June 2, 1942. G. VARNEY 2,284,998

MODEL RAILWAY TRUCK

Filed Dec. 17, 1940

Fig. 1.

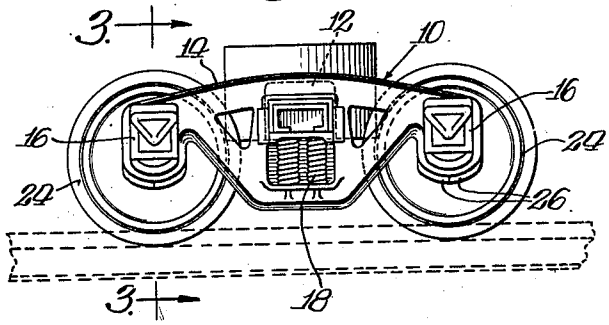


Fig. 2.

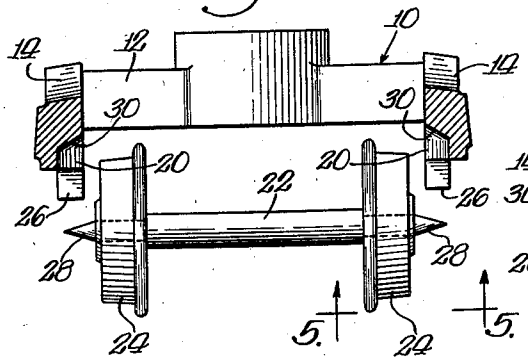


Fig. 3.

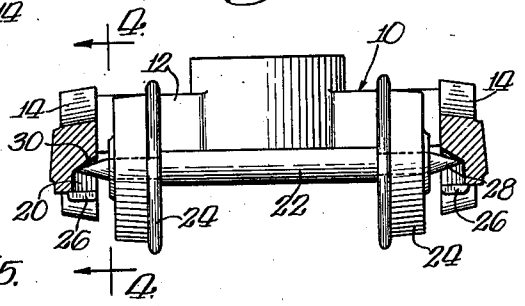


Fig. 4.

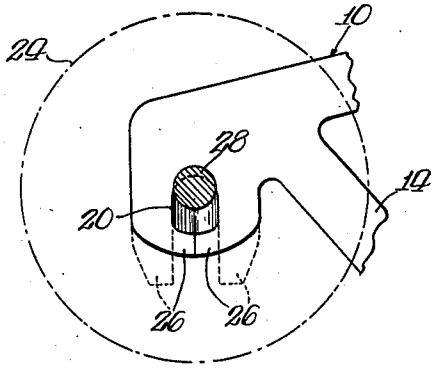
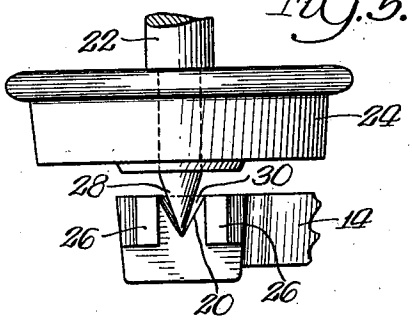


Fig. 5.



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MODEL RAILWAY TRUCK

Gordon Varney, Chicago, Ill.

Application December 17, 1940, Serial No. 370,515

10 Claims. (Cl. 46—221)

My invention relates to the construction of a truck assembly for model railway equipment.

In miniature or scale model railway equipment it is important to simplify, so far as possible, the construction and assembly operations involved, so that satisfactory results can be secured by hobbyists and others who may be relatively unskilled.

It is an object of my invention to provide a model railway truck which can be easily assembled by anyone, with perfect assurance that the assembled truck will be square and accurate, so that it will rest properly on the rails.

It has been common in the art of model railway equipment to make the bolster and the end plates of a truck in separate parts, which were subsequently assembled, the assembly being made by various means. A use of several separate parts was necessary because the ends of the axles, protruding beyond the wheels, were inserted in bearing sockets in the end plates, and this insertion could not be made except when the bolster and end plates were in separate pieces. The axles were inserted in the sockets at the time the bolster and end plates were put together.

According to my invention I have provided a unitary frame member representing the bolster and end plates, and I have provided grooves or slots in which the ends of the axles may be received, together with means for retaining the axles in the slots after they have been inserted.

I have further found it advantageous to shape the ends of the axles, and the corresponding parts of the bearing slots, in a manner which substantially reduces friction.

The objects above referred to, together with other objects, are attained in the construction hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a side elevational view of a model railway truck embodying my invention.

Figure 2 is an end elevational view, partly in vertical section, showing the truck frame, together with a wheel and axle unit, as they appear at one stage in the assembly of the truck.

Figure 3 is an end elevational view, partly in vertical section on the line 3—3 of Figure 1, showing the truck frame, together with the wheel and axle unit, after assembly.

Figure 4 is an enlarged vertical fragmentary sectional view on the line 4—4 of Figure 3.

Figure 5 is an enlarged fragmentary plan view, taken from below the truck during assembly, as indicated by the line 5—5 in Figure 2.

On the drawing I have used the reference numeral 10 to indicate generally the truck frame, which consists of a bolster portion 12 constituting a cross connecting member between the end plate portions 14. The truck frame 10 can be conveniently and economically formed by die casting, using zinc, lead, or other common die casting metals. When this process is used, it is possible to reproduce, in relief, on the surface of the end plates many details of regular railway equipment which give realism to the model. These details are exemplified by the journal box covers 16, the springs 18, etc. In the inner faces of the end plates I provide slots indicated generally by the numeral 20. These slots are for the purpose of receiving the ends of an axle 22 on which wheels 24 are mounted. In Figure 4 of the drawing the dotted lines indicate the original formation of the lower end of the slot 20, indicating that it is open at the bottom to permit insertion of the end of the axle 22.

Projecting downwardly from the truck frame 10, and defining the sides of the slot adjacent its open end, are the lips 26. After the truck is assembled by placing the axles in the slots as shown in Figure 3, the lips 26 are bent over by swaging or peening, or by any other suitable process, into the position shown in full lines in Figure 4. The lips 26 then constitute a closure for the end of the slot 20.

The axles are thus retained in the slots, without the necessity of any additional parts, screws, rivets or the like. Nothing shows on the outer surface of the end plates to destroy the realism.

A significant advantage of this type of construction lies in the fact that it is especially adapted to the use of conical bearings, which constitute a further feature of my invention. According to this feature, I form the ends of the axles with conical points 28, and the upper or inner ends of the slots 20 are formed with a portion 30 which is semi-conical in shape, to receive and constitute a proper bearing surface for the ends of the axle. The vertex angle of the conical point 28, however, is somewhat less than that of the semi-conical bearing surface 30. The difference in angle is shown, slightly exaggerated, in Figures 3 and 5. The result of the difference in shape of the coacting conical portions is that the engagement of the axle with the bearings occurs at the very tips of the points 28, where the diameter is smallest, so that the effect of friction is minimized. This type of bearing operates with extremely little friction,

giving a truck which runs freely and smoothly without oiling.

An important advantage of the construction described lies in the fact that when the truck frame 10 is made in one piece, the bearing surfaces 30 will all lie in a plane, so that when the wheels are mounted in the bearings, the assembly will sit squarely and solidly on the track. This accuracy has never been assured where it was necessary to attach separate end plates to the bolster, because one end plate could be somewhat skewed with respect to the other, so that the axles supported in the end plates did not lie in a common plane. With my construction, however, no error of assembly or lack of skill can cause the truck to be out of square.

It will be noted in Figure 4 that the slot is somewhat elongated in a vertical direction. This assures that when the lips 26 are bent over by the hobbyist or amateur constructor, there will be no binding or friction on the axle caused by inaccuracy in closing the open end of the slot.

It will thus be seen that I have provided a construction which is entirely foolproof, and permits any person to assemble a truck that will be accurate, square and smooth running.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a model railway truck, a frame consisting of a unitary bolster and end plates, and axle-receiving slots formed in the inner faces of said end plates the outer faces of said end plates being imperforate, said slots being open at their lower ends.

2. A model railway truck having a frame comprising bolster and end plates cast in one piece, vertically extending open bottom slots in said end plates adapted to receive the axles, and conical bearing surfaces in said end plates at the top of said slots, the material of said end plates adjacent the open ends of said slots being malleable so that it may be swaged into the slots to form closures therefor.

3. In a model railway truck, a unitary wheel supporting frame having end plates provided in their inner faces with open bottom slots adapted to receive rotating axles, the outer faces of said plates being imperforate, to conceal the ends of said axles, and bendable lips adjacent the open end of each slot whereby the open end can be closed after the axle is placed in the slot, the space between the inner end of the slot and said lips being such that the axle may have substantial play longitudinally of said slot after said lips are closed.

4. In a model railway truck, a supporting frame, a wheel axle having conical ends, and slots formed in said frame to receive said axle, each of said slots being open at one end, and having a semi-conical bearing surface at the opposite end.

5. A miniature truck consisting of a frame, a pair of wheel axles having conical ends, open-end slots formed in said frame to receive said axles, a lip adjacent the open end of each of said slots adapted to be bent over the open end to retain the axle in the slot, and a semi-conical bearing surface in the slot engaging the conical end of the axle.

6. In a model railway truck, a supporting frame, a wheel axle having conical ends, and slots formed in said frame to receive said axle, each of said slots being open at one end, and having at the opposite end a semi-conical bearing surface of vertex angle greater than the vertex angle of the conical ends of the axle.

7. A miniature truck consisting of a frame, open end slots formed in said frame to receive axles, a lip adjacent the open end of each of said slots adapted to be bent over the open end to retain an axle in the slot, a semi-conical bearing surface at the top of the slot, and a pair of wheel axles received in said slots, said axles having conical ends with vertex angles more acute than the angle of said bearing surface.

8. A miniature truck consisting of a frame having end plates, axles with pointed ends, grooves in the inner faces of said end plates receiving said axles, and for each of said grooves closure means at the outer end thereof, and bearing surfaces at the inner end thereof engaging only the extremity of the pointed end of an axle, the length of said groove from its inner end to said closure being greater than the diameter of the axle.

9. In a model railway truck, a unitary frame casting having end plates formed thereon, rotating axles with pointed ends, recesses in the inner faces of said plates receiving said axles, means on said end plates holding said axles in said recesses, and bearing surfaces in each of said recesses engaging only the extremity of the pointed end of an axle.

10. In a miniature truck, a unitary casting of bolster and end plates, and vertical grooves in the inner faces of said end plates adapted to receive axles, each of said grooves extending at one end to the edge of the end plate, axles with pointed ends received in said grooves, and means on said end plates for retaining said axles in said grooves.

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