April 23, 1957 J. DANIELS 2,789,518

MODEL RAILWAYS

Filed Jan. 2, 1952

Fig. 1.

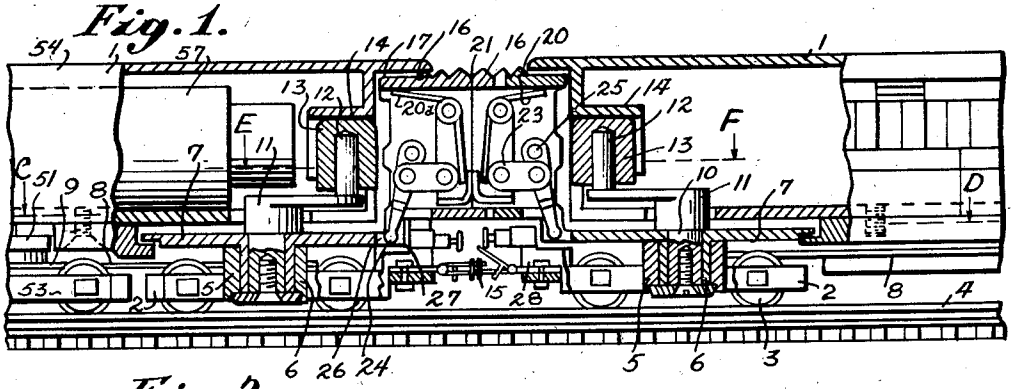


Fig. 3.

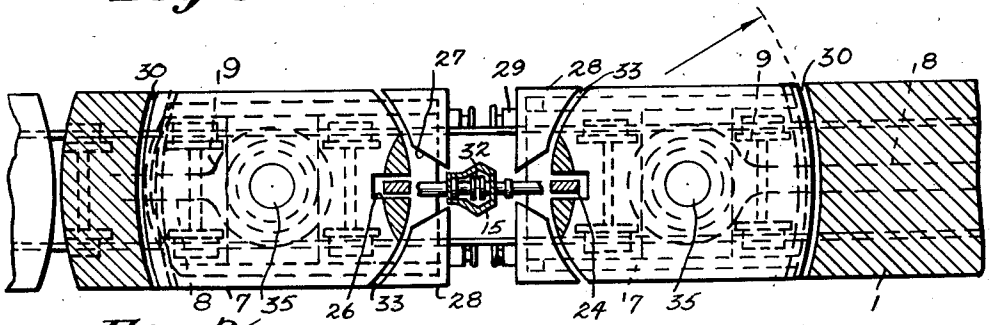


Fig. 2.

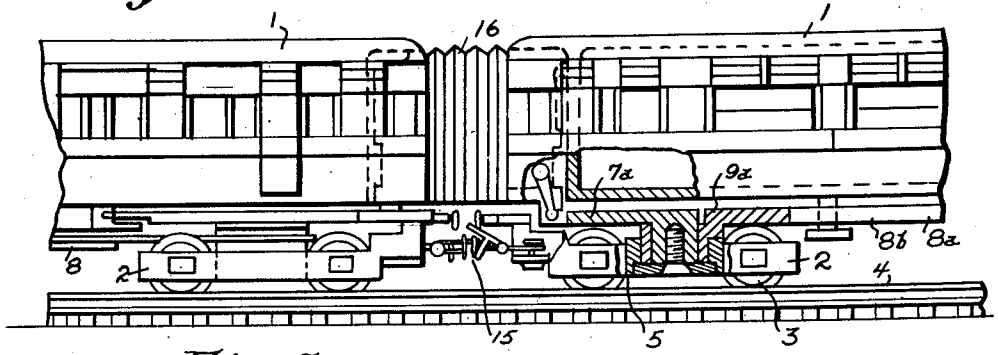
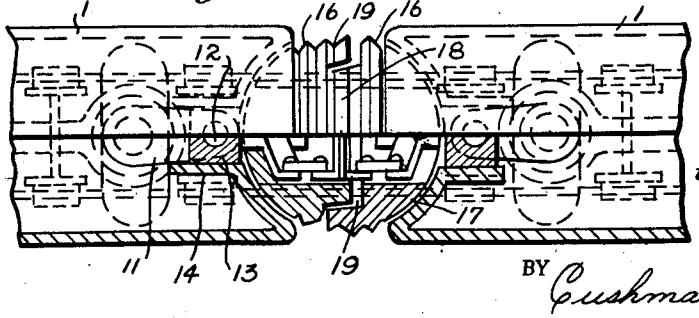


Fig. 4.



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# MODEL RAILWAYS

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6 Claims. (Cl. 105—1)

This invention relates to toy or model railways and more particularly to vehicles on such railways having more than two axles, particularly locomotives and passenger or freight cars with four or more axles.

One purpose of the invention is to provide, in the art of model railway construction, new possibilities for the production of model railways which are particularly true representations. It is also the purpose of the invention to improve the running of the model railways on curves, that is on rail curves of small radius, and to adapt the train unit better than hitherto as regards its pictorial impression and its running properties, to the original.

It is known that the method of construction and in particular the behaviour of model trains which have hitherto appeared on the market differs substantially from real trains. This applies in particular in the copying of locomotive models with a high number of driving axles and in the copying of four-axle passenger and freight cars. With the technique at present employed it is for example, impossible to close the gaps between the locomotive housing and the tender, as well as between the adjacent ends of four-axle cars. Also, locomotives in which the tender is attached, and the ends of cars extending beyond the bogies of four-axle cars project too far beyond the curve of the track and influence to a considerable degree the appearance of the model and the total impression of the train assembly.

A general solution of this problem has not been possible on account of the association with the small radii of the curved rails on model railways.

The invention consists in principle in that in the coupled condition of two vehicles their coupled ends are withdrawn from the direct driving influence of the running mechanism adjacent two of the coupling points and subjected to the driving action from a point lying in the middle or approximately in the middle between the two bogies.

The practical development of this basic idea of the invention can be carried out in various ways. Basically it is a question of arranging the upper body of the vehicle rotatably in relation to the running mechanism and movable transversely to the longitudinal axis of the vehicle.

Various preferred forms of construction of the invention will be hereinafter described.

According to the invention the two leading bogie cars to be coupled are connected by a central, preferably separable traverse member which at its ends is hingedly mounted about the rotary pin of the bogie car. At the abutment point of the two halves of the traverse there is arranged on each the one half of a link member constructed in the manner of a concertina bellows about which the two leading ends of the adjacent upper bodies of the car, for example, in the form of a reproduction of a passenger car are so placed that they remain controlled by the link member.

A further important advance in respect of trouble-free operation of such a guiding point imposed on the car bogies, which itself results from the described functional



connection of two coupled leading car bogies is achieved through the fact that the problem of the actual transmission of the tractive force in the middle portion of the upper body of the vehicle is taken over by special ties or the like.

According to the invention for this purpose the bogies of a vehicle body unit are connected with each other below the central point lengthwise of the car by special traction members which are likewise linked about the guide pin of the bogie. The upper body element of the model thus no longer serves as the traction member.

In order to prevent the tipping of a model system which has stopped on a curved rail when in the uncoupled condition the car upper bodies are, according to the invention, when uncoupled, locked, preferably automatically, with the bogies or the half-traverses so that the guiding takes place directly from the pivot pin of the vehicle frame.

By means of the above described features the following requirements are fulfilled:

1. The separation of the model system into model upper bodies and lower vehicle bodies,

2. A successive link connection between all the lower vehicle bodies that is both at the separable coupling point between two vehicles as well as between the two bogies of a vehicle,

3. A transference of the pivot point of the leading ends of the upper body to or near to the middle of the gap between the two inter-coupled vehicles.

As in the case of passenger or freight train models so in the case of locomotive models according to the invention there is maintained the principle of a constructional and functional division of the locomotive model into a lower vehicle body and a superstructure, which as in the car models have a movable connection only by means of guiding points carried by traverses.

The transference of the principle of the invention to the construction of model locomotives gives a substantial technical advance compared with previous methods of model construction. The separation of the driving wheel frame system permits in particular undistorted reproduction of large locomotives with any desired number of axles, as well as of machines connected in tandem.

On the drawing there are illustrated various forms of construction of the invention.

Fig. 1 is a side elevational view of two adjacent flat freight or passenger cars provided with a coupling constructed in accordance with the present invention;

Fig. 2 is a side elevational view similar to Fig. 1, but showing only one car in sectional elevation for purpose of illustration;

Fig. 3 is a longitudinal sectional plan view taken substantially along the line C—D of Fig. 1; and

Fig. 4 is a longitudinal sectional plan view taken substantially along the line E—F of Figure 1.

The traction unit illustrated in the drawings consists of a locomotive with a tender coupled thereto and two four-axle express cars coupled thereto.

As shown, the passenger and freight cars of a train including the locomotive and tender are formed of the upper bodies **1**, which have the external appearance, truly to scale, of the body work of the vehicle to be illustrated. On each body **1** there are arranged the two normal bogies **2** whose wheels **3** run on the rails **4**. The bogies have in place of a guide pin a central bore or the like which is preferably limited by a bearing bushing **5** and has rotatably mounted therein the cylindrical extension **6** of a traverse member **7**.

The two bogies of a vehicle are connected with each other by means of a tension bar **8** the eye **9** of which embraces the bushing **5** of the bogie rotatably from the outside.

If the upper body 1 is removed from the bogie the two bogies of a vehicle thus remain pivotally connected with each other through the traction member 8 and the transmission of the tractive force from one bogie to the other is effected, not through the car body, as in a real train but through the traction member 8 which is preferably covered.

In the bore in the extension 6 of the traverse member 7, preferably constructed as a bearing, there is pivotally supported one pin 10 of a crank 11 the other pin 12 of which rotatably carries the block 13 which is displaceable in a guide 14 of the upper body, in the longitudinal direction of the car (see Figs. 2 and 6).

The arrangement is such that the upper body 1 of the vehicle is carried by the two cranks 11 with the assistance of the two blocks 13, in such a way that under certain provisions the upper body 1 is both rotatable as well as transversely displaceable with respect to the bogies 2. In this way the load of the upper body is transmitted directly to the bogie through the crank-like part 11.

At the leading end the bogies 2 are provided in the usual manner with coupling suspensions 15 which upon the abutment of two vehicles automatically couple together and then form a direct connection between the oppositely abutting bogies.

The traverse members 7 which are carried by the bearing bushings 6 project somewhat beyond the respective bogie 2 at the front of the vehicle and each carries a substantially semicylindrical superstructure 16 which fits accurately or with a suitable amount of play in an opening 17 at the end face of the respective upper body 1 of the car. The two superstructure parts 16 of two vehicles which are to be coupled together engage at the coupling point to form a bellows connection between the two cars.

In the vertical direction the end faces of the parts 16 are provided with grooves or suitable projections staggered with respect to each other so that upon the coupling together of two vehicles the projection 18 of one part 16 engages in the groove-like recess 19 of the other, so that the two parts 16 even when the car bodies lie obliquely to each other engage and complete a unit serving as the desired guide column.

In the coupling position the two guide column parts 16 are held together by the coupling 15 which acts against the pressure of two springs 20 which are arranged in the hollow space of the guide column parts 16. These springs 20 end in plates 21 which are constructed as the traps for the high coupled passage-way of normal railway freight and passenger cars but here act as the opposing abutments for the two springs 20 of two abutting cars.

The springs 20 are arranged with their screw threaded middle part on pins 22 which extend through the inner chamber of the guide column parts 16. On these pins 22 there are also carried pivotal levers 23 which act through a link member 23*a* on a latch 24 pivoting about a pin 25. The lower end of the latch 24, which is preferably broadened, engages in the coupling position, as can be seen from Fig. 3, in a recess 26 of the adjacent traverse members 7.

If the two vehicles shown in Figs. 1 and 3 are to be uncoupled from each other, the two springs 20 are freed whereby the levers 23 pivot outwardly and take therewith in the corresponding direction the latches 24 connected therewith. The latch 24 then passes from the position shown in Fig. 3 to the opposite end position in which its end engages in a recess 27 provided with an oblique end wall, which is provided on a leading extension 28 of the corresponding bogie 2. This leading extension of the bogie also carries the buffer 29. In this position of the latch 24 the traverse member 7 is thus non-rotatably connected with its rotary frame or bogie 2. It will be noted that the pivotal connection of the crank 11 with the traverse member 7 is longitudinally or laterally offset relative to the pivotal connection of the crank with the car body 1 (Fig. 2). Thus, means are provided for allowing each of the car bodies 1 to move relative to the vertical



axis of the bogie 2 in radial directions and in such a manner that the ends of the car body 1, while passing a curve, will remain in substantially the same position with the rails or track 4 as when running over straight track.

The traverse member 7 is embraced by the upper body 1 with an arcuate guide track 30 the middle point of which, as shown by the broken line 31 lies in the centre 32 of the gap between two vehicles or cars of a train.

The bogie 2 engages on the other hand the traverse member 7 with the projection 28 which likewise extends arcuately as indicated at 33 but with a radius 34 the middle point of which lies in the pivot pin 35 of the respective bogie.

Upon the connection of two cars, as described above two traverse parts are employed which in the coupled condition are connected with each other in such a way that between the two end bogies a functional unit is formed in the centre of which lies the guide member for the coupled car bodies.

In those cases in which two vehicles or vehicle parts remain permanently connected together and uncoupling need not take place, for example in the case of a locomotive and the respective tender, the traverse carrying the guide member is made in one part, that is, not only functionally but also constructionally as a unit.

The length of the locomotive tender between its guide pins is given by the arrow 69 and that of the following D-car by the arrow 70.

At the coupling point between the tender and the first car there is shown by the arrow 71 the distance between the link points of the united coupling members. In the coupling connection shown in Fig. 2 the corresponding interval is shown by the arrow 72.

I claim:

1. A model railway train including detachably connected car bodies, at least two longitudinally spaced bogies below each car body, means connecting the bogies together, a movable traverse member between each bogie and the car body, and longitudinally offset means pivotally connecting said traverse member to said car body so that the latter is rotatably and transversely displaceable relative to said bogies.

2. A model railway train including detachably connected car bodies, at least two longitudinally spaced bogies below each car body, means connecting the bogies together, a movable traverse member between each bogie and the car body, a crank between each traverse member and the car body, said crank having a depending arm at one end pivotally connected to the traverse member and an upwardly extending arm at its opposite end pivotally connected to the car body so that the latter is rotatably and transversely displaceable relative to the bogie.

3. A model railway train including detachably connected vehicles, each vehicle including at least two longitudinally spaced bogies, wheels carried by said bogies, an upper car body, each bogie having a central opening, a movable traverse member above each bogie and having a depending extension projecting into said opening, a crank having at one end a depending arm connected to said depending extension, said crank at its opposite end having an upwardly projecting arm, and means movably connecting said projecting arm to said car body, said car body being rotatably and transversely displaceable relative to said bogies so as to transmit the load on the upper body directly to the bogies through said crank.

4. A model railway train as called for in claim 1 in which the car bodies have opposed bellows at the adjacent ends thereof, means connecting adjacent car bodies together, and latch means pivotally connected to each of the bellows for non-rotatably connecting the traverse member to a bogie.

5. A model railway train including detachably connected car bodies, at least two longitudinally spaced bogies below each car body, means connecting the bogies together, a movable traverse member between each bogie

and the car body, each of said traverse members having a notch therein, said car bodies having opposed bellows at the ends thereof, means coupling the bellows to each other, each of said bellows having a latch pivotally mounted therein and arranged to engage an adjacent notch, and yieldable means for urging the latch into a notch for connecting the traverse member to a bogie.

6. A model railway train as called for in claim 3 in which the car bodies have opposed bellows at the adjacent ends thereof, means connecting adjacent car bodies together, and latch means pivotally connected to each of



the bellows for non-rotatably connecting the traverse member to a bogie.

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