

Aug. 22, 1944.

R. G. SMITH

2,356,280

LOAD CATAPULTING TOY RAILWAY CAR

Filed March 20, 1943

2 Sheets-Sheet 1

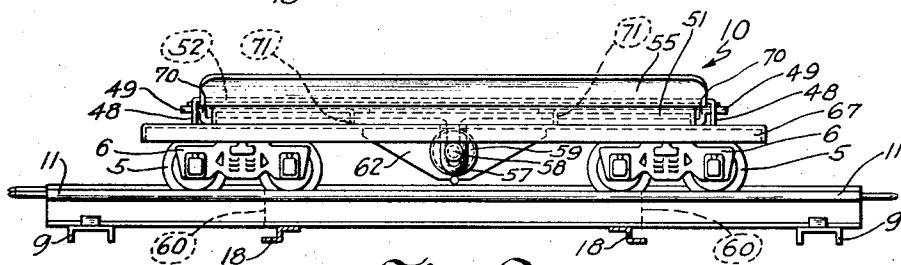
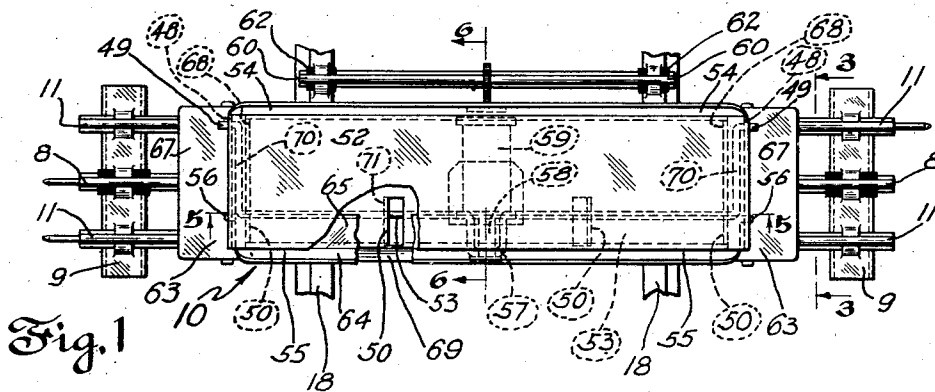


Fig. 2

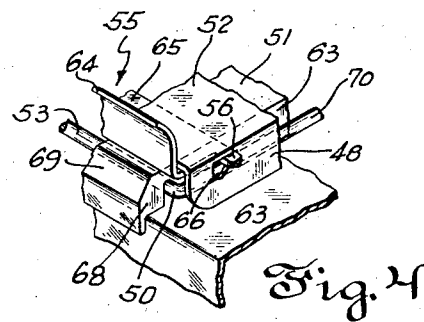
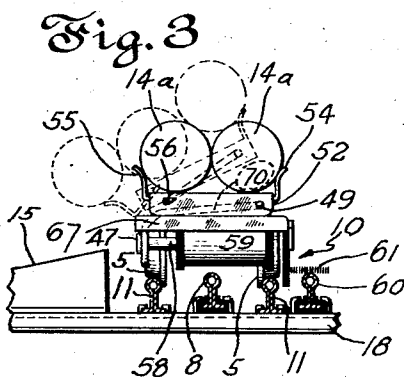


Fig. 4

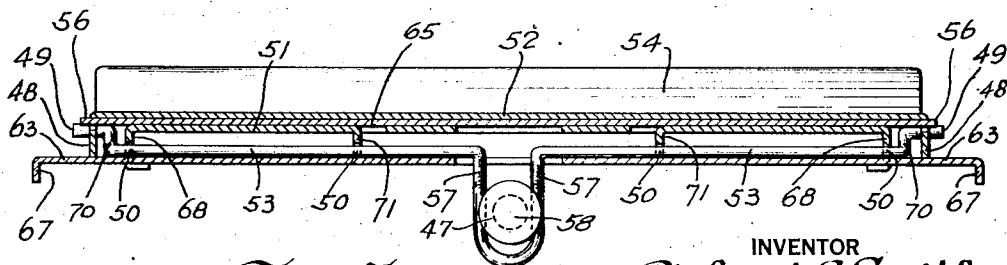


Fig. 5

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2 Sheets-Sheet 2

Fig. 6

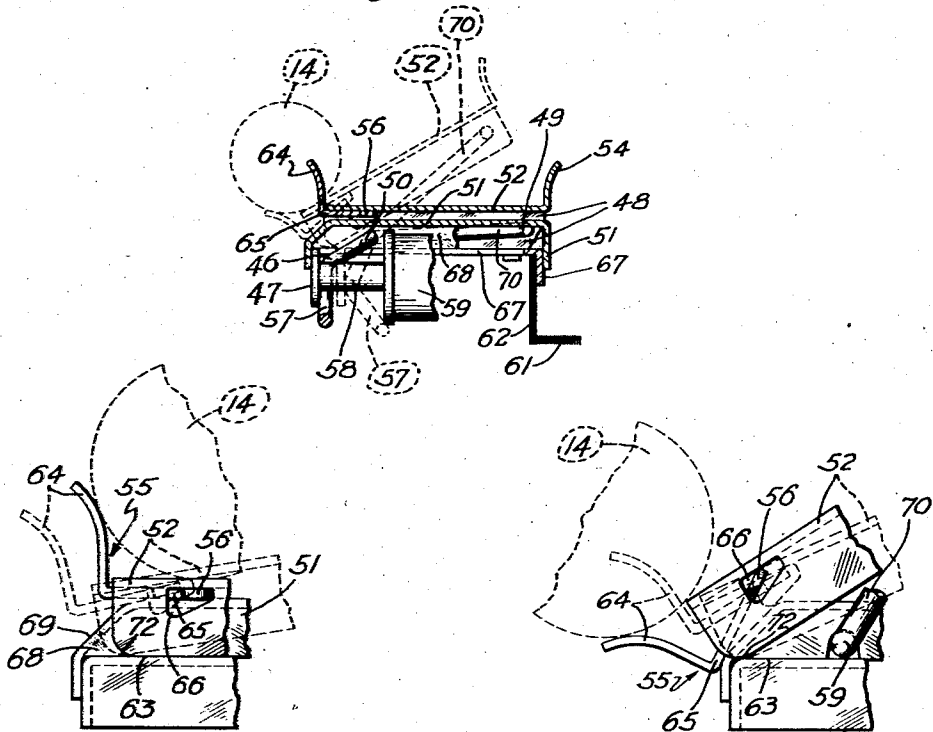


Fig. 7

Fig. 8

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2,356,280

LOAD CATAPULTING TOY RAILWAY CAR

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Original application August 21, 1942, Serial No. 407,769. Divided and this application March 20, 1943, Serial No. 479,840

15 Claims. (Cl. 46-214)

This invention relates to toy railway cars especially adapted for operating performance beyond that of merely riding along a track and intended to appeal to the imagination of boys through the ability to imitate realistically certain industrial operations commonly associated with actual railroading such as the automatic unloading of toy logs or other toy load materials from a freight car.

It is an object of the invention to provide a toy vehicle, as for instance a toy railway freight car or "flat" car, with means capable of operating in response to remote control to dump or discharge a carried load of make-believe logs or other toy load articles alongside the track over which the toy freight car travels.

Another object is to equip a toy car with a load carrying and dumping table and with electromagnetic means adapted through remote electrical control to cause such table to tilt abruptly for dumping its load and then to become restored to a position in which it can retain a subsequent load while the car is located at some point along a course of toy railway tracks beyond manual reach of the operator.

Another object is to eject or catapult toy load articles resting on a movable repository carried by the toy car and with sufficiently abrupt discharging action to fling the carried load articles over and clear of the side of the car preferably by the action of an electromagnet.

A further object is to equip the catapulting repository with means to retain load articles or material thereon, such means upon occasion preferably being collapsible, at least in part.

A still further object is to cause rollable articles such as toy logs discharged from the car to be moved by gravity farther away from the side of the track than the spot at which they are deposited.

The foregoing and other objectives will appear in greater particular from the following description of preferred forms of the invention and should also be considered in conjunction with certain description and illustrations appearing in my copending application Serial No. 407,769, filed August 21, 1942, from which the present case is divisional. In the description hereof reference is had to the accompanying drawings wherein:

Fig. 1 is a plan view of a toy railway car with a fragmentary section of the railway tracks on which it rides.

Fig. 2 is a view of the car and tracks of Fig. 1 in side elevation.

Fig. 3 shows an end view of the toy car taken in section through the track rails on the plane 3-3 in Fig. 1 looking in the direction of the arrows.

Fig. 4 is a fragmentary perspective view of corner portions of certain parts of the toy car appearing in Figs. 1, 2 and 3 drawn on an enlarged scale.

Fig. 5 is a fragmentary view on a correspondingly enlarged scale of the tilting table and associated parts taken in section on the plane 5-5 in Fig. 1 looking in the direction of the arrows.

Fig. 6 is a fragmentary enlarged view taken in section through the toy freight car on the plane 6-6 in Fig. 1 looking in the direction of the arrows.

Fig. 7 is a fragmentary endwise view of the dumping mechanism as appearing in Fig. 3 drawn on a still further enlarged scale.

Fig. 8 is a view similar to Fig. 7 showing the parts in the act of dumping or catapulting a toy load article.

The toy railway flat car 10 will be understood to be equipped with conventional devices (not shown) at its ends for releasable coupling it to the ends of other toy railway rolling stock, thereby in usual manner to make up a toy train that is impelled along the traction rails 11 of an electrified toy trackage which may include the usual form of simulated rail-supporting sleepers 9. The "third" or power rail 8 of the trackage may be insulated in conventional manner from sleepers 9 as also is insulated a limited length of "fourth" rail 60 further hereinafter referred to.

The body of car 10 incorporates a chassis base 67 supported pivotally on trucks 6 affording bearings for axles of the traction wheels 5, all of which construction may be conventional for traveling on the before mentioned track rails 11. Chassis base 67 carries fixed thereon a shorter hollow raised platform 51 having end walls 68, intermediate walls 71, and a sloping or bevelled edge surface 69. Outside of and adjacent each end wall 68, car chassis 67 presents a bed surface or seat 63 on which is adapted to pivotally rest, roll and slide the rounded corners or rocker portions 72 of the turned down end flanges 48 of tiltable table 52. This tiltable, load receiving table 52 may be termed an article ejector or article motivator and is of specialized construction and functions for normally retaining one or more logs 14 thereupon and for, upon desired occasions, dumping a load of such logs off onto the inclined ways 15 extending downward and away from the track rails. For this purpose the tilt-

able table 52 is provided along one of its long L-shaped edges with an upstanding fixed flange 54 rigid therewith. The opposite long edge of this tiltable table is flanked by a similar load retaining flange 64 forming part of a collapsible apron 55.

Apron 55 comprises an elongated L-beam type of member and includes in addition to load retaining flange 64 and in rigid relation thereto the anchored flange 65 which underlies an edge portion of tiltable table 52 and is provided at each end with a trunnion lug 56 having a pivotal bearing of controlled looseness in hole 66 in each of the down-turned end flanges 48 of tiltable table 52. When the tiltable table 52 is collapsed into horizontal or load retaining position, the anchored flange 65 of apron 55 rests upon the top surface of raised platform 51 and thus becomes fixedly sandwiched or clamped between said surface and the overlying marginal portion of tiltable table 52. This holds the load retaining flange 64 of the apron in firmly upstanding position.

A swingable article unloader is herein shown in the form of a crank-like bail 53 for tilting the table or load ejector 52 which bail is but one form of an actuatable article unloading arm that may be anchored to ejector 52 at a point fixed in relation thereto and extending therefrom to below the car body to be actuated. In the illustrative form herein chosen, the operating extremities or terminals 49 of bail 53 are pivotally engaged respectively with the end flanges 48 of the tiltable table 52 at crank arm's length from its fulcrum bearings afforded by notches 59, of which there are four, two being in the end walls 68 of raised platform 51 and two being in additional walls 71 intermediate end walls 68 as best shown in Fig. 5. Crank-shaft portion 70 of bail 53 is pivotally anchored in such fulcrum bearings at 50 and derives support along its entire length by resting rotatably on the top surface 63 of the chassis. Centrally of bail 53 between the intermediate fulcrum bearings 50, the stiff wire which forms this bail is looped to form a downward extending bight 57 which straddles the stem 58 of an electromagnet plunger thereby to be actuated by a crosswise extending element afforded by the enlarged head 47 of such plunger stem which reciprocates lengthwise in a rectilinear path. As viewed in Fig. 6 the wire bight 57 is seen also to have an elbow bend at 45 to facilitate its actuation by plunger head 47. Solenoid 59 of this electromagnet is fixedly suspended from the car chassis 51 and has its axis disposed crosswise the car.

For electrically energizing solenoid 59 one end of its winding may be grounded to the metallic chassis 67 of the car and thereby, through the trucks 6 and traction wheels 5 of the toy freight car, maintained in constant electrical circuit with the electrified track rails 11. The other end of the solenoid winding may be connected electrically to a conductive flexible current collector or shoe 61 which may take the form of a laterally projecting flexible coil of close helically wound wire mounted at its inner end on a depending plate 62 of insulating material carried by car chassis 67. Examples of suitable details of construction for this form of current collector shoe are disclosed and claimed in my copending application, Serial No. 337,625 filed May 28, 1940. Collector shoe 61 is adapted to ride into and out of wiping contact with a limited length of fourth rail 60 mounted on and insulated from sleepers 9

in position to be electrically contacted by the collector shoe while the toy car occupies the position shown in Fig. 1. Suitable details of construction for this fourth rail 60 are disclosed and claimed in the last said copending application.

The operation of my improved toy article dumping or catapulting car will for the most part be clear from the foregoing description of the manner of operation of its several parts. When the current collector 61 arrives in wiping contact with the fourth rail 60, or when such current collector is standing engaged with fourth rail 60 and the latter becomes electrically energized from a remote point through circuit connections including an electrical controller such as is illustrated in Fig. 21 and described in my aforesaid parent application Serial No. 407,769, the plunger 58 of solenoid 59 will be attracted toward the right in Figs. 3 and 6. Previously the weight of the tiltable table 52 has held this table down in load retaining position as shown in full lines in said figures and in Figs. 4 and 7. Now however the terminal head of plunger 58 acts against the elbow formed in arm 57 as shown in Fig. 6 and forces the crank members 49, 53, 57, 70 counterclockwise to its broken line position in Figs. 3, 6 and 8, whereupon table 52 is rocked and can also slide upon its supporting fulcrum 63 as it becomes tilted to its broken line position in Figs. 3 and 6 corresponding to its full line positions in Fig. 8. Toward the end of the tilting movement of table 52 the horizontal flange 65 of apron 55 becomes released from its sandwiched imprisonment between table 52 and the car body platform 51 so that it is free to swing downward out of load retaining position or collapse to its full line position in Fig. 8 which permits a large load article, such as make-believe log 14, to slide or roll off from the table without interference by apron lip 64. Obviously this feature of a collapsible apron is not needed when the toy articles to be discharged are so light in relation to the actuating force of solenoid 59 that the table 52 is flung upward with sufficient abruptness to project the discharged articles through space and over and clear of the side of the car and of apron 55 in the latter's uncollapsed position shown in broken lines in Fig. 8.

Many modifications of the particular forms and arrangement of parts which are herein disclosed to illustrate the invention will be suggested by this disclosure to workers in the art and the appended claims are intended to define and are directed to all fair equivalents and well known substitutes for any of the particular constructions and relationships of parts disclosed.

I claim:

1. A toy railway freight car for dumping toy loads, embodying in combination with a car chassis including a base presenting a bed surface and a raised platform fixed on and shorter than said base thereby to expose a portion of said bed surface adjacent the end of said platform, a tiltable table of greater length than said platform and shorter than said base having a rocker portion rollably resting on said bed surface, and crank means pivotally mounted on said chassis pivotally engaged with said table in a manner to cause the latter to rock upon said base when said crank means swings relative to said chassis.

2. A toy railway freight car for dumping toy loads as defined in claim 1, in which the said crank means for rocking the said table includes

a crank-like bail having pivotal anchorage to said raised platform and pivotally engaging said table at crank arm length from said anchorage.

3. A toy railway freight car for dumping toy loads as defined in claim 1, in which the said crank means for rocking the said table includes a bail pivotally anchored in said raised platform and pivotally engaging the said tiltable table and having an actuatable arm portion, together with an electromagnet carried by the said car having a reciprocative armature operatively engaging said arm portion for swinging said bail.

4. Toy apparatus for unloading articles from toy cars, comprising in combination with a car body, a solenoid carried by and under said car body having a horizontally reciprocable plunger, an ejector fulcrumed on said car normally held by gravity in a relatively low position, and a bent wire crank shaft pivotally mounted on said car including a radially extending bight engageable by said plunger and further including radially extending terminals propellingly engaged with said ejector in a manner to lift the latter when said solenoid is energized.

5. A toy railway freight car for dumping toy loads, embodying in combination with a car chassis including a base presenting a seat and a raised platform fixed on and shorter than said base thereby to expose said seat adjacent the end of said platform, a tiltable table of greater length than said platform and shorter than said base rockably resting on said seat, crank means pivotally mounted on said chassis pivotally engaged with said table in a manner to cause the latter to rock upon said seat when said crank means swings relative to said chassis, a collapsible apron pivotally anchored to the said tiltable table including an anchoring flange releasably clamped between the said raised platform and said tiltable table when the latter is in substantially horizontal position and a load retaining flange thereby held in upright position at the edges of said tiltable platform for retaining a toy load upon said platform, whereby tilting of said table upward away from said platform releases said anchoring flange and permits said apron to swing to such position that said retaining flange may fall out of load retaining position relative to said tiltable table.

6. Toy apparatus for unloading toy articles from toy cars, comprising a horizontally extending toy car body, a solenoid coil carried by said car body, a reciprocative actuator including a plunger magnetically responsive to said coil having rectilinear movement beneath said body, a tippable ejector pivotally supported on and above said car body in a manner to swing between horizontal article retaining position and inclined article discharging position, and a swingable article unloading arm anchored to said ejector at a point fixed in relation to the latter and extending therefrom to below said body and into the path of rectilinear movement of said actuator to be motivated by the latter.

7. Toy apparatus for unloading toy articles from toy cars, comprising a horizontally extending toy car body, a solenoid coil carried by said

car body, a reciprocative actuator including a plunger magnetically responsive to said coil having rectilinear movement beneath said body, a tippable ejector pivotally supported on and above said car body in a manner to swing between horizontal article retaining position and inclined article discharging position, and a swingable article unloading crank pivotally mounted on said body and pivotally anchored to said ejector at a point fixed in relation to the latter and extending therefrom to below said body and into the path of rectilinear movement of said actuator to be motivated by the latter.

8. In toy apparatus for motivating toy articles carried by toy cars, the combination of, a car body, a solenoid coil carried by said body having a magnetic plunger reciprocative in a straight path, and a swingable article motivator pivotally supported on said car body, a crosswise element on said plunger, and a swingable arm operatively related to said motivator to cause the latter to swing, said arm extending crosswise of said plunger and into the path of movement of said plunger element to be actuated by the latter.

9. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm is bifurcate and straddles the said plunger.

10. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm has a bend forming an elbow engageable by the said crosswise extending element of the said plunger.

11. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm is bifurcate and straddles the said plunger and also has a bend forming an elbow engageable by the said crosswise extending element of the said plunger.

12. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm comprises a loop of wire straddling the said plunger.

13. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm includes a length of stiff wire looped loosely about the said plunger and bent in a manner to present an elbow into engagement with said crosswise extending element of the said plunger.

14. In toy apparatus for motivating toy articles carried by toy cars, the combination defined in claim 8, in which the said arm depends between the said solenoid coil and the said crosswise extending plunger element.

15. In a log discharging toy railway car, a car body including a platform having a lateral edge extending lengthwise of the car, a tiltable table on said car above said platform having an L-shaped lateral edge closely adjacent to and parallel with said platform edge, means to tilt said table about an axis disposed close to and parallel with both said lateral edges, and a bevel on said lateral edge of said platform disposed to make room for said L-shaped lateral edge of said table when the latter is tilted about said axis.

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