

March 14, 1967

H. INGOLD  
PORTABLE RAILWAY

3,309,022

Filed May 21, 1963

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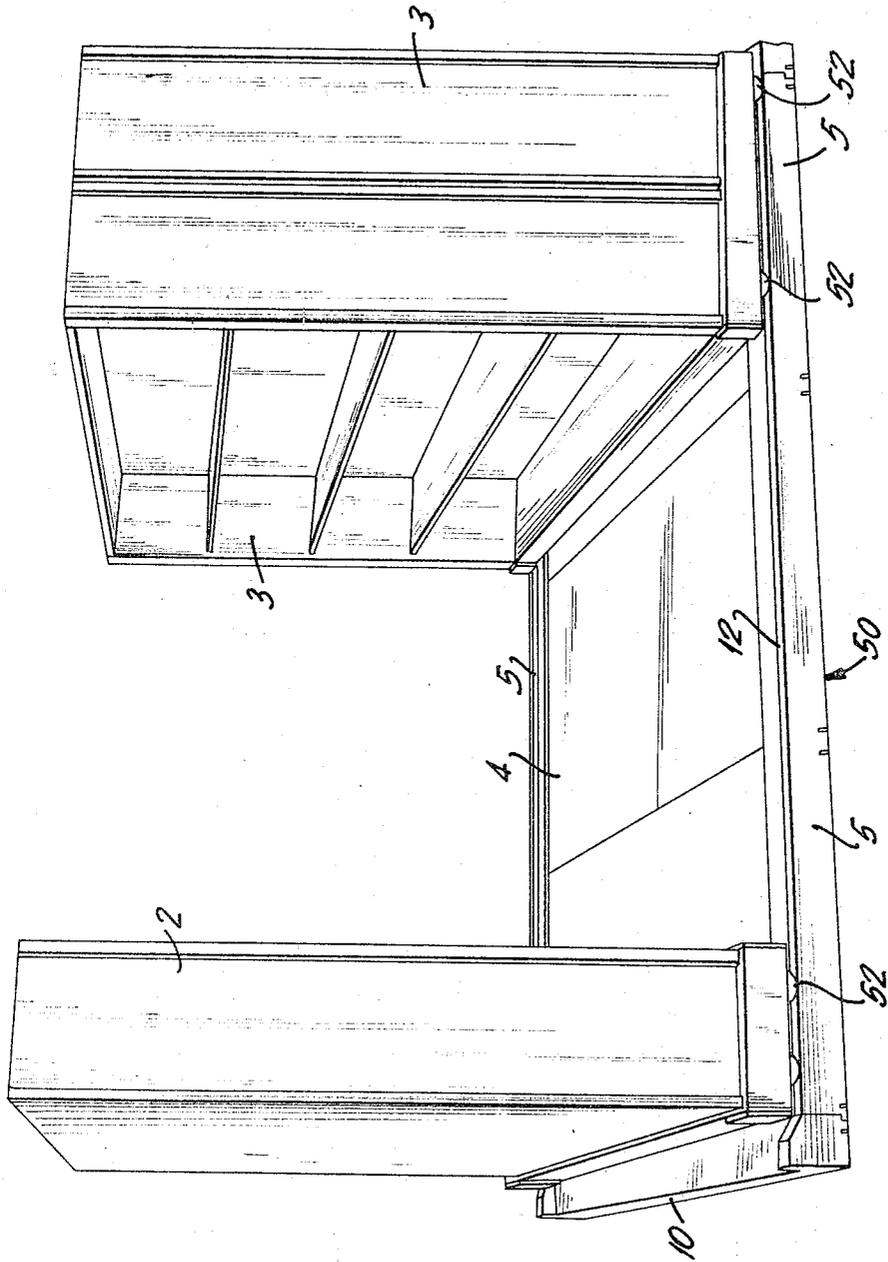


FIG. 1

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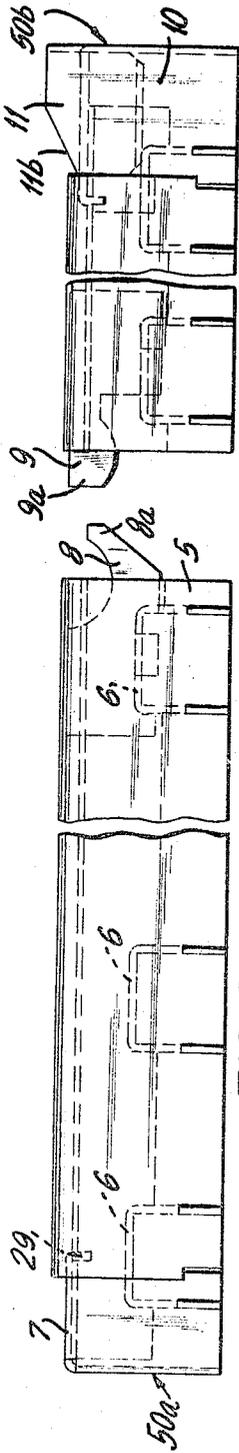


FIG. 3

FIG. 2

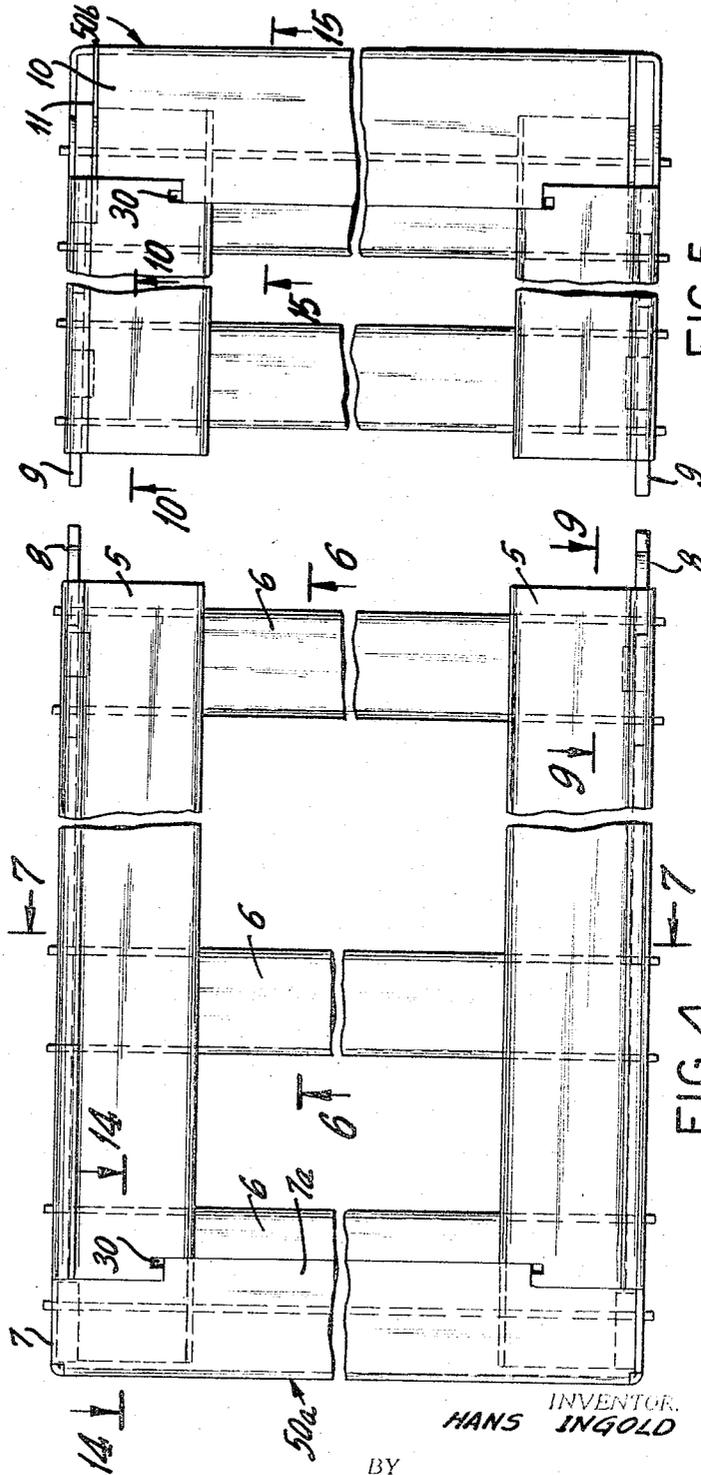


FIG. 5

FIG. 4

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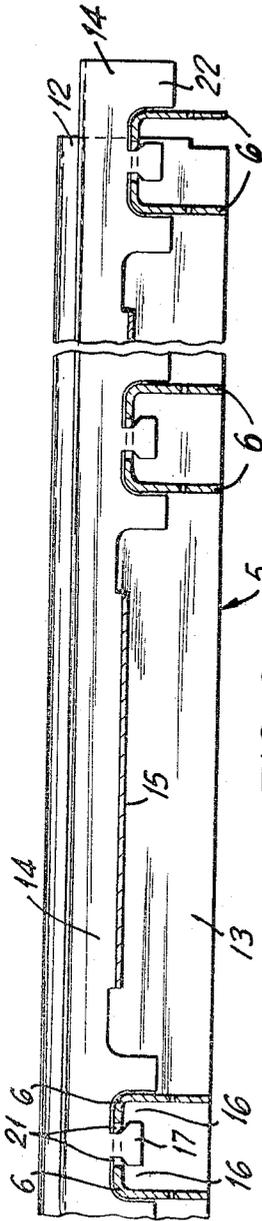


FIG. 6

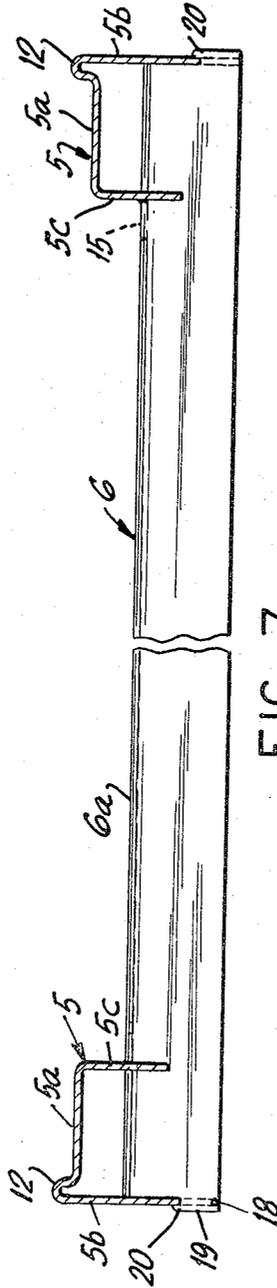


FIG. 7

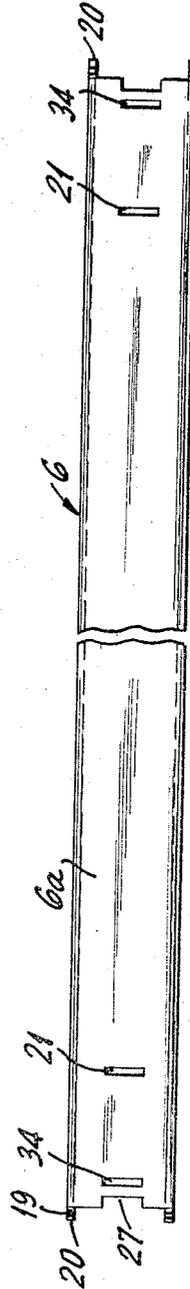


FIG. 8

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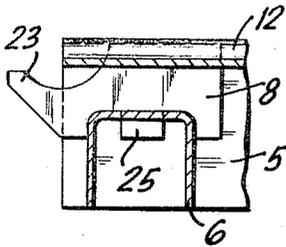


FIG. 9

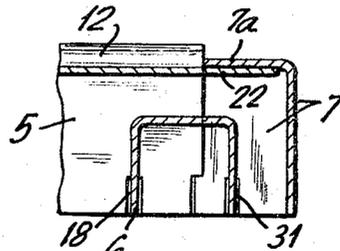


FIG. 14

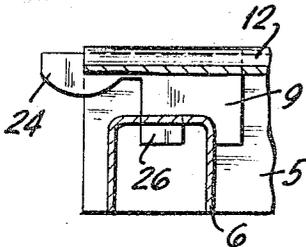


FIG. 10

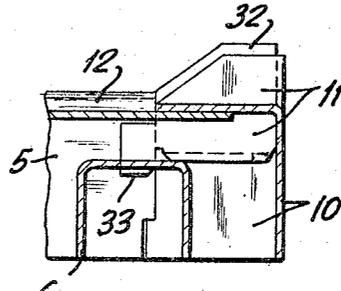


FIG. 15

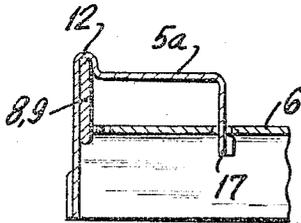


FIG. 11

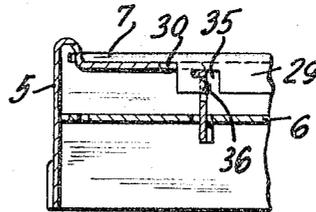


FIG. 16



FIG. 12



FIG. 12a



FIG. 13a



FIG. 13

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**PORTABLE RAILWAY**

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Claims priority, application Switzerland, May 24, 1962, 5

6,288/62

11 Claims. (Cl. 238—10)

This invention relates, in general, to constructional elements and assembly of such elements, and, in particular, to a new and useful construction forming a trackway and the like, made up of interconnected structural elements.

The invention has a significance for a great number of applications such as, for example, for support constructions which are made for transportable or movable containers, for scaffoldings, for building purposes, for track installations, mast-like girders or towers, etc. The invention, particularly, relates to the construction of trackways, which are to be employed in connection with large containers, such as, book shelves, filing cabinets and the like. The feature of the invention is the employment of individual constructional elements, or rod members, which may be interconnected in a simple manner at the location of their use without special aids, and may be similarly separated from each other for storage purposes. The individual constructional elements comprise members, some of which have projecting tongue elements formed on a connecting side which interengage with recesses formed on similar elements to be connected thereto. The elements may be assembled together in such a manner that they will be structurally rigid after erection, but in some instances, additional security means, such as screws, are advantageously provided. The feature of the invention is that the individual structural elements are equipped with interengaging coupling parts which engage with one another in such a positive shape-locking fashion that the assembly is secured against external forces.

In a preferred form of the invention, a security against forces acting in a longitudinal direction of the rods is achieved. It should be appreciated that security against longitudinal forces also includes the concept that the structure will be secure against forces acting obliquely, or which have a component force in the longitudinal direction.

In accordance with a specific embodiment of the invention there is provided a support trackway for carrying carriages of a supporting container, or book cases and the like, which carriages may be shifted backwardly and forwardly over the trackway.

Accordingly, it is an object of this invention to provide an assembly of structural elements having interengaging coupling parts.

A further object of the invention is to provide an improved trackway structure for movable book cases, cupboards and the like, which comprises a plurality of structural elements which are interengaged with each other by projecting tongue and recess coupling portions to facilitate a rapid erection and dismantling of the structure.

A further object of the invention is to provide a trackway structure base support or the like, which includes spaced longitudinal elements which are held rigidly erect by transverse elements which are interengaged therewith by projecting-tongue and receiving recess coupling portions of the respective parts.

A further object of the invention is to provide a structural assembly of interconnected elements, which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterize the

invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

In the drawings:

FIG. 1 is a perspective view of a combination supporting base and trackway structure for book cases constructed in accordance with the invention;

FIG. 2 is a side elevation view of one section of the trackway indicated in FIG. 1;

FIG. 3 is a view similar to FIG. 2 of another portion of the trackway;

FIG. 4 is a top plan view of the section corresponding to FIG. 2;

FIG. 5 is a plan view of the section corresponding to FIG. 3;

FIG. 6 is a partial transverse section taken on the line 6—6 of FIG. 4;

FIG. 7 is a section taken on the line 7—7 of FIG. 4;

FIG. 8 is a top plan view of a transverse beam;

FIG. 9 is a section taken on the line 9—9 of FIG. 4;

FIG. 10 is a section taken on the line 10—10 of FIG. 5;

FIG. 11 is a partial sectional view similar to the left hand portion of FIG. 7 of another embodiment of the construction;

FIGS. 12 and 13 are side elevations of other embodiments of connecting elements;

FIGS. 12a and 13a are end elevations of the connecting elements of FIGS. 12 and 13, respectively;

FIG. 14 is a section taken on the line 14—14 of FIG. 4;

FIG. 15 is a section taken on the line 15—15 of FIG. 5; and,

FIG. 16 is a section similar to FIG. 11 indicating the detailed connection of an end piece.

Referring to the drawings in particular, the invention, as embodied therein, comprises a structural combination base and trackway, generally designated 50, having rounded upstanding rail portions 12 formed on longitudinal members 5 defining trackways for wheels 52 of the carriages of a single book case or cupboard 2 and a double book case or cupboard 3. The overall assembled structure described is particularly advantageous for the storage of books, files and the like, and both the cupboards 2 and 3 and the trackway, or support 50, may be rapidly assembled at the site of use.

As indicated, particularly, in FIGS. 2—5, the combination base and trackway comprises: laterally spaced longitudinal girders 5, which are interconnected by a plurality of transverse rods, or substantially U-shaped structural elements 6, fixed together to form an assembly, or section, generally designated 50a in FIGS. 1, 2 and 4, or a section, generally designated 50b in FIGS. 1, 3 and 5. One end of the section 50a is advantageously finished with a finishing structural element or rounded piece 7, which includes a top wall portion 7a, which overlies a portion of the first transverse element 6 and includes projections 29 formed at each end, which engage in recesses 30 formed on an inner flat top portion 5a of the trough-shaped longitudinal elements 5. (See FIGS. 4 and 16). The assembly 50a includes coupling elements 8, 8 arranged at each side adjacent an outer web portion 5b of the longitudinal elements 5 (See FIGS. 9 and 10) and includes a hook, or recess, portion 8a which projects in a longitudinal outward direction for interengagement with the rounded, or projection, portion 9a of a coupling element 9 held on a corresponding end of the assembly 50b in order to permit interengagement of the assemblies 50a and 50b.

The assembly 50b differs from the assembly 50a, indi-

cated in FIGS. 2 and 4, by the provision of an end piece, or transverse finishing member 10, which includes a buffer plate 11 at each side which aligns with the end of the track 12. The plate 11 includes an inclined, or oblique, portion 11b, which serves for the retention of the cupboards 2 and 3 by limiting the movement of the rollers 52 on the track. The end piece 10 is employed when a particular stop at the end of the frame is necessary. The constructional element 7 is employed when a stop at the end of the frame is not necessary.

The individual girder frame elements can be adapted in their dimensions largely to the purpose in each case. For example, for the purpose of storage of various articles, they can have a width of from 1 meter to several meters with an appropriate length of the longitudinal girders. The length and width of the support construction to be taken into consideration for the production are determined from the view point of the most extensive possible standardization. Sizes will be chosen so that for any particular installation, there will be a minimum number of different dimensions for the individual parts. Such parts are particularly the longitudinal girders 5, the transverse rods 6 and the end pieces 7 and 10. Elements 4 are employed as covers between these parts.

For installations with great length of the support construction, there are also provided intermediate frames for insertion in the center between the frame assemblies 50a and 50b for example. The intermediate frames would be identical with those illustrated in FIGS. 2 and 3 with the exception that the end pieces 7 and 10 would not be included, but there would be coupling elements arranged at each end. In FIGS. 6 and 7, it can be seen that the longitudinal elements 5 include the flat upper surface portion 5a, the side portion 5b and the intermediate, or rounded rails, 12. The outer vertical portion 5b is provided with notched areas 18 in order to facilitate its insertion around tabs 19, which have hook areas 20 defined therein for interlocking the longitudinal element 5 to the transverse element 6. An inner vertical wall or leg 5c of the longitudinal member 5, 5 includes a tab portion 17 (FIG. 7) which fits into a recess 21 defined in the top base 6a of the trough-shaped transverse element 6. When the tabs are inserted into the space 16, defined within the transverse element 6, the tab 17 may be bent to secure the elements 5 and 6 together.

In the assembly of the girder frame, the longitudinal girders 5 are placed, with the rail 12 outwardly, upon each end of the transverse rod 6 so that the tabs 17 engage in the slots 21, and are pressed downwardly until the notches 18, formed in the vertical portions 5b, fit into the notches of hooks 19. In the locked position, the upwardly directed projections 20 of the tabs 19 engage behind the outer side plate 5b so that a firm locking is provided against forces which act in a direction of the transverse member 6.

As indicated in FIG. 6, the right hand end portion 22, extends outwardly at the inner portion 5c, with the rail 12 and the outer portion 5b being cut away in order to facilitate the reception of a transverse end piece of a type such as the type 7 or 10, indicated in FIGS. 2 and 3, respectively.

In FIGS. 9 and 10, there is indicated the arrangement of the under-gripping coupling element 8 and the over-gripping coupling element 9, respectively. In FIG. 11, the position of these coupling elements is indicated in section, and they serve to firmly interconnect the assemblies 50a and 50b. The coupling elements 8 and 9 are flat plates and the one 8 includes a coupling hook 23 and the one 9 includes, a complimentary coupling nose 24. The upper edge of the coupling hook 23 is so shaped that, in the coupled state, it rests exactly on the lower edge of the coupling nose 24. By referring to the position of the girder frames, indicated in FIGS. 2 and 3, it can be seen that coupling can take place by lifting the left hand assembly 50a, and pushing the entire assembly to the right into abutment so that the hooks of the coupling elements

8 slip between the noses of the coupling elements 9, and then the assembly 50a may be lowered to interlock the assemblies. The interlocking structure provides for a firm interengagement to resist forces both in longitudinal and transverse directions. The coupling plates 8 and 9 are advantageously secured to the wall portion 5b of the longitudinal elements and portions extend upwardly beneath the shaped rail portions 12. The connection may be made, for example, by means of spot welding. Tabs 25 and 26 are provided which extend downwardly through rectangular recesses 27, cut in an end of the transverse member 6 (See FIGS. 8 and 10). In FIG. 11 there is also illustrated an additional securing of the transverse element 6 in relation to the longitudinal element 5 by bending the tab 17 so that it will be impossible to draw the tab 17 upwardly out of the transverse slot 21 in the transverse element 6.

In FIGS. 14-16, there is indicated the nature of the connection of the end pieces 7 and 10 with the girder frame. FIGS. 14 and 15 indicate such an arrangement in longitudinal section through the longitudinal girder 5, and according to FIG. 14, the end piece 7 grips with its entire top surface 7a over the projecting part 22 of the top surface of the longitudinal girder 5. The tabs 29 formed at each end of the element 7 are engaged in the transverse slots 30, as indicated in FIG. 2. The slot 31 in the lateral part of the end piece 7 permits engagement over the tab 19.

In FIG. 15, the end piece 10 is shown secured by an additional buffer plate 11 with an obliquely disposed edge. The buffer plate 11 lies with its inside against the external lateral edge of the covering surface of the end piece 10 as may be seen from FIG. 5. Its part lying on the left carries, on its underside, a downwardly directed tab 33, which fits into the slot 34 defined on the transverse element 6 (see FIG. 3). Between the buffer plates 11 and the correspondingly lateral outer part of the end piece 10, there is inserted a rubber buffer 32. This rubber buffer serves as stop for the wheels of the cupboard units indicated in FIG. 1.

FIG. 16 indicates an amplification of FIGS. 2 and 14, showing an additional locking between the end piece 7 and the longitudinal girder 5. For this purpose in the end of a tab 29, similar to tab 7b, there is provided a hooked-shaped recess 35. The nose 36 of the hook so produced grips behind the vertical edge of the slot 30 on the longitudinal girder 5, and, thus, the end piece is additionally secured against turning forces directed perpendicularly of its longitudinal axis. The end piece 10 may be secured to the longitudinal girders 5 in a corresponding manner.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A frame comprising, in combination, longitudinal and transverse girders of substantially inverted U-shape cross section, the transverse girders extending substantially perpendicular to the longitudinal girders; the outer legs of the longitudinal girders being higher than the inner legs thereof, and the legs of the transverse girders being substantially equal in height; the end surfaces of the transverse girders abutting the inner surfaces of the outer legs of the longitudinal girders; the ends of the legs of the transverse girders having projections interlocking with notches in the outer legs of the longitudinal girders; the inner legs of the longitudinal girders having tabs engaged in slots in the webs of the transverse girders.

2. A structural assembly according to claim 1, wherein the webs of said longitudinal girders have a raised rail portion formed adjacent the outer edges thereof for defining a rail trackway.

3. A frame, as claimed in claim 1, in which said pro-

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jections on the ends of the legs of the transverse girders are formed as upwardly directed hooks, one on each of each leg of a transverse girder, each hook having a lug portion externally engaging the outer surface of the outer leg of the associated longitudinal girder.

4. A frame, as claimed in claim 1, including interengageable releasable coupling elements connecting the longitudinal girders in end-to-end relation; said coupling elements projecting from the ends of the longitudinal girders and being juxtaposed in contact with the inner surfaces of the outer legs of the longitudinal girders.

5. A frame, as claimed in claim 4, said coupling elements having tabs engaging in slots adjacent the ends of the webs of said transverse girders.

6. A frame, as claimed in claim 4, in which said coupling elements comprise flat vertically oriented plates, one coupling element of each interlocked pair comprising a coupling hook and the other coupling element of the interlocked pair comprising a coupling nose conformingly engageable with said coupling hook.

7. A frame, as claimed in claim 1, including two end pieces each extending parallel to the transverse girders and each having interlocking engagement with one transverse girder and the two longitudinal girders at the ends of said transverse girder.

8. A frame, as claimed in claim 7, including a buffer plate mounted on at least one end piece; said buffer plate having a projection engaged through a slot in the associated transverse girder.

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9. A frame, as claimed in claim 7, the ends of the outer legs of the longitudinal girders being cutaway to form notches receiving legs on said end pieces; the webs of the longitudinal girders being formed with recesses receiving interlocking projections on said end pieces.

10. A frame, as claimed in claim 9, in which said legs on said end pieces are formed with downwardly opening notches interengageable with said projections on the ends of the legs of the transverse girders.

11. A frame, as claimed in claim 10, in which said projections on said end pieces are in the form of hooks having noses interlocking with the longitudinal girders having the slots receiving said last-named projections.

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