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[54] ROLLER COASTER

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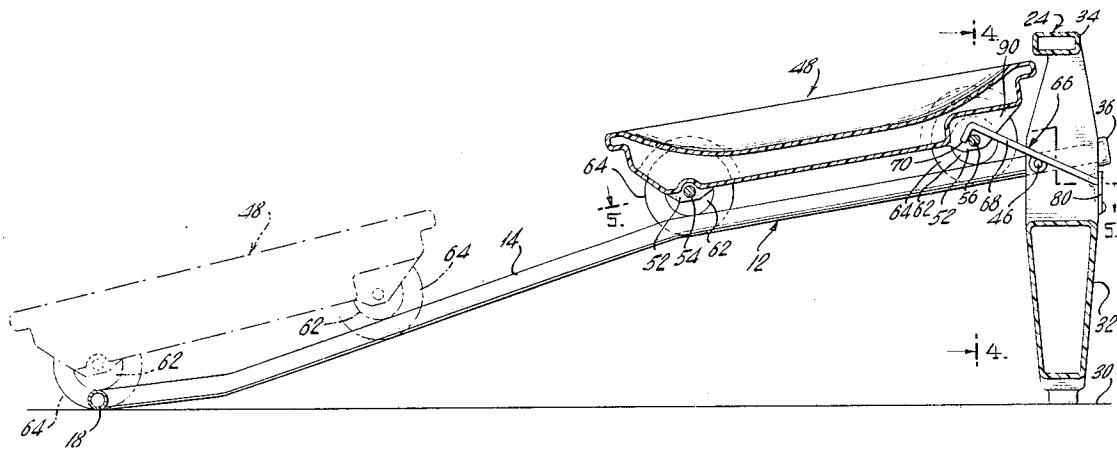
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ABSTRACT

A roller coaster suitable particularly for young children such as children of pre-school age. A track is provided with a lower front end and a rear upper end while a vehicle is provided for free movement gravitationally down the track from its rear upper end toward its lower front end. A supporting structure supports the rear upper end of the track at the required elevation, this supporting structure also serving to support a releasable holding element which releasably holds a vehicle at the rear upper end of the track while a child climbs into the vehicle. A manually operable member is accessible to the occupant of the vehicle for displacing the holding member to a non-holding or release position, so that when the occupant desires the vehicle can be released for movement down the track.

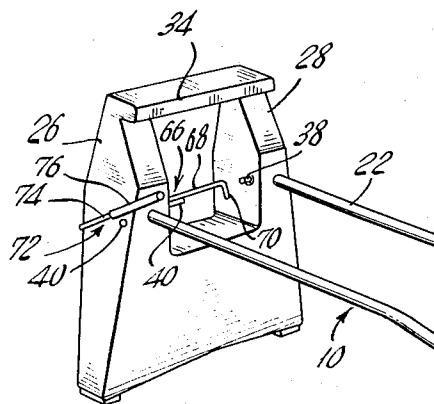
12 Claims, 7 Drawing Figures



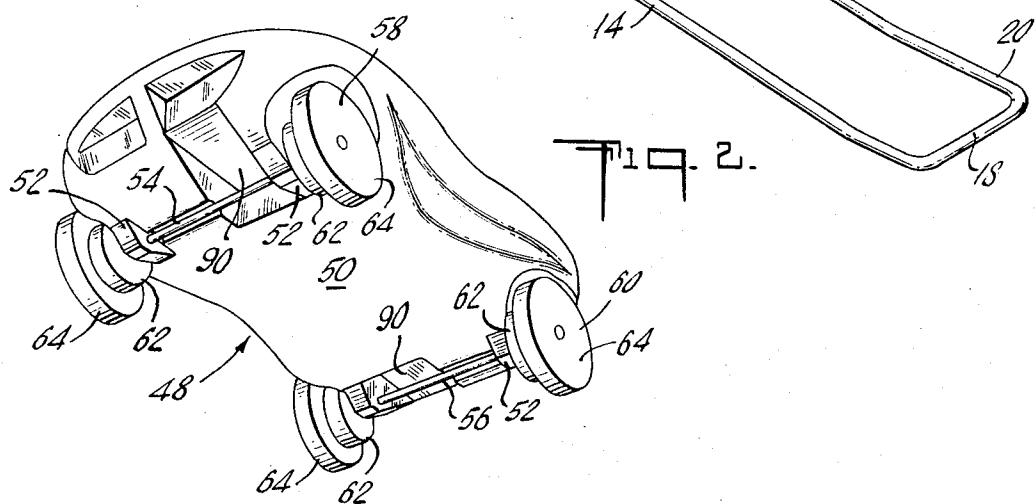
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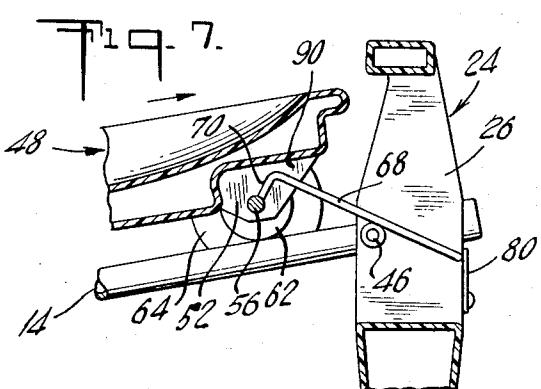
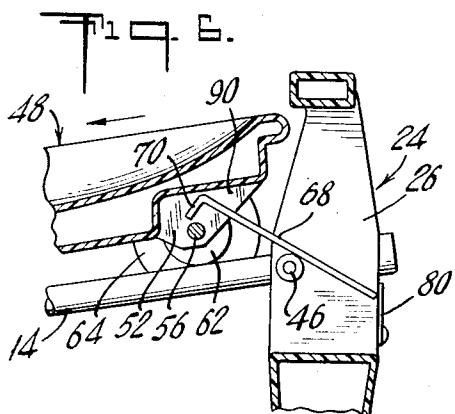
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T1-2.

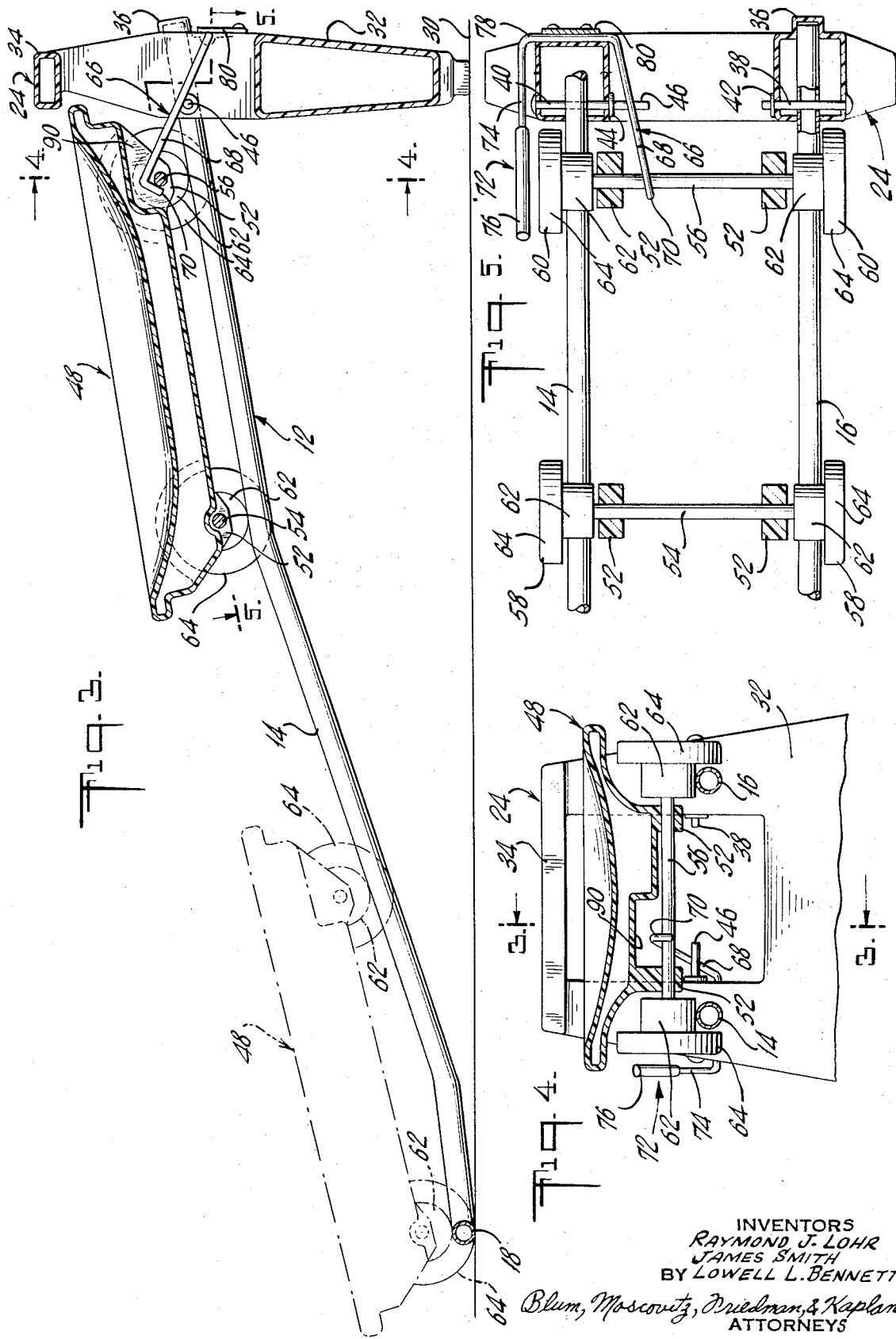


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ROLLER COASTER

BACKGROUND OF THE INVENTION

The present invention relates to roller coasters.

In particular, the present invention relates to that type of roller coaster which is adapted particularly for use by relatively small children, such as children of preschool age.

Rollers coasters of this general type have a vehicle into which a child can climb. The child will usually displace the vehicle to the upper end of the track and will then climb into the vehicle in order to ride in the latter down the track.

Considerable problems have been encountered with roller coasters of this type in making them fool-proof and absolutely safe, particularly for small children. With known structures of this type the vehicle often tips and falls off the track when the child tries to climb into the vehicle. Also the vehicle does not reliably remain at the upper end of the track so that children, and particularly small children, encounter considerable difficulties in climbing into the vehicle while holding the latter at the upper end of the track in preparation for riding the vehicle down the track.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a roller coaster which will solve the above problems.

In particular, it is an object of the invention to provide a roller coaster which will enable a child to climb into the vehicle thereof without any possibility of tilting or tipping the vehicle.

Also, it is an object of the invention to provide a roller coaster of the above type which will reliably maintain the vehicle at the upper end of the track without any manipulations being required by the child in connection with holding the vehicle at the upper end of the track.

Also it is an object of the invention to provide for a roller coaster a structure which will enable the occupant of the vehicle to release the vehicle for movement down the track whenever desired.

In addition, it is an object of the invention to provide a roller coaster made up of simple rugged components which can be inexpensively manufactured at low cost and which will have a long operating life even under the rugged use to be expected from small children.

According to the invention the roller coaster includes an elongated track means having a lower front end and an upper rear end. A support means supports the upper rear end of the track means at the required elevation with respect to the lower front end thereof. A vehicle means is provided for moving freely on the track so that the vehicle means will move by gravity freely down the track from the upper to the lower end thereof. A releasable holding means is provided for releasably holding the vehicle means at the upper end of the track, so that a child can readily climb into the vehicle while it remains reliably held at the upper end of the track by the releasable holding means. A manually operable means is accessible to the occupant of the vehicle for displacing the releasable holding means to a release position releasing the vehicle for movement down the track at the will of the occupant of the vehicle.

BRIEF DESCRIPTION OF DRAWINGS

The invention is illustrated by way of example in the accompanying drawings which form part of this application and in which:

FIG. 1 is a perspective illustration of a roller coaster of the invention showing all parts thereof except the vehicle;

FIG. 2 is a perspective illustration of the vehicle of the roller coaster as seen when looking toward the bottom thereof;

FIG. 3 is a sectional side elevation of the roller coaster of the invention showing the vehicle at the upper end of the track and in phantom lines when it has reached the lower end of the track, FIG. 3 being taken along line 3—3 of FIG. 4 in the direction of the arrows;

FIG. 4 is a transverse section taken along line 4—4 of FIG. 3 in the direction of the arrows and showing further details;

FIG. 5 is a sectional plan view taken along line 5—5 of FIG. 3 in the direction of the arrows;

FIG. 6 is a view showing the structure at the upper right portion of FIG. 3 in the position taken by the structure at the moment when the occupant decides to release the vehicle for movement down the track; and

FIG. 7 is a view of the structure at the upper right of FIG. 3 showing the position which the parts take during return of the vehicle to the upper end of the track.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings, FIG. 1 shows a roller coaster 10 according to the present invention. This roller coaster 10 includes an elongated track means 12 made up of a pair of elongated tracks 14 and 16. These tracks are interconnected at their lower front ends by a transverse portion 18. The entire track means 12 is composed of a single elongated tube made of a suitable metal and having the configuration illustrated in FIG.

1. Thus, the track means has a lower front end 20 at the region of the transverse portion 18 and an upper rear end 22 carried by a support means 24. The track means 12 can be formed in its entirety of a single length of tubing of any suitable metal, and the rear ends of the

track 14 and 16 extend through suitable openings which are formed in standards 26 and 28 of the support means 24. As is apparent particularly from FIGS. 3 and 5, the entire support means 24 is made of a single body which is hollow and which may be blow-molded from any suitable plastic. At its lower end the support means 24 is adapted to rest on any suitable floor 30 or the like.

The transverse hollow base 32 carries the upwardly extending hollow standards 26 and 28 which in turn are connected to each other by the transverse hollow upper portion 34 of the support means. The hollow upper rear end portions of the tracks 14 and 16 extend through the front and rear walls of each standard 26 and 28, and the rear walls thereof are respectively formed with shallow tubular extensions 36 which receive the rear ends of the tracks, as is apparent from FIGS. 3 and 5.

In order to fix the tracks to the support means 24, the upper rear ends of the tracks are formed with openings for receiving fastening rods 38 and 40 (FIG. 5). These rods have head ends situated at the outer side surfaces of the standards 26 and 28, and at their inner ends the rods extend through the inner walls of the standards and carry suitable fixing collars 42 and 44. The rod 40

has an elongated inner free end portion 46 which forms a stop member referred to in greater detail below.

The vehicle means 48 of the roller coaster is shown by itself in FIG. 2. This vehicle means includes a one-piece hollow blow-molded body 50 which is of a simple rugged construction and which in effect forms a simple dished enclosure in which a child can be seated. The one-piece hollow body 50 is provided with downwardly extending projections 52 which are transversely bored to receive the rotary axles 54 and 56. The front axle 54 is fixed to the front wheels 58 of the vehicle while the rear axle 56 is fixed to the rear wheels 60 of the vehicle. Each of the wheels 58 and 60 is in the form of a one-piece injection-molded body having an inner portion 62 of relatively small diameter for riding directly on a track and an outer portion 64 of relatively large diameter situated beside a track and adapted to engage the floor 30 when the vehicle moves downwardly beyond the track means 12.

A releasable holding means 66 is provided for releasably holding the vehicle means 48 at the upper end of the track means 12. This releasable holding means 66 takes the form of a lever 68 having a front hook portion 70 adapted to hook over the rear axle 56.

A manually operable means 72 is accessible to the occupant of the vehicle for raising the releasable holding means 66 away from the axle 56 when it is desired to release the vehicle for movement down the track. This manually operable means 72 is itself in the form of a lever 74 having a free end 76 situated beside the vehicle so as to be freely accessible to the occupant of the vehicle.

The levers 68 and 74 of the releasable holding means 66 and manually operable means 72 are interconnected by a transverse member 78. In fact this transverse member 78 forms one piece with the levers 68 and 74, so that these components can be formed from a single elongated rod having the configuration most clearly apparent from FIGS. 4 and 5.

The support means 24 supports the transverse member 78 for rotary movement so that in this way the levers 68 and 74 are supported for swinging movement. For this purpose the rear wall of the standard 26 is formed with an exterior groove receiving the transverse member 78. A plate 80 is fastened to the rear surface of the standard 26 so as to retain the transverse member 78 in the groove in which it rotates.

The stop member formed by the free end portion 46 of the rod 40 extends beneath the lever 68 so as to limit the downward swinging movement thereof. The elevation of the stop member 46 and the transverse member 78 is such that the free end of the hook 70 will engage and ride over the axle 56 during rearward movement of the vehicle up to the upper end of the track means, as illustrated in FIG. 7. Once the vehicle 48 moves slightly to the right beyond the position shown in FIG. 7, the hook portion 70 of the lever 68 will fall in front of the rear axle 56 so that the parts will have the position shown in FIG. 3. The stop member 46 locates the lever 68 at an inclination where the tip of the hook 70 will engage and ride over the axle 56 during movement of the vehicle up the track slightly beyond the position shown in FIG. 7.

When it is desired to release the vehicle for movement down the track the operator will simply engage the free end portion 76 of the lever 74 and raise the free end portion 76 so as to raise the releasable holding

lever 68 to the position shown in FIG. 6, and thus the vehicle will be released for movement down the track, the operator of course releasing the lever 74 so that the lever 68 will fall onto the stop member 46 to be held thereby at the proper elevation for again engaging the axle 56 when the vehicle is returned to the upper end of the track.

As is apparent particularly from FIG. 4, the vehicle 48 has an extremely low center of gravity with respect to the tracks 14 and 16. Moreover, the engagement of the larger diameter portions 64 of the wheels with the outer sides of the tracks 14 and 16 while the inner smaller diameter portions 62 ride on the tracks gives the vehicle an extremely high lateral stability on the tracks. As a result of this construction when the hook 70 holds the vehicle 48 at the upper end of the track means 12, while extending over the rear axle 56 of the vehicle means, a child, for example, can readily climb into the vehicle without any danger of tilting or tipping the vehicle or causing it in any way to assume any position of instability on the tracks 14 and 16. The simple releasable holding means 66 reliably maintains the vehicle at the upper end of the track while a child climbs into the vehicle. Moreover, once the child raises the lever 74 so as to release the vehicle it will reliably roll down the track without any danger of riding off the track before reaching the floor 30 onto which the vehicle rolls while moving due to its momentum beyond the track 12. Moreover, because of the hollow molded structure of the vehicle it is of an extremely light weight while at the same time being very rugged, so that it can readily be moved up the track back to the starting position by a child. The releasable holding means operates automatically to hold the vehicle at the upper end of the track in the manner described above.

It is furthermore to be noted that the structure of the invention is exceedingly simple to assemble. All that is required is to move the tracks 14 and 16 into the standards of the support means, to be received by the portions 36 thereof, and then the fastening rods 38 and 40 can be applied. Thereafter the assemblies of levers 68 and 74 is applied to the standard 26 and the plate 80 is fastened to hold this assembly in position. The only care required is to see to it that the lever 68 extends over the stop member 46. Through this simple structure it becomes possible to quickly assemble the entire roller coaster.

Thus, it will be seen that with the invention there has been provided a roller coaster which is completely fool-proof and which can be used by small children even of pre-school age, without any danger whatsoever. Moreover, the components of the roller coaster are of an exceedingly simple and rugged construction which will have a longer operating life even under the rugged use to be expected from small children. Furthermore, the parts are quite inexpensive and of a light weight, and lend themselves to easy assembly by the purchaser of the roller coaster, so that the entire roller coaster can conveniently be sold in a disassembled condition.

It is to be noted that the vehicle 48 is reversible so that either one of the shafts 54 and 56 can coact with the lever 68. Thus, if the vehicle is reversed from the position shown in FIGS. 3-5, 6 and 7, it will be the shaft 54 which coacts with the lever 68 in the same way as the shaft 56.

Also, in order to provide sufficient clearance for the hook end 70 of lever 68 the vehicle 48 is formed at its

lower surface with the recessed portions 90 into which the lever 68 moves in the manner shown in FIGS. 6 and 7. Because of the reversibility of the vehicle these recessed portions 90 are positioned as shown in FIG. 2 so that irrespective of which end of the vehicle happens to be used as its rear end, there will be proper positioning at a recess 90 with respect to the lever 68.

What is claimed is:

1. A roller coaster comprising elongated track means having a front lower end and a rear upper end, support means supporting said track means at said rear upper end thereof with the latter end situated at a substantially higher elevation than said front lower end of said track means, vehicle means freely movable on said track means for gravitational movement from said rear upper end thereof down to said front lower end thereof, releasable holding means coacting with said vehicle means for releasably holding the latter at said rear upper end of said track means, and manually operable means accessible to an occupant of said vehicle means and operatively connected with said releasable holding means for displacing the latter to a release position releasing the vehicle for gravitational movement down the track means at the will of the vehicle occupant, said vehicle means having a rear axle, said releasable holding means including a lever swingably carried by said support means and having a hook portion extending over said rear axle for releasably holding said vehicle means at the upper rear end of said track means, and said manually operable means being operatively connected to said lever for raising the latter away from said rear axle to release said vehicle means for movement down said track means.

2. The combination of claim 1 and wherein said manually operable means is itself in the form of a lever having a free end accessible to the operator and operatively connected to said lever of said releasable holding means for swinging the latter lever.

3. A roller coaster comprising elongated track means having a front lower end and a rear upper end, support means supporting said track means at said rear upper end thereof with the latter end situated at a substantially higher elevation than said front lower end of said track means, vehicle means freely movable on said track means for gravitational movement from said rear upper end thereof down to said front lower end thereof, releasable holding means coacting with said vehicle means for releasably holding the latter at said rear upper end of said track means, and manually operable means accessible to an occupant of said vehicle means and operatively connected with said releasable holding means for displacing the latter to a release position releasing the vehicle for gravitational movement down the track means at the will of the vehicle occupant, said vehicle means having a rear axle, said releasable holding means including a lever swingably carried by said support means and having a hook portion extending over said rear axle for releasably holding said vehicle means at the upper rear end of said track means, and said manually operable means being operatively connected to said lever for raising the latter away from said rear axle to release said vehicle means for movement down said track means, said manually operable means itself being in the form of a lever having a free end ac-

cessible to the operator and operatively connected to said lever of said releasable holding means for swinging the latter lever, a transverse member extending between and interconnecting said levers of said releasable holding means and said manually operable means, and said support means supporting said transverse member for rotary movement so that said levers swing together as a unit with said transverse member.

4. The combination of claim 3 and wherein said track means includes a pair of tracks, and said support means including a pair of standards supporting said tracks at rear upper end portions thereof, one of said standards supporting said transverse member for swinging movement with said lever of said releasable holding means located at an inner side of said one standard for engaging said rear axle and with said lever of said manually operable means located at an outer side of said one standard to be situated at said free end portion thereof beside a vehicle at the rear upper end of said track means so as to be accessible to the operator.

5. The combination of claim 4 and wherein said one standard carries a stop member extending beneath said lever of said releasable holding means to limit the downward swinging thereof, said stop member situating the latter lever at an elevation for automatically moving over and hooking onto said rear axle of said vehicle means when the latter is moved up to said rear end of said track means.

6. The combination of claim 5 and wherein said stop member is in the form of an elongated fastening pin extending through said one standard and that one of said tracks which is carried thereby for fixing the latter track to said one standard and said pin having an elongated free end portion forming said stop member.

7. The combination of claim 5 and wherein said one standard has a rear groove receiving said transverse member and said one standard carrying a plate which extends across said groove and said transverse member for retaining the latter in said groove.

8. The combination of claim 1 and wherein said track means includes a pair of tracks and said vehicle means including wheels engaging said tracks with each wheel having an inner small-diameter portion riding on a track and an outer large diameter portion situated beside a track.

9. The combination of claim 8 and wherein each of said wheels is in the form of a one-piece molded body.

10. The combination of claim 9 and wherein said vehicle means includes a one-piece hollow molded chassis having downwardly extending projections situated between said wheels, and said vehicle means including axles extending through said projections and connected with said wheels.

11. The combination of claim 1 and wherein said support means is in the form of a one-piece hollow molded body.

12. The combination of claim 1 and wherein a stop means extends beneath said lever of said releasable holding means to limit downward swinging thereof, said stop means situating the latter lever at an elevation for automatically moving over and hooking onto said rear axle of said vehicle means when the latter is moved up to said rear upper end of said track means.

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