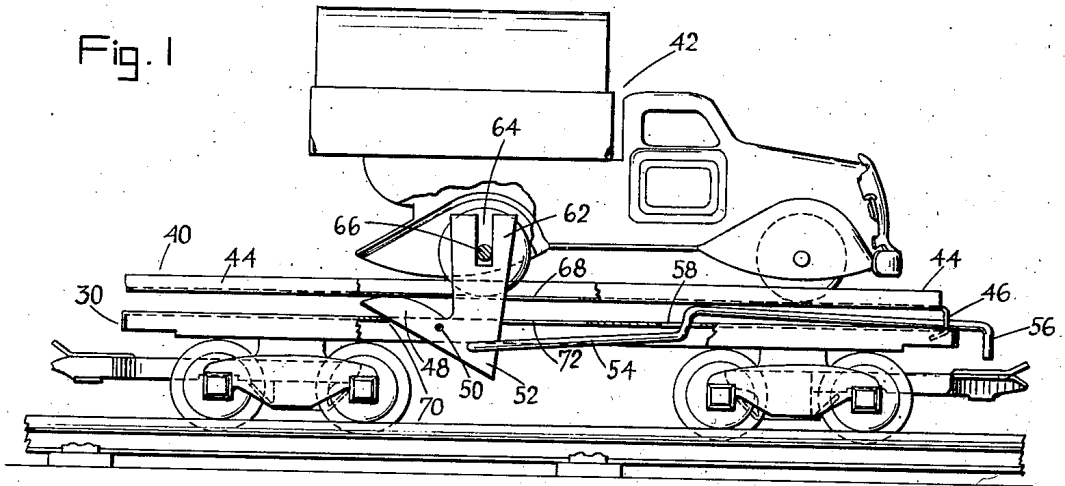
March 9, 1943. D. V. GODFREY 2,313,335

TOY RAILWAY SYSTEM

Filed May 3, 1941

Fig. 1



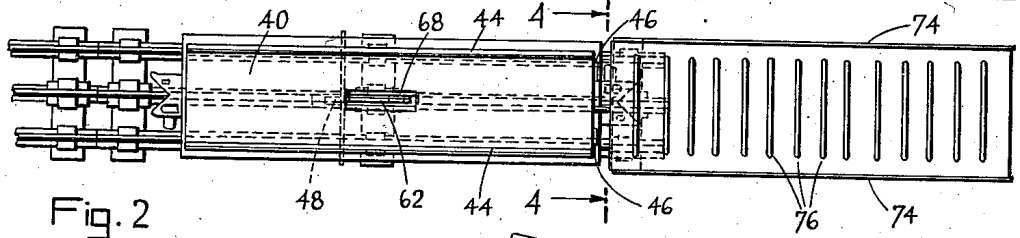
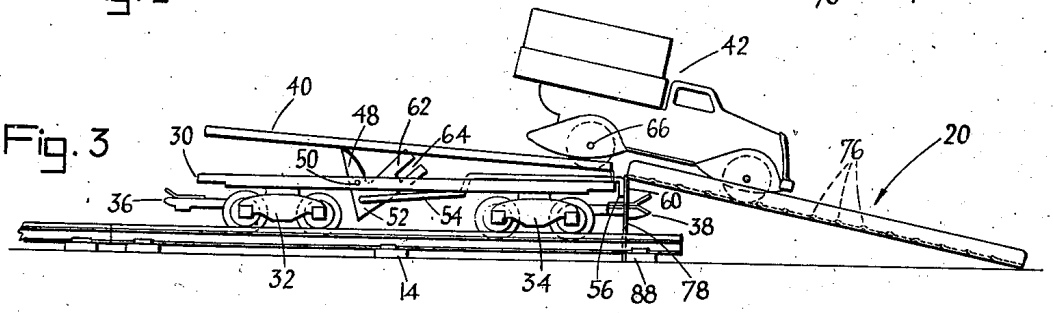


Fig. 2

Fig. 3



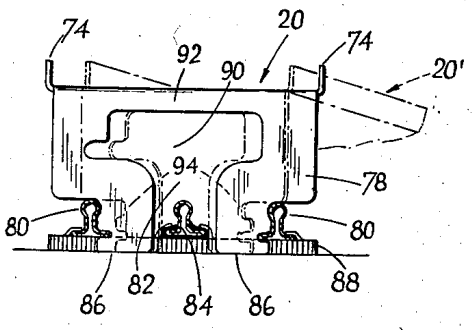
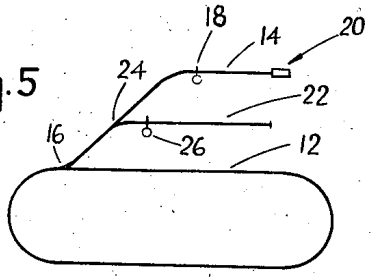


Fig. 4

Fig. 5



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2,313,335

TOY RAILWAY SYSTEM

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8 Claims. (Cl. 214—44)

This invention relates to toy railway systems, and more particularly to a ramp and flat car arrangement for automatic unloading of a vehicle.

The primary object of my invention is to generally improve toy railroads by simulating the transportation of vehicles. A more particular object is to provide a car for carrying a vehicle and arranged to automatically unload the same. Another object is to provide a stationary ramp forming a part of the track system to facilitate unloading of the vehicle from the car. Still another object is to provide means for automatically discharging the vehicle from the car when the car reaches the ramp.

In accordance with more specific features and objects of the invention, the discharge of the vehicle may be obtained either by tilting a vehicle-carrying runway to inclined position, or by ejection of the vehicle along the runway, or preferably as here disclosed, by both. Still another object is to provide means to hold the vehicle against movement during transportation on the railway car, which means is automatically released when unloading the vehicle at the stationary ramp.

To the accomplishment of the foregoing, and such other objects as will hereinafter appear, my invention consists in the toy elements and their relation one to the other as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by a drawing, in which

Fig. 1 is a partially sectioned side elevation showing a railway car for carrying and automatically unloading a vehicle;

Fig. 2 is a plan view of the railway car when moved against the stationary ramp, with the vehicle removed;

Fig. 3 is a side elevation of the same with the vehicle running down the ramp;

Fig. 4 is a section taken in the plane of the line 4—4 of Fig. 2; and

Fig. 5 is a schematic illustration of one track layout with which the invention may be employed.

Referring to the drawing, and more particularly to Fig. 5, the track layout there shown comprises a loop of track 12 provided with a dead end spur or siding 14, said siding being connected to the loop 12 by means of a switch 16. The spur 14 preferably includes an uncoupling device 18, which may be of the type disclosed in U. S. Letters Patent 2,157,187, issued to W. E. Rexford, May 9, 1939. The spur terminates in a stationary ramp 20. In accordance with the present invention, the vehicle bearing car is backed against the ramp 20, and thereupon automatically discharges the vehicle which runs down the ramp to the ground. The car may be made the last car for purposes of unloading the vehicle in any desired manner, as by manual uncoupling other following cars on the loop 12, or by the provision of a remotely controlled coupling unit in the main loop 12, but I prefer to provide an additional spur 22 and switch 24, said spur 22 being provided with another uncoupling unit 26. In this way the train may be backed into spur 22 and the unit 26 used to disconnect all cars following the vehicle bearing car, whereupon the shortened train is then backed into the spur 14 to unload the vehicle. The empty car may, if desired, be left in spur 14, while the train is again made up without the empty car by backing the train into spur 22 to collect the other cars.

The car and ramp arrangement may be generally described with reference to Fig. 3 of the drawing, which clearly shows the stationary ramp 20 mounted at the end of spur 14. The car comprises a flat-car like chassis 30 mounted on wheeled trucks 32 and 34, said trucks preferably being provided with suitable coupling bars 36 and 38. The car includes a runway 40 which is normally disposed in horizontal position as shown in Fig. 1, but which may be raised to the tilted position shown in Fig. 3 when the vehicle 42 is to be unloaded. The upper end of stationary ramp 20 has a height substantially the same as that of the lower end of runway 40.

Referring now to Figs. 1, 2, and 3, the runway 40 is preferably flanged or reversely folded at 44 to provide guides for the vehicle wheels, and also to stiffen the runway which is pressed out of sheet metal. One end of the runway is pivoted on the chassis 30, this being done in the present case by the provision of tongues 46 which extend downwardly through mating slots in chassis 30. A cam 48 is pivoted on chassis 30 by means of pin 50, and an extension 52 of the cam is connected to a rod 54. This extends beyond the end of the chassis to form a feeler 56. The rod 54 may be guided by disposing a part of the same above the chassis, as is clearly shown in the drawing, an intermediate part passing through a slot 58. It will be evident by comparison of Figs. 1 and 3 that when the car is moved against the end 60 of the stationary ramp 20, the projecting feeler 56 turns cam 48 to the upward position shown in

Fig. 3, thereby raising the free end of the runway.

To insure discharge of the vehicle 42, it may be positively moved or ejected along the runway. For this purpose I provide an upwardly extending ejector 62, said ejector being downwardly slotted at 64 to receive a part of the vehicle, most conveniently the axle 66. The ejector 62 is pivoted on chassis 30 by means of the pin 50, and it extends upwardly through a slot 68 in runway 40. It will be evident from comparison of Figs. 1 and 3 that when feeler 56 bears against the stationary ramp, the ejector 62 is turned to the position shown in Fig. 3, thereby urging the vehicle along the runway and finally disengaging itself from the axle of the vehicle.

The ejector 62 is important as a holding means for the vehicle when transporting the same on the railway car. When the ejector is in the normal or upright position shown in Fig. 1, the vehicle is held securely against movement off the car. However, when the car reaches the ramp the holding means is automatically disengaged from the vehicle.

The ejector serves still another purpose in locating the runway 40 against sideward or lateral movement. By using the ejector 62 the runway may be held in position simply by the use of the pivot tongues 46 previously referred to and the ejector 62.

In practice the ejector 62 and the cam 48 may be made of a single piece of material such as fibre board. This piece is essentially an angle lever which is connected to and operated by the feeler 56 and rod 54. One arm of the angle lever is shaped to act as a cam for tilting the runway. The other arm of the angle lever is shaped to act as a holding means and an ejecting means for the vehicle. With this construction the vehicle is held against undesired movement along the runway by its own weight, for the weight of the vehicle and the runway keeps the cam 48 in the depressed position shown in Fig. 1. This position may be limited by movement of the bottom edge of cam 48 against the end 70 of a slot 72 cut through the top wall of the chassis or flat car 30. With cam 48 held in the downward position shown in Fig. 1, the ejector 62 is held in vertical position, thereby restraining the vehicle against accidental movement.

The ramp 20 is preferably made up of a single piece of sheet metal, the side edges of which are bent upwardly to form guide flanges 74. If desired, the surface of the runway may be bent to form a series of transverse ridges or treads 76. One end of the ramp has an extension which is turned downwardly as indicated at 78 to elevate that end of the ramp so as to maintain the desired angular position. Referring to Fig. 4, it will be seen that the downwardly turned end is preferably cut away at the sides to fit between the wheel bearing rails 80 of the toy track. The center part is cut away as indicated at 82 to clear the third rail or power rail 84 in order not to short-circuit the track. The lower edges 86 rest on the ground within the end tie 88 of the track, thereby anchoring the ramp against movement. In this way the ramp acts as a bumper as well as a ramp and is well able to take the push of the feeler when the car is backed into the ramp. The end 78 of the ramp is preferably cut away at 90 to clear the coupling bar 38 of the car, because the coupling bar preferably projects from the car even further than the feeler 56. However, a part 92 of the ramp is left intact for engagement with the feeler 56.

The ramp 20 is readily applied to or removed from the track section. For this purpose it is merely necessary to turn the ramp to angular position, as is indicated by the broken lines 20' in Fig. 4. In this angular position the shaped edges at the bottom of end 78 move from the solid line position conforming to the rails 80, to the broken line position indicated at 94 in Fig. 4. The ramp is then readily lifted upwardly out of the track section. In applying the ramp to the track it is first set down in angular position within the end tie 88 and is then straightened to a position in alignment with the track as shown in Fig. 2.

It is believed that the construction and operation, as well as the many advantages of my improved ramp and automatic unloading car will be apparent from the foregoing detailed description thereof. It will also be apparent that while I have shown and described my invention in a preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention, as sought to be defined in the following claims.

I claim:

1. A toy railway car comprising a chassis, wheeled trucks carrying said chassis, a vehicle runway on top of said chassis, said runway being pivoted at one end, means for elevating the opposite end to incline the runway for discharge of a vehicle therefrom, and a slotted ejector for either holding or ejecting a vehicle from the runway, said ejector comprising an upwardly projecting member having a downwardly extending slot dimensioned to receive an axle of the toy vehicle and to thereby prevent longitudinal movement of the vehicle on the runway, said member being pivoted for downward and forward movement in such a manner as to force the vehicle along the runway and to then disengage the slot from the axle.

2. A toy railway system comprising a dead end track terminating in a stationary ramp, and a toy railway car comprising a wheeled chassis carrying a vehicle, a lever pivoted on said chassis, a rod extending from said lever and projecting from the chassis in such position as to bear against and be moved by the stationary ramp when the car is moved against the ramp, thereby oscillating said lever from vehicle-holding position to vehicle-releasing position, said lever projecting upwardly when in vehicle-holding position and being dimensioned to receive a part of the vehicle.

3. A toy railway system comprising a dead end track terminating in a stationary ramp, and a toy railway car comprising a wheeled chassis, a vehicle runway disposed on said chassis, an angle lever pivoted on said chassis, a rod extending from said angle lever and projecting from the chassis in such position as to bear against and be moved by the stationary ramp when the car is moved against the ramp, thereby oscillating said angle lever from vehicle-holding position to vehicle-releasing position, one arm of said angle lever being arranged to elevate one end of the runway, the other arm of said angle lever normally projecting upwardly and having means to engage and hold a part of the vehicle in order to prevent movement thereof when the angle lever is in vehicle-holding position.

4. A toy railway system comprising a dead end track terminating in a stationary ramp, and a toy railway car comprising a chassis car-

ried on wheeled trucks, a vehicle runway disposed on said chassis, said runway being pivoted at the end toward the stationary ramp, an angle lever pivoted on said chassis, a rod extending from said angle lever toward the pivoted end of the runway and projecting from the chassis in such position as to bear against and be moved by the stationary ramp when the car is moved against the ramp, thereby oscillating said angle lever from vehicle-holding position to vehicle-releasing position, one arm of said angle lever being shaped to act as a cam for elevating the free end of the runway, the other arm of said angle lever normally projecting upwardly and being downwardly slotted to receive an axle of the vehicle.

5. A toy railway car comprising a wheeled chassis, said wheels being flanged for operation on a toy track, a toy vehicle having regular wheels for land operation, a vehicle runway on top of said chassis and dimensioned to receive and support the wheels of the wheeled vehicle, and a slotted ejector for either holding or ejecting said vehicle from the runway, said ejector comprising an upwardly projecting member dimensioned to receive a part of said toy vehicle and to thereby prevent longitudinal movement of the vehicle on the runway, said member being pivoted for downward and forward movement in such a manner as to roll the vehicle on its own wheels along the runway and to then disengage itself from the vehicle.

6. A toy railway car comprising a wheeled chassis, said wheels being flanged for operation on a toy track, a toy vehicle having regular wheels for land operation, a vehicle runway on top of said chassis and dimensioned to receive and support the wheels of the wheeled vehicle, means to incline the runway for discharge of said vehicle therefrom, and an upwardly projecting member dimensioned to receive a part of said toy vehicle and to thereby prevent longitudinal movement of the vehicle on the runway when the runway is in horizontal position, said member being disengaged from the toy vehicle when the runway is moved to inclined position, thus permitting said vehicle to roll on its own wheels down the inclined runway.

7. A toy vehicle automatic unloading system comprising an inclined stationary ramp, a first toy vehicle comprising a wheeled chassis, a vehicle runway disposed on said chassis, said runway being pivoted at one end to afford upward movement at the other end, a second and smaller toy vehicle having regular wheels for land operation, said runway being dimensioned to receive and support the wheels of said second vehicle, the upper end of the ramp being at substantially the same elevation as the pivoted end of the runway, the chassis of said first vehicle having an angle lever pivoted thereon, said lever having an upwardly projecting arm for engaging a part of and so holding the second vehicle in position on the first vehicle, and having a sidewardly projecting arm shaped to act as a cam for elevating the free end of the runway, a rod extending from said angle lever toward the pivoted end of the runway and projecting from the chassis in such a position as to bear against and be moved by the stationary ramp when the first vehicle is moved against the ramp, thereby oscillating said angle lever from vehicle-holding position to vehicle-releasing position, while at the same time tilting the runway, whereby the second vehicle readily rolls on its own wheels down the runway and the ramp to the ground.

8. A toy railway unloading system for automatically unloading toy vehicles, said system comprising a track, an inclined stationary ramp at one end of the track, a toy railway car including a wheeled chassis, said wheels being flanged for operation on the toy track, a vehicle runway disposed on said chassis, said runway being pivoted at one end to afford upward movement at the other end, a toy automotive vehicle having regular wheels for land operation, said runway being dimensioned to receive and support the wheels of said vehicle, the upper end of the ramp being at substantially the same elevation as the pivoted end of the runway, the chassis of said railway car having an angle lever pivoted thereon, said lever having an upwardly projecting arm for engaging a part of and so holding the toy vehicle in position on the railway car, and having a sidewardly projecting arm shaped to act as a cam for elevating the free end of the runway, a rod extending from said angle lever toward the pivoted end of the runway and projecting from the chassis in such a position as to bear against and be moved by the stationary ramp when the railway car is moved against the ramp, thereby oscillating said angle lever from vehicle-holding position to vehicle-releasing position, while at the same time tilting the runway, whereby the vehicle readily rolls on its own wheels down the runway and the ramp to the ground.

DONALD V. GODFREY.