body side walls with adjacent underframing prevents loosening of joints which may occur in built-up structures due to weaving and bending forces in the body of the car and the novel construction adequately compensates for the structural portions of the car body and underframe which are cut away to provide for the doorway and door step opening. The box-section formation of the doorway framing is adapted to provide maximum strength with the use of a minimum amount of metal.

Various details of the invention as illustrated are not essential such, for instance, as the exact shaping of the doorway framing members and the disposition and shaping of the substantial transom members. Also the invention may be applied to box cars and other types of cars in which center doorways may be advantageous. The structure illustrated and described may be modified in these and other respects as will occur to those skilled in the art without departing from the spirit of the invention and the exclusive use of all such modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In a railway car body, an underframe including a center sill girder of substantial depth and longitudinally spaced side sill members, and integral doorway frame structure attached to said side sill members and having a lateral projection including a part corresponding in depth to said center sill girder and constituting an underframe transom and attached to said center sill girder.

2. In a railway car, side members constituting side sills having cut away portions and doorway frames in said portions, transversely spaced intermediate longitudinals, and transom structure comprising pairs of longitudinally spaced members connecting said side members and said longitudinals and separately formed members connecting and bracing said longitudinals directly between transversely alined ones of said pairs, all of said members and said sills being of substantial construction and being rigidly assembled for carrying vertical and horizontal loads on the underframe.

3. In a railway car, an underframe including a side sill with a portion cut away to form a door opening and transversely spaced intermediate longitudinals, a doorway frame in said cut away portion comprising door posts and connecting members and members projecting inwardly from said posts at their intersections with said sills, said frame being secured to the cutaway ends of said sill and said inwardly projecting members being secured to the nearer of said intermediate longitudinals and bracing said door posts beneath said side sill, and separately formed structure bracing said longitudinals in alinement with said projecting members.

4. In a railway car integral structure, side sill members, a door framework extending a substantial distance below the level of said members, a pair of underframe transom members extending at right angles to said sill members at the sides of said framework and bracing the latter transversely of the car throughout said distance.

5. In a railway car, a deep center sill girder, spaced transom members tapered outwardly and upwardly from said girder towards the side of the car and having downwardly extending terminals, a connection between the lower portions of said terminals, an upright door frame having said connection as a base, and steps leading inwardly and upwardly from said base between said transoms and carried thereby.

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