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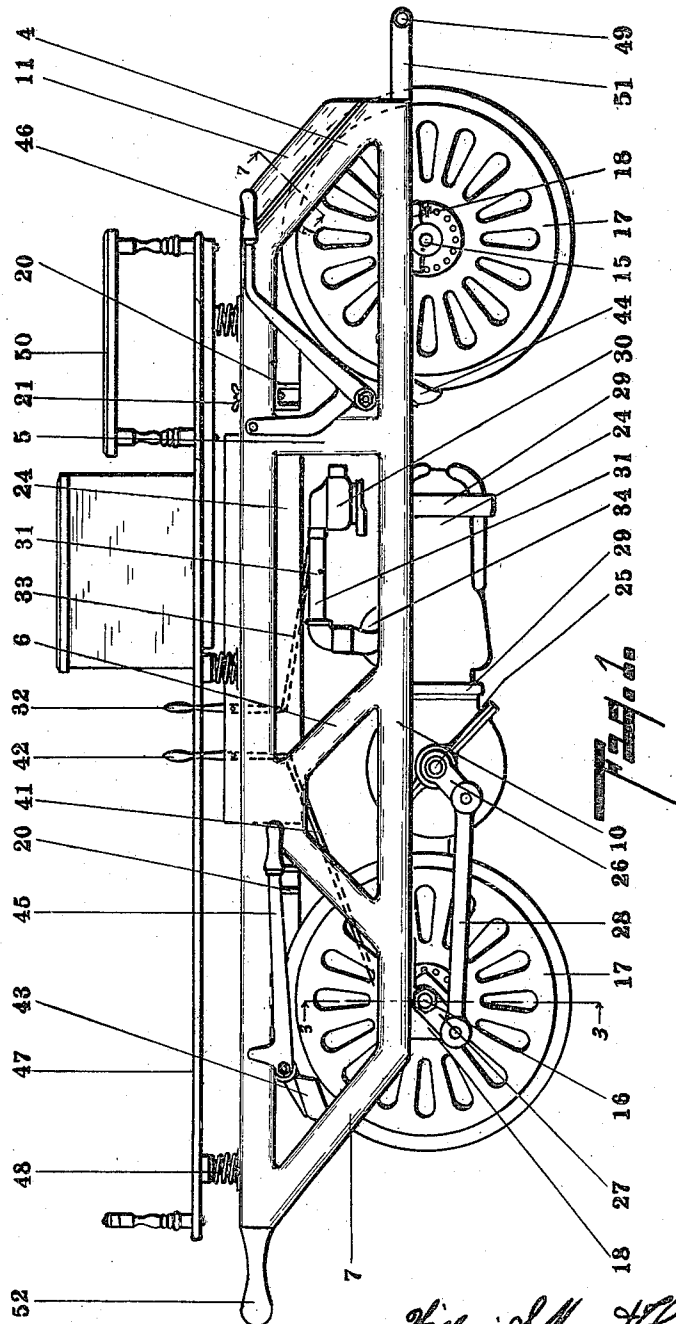
RAILWAY CAR.

APPLICATION FILED MAR. 7, 1910.

987,881.

Patented Mar. 28, 1911.

4 SHEETS-SHEET 1.



Witnesses
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By

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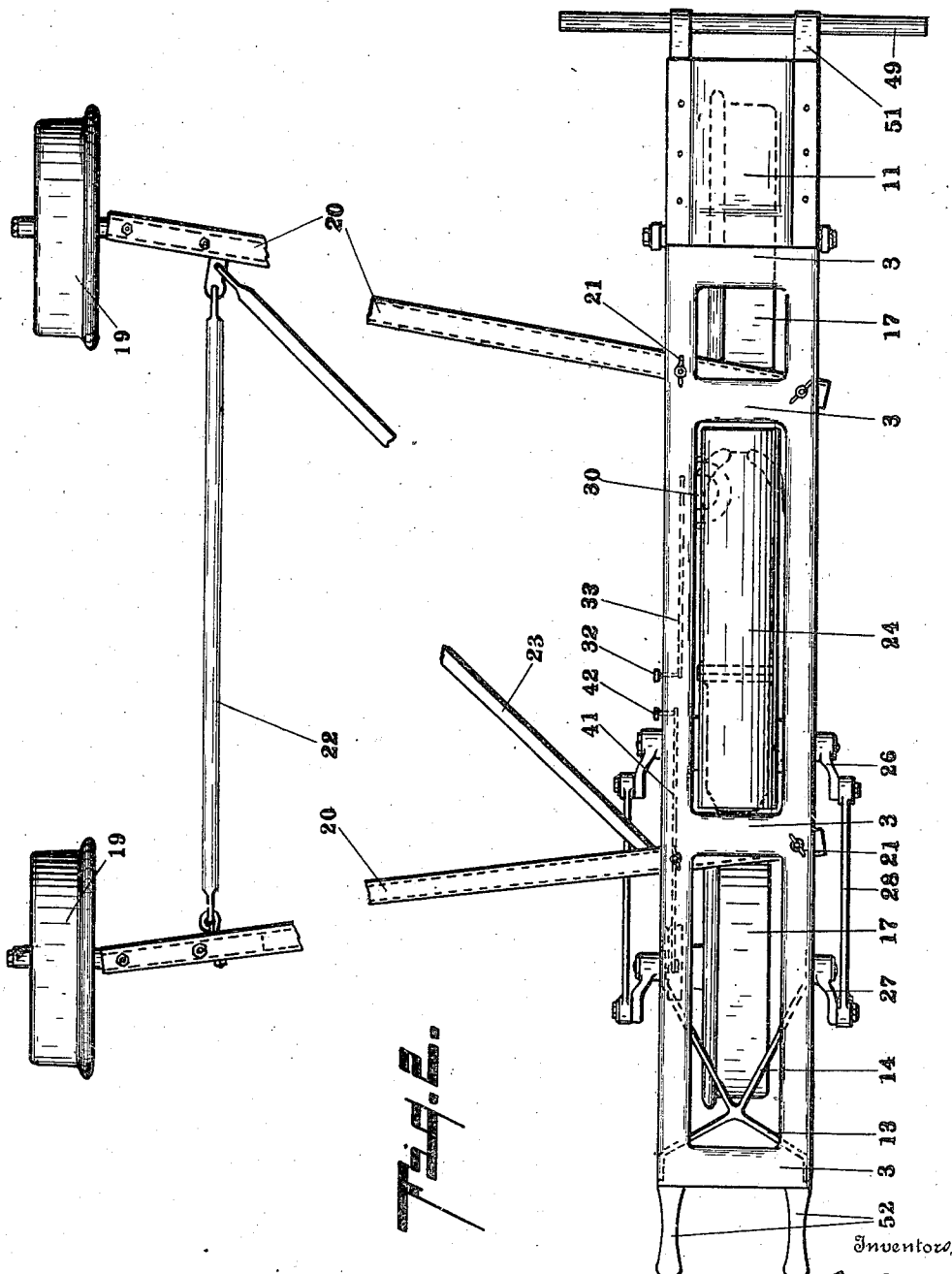
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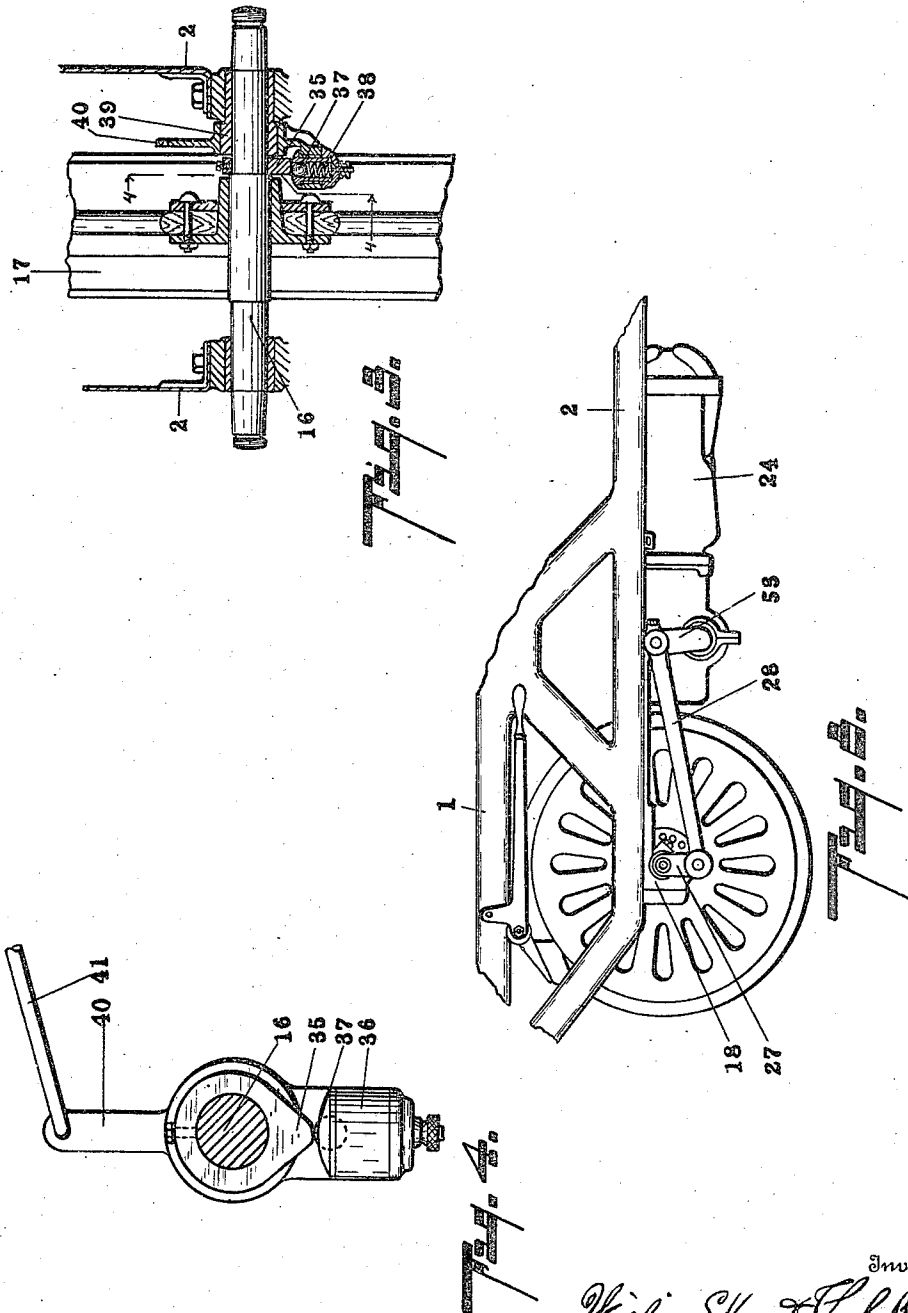
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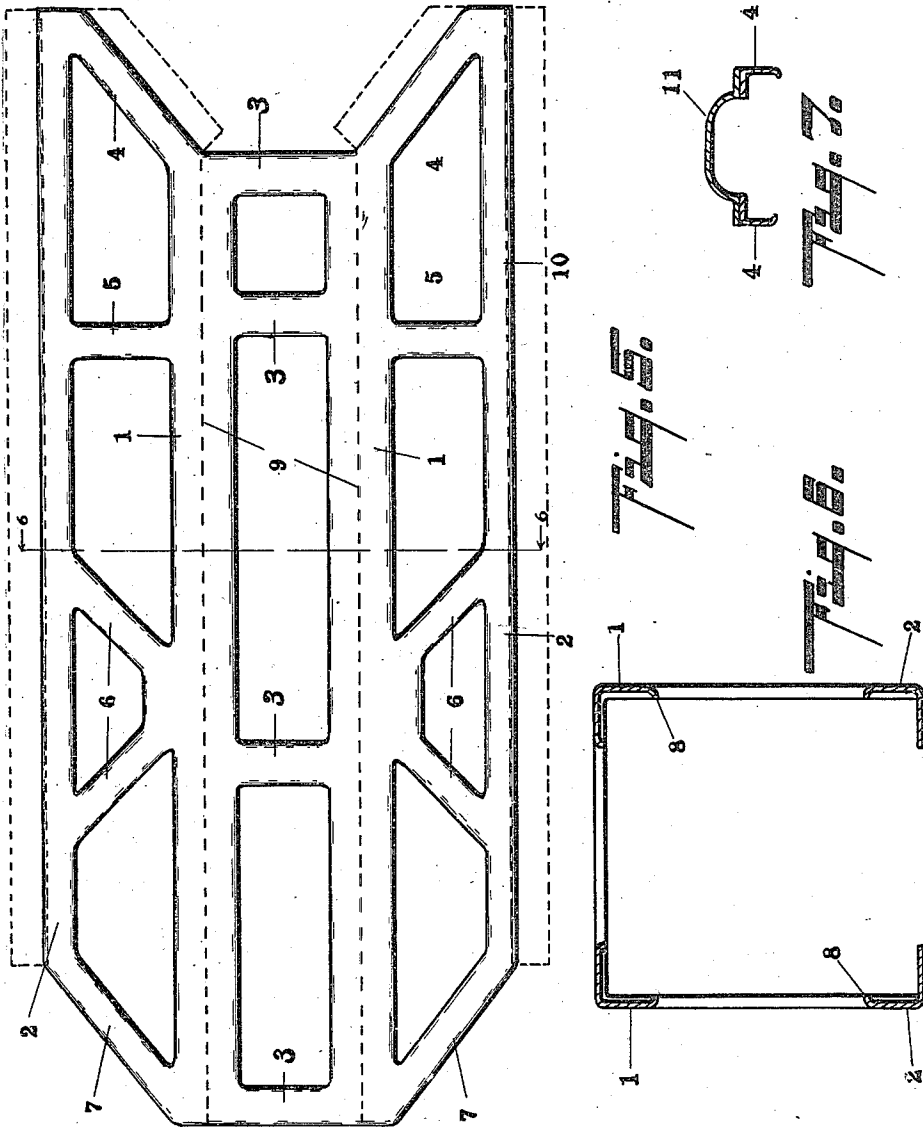
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UNITED STATES PATENT OFFICE.

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RAILWAY-CAR.

987,881.

Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed March 7, 1910. Serial No. 547,910.

To all whom it may concern:

Be it known that we, WILLIAM S. HOVEY and CHARLES B. STEBBINS, citizens of the United States, residing at Three Rivers, Michigan, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

This invention relates to improvements in railway cars.

10 The main objects of this invention are: First, to provide in a railway motor car an improved frame construction. Second, to provide in a railway motor car an improved arrangement of the engine and driving connections therefor to the traction wheel. 15 Third, to provide an improved railway motor car which is very compact and simple in structure.

20 Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

25 The structure described constitutes one effective embodiment of our invention. Other embodiments would be readily devised by those skilled in the art.

30 The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of our invention is clearly illustrated in the accompanying drawing, forming a part of 35 this specification, in which:

Figure 1 is a side elevation of a structure embodying the features of our invention. Fig. 2 is a detail plan view thereof. Fig. 3 is a detail vertical section taken on a line 40 corresponding to line 3—3 of Fig. 1, showing the arrangement of the timer. Fig. 4 is an enlarged detail section taken on a line corresponding to the broken line 4—4 of Fig. 3. Fig. 5 is a plan view of the frame in process 45 of manufacture, the same being completely formed except folding on the dotted lines 9, the position of certain parts before the folding operations being indicated by dotted lines. Fig. 6 is a cross section through our 50 improved frame taken on a line corresponding to line 6—6 of Fig. 5. Fig. 7 is a detail section taken on a line corresponding to line

7—7 of Fig. 1, showing further details of the frame structure. Fig. 8 is a detail side elevation of a modified structure, the principal 55 modification being in the arrangement of the crank shaft, which is of the rocking type as distinguished from the rotary type shown in Fig. 1.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the frame of 65 our improved motor car consists of the top longitudinal sill members 1 and bottom longitudinal sill members 2. The top sill members 1 are connected by cross pieces 3, while the bottom sill members are connected 70 to their respective sill members by cross pieces 4, 5, 6 and 7. The sill members are preferably disposed so that the bottom sill members project beyond the top sill members at the forward end of the frame, and the 75 top sill members project beyond the bottom sill members at the rear end of the frame, as is clearly disclosed in the drawing. The end cross pieces 4 and 7, connecting the top and bottom sill members, are inclined, as 80 are also the pairs of cross pieces 6, the cross pieces 6 being disposed in an A shape. These sill members and cross pieces are formed integrally of sheet metal and their edges are preferably provided with inturned flanges 85 8, which add to the rigidity of the same and, further, obviate any projecting rough edges and gives the structure a more finished and heavier appearance. The sill members are preferably angle shaped in cross section, 90 as shown, and disposed with their angles outwardly. In the manufacture of the frame, it is first blanked out and the edges flanged, then folded or bent along the lines 9, which form the top sill members, see 95 Fig. 5, and along the lines 10, forming the angles of the bottom sill members.

We preferably provide the front of the frame with a hood or shield 11, which is rigidly secured to the inturned flanges 12 100 on the front cross pieces 4, see Figs. 1, 2 and 7. The frame is braced at its rear end by the diagonally disposed braces 13 and 14, which are preferably formed integrally, see

Fig. 2. The front and rear axles 15 and 16, respectively, for the wheels 17, are carried by bearings 18 secured to the bottom sill members. The supplementary carrying wheels 19 are connected by the bars 20 to the top sill members of the frame, the bars being arranged under the sills and connected thereto by bolts 21. The bars are connected by the braces 22 and 23, the brace 23 being diagonally disposed. These bars are preferably formed of channel iron, as illustrated.

The engine 24 illustrated is of the two-cycle type, and is arranged between the wheels 17, and in alinement therewith, thus securing a balanced structure. The crank shaft 25 of the engine is arranged transversely of the frame, and is provided with coupling rod crank arms 26. The axle 16 is provided with crank arms 27, which are connected to the arms 26 by the coupling rods 28. The engine is supported on the bottom sill members by the hangers 29, the connections for the hangers to the sills not being illustrated as they will be readily understood.

The carbureter 30 is connected to the engine through the pipe 31. The throttle, not illustrated, is controlled by the lever 32 which is connected to the throttle by the link 33. The carbureter is arranged within the frame above the engine so as to be fully protected, although it is, at the same time, completely accessible.

The exhaust 34 is preferably arranged to deliver at the side of the frame, as indicated. The timer is preferably arranged on the rear axle, and consists of a cam-like rotating member 35 which engages a coacting member 36 adjustably mounted on the shaft. This coacting member has a contact ball 37 supported by a spring, as 38. As the details of the timer form no part of this invention, they are not described in detail. The timer member 36 is adjustably mounted on the bearing 39, so that it may be adjusted to secure proper timing. This is accomplished in the structure illustrated by providing the member 36 with an upwardly projecting arm 40, which is connected by the link 41 to the lever 42.

We preferably provide brake shoes, as 43 and 44, the shoe 43 being arranged to coact with the rear wheel, while the shoe 44 is arranged to coact with the front wheel. These shoes are actuated by levers 45 and 46, respectively. As the structural details of these brakes form no part of this present invention, they are not illustrated or described herein.

We preferably provide a platform or body, as 47, supported on the frame by means of the springs 48. At the front end of the frame is a cross rod 49, adapted to serve as a foot rest for the occupant of the seat 50, and also as handles. The rod 49 is

preferably carried by the bars 51 arranged within the angles of the bottom sill members. Handles 52 are provided at the rear end, these handles being arranged within the angles of the upper sill members. The securing means for these parts are not illustrated, as they will be readily understood.

In the modified construction shown in Fig. 8, the crank shaft 53 is of the rocking type. In the structure shown in Fig. 2, it is desirable, in order to prevent the connections getting on the dead center, to have the coupling rod arms on opposite ends of the axle and crank shaft slightly out of alinement. In this modified construction, this feature is not required. The fuel reservoir 24 is arranged within the frame above the engine, and in alinement between the wheels 17 so that the load is well balanced, and the engine and its accessories, while they are readily accessible, are effectively protected, and compactly arranged.

We have illustrated and described our improvements in detail in the form which we have embodied them in practice. We are, however, aware that they are capable of considerable variations in structural details without departing from our invention, but as these details will be readily understood by those skilled in the art, we have not attempted to illustrate or describe the same herein.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members angled in cross section, disposed with the angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members, the rear ends of the top sill members being extended beyond the bottom sill members, a hood rigidly secured to the front cross pieces and serving as a brace for said frame, integrally formed diagonally disposed braces secured at the rear ends of said top and bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; an engine arranged within said frame between said wheels and having driving connections to one of them; and a platform or body mounted on said frame.

2. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members angled in cross section, disposed with the angles outwardly, the top sill members and cross pieces being formed integrally of a single

piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members, the rear ends of the top sill members being extended beyond the bottom sill members, a hood rigidly secured to the front cross pieces and serving as a brace for said frame; integrally formed diagonally disposed braces secured at the rear ends of said top and bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; and an engine arranged within said frame between said wheels and having driving connections to one of them.

3. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members angled in cross section, disposed with the angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members, the rear ends of the top sill members being extended beyond the bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; an engine arranged within said frame between said wheels and having driving connections to one of them; and a platform or body mounted on said frame.

4. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members angled in cross section, disposed with the angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members, the rear ends of the top sill members being extended beyond the bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; and an engine arranged within said frame between said wheels and having driving connections to one of them.

5. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal, a hood rigidly secured to the front cross pieces and serving as a brace for said frame, integrally formed diagonally disposed braces secured at the rear ends of said top and bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels

arranged on said axles within said frame; an engine arranged within said frame between said wheels and having driving connections to one of them; and a platform or body mounted on said frame.

6. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal, a hood rigidly secured to the front cross pieces and serving as a brace for said frame, integrally formed diagonally disposed braces secured at the rear ends of said top and bottom sill members; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; and an engine arranged within said frame between said wheels and having driving connections to one of them.

7. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; an engine arranged within said frame between said wheels and having driving connections to one of them; and a platform or body mounted on said frame.

8. In a railway motor car, the combination of the frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sill members and cross pieces being formed integrally of a single piece of sheet metal; axles; bearings therefor secured to the bottom sill members; wheels arranged on said axles within said frame; and an engine arranged within said frame between said wheels and having driving connections to one of them.

9. A car frame comprising top and bottom longitudinal sill members angled in cross section, disposed with their angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal, the edges of the cross pieces and sill members being flanged inwardly, the front ends of the bottom sill members being extended beyond the top sill members and the rear ends of the top sill members being extended beyond the bottom sill members; and a hood rigidly secured to the inturned flanges on the front cross pieces and serving as a brace for said frame.

10. A car frame comprising top and bottom longitudinal sill members angled in cross section, disposed with their angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal, the edges of the cross pieces and sill members being flanged inwardly; and a hood rigidly secured to the inturned flanges on the front cross pieces and serving as a brace for said frame.

11. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members and the rear ends of the top sill members being extended beyond the bottom sill members; and a hood rigidly secured to the front cross pieces and serving as a brace for said frame.

12. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal; and a hood rigidly secured to the front cross pieces and serving as a brace for said frame.

13. A car frame comprising top and bottom longitudinal sill members angled in cross section, disposed with their angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal, the edges of the cross pieces and sill members being flanged inwardly, the front ends of the bottom sill members being extended beyond the top sill members and the rear ends of the top sill members being extended beyond the bottom sill members.

14. A car frame comprising top and bottom longitudinal sill members angled in cross section, disposed with their angles outwardly, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet

metal, the edges of the cross pieces and sill members being flanged inwardly.

15. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal, the front ends of the bottom sill members being extended beyond the top sill members and the rear ends of the top sill members being extended beyond the bottom sill members.

16. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces, said sills and cross pieces being formed integrally of a single piece of sheet metal.

17. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by integral cross pieces; a hood rigidly secured to the front cross pieces and serving as a brace for said frame; and integrally formed diagonally disposed braces secured at the rear end of said top and bottom sill members.

18. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by cross pieces formed integral therewith; and braces for said top and bottom sill members.

19. A car frame comprising top and bottom longitudinal sill members, the top sill members and the top and bottom sill members being connected by integral cross pieces, and a hood secured to the front cross pieces and serving as a brace for said frame.

20. A car frame comprising top and bottom longitudinal sill members, and connecting cross pieces therefor, formed of sheet metal and integral with said sill members.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

WILLIAM S. HOVEY. [L. S.]
CHARLES B. STEBBINS. [L. S.]

Witnesses:

JOHN BURKE, Jr.,
D. C. MIX.