Aug. 13, 1940. O. H. BRAUER 2,211,095

FRAME STRUCTURE FOR RAILWAY MOTOR CARS

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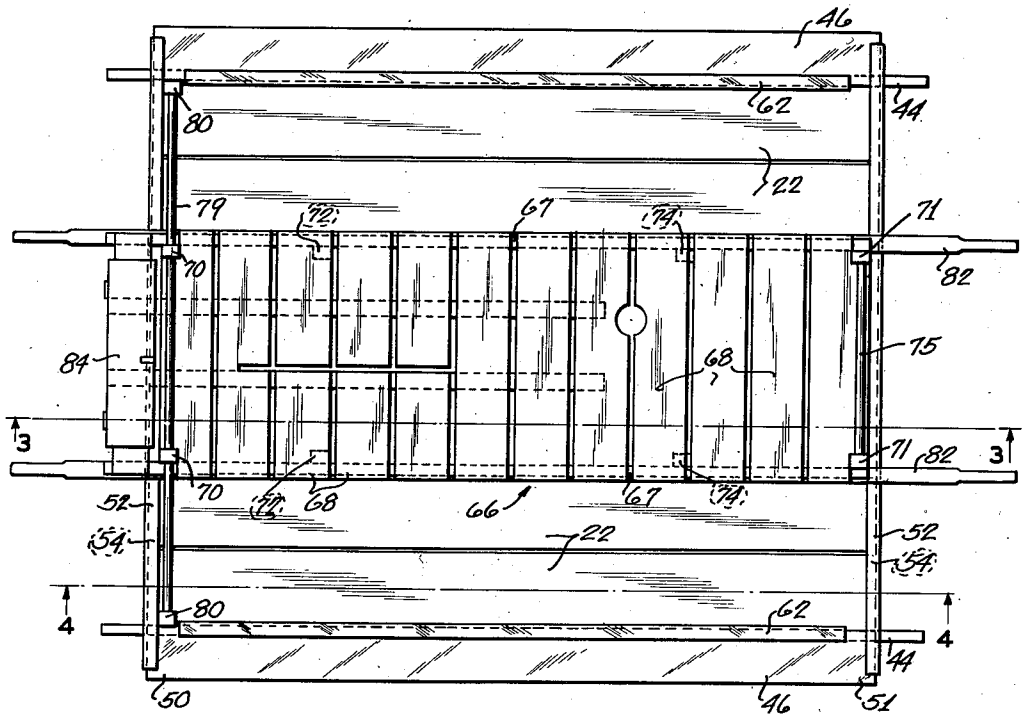


FIG. 1.

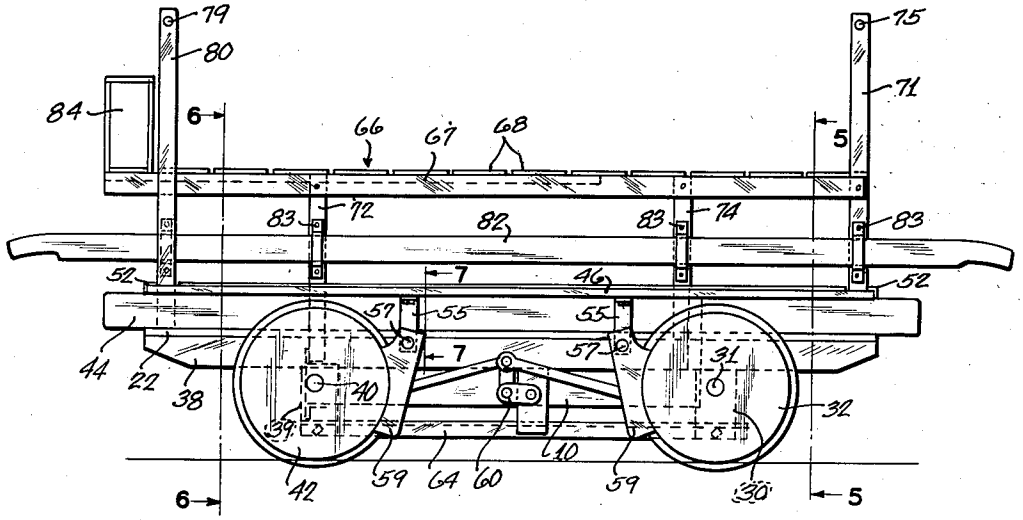


FIG. 2.

INVENTOR
OTTO H. BRAUER

BY Paul L. Kosha

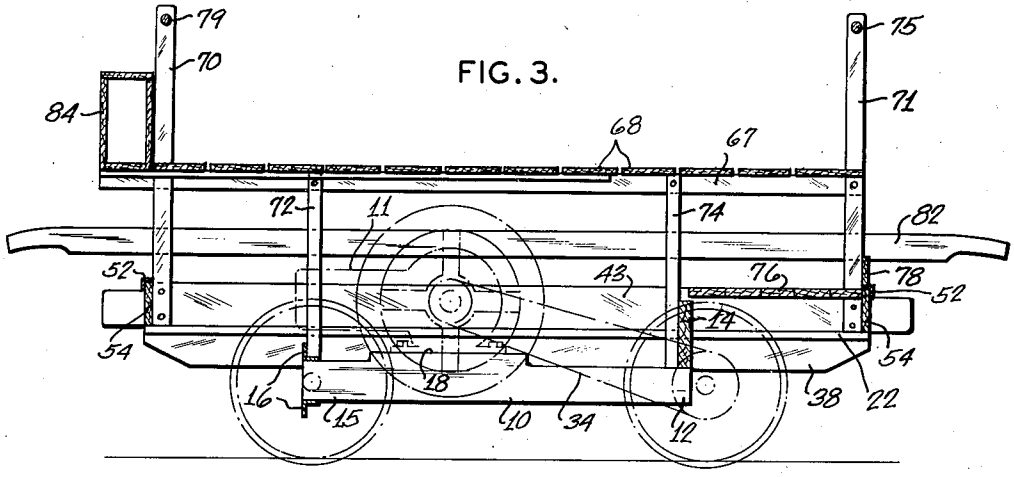
ATTORNEY

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FIG. 3.



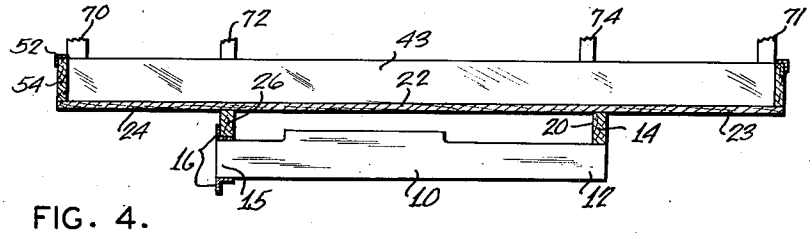
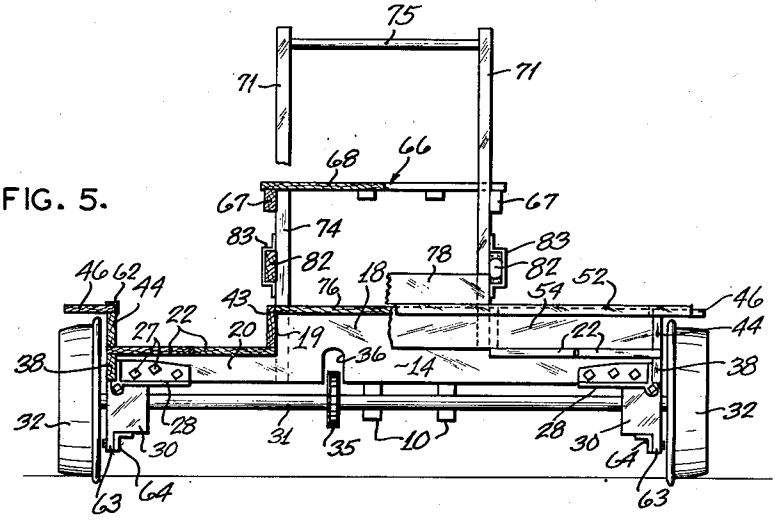


FIG. 4.

FIG. 5.



INVENTOR
OTTO H. BRAUER

BY Paul L. Krohn

ATTORNEY

Aug. 13, 1940. O. H. BRAUER 2,211,095

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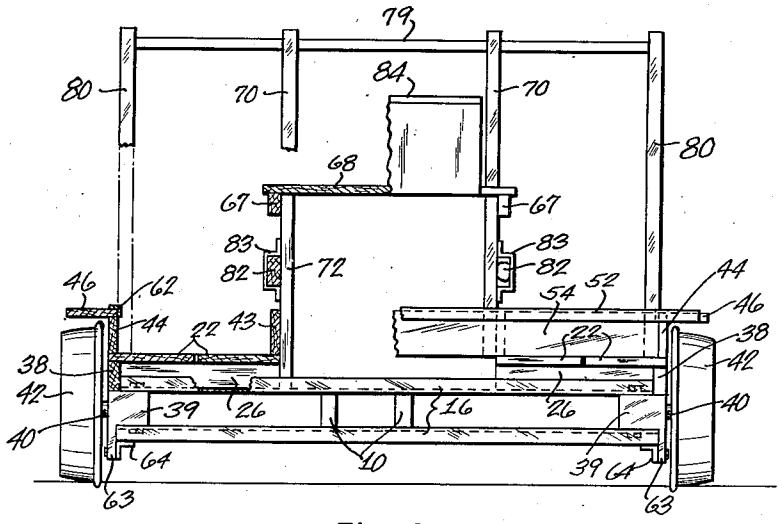


FIG. 6.

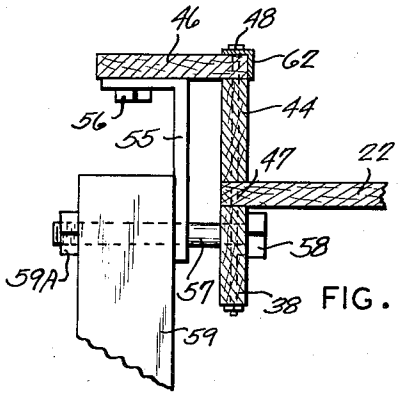


FIG. 7.

INVENTOR
OTTO H. BRAUER

BY Paul L. Kochu

ATTORNEY

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UNITED STATES PATENT OFFICE

2,211,095

FRAME STRUCTURE FOR RAILWAY MOTOR CARS

Otto H. Brauer, Three Rivers, Mich., assignor to Fairbanks, Morse & Co., Chicago, Ill., a corporation of Illinois

Application August 25, 1938, Serial No. 226,693

3 Claims. (Cl. 105—162)

This invention relates to improvements in frame structures for railway cars and like vehicles, and more particularly to a railway motor car frame and seat assembly of strong, but light construction.

An object of the invention resides in the provision of an improved frame assembly for railway motor cars and the like, the assembly being comprised of strong and relatively light-weight longitudinal and transverse frame elements arranged to provide a rugged and durable car frame.

Another object is found in the provision of an improved motor car frame comprised of longitudinal and transverse frame elements, certain of which are of relatively narrow but deep section, so arranged in the frame asembly as to effect a certain degree of flexibility in the assembled frame, whereby to provide for absorption or cushioning of vibrations transmitted to the frame through the car wheels operating on the rails.

A further object is to provide a railway motor car frame of the characteristics above noted, which may be manufactured and readily assembled at a minimum cost.

Further objects and advantages will readily appear from the following description when read in connection with the accompanying drawings, in which:

Fig. 1 is an assembly elevation in plan, of a railway motor car embodying the improved frame forming the subject of the present invention; Fig. 2 is a side elevation thereof; Fig. 3 is a longitudinal sectional elevation of the car frame, as viewed from line 3—3 in Fig. 1; Fig. 4 is a fragmentary longitudinal section of the frame as taken from line 4—4 in Fig. 1; Fig. 5 is a transverse section of the frame as viewed from line 5—5 in Fig. 2, with a portion thereof shown in end elevation; Fig. 6 is a transverse section of the frame as viewed from line 6—6 in Fig. 2, and Fig. 7 is an enlarged, fragmentary section of a portion of the frame illustrating certain features thereof, the section being taken along line 7—7 in Fig. 2.

It is of major importance in railway motor cars that the car structure be strong and durable, yet as light as possible, for the reason as is well known, that such cars are manually transferred to and from the rails at relatively frequent intervals during use. Accordingly, as hereinabove stated in the objects, the principal purpose of the present invention is to provide such a car frame, i. e., a light weight, strong and rugged frame assembly.

Referring now to the drawings by suitable numerals of reference, there is provided preferably a pair of longitudinal frame elements 10 located somewhat centrally of the car, these elements serving as engine sills upon which is mounted a suitable car-propelling means such as an internal combustion engine, shown in broken lines at 11 in Fig. 3. The sills 10 which are, by preference, formed from suitable wood material, have their corresponding ends 12 secured as by bolts (not shown), to a transverse or cross sill 14 located thereabove and extending substantially the width of the car, the cross sill 14 also being of a suitable wood material. The opposite ends 15 of the longitudinal members 10 are connected in any suitable manner, as by bolting (not shown), to transverse elements 16 which, in the present example, are preferably angle irons. As clearly appears in Fig. 5, the cross sill 14 is of stepped form, having a central raised portion 18 providing vertical shoulders 19 for a purpose later appearing, and horizontal reduced end portions 20. Horizontally disposed floor boards 22, extending longitudinally on either side of the raised sill portion 18 and substantially coextensively with the length of the motor car, are mounted upon the reduced sill ends 20 inwardly of their ends 23 (Fig. 4), being secured thereto in any suitable manner, as by bolting (not shown). Inwardly of their opposite ends 24, the floor boards rest upon and are secured to transverse elements or filler members 26, these members in turn being secured upon the upper transverse angle iron 16. As appears in Fig. 1, the floor boards provide in combination with other elements hereinafter appearing, a tool tray along each side of the car. It is to be noted also as an important feature, that the floor boards secured to the transverse sill 14 and to the upper angle iron 16 through the transverse elements 26, serve to prevent diagonal shifting or twisting movement of the frame.

Secured to the outer ends of the cross sill 14, as by bolts 27, are brackets 28 providing supports for bearing members or boxes 30 in which are rotatively journalled the ends of an axle 31. The outer ends of the axle extend beyond the journal boxes for operative connection to car wheels 32. The axle 31 is power driven from the engine 11 through a suitable drive connection, such as a belt or chain indicated in broken lines at 34, and a pulley or sprocket 35 operatively secured to the axle intermediate its ends (Fig. 5). A cut-away portion or notch 36 is provided in the cross sill 14 to accommodate one pass of the belt or chain.

The brackets 28 serve also to support side sills

38 which extend longitudinally of the car frame, the portions of the sills engaging the brackets being secured thereto in any suitable manner, as by bolting (not shown). The side sills 38 also engage and are secured near their opposite ends, to axle journal members 39 secured between the ends of the angle iron cross pieces 16 (Fig. 6). The journal members 39 operatively support the stub-shafts 40 for car wheels 42.

The sides for each of the tool trays hereinabove noted, are provided by relatively thin but wide boards 43 and 44 arranged on edge and extending longitudinally of the frame, the boards 43 constituting the inner sides, being secured, as by bolting (not shown), to the shoulders 19 of the transverse sill 14 as appears in Fig. 5. The boards 44 comprise the outer longitudinal sides for the trays. Engaging and extending outwardly from the upper end of each side board 44 is a so-called toe board 46 which is substantially coextensive with the longitudinal extent of the frame. As shown in Fig. 7, the outer margin 47 of one of the floor boards 22 is interposed between the side board 44 and the side sill 38. The floor board margin 47, side board 44 and toe board 46 are preferably bolted together throughout the longitudinal extent thereof, as by through-bolts 48, one of which is illustrated in the figure.

The toe boards 46 are structurally braced and supported in part at their opposite ends 50 and 51, by steel angle members 52 which extend transversely the entire width of the car. Also between the ends of the outer side boards 44 and extending transversely of the car, are frame strengthening end boards 54, these end boards serving as end walls for the tool trays. Further supporting the toe boards 46 intermediate their ends, are angle brackets 55, each secured to its associated toe board as by a suitable bolt or screw 56, and to the shank of a bolt or stud 57 carried by and projected outwardly of the adjacent side sill 38, the head 58 of the bolt engaging the inner side of the sill as appears in Fig. 7.

As will appear from Figs. 2 and 7, upon each of the studs 57 is pivotally mounted a brake shoe 59, there being by preference, a brake shoe for each of the car wheels 32 and 42. A suitable nut 59A engaging the end of each stud serves to retain the shoe thereon. The location of the studs is such that the brake shoes are disposed adjacent the car wheels in a manner to provide for braking engagement therewith, upon brake actuation. All of the brake shoes may be actuated simultaneously by any well known type of brake actuating mechanism, elements of which are indicated at 60 in Fig. 2, in operative association with a pair of the shoes on one side of the car. It is to be noted that the brackets serve to transmit to the car frame, particularly to the toe boards 46 and indirectly to the side boards 44, the brake reaction upon braking actuation of the brake shoes.

As appears in Figs. 1 and 5, the inner longitudinal margin of each toe board 46 is provided with an angle iron 62 which serves to prevent wear or chaffing of the toe board margin, since these boards serve as foot rests for the car passengers. Further, as shown in Figs. 5 and 6, each of the axle journal members 30 and 39 is provided with a depending lug 63, and between the lugs of the journal boxes on each side of the car is a longitudinal rail skid 64, preferably comprised of a steel angle iron. The rail skids serve in addition to the well known purpose therefor, to further strengthen the car frame, acting as truss members for the longitudinal frame elements.

The passenger seat indicated generally at 66, which is located centrally of the car frame longitudinally thereof, is comprised of longitudinally extending side members 67 which serve to support transversely directed seat boards 68. The members 67 are secured by bolting (not shown), to posts 70 located adjacent one end of the car, posts 71 adjacent the opposite end thereof, and intermediate stub posts 72 and 74. As appears in Fig. 3, the stub posts 74 engage and are secured to the cross sill 14 at their lower ends, while the stub posts 72 rest upon the upper transverse angle iron 16, and are securely connected to the side boards 43 as by bolting (not shown). The end posts 70 are secured adjacent their lower ends to the side boards 43 and are braced by the adjacent end board 54 and angle piece 52, while the posts 71 at the opposite ends of the car frame are similarly secured to the side boards 43 and are also braced in a similar manner by the adjacent end board 54 and angle piece 52.

The upper ends of end posts 71 are connected by a rail 75 (Fig. 5), which may be a section of pipe suitably secured to the posts and serving as a hand rail. Also, at this end of the car, there is provided a storage platform beneath the seat, constituted by horizontal boards 76 arranged transversely of the frame between the inner side boards 43 (Figs. 3 and 5). A board 78 arranged on edge and extending between the posts 71 provides an end guard or wall for the platform.

As appears in Figs. 1 and 6, the end posts 70 have their upper ends connected by a hand rail 79 which may be a pipe section, the rail being extended laterally of the car frame beyond the posts 70 for connection to the upper ends of additional posts 80. Each of the latter posts is secured near its lower end to the adjacent outer side board 44, in the corner formed by the side board and adjacent end board 54.

The car frame is provided with lifting handles 82 arranged longitudinally on either side of the seat structure, the handles being operatively mounted in brackets 83 suitably secured to the seat posts 71, 72 and 74. Also, arranged adjacent the posts 70 and mounted on the side elements 67, is a storage box 84 for tools, etc.

From the foregoing it will now appear that a relatively rigid, strong and durable car frame is provided, constituted by a plurality of longitudinal and transverse elements arranged to provide for some flexibility in the frame, whereby to absorb or cushion shock and vibrations transmitted to the frame through the car wheels operating on the rails. The car frame, the preferred embodiment of which is hereinabove described, may be manufactured and assembled at a minimum cost, and is of light weight to facilitate car handling.

It is to be understood that the foregoing description relates only to a preferred embodiment of the invention, and that alterations or modifications in the elements and arrangement thereof may be made without departing from the spirit and full intended scope of the invention as defined by the appended claims.

I claim:

1. A frame for a railway motor car or like vehicle, comprising central longitudinal sills, a transverse or cross sill arranged on edge and secured to adjacent, corresponding ends of said longitudinal sills, said cross sill having vertically

reduced end portions, vertically spaced angle irons extending transversely of the car frame and secured to the opposite corresponding ends of said longitudinal sills, longitudinal side sills interconnecting the ends of said cross sill and angle irons, floor boards extending longitudinally of the frame and mounted upon the reduced ends of said cross sill and one of said angle irons, longitudinal and transverse side boards arranged on edge and cooperating with said floor boards to form storage trays, and a seat structure extending longitudinally of the frame between said trays, said seat structure including vertical supporting elements secured to certain of said side boards.

2. A frame for a railway motor car or like vehicle, comprising central longitudinal sills, transverse or cross sills connecting the opposite corresponding ends of said central sills, longitudinal side sills interconnecting the opposite corresponding ends of said cross sills, longitudinally extending floor boards arranged along each side of the frame and mounted upon said cross sills, inner and outer longitudinal side boards and transverse end boards all arranged on edge and cooperating with said floor boards to form storage trays, said inner longitudinal side boards being secured to at least one of said cross sills, a longitudinal toe board extending laterally and outwardly from the upper end of each of the outer longitudinal side boards, means structurally connecting the associated toe board and side board to the adjacent side sill, means common to and structurally bracing the corresponding ends of said toe boards, elements projecting from said side sills and formed to serve as supports for car-braking members, and means structurally cooperating with said elements and toe boards for additionally bracing said toe boards.

3. A railway motor car comprising a frame including structurally related longitudinal and transverse sill members, wheel-supporting axle elements carried by said transverse sill members and car wheels on said axle elements, longitudinally extending floor boards mounted on said transverse sills, longitudinal and transverse side boards arranged on edge and cooperating with said floor boards to form storage trays, certain of said longitudinal side boards being structurally connected to at least one of said transverse sill members, a toe board projecting laterally of and supported upon one of the longitudinal side boards on each side of the frame, elements common to and structurally bracing the corresponding ends of said toe boards, brake shoe supporting elements on certain of said longitudinal sill members, means connected to said toe boards and bearing on said brake shoe supporting elements, provided for additionally bracing said toe boards, a brake shoe pivotally carried by each of said supporting elements and arranged for braking engagement with an adjacent car wheel, and brake-shoe actuating mechanism operatively associated with said brake shoes.

OTTO H. BRAUER.