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4 Sheets-Sheet 1

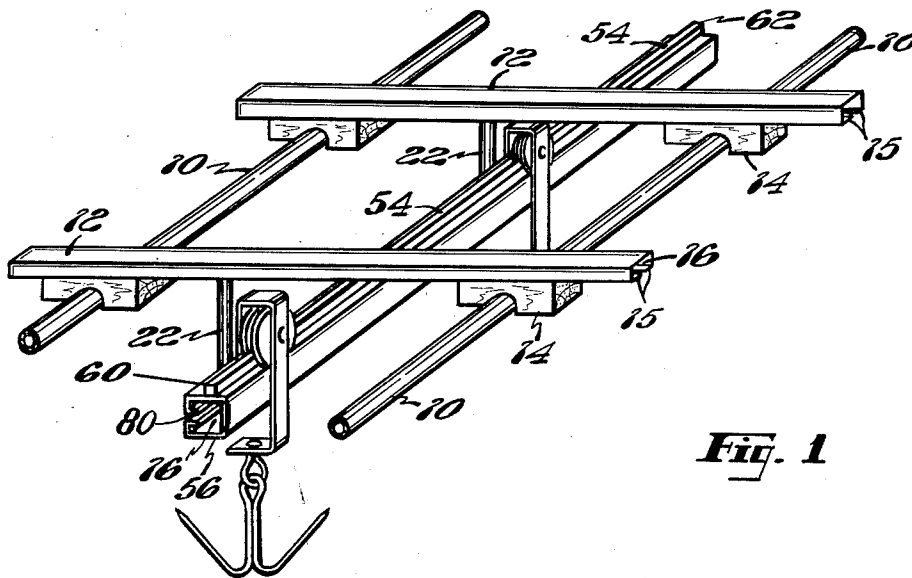


Fig. 1

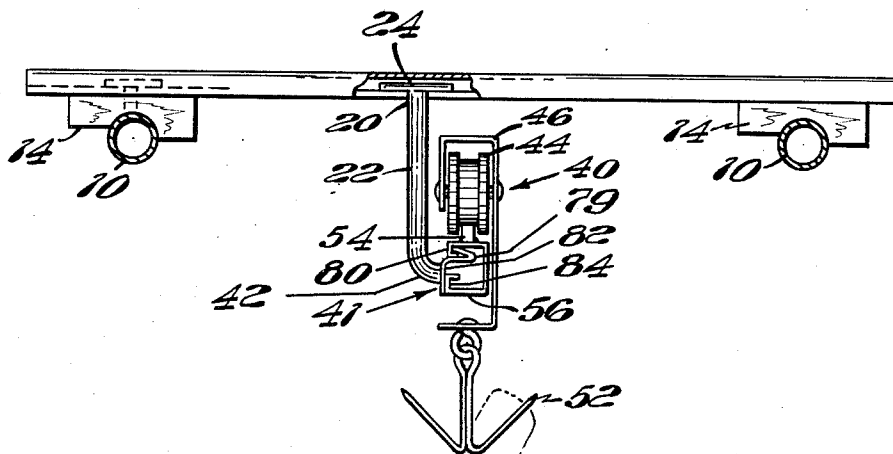


Fig. 2

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Fig. 3

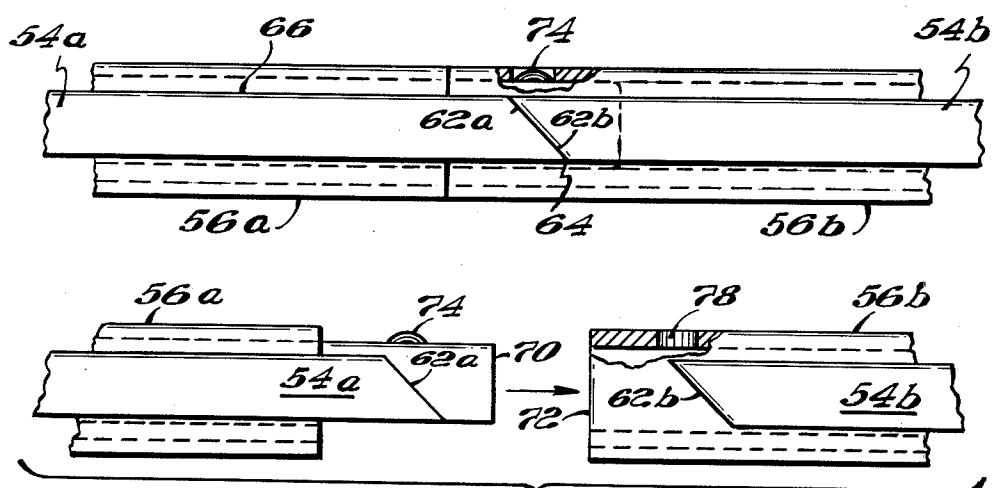


Fig. 4

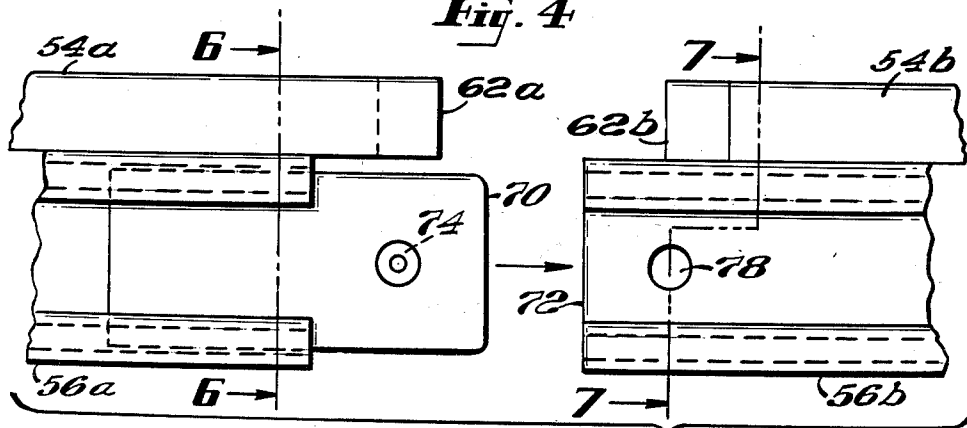


Fig. 5

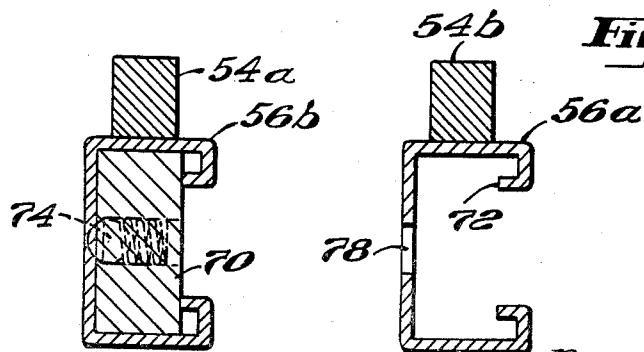


Fig. 6

Fig. 7

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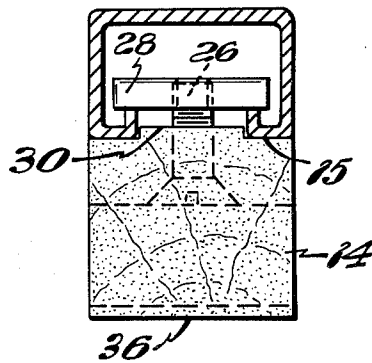
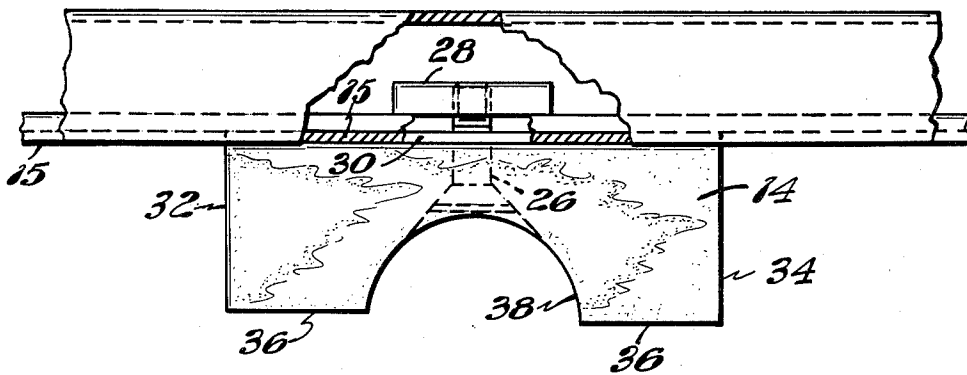


Fig. 9

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Fig. 10

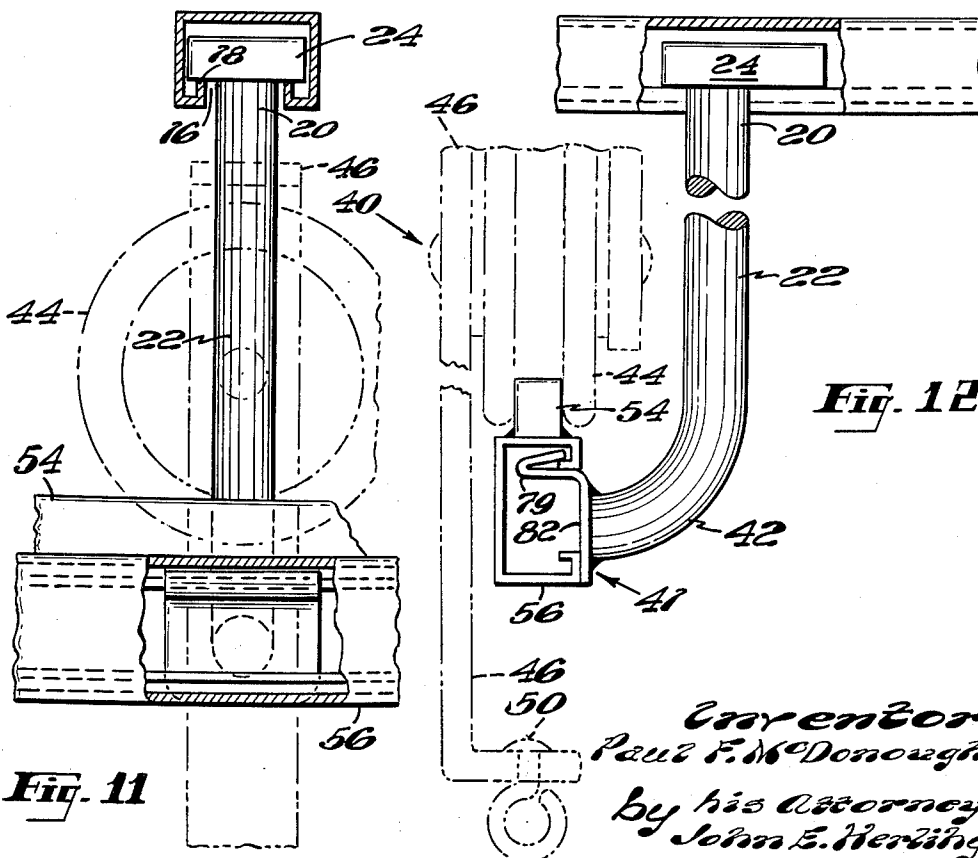
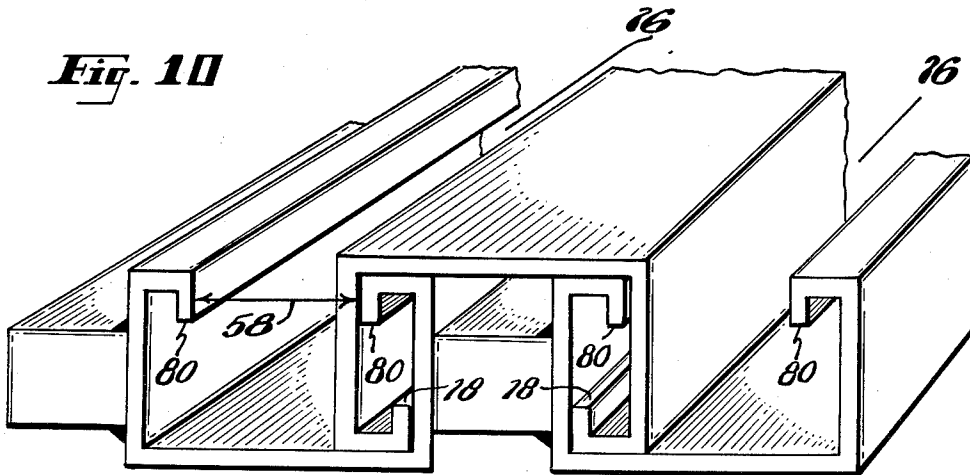


Fig. 11

Fig. 12

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2 Claims. (Cl. 104—110)

This invention relates to improvements in overhead monorail systems and more particularly to monorail systems for installation in vehicles such as truck vans and freight cars and other conveyances used for the transport of animal carcasses. It will be readily appreciated, however, if the apparatuses herein described may be used in stationary meat-packing structures and may be used in connection with the transportation and storage of products other than meat.

The transportation of meat, from abattoir to warehouse, from packing plants to packing plants, and from packing plant to wholesaler for retailer, is for the most part conducted by independent haulage contractors. Some of the larger meat packers have a limited number of their own trucks, but, in general, the larger number of trucks which are used for conveyance of meat products belong to independent haulage contractors.

While refrigerator vehicles which are owned and used solely by meat packers will normally have installed within them a permanent overhead monorail system, such systems are not found in the independent haulage contractor vehicles for various reasons. Permanent installation of a monorail system involves a major alteration to the interior of the vehicle itself. This is done at considerable expense, and provides the vehicle with a certain amount of dead load, which is unusable when the vehicle is being employed in the transport of products not needing such a system. Since refrigerator vehicles are in demand for the transport of substantially all perishable products, dead load represents expense to the contractor which is not compensable when products other than meat or similar substances which require a monorail are being conveyed. Also, initial costs of installation is high with a permanent monorail system. The interior of the vehicle is permanently altered and the monorail itself cannot be removed readily without major alteration of the entire interior of the vehicle.

As a consequence, normal procedure of haulage contractors is that of installing racks which normally run longitudinally of the vehicle, upon which meat carcasses can be tied. The refrigerator vehicle is brought to the point of loading and the carcasses are manually carried from the loading platform into the truck or van, and are there tied by twine to the overhead racks. Although such a loading procedure requires substantially more time delay for the truck and substantially greater amounts of manual labor than does a loading procedure involving the use of an overhead monorail loading mechanism, this loss of time is offset against the gain in refrigeration space provided by the absence of a permanent monorail system.

There has long been a need of a device which could readily be installed within vehicles which are used for the transport of meat and other products, which device could be removed from the vehicle when meat carcasses were not being transported, so the haulage contractor could get maximum use of the valuable refrigeration space of the vehicles which are used for this purpose. It has long been recognized that such a system would necessarily have to be removable from the vehicle without major overhaul of the vehicle itself, so that the system could be used in connection with the transport of meat or other perishable commodities as a time and labor saving mechanism, which would facilitate greater utilization of the haulage contractors valuable refrigerated conveyances.

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It is therefore the primary object of this invention to provide a portable monorail system for vehicles.

It is a further object of this invention to provide a monorail system which is adapted to be installed on a non-permanent basis in haulage contract vehicles.

It is a further object of this invention to provide a monorail system which may be installed or removed from a vehicle without requiring major modification of the internal walls of the vehicle.

10 A further object of this invention is to provide an overhead monorail system which may be installed or removed from a vehicle with the minimum amount of labor.

15 Still further objects and advantages of the invention will appear in the following description and the appended claims.

I accomplished these objects by providing a sectionalized monorail system which may be installed in meat-carrying vehicles by suspending a sectionalized unit from the racks which are normally found in such vehicles. 20 When assembled, the sectionalized units provide a unitary monorail, by which the meat cargo may be transported into or out of the vehicle. The cargo itself may then be transposed from the monorail unit or may be left on it. When the cargo is transposed from the monorail unit, the monorail may be disassembled and placed on another rack within the same vehicle; thereby enabling a single monorail comprising a plurality of sectionalized monorail units to do the work of a permanent installation of a monorail system.

30 Going into more detail, reference is made to the accompanying drawings in which:

FIGURE 1 is a perspective view of one section of a portable monorail apparatus showing the same mounted on a cross-bar and the rack now commonly found installed in meat-carrying conveyances.

FIGURE 2 is an end view of the apparatus of FIGURE 1, having a side of meat fastened thereto, the apparatus being shown in partial broken-away section to reveal means for suspending the hanger.

FIGURE 3 shows partially in section, a plan view of two monorail sections with supporting frame adjoined to present a continuous track, the supporting frame being partially broken away to reveal the lock in engagement means.

FIGURE 4 is the monorail section of FIGURE 1, disjoined.

FIGURE 5 is a side elevation of the apparatus of FIGURE 4.

FIGURE 6 is a cross section along line 6—6 of FIGURE 5.

FIGURE 7 is a cross section along line 7—7 of FIGURE 5.

FIGURE 8 is an end view of a rack engaging standard member and shows in side elevation the cross bar member which is, in part, broken away to show means for fastening the standard to the cross bar.

FIGURE 9 is a side elevation of the rack engaging standard shown in FIGURE 8, and an end elevation of the cross supports.

FIGURE 10 is a sectional fragmentary perspective view of a package of monorail components.

FIGURE 11 is a side sectional elevation of the monorail partially broken away to show means for fastening the same to a hanger and shows in broken line a travel wheel.

FIGURE 12 is an end view of the monorail shown in FIGURE 11, with the support member broken away to show means of fastening the same to the hanger and shows the travel wheel assembly with depending hanger-arm and eye-hook for engaging meat in broken line.

Referring to the drawings, particularly FIGURES 1

and 2, where one embodiment of the invention is shown, the number 10 represents rounds or racks which are commonly installed in refrigerated vehicles, such as freight cars, or truck bodies used for the conveyance of meat. Such racks usually extend longitudinally of the vehicle and are spaced apart about two feet in the vehicle to provide means for suspending the meat carcasses in transfer. Usually these racks are made of hard wood but may be made of metal, tubing, or the like. As heretofore used, the meat was directly tied to the racks with suitable twine or was hooked and the hook was tied to the rack. The meat was physically, that is, manually carried into the vehicle body to the desired position, and there it was fastened to a rack which was convenient.

In accordance with my invention, cross-bar members 12, extend over and are supported on racks 10 by means of standard members 14. The cross-bar members are preferably made of a substantially rectangular structural member which is hollow, and is provided along its bottom side 15 with an opening 16, which is positioned substantially centrally of said side and extends the full length of the member. Also, as shown in FIGURES 10 and 11, an inwardly extending lip 18 is preferably provided along both edges of the opening 16 to provide greater structural rigidity for the member, thereby making an essentially G-shaped structural member. The opening 16 of the cross-bar 12 provides means for inserting the shank 20 of hanger 22 so as to suspend the same from the cross-bar. A flat end support piece 24, which attaches to the top and extends radially outward of the shank 20, and is of such dimensions as will permit it to be inserted in the hollow portion of the cross-bar, rests upon the lips 18 of the cross-bar 12 and provides means for suspending the hanger 22.

Standards 14, as more clearly shown in FIGURES 8 and 9, are also held to the cross-bar 12 by means of a bolt 26 and a nut 28, the nut having a wider diameter than the opening 16, to engage the lip 18 of the cross-bar. The bolt 26 engages the nut 28 to hold the standard 14 firm against the bottom side 15 of the cross-bar 12. A shoulder 30, which extends widthwise of the standard, and protrudes into the opening 16 of the cross-bar, prevents the standard from rotating about the bolt 26, while the standard is shown in its preferred form with one of its sides 32, being shorter than the other side 34, to facilitate placing the assembled cross-bar and standard on the racks 10, this feature of the standard construction is by no means critical to its usefulness. More important is that the standard be provided with the bottom surface 36 including a hollowed out arcuate segment of surface 38, which segment accommodates the round surfaces of the racks 10, and stabilizes the cargo to be carried on the cross-bar within the truck by preventing lateral motion of the cross-bar when the same is assembled in place in the vehicle.

The hanger 22 is suspended from the cross-bar 12 and extends downwardly therefrom. At a sufficient distance to permit clearance of a travel wheel assembly 40, the shank 20 of hanger-arm 22, elbows inwardly in the direction of the cross-bar 12. This elbow or bend is noted by the numeral 42. Since a four-inch wheel is normally used in the travel wheel assembly, the distance between the cross-bar and the bend is preferably maintained at a constant 6 inches to permit clearance of the assembly in its travel under the cross-bar. The hanger arm 20 extends inwardly from the bend an additional 2 inches to permit the travel wheel assembly to clear the hanger-arm. Of course it will be appreciated that these clearance distances may vary somewhat, depending upon the size of the travel wheel assembly that is being used. At the lower end of the hanger-arm, a hooking assembly 41 is provided to engage a support member 56, as will be explained more fully hereinafter. The travel wheel assembly 40 includes a grooved wheel 44, its bracket 46 and carrying-arm 46, which engages the bracket and extends downwardly to provide means 50 (an eye) for engaging a meat

hook 52. As is shown in FIGURES 1, 2, 11 and 12, the travel wheel assembly 40 rides on the monorail 54, which is fastened to the upper outer flat surface of support member 56, which, in turn, is suspended from the hooking assembly 41 of the hanger-arm 22.

Structural support member 56 and monorail 54 are of equal length. I prefer to use $\frac{1}{2}$ to $\frac{5}{16}$ inch square, solid steel bar for a rail although other standard rail size bar members may be used. A support member, like the cross bar member, is made having a central hollow section and an opening 58 extending the full length along one side of the section. The support member may be made of $\frac{3}{32}$ inch, cold rolled or drawn steel plate, or may be made of such a material as aluminum alloy or other lightweight metal extrusions which have modulus characteristics adequate to withstand a load applied. The length of the monorail, the length of the support member is preferably two feet, to facilitate one man handling of the components; however, the rail and its support member may be made somewhat longer or may be made shorter than two feet without materially departing from the spirit or scope of this invention.

The ends 60 and 62 of the monorail 54 are mating end surfaces. That is, these surfaces are so cut and are preferably finished to provide a substantially continuous track surface from one rail section to the next. Also as is shown in FIGURES 3, 4, and 5, I prefer to cut these surfaces angularly with respect to the side surfaces 64 and 66 of the monorail to form supplementary angles other than 90° angles. Angularly disposed facing end surfaces are preferred to provide a continuity of track over which the travel wheel assembly moves. As shown in the drawings, the rails are cut substantially at angles of approximately 45° (measured from side surface 64) at one end, and 135° at the other end, so that supplementary angular mating of the rails is provided.

As is shown in FIGURES 3, 4 and 5, rail 54-a, having end surface 62-a, is cut at approximately 135°, whereas, its mating face on rail 54-b is cut at 45°. The opposite ends (not shown) of each of these respective rails would be cut at supplementary angles; i.e., 135° or 54-b, at 45° for 54-a. Other supplementary angular cuttings of rails can be used, but I prefer angles other than 90° angles, to smoothen the traverse of the travel wheel over the rail.

Further, as illustrated in FIGURES 3, 4 and 5, monorail 54-a extends lineally outwardly of support member 56-a. It will be appreciated that on the opposite end (not shown) of this rail section, the support member extends an equivalent distance lineally outwardly beyond the monorail, to accommodate the monorail section which is to be fastened to 54-a and its support member 56-a. The drawings do show in FIGURE 3, monorail section 54-a and its support member 56-a conjoined with monorail sections 54-b and its support member 56-b. In FIGURES 4 and 5, these same two monorail units are shown disjoined from one another.

Provision for fastening the rail units (comprising the monorail and support) to one another and for unfastening the same, is furnished by the tongue 70, which is shown fastened to one end of the support member 56-a, and extending lineally outwardly therefrom, preferably a short distance beyond the extension of the monorail 54-a. This tongue 70 is of width and height dimensions as to permit it to engage the socket 72 of rail support section 56-b. Each unit has one male socket member and one open end for the support 56. As is also shown, I prefer to provide each unit with a socket stabilizer, which comprises a ball 74, and a spring, which presses the ball outwardly of the tongue 70. An accommodating opening 78 is provided in the over-end of each unit to further stabilize the union of monorail units.

The units are assembled into a continuous monorail within the vehicle. By sliding the hanger-arm shank 22 into the opening 15 provided in cross-bar 12, and by sliding the standards 14 into the opening 15, the standards

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are set from the cross-bar at a distance equal the distance between rack members in the vehicle. The standards are set in place by tightening the screw 26, and the cross-bar is laid on the racks with the hanger extending downwardly therefrom. The monorail units are then attached to the hanger through the monorail hooking assembly. The monorail hooking assembly, as is shown in FIGURE 2, comprises an upwardly extending V-shaped hook 79, which is fastened to the hanger-arm, and at its upper extension is bent in the direction of the hanger-arm to provide means for selectively engaging and disengaging the support 56. This hook engages the upper lip 80 of the monorail support member. The lower end, or hooking assembly 41, comprises a flat outer surface 82, against which a lower vertical section 84 of the open side of G-shaped support member 56 rests.

The support member 56 with the monorail 54 extending upwardly therefrom engages the hooking assembly 41, as a result of the lip 80 engaging the V-shaped hook 79, about which the entire support member pivots. The support member itself thereby is held firm in upright position by the hanger as the result of the support, particularly its lower section 84, coming to rest against the flat outer surface 82 of the hooking assembly 41. Accordingly, the support member 56 is thereby held by the hanger-arm 22, which in turn is suspended from the cross-bar 12 to form a complete unit of the system. Several such units are assembled by engaging the tongue 70 of one such unit with the socket 72 of the next adjoining unit, thereby forming a continuous monorail comprising a plurality of sectionalized monorail units.

I claim:

1. An overhead track system which is characterized by ease of assembly in and disassembly from vehicles, which comprises a plurality of monorail units, each of said

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units including as its essential components in combination a short section of monorail track, a substantially G-shaped rail support member of substantially the same length as the section of monorail and having accommodating tongue at one end and socket member at the other end, the monorail being fastened to the support member along its length, means on each support member consisting of said tongue and socket members to fasten said unit to another such unit so that the monorail track sections may be linearly aligned with the end surfaces thereof in mating and conjoining relationship, at least one hanger member associated with each support member, means at the lower end of the hanger member for pivoting and slidably engaging and disengaging said hanger member and said support member, means for slidably engaging and suspending said hanger member in substantially firm vertical position within the vehicle, and means to stabilize the combination and to prevent lateral movement thereof within the vehicle.

2. The apparatus of claim 1 wherein the monorail is positioned on the support so as to extend for a short distance beyond the support at one end and the support to extend a short and equivalent distance beyond the monorail at the other end.

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