Feb. 16, 1932. R. H. SHEPARD 1,845,201

STRUCTURAL TOY TRAIN AND THE LIKE

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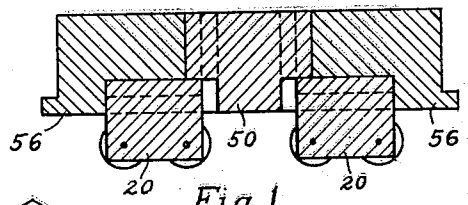


Fig. 1

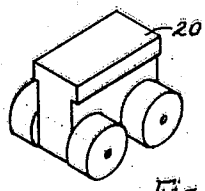


Fig. 1A

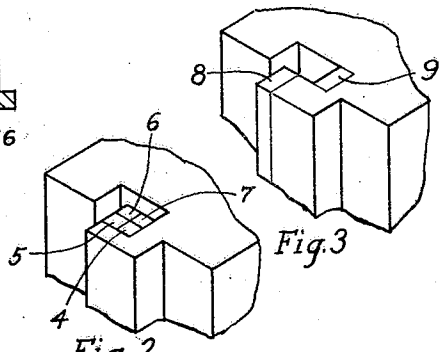


Fig. 2

Fig. 3

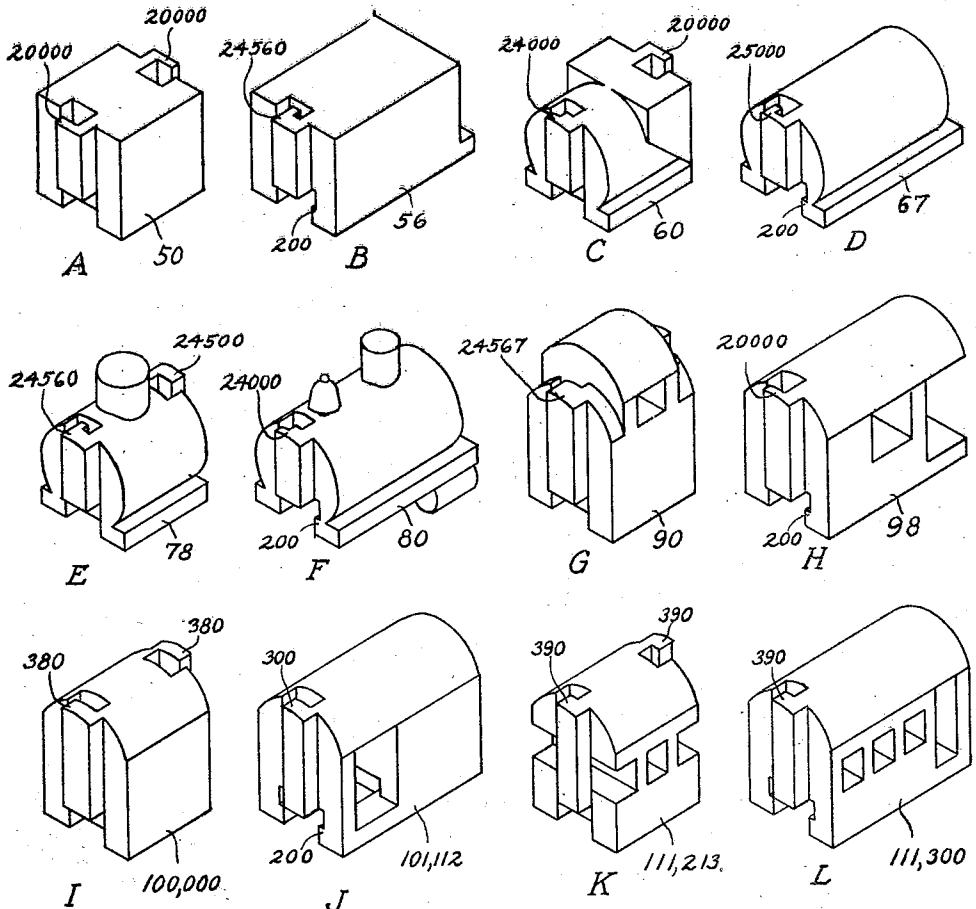


Fig. 4

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STRUCTURAL TOY TRAIN AND THE LIKE

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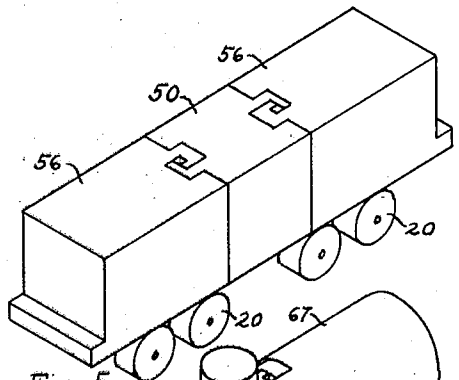


Fig. 5

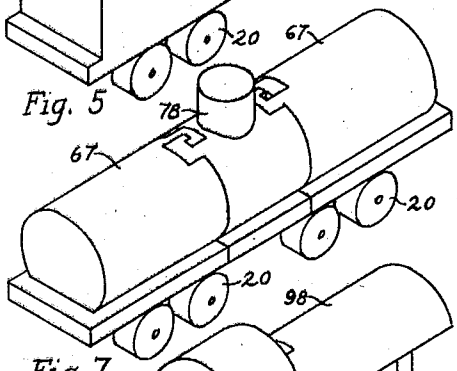


Fig. 7

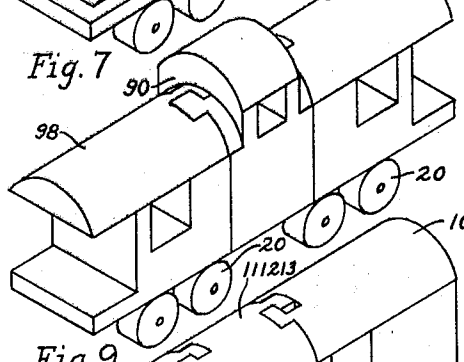


Fig. 9

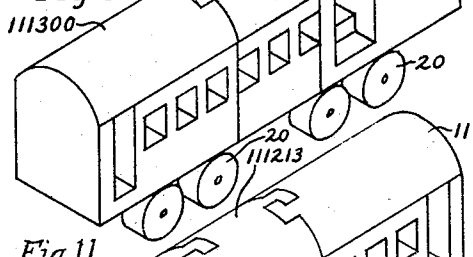


Fig. 11

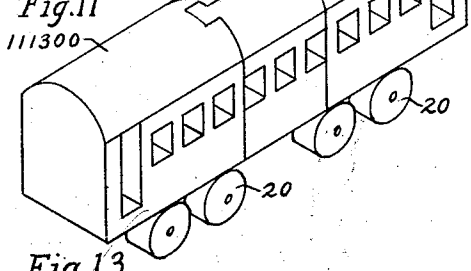


Fig. 13

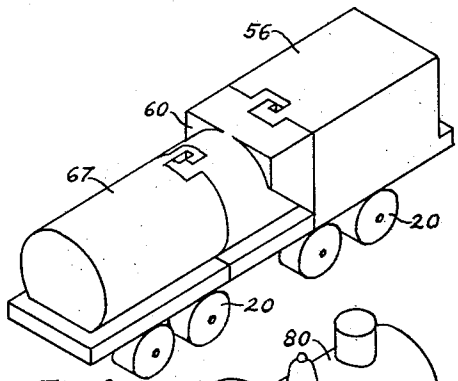


Fig. 6

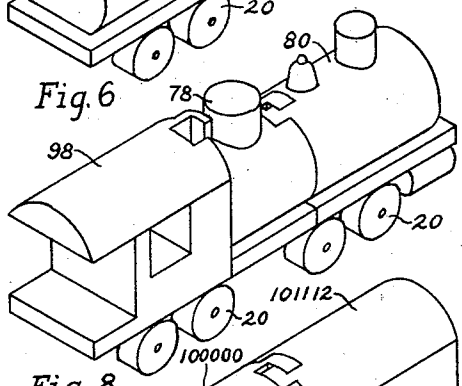


Fig. 8

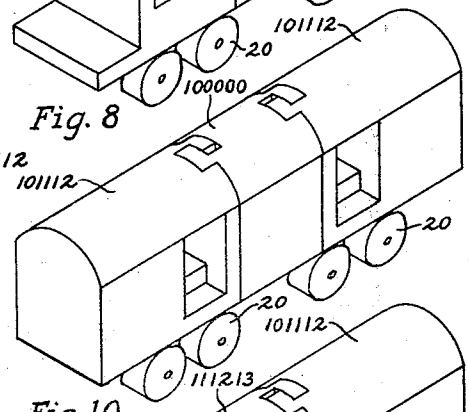


Fig. 10

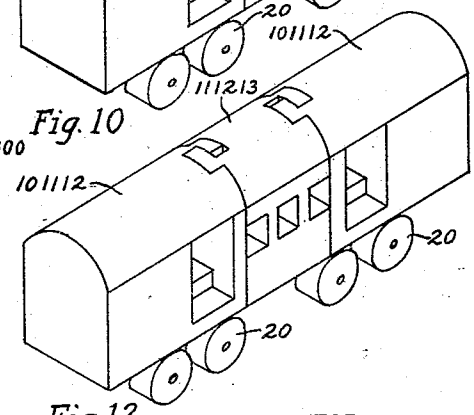


Fig. 12

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STRUCTURAL TOY TRAIN AND THE LIKE

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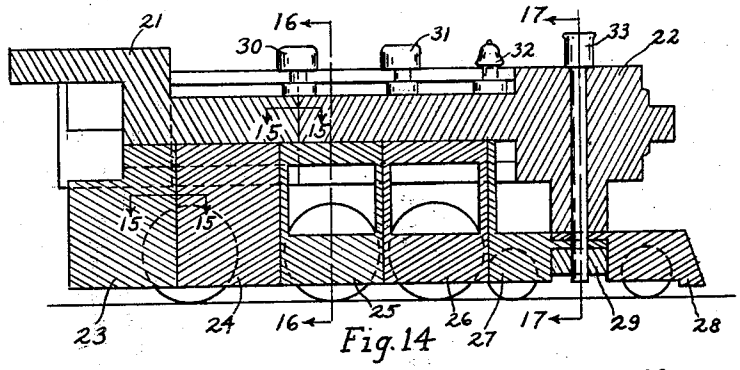


Fig. 14



Fig. 15

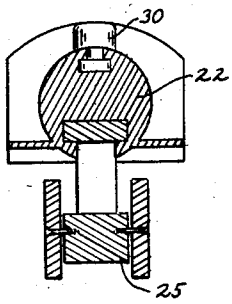


Fig. 16

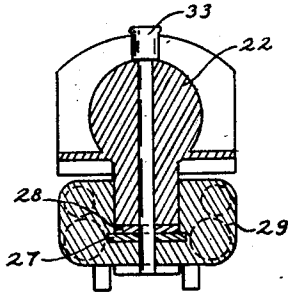


Fig. 17

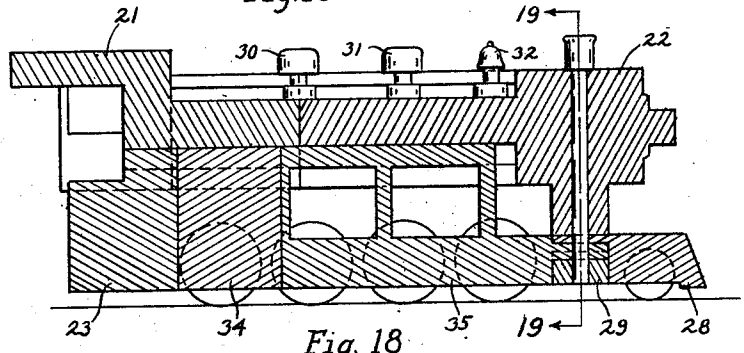


Fig. 18

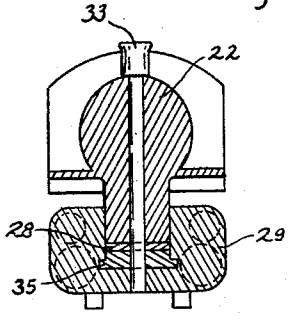


Fig. 19

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UNITED STATES PATENT OFFICE

RALPH H. SHEPARD, OF BRONXVILLE, NEW YORK

STRUCTURAL TOY TRAIN AND THE LIKE

Application filed May 3, 1930. Serial No. 449,370.

This invention relates to improvements in structural toys, and more especially to a toy train with interchangeable parts arranged to alter the types of cars or locomotives at will.

An object is the provision of means for assembling from standardized parts the different kinds of cars and locomotives of the steam type, and which are well-known in the present day.

Another object is to provide such a structural toy of standardized parts which can be easily assembled by a child or amateur in proper realistic combinations, and as easily disassembled or altered.

All these and other objects as suggested herebelow are attained by the method and means now to be described, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through a central plane, of a typical toy car of the type known as a gondola car; Fig. 1A is an isometric view of one of the trucks therefor;

Figs. 2 and 3 are mutilated isometric views of ends of typical standardized parts therefor, showing the interlocking joint construction; Fig. 4, subs A, B, C, D, E, F, G, H, I, J, K, and L, are isometric views of each different part which may be assembled in different combinations to form the toy cars and locomotive shown in the remaining isometric views, in which Fig. 5 is a gondola car, Fig. 6 is a tender, Fig. 7 is a tank car, Fig. 8 is a locomotive, Fig. 9 is a caboose, Fig. 10 is a baggage car, Fig. 11 is a combination passenger and baggage car, Fig. 12 is a postal car, and Fig. 13 is a passenger car;

Fig. 14 is a vertical longitudinal section through a central plane of a modification of the toy locomotive in Fig. 8; Fig. 15 is a horizontal section through each plane 15—15 of the locomotive shown in Fig. 14, and showing a typical joint between the several parts; Fig. 16 is a vertical transverse section through plane 16—16 of Fig. 14; Fig. 17 is a vertical transverse section through plane 17—17 of Fig. 14; Fig. 18 is a vertical central longitudinal section of a locomotive having a different arrangement of driving wheels smaller than those of the locomotive shown in Fig. 14; and Fig. 19 is a vertical transverse section through plane 19—19 of the locomotive shown in Fig. 18.

Like numerals refer to like parts throughout the several views. The digits of the reference numerals denoting parts in the two upper rows (subs A to H, inclusive) in Fig. 4, are the numbers of the figures in which those parts appear. Likewise each pair of digits of the reference numerals denoting parts in the bottom row (subs I to L, inclusive) in Fig. 4, are the numbers of figures in which those parts appear. Reference numerals denoting the end joints of these parts indicate the type of joint as follows: The first digit shows whether it is of the general type of Fig. 2 or of Fig. 3, and the following digits indicate inclusion of the lugs shown in those figures. Ciphers in the reference numerals, except when indicating a part of the number of Fig. 10, are added for uniformity only.

Each car or locomotive is made up of two trucks or lower members 20—20, each supporting one end part similar to one of those in the second and fourth vertical columns of Fig. 4. Between these end parts, joining them, and likewise supported by trucks 20—20 is a middle part similar to one of those in the first and third vertical columns of Fig. 4. Thus the gondola car shown in Fig. 1 is composed of two trucks 20—20 supporting two end parts 56—56 and the connecting center part 50. This car is shown also in an isometric complete view of Fig. 5.

Trucks 20 are joined to the end parts by T-sectional heads at the tops of the former sliding into correspondingly shaped horizontal slots 200 in the bottoms of the latter. The joints joining the center and end parts are vertically slidable on one another and are of the general form shown in Figs. 2 and 3. The Fig. 2 type may include lugs or bosses 4 or 5; or 4 and 5, which would mate properly with a similar joint; or 4, 5 and 6; or 4, 5, 6 and 7; or these lugs may all be omitted. Parts in the two upper horizontal rows of Fig. 4 have end joints of the general type shown in Fig. 2. The Fig. 3 type of joint may include lugs or bosses 8 and/or 9,

or neither. With either one it would mate properly with a similar joint. Parts in the bottom horizontal row of Fig. 4 have the Fig. 3 type end joints.

The type of end joint in each case is selected to permit joining of proper parts and to prevent joining of improper parts. Thus part 50 may be joined with part 56 because joint 20000 will mate properly with joint 24560, and part 67 may be joined with part 78 because joint 25000 will mate with joint 24500 or joint 24560. Part 56 cannot be joined to part 78, however, because joint 24560 will not mate with joint 24500 (since lug 6 of the former will interfere with lug 4 of the latter) nor with joint 24560 (for the same reason and since, conversely, lug 4 of the first will interfere with lug 6 of the last). Nor can part 50 be properly joined to part 67 because joint 20000 will not mate properly with joint 25000 (since there is too great clearance between lug 5 of the former and the lugless hook of the latter).

Similarly, each other part can be joined with only the proper parts.

Some end parts can be joined to either end of certain center parts, while other end parts, such as 80 or 98 can each be joined to only its one respective end of the proper center part, such as 78. No provision is necessary to either allow or prevent joining of any center part with any other center part, nor of any end part with any other end part, since such joining is obviously improper.

The shapes of the parts, and particularly the construction of the joints shown in the drawings, are selected for purposes of illustration only, and the invention is not limited thereto. Many modifications will present themselves to those skilled in the art. For example, the joints may be all of one type, or be interchangeable. Likewise the combining of more or less than five separate parts as described previously to form one car or locomotive is but a modification. For instance, the toy locomotive shown in Fig. 14 is a modification of that shown in Fig. 8, but it includes 13 parts, of which only two parts, 21 and 22, correspond to the upper parts 78, 80 and 98, while five parts, 23, 24, 25, 26 and 27 correspond to the trucks 20—20 of Fig. 8. The locomotive, Fig. 14, has six other parts in addition to those mentioned.

Like the upper parts, the lower parts 23 to 27 inclusive, in Fig. 14, are joined together by vertically-slidable joints of the general form shown in Fig. 15, or of the modifications shown in Figs. 2 and 3. The lower parts are joined to the upper parts 21 and 22, Fig. 14, by suitably-shaped top portions of the former parts slidably fitted into aligned horizontal T slots in the bottoms of the latter parts, as shown in the transverse section Fig. 16. In this respect Fig. 14 resembles the previous figures. Boiler top mountings 30, 31, and 32 are likewise joined to parts 21 and 22 by suitably-shaped heads slidably fitted into aligned horizontal T slots in the latter parts.

Longitudinal movement of the group of parts 23 to 27 inclusive with respect to the upper parts 21 and 22 is prevented by a pin 33, whose head forms the smoke stack, projecting down through an upper part 22 and a portion of a lower part 27 beneath it. Relative vertical movement between two adjoining lower parts, such as 23 and 24 is prevented by the T-heads of both fitting into the corresponding slot in the bottom of a common upper part 21. Likewise relative vertical movement between two adjoining upper parts 21 and 22 is prevented by the T-shaped slots in the bottoms of both fitting around the T-head of a common lower part such as 25 and/or by the T-shaped slots in the tops of both upper parts fitting around the T-head of a common boiler top mounting such as part 30.

Part 29 represents the cylinders and valve chests of the locomotive and is of U-form as shown in the transverse section, Fig. 17. Its height relative to the rest of the assembly is determined by the shape of the tongue at the front of a lower part such as 27, whose sides fit into grooves in part 29 as shown. In the case of a toy passenger "high wheel" locomotive, Figs. 14, 16, and 17, the tongue has a quadrilateral cross section as shown in Fig. 17. In the case of a toy freight locomotive, or "low wheeler", however, part 29 is located correspondingly lower by the different shape of the tongue at the front of a piece similar to part 35, Figs. 18 and 19. Most of the tongue is made thicker, while lugs on each side near the bottom of it fit into the grooves in part 29. All other parts of the toy locomotive are maintained at the same height, including the pilot, part 28, whose tongue fits between tongue 35 or 27 and the upper part 22. Pin 33 passes through all of these parts, preventing relative lateral movement of any of them.

To those skilled in the art it will be obvious that parts of the device may be used without other parts thereof, and steps in the method without other steps, many such combinations readily suggesting themselves. Therefore it should be and is to be distinctly understood that for a definition of the limitations of the invention, reference must be had to the appended claims.

Having now described the invention, what is claimed as new and for which Letters Patent of the United States is desired, is:

1. A knock-down toy railroad train unit comprising a plurality of upper parts and a lower part, each pair of upper parts being held together rigidly in a longitudinal direction by means of a vertically-slidable joint at their ends, said slidable joints being con-

tinuous through both sides of said parts to permit the parts to be held together at various relative vertical positions.

2. In combination with the main supporting lower parts of a knock-down toy locomotive, means for supporting the upper parts and the pilot at a uniform height above the rails when used with different heights of cylinders corresponding to different driving wheel diameters, said means including tongues of different thicknesses forming parts of said lower part, and having lugs on their sides of uniform thickness and adapted to fit into grooves in the cylinders.

3. In a toy of this character, having lower members and a common upper member, means for maintaining fixed relative positions vertically of adjoining lower members, including T-heads on those members adapted to fit into a correspondingly-shaped slot in the bottom of said upper member.

4. In a combined toy car and toy locomotive means for maintaining fixed relative vertical positions of two adjacent upper members, including aligned T-slots in the tops of those members adapted to fit the head of a common boiler top mounting and aligned T-slots in the bottoms of the upper members fitting around the head of a common lower member, said latter means being also adapted to maintain fixed relative vertical positions between the two adjacent upper members in said toy railroad car.

Signed at Lakehurst, in the county of Ocean and State of New Jersey, this 30th day of April, A. D. 1930.

RALPH H. SHEPARD.