March 24, 1942. W. E. REXFORD 2,277,455

DUMP CAR FOR TOY RAILROAD

Filed July 8, 1939

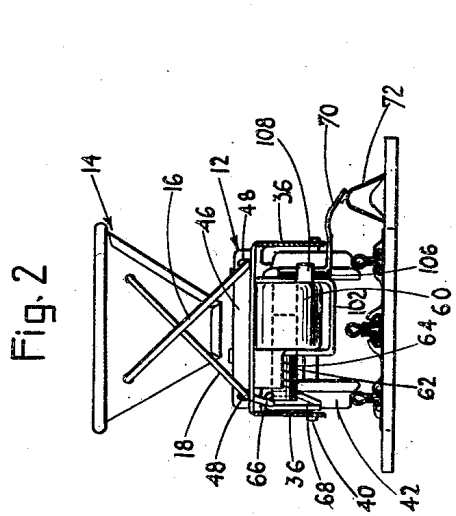

Fig. 2

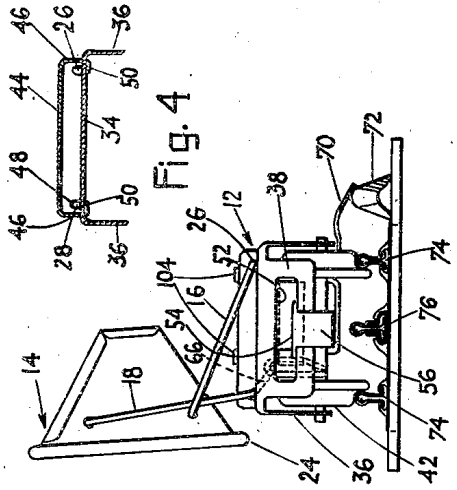

Fig. 4

Fig. 3

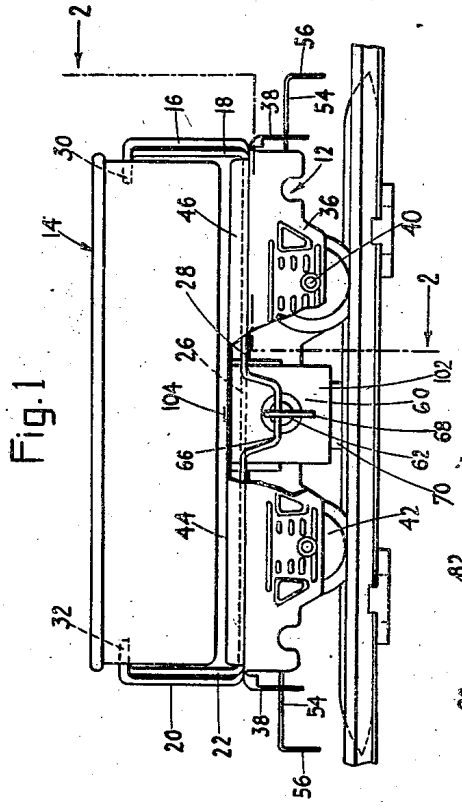

Fig. 1

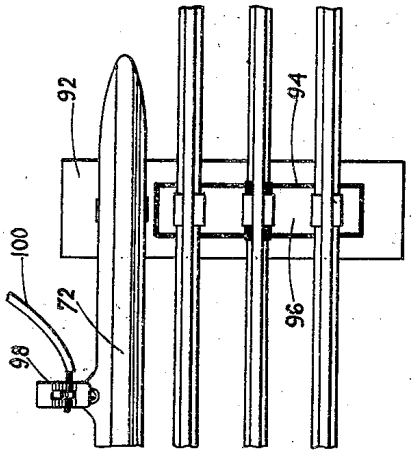

Fig. 5

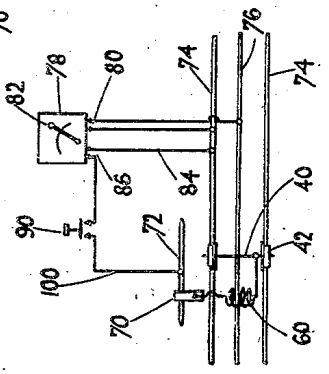

Fig. 6

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Patented Mar. 24, 1942 2,277,455

# UNITED STATES PATENT OFFICE

2,277,455

## DUMP CAR FOR TOY RAILROADS

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Application July 8, 1939, Serial No. 283,354

8 Claims. (Cl. 46—214)

This invention relates to dump cars, and more particularly to a dump car for toy railroads.

The primary object of my invention is to generally improve toy dump cars. A more particular object is to provide an improved mounting for affording tipping of a dump body, said mounting being so devised that, on the one hand, the dump body tends to gravitationally remain in upright position, yet, on the other hand, is easily dumped, and when dumped discharges its contents well to the side of the car and the track bearing the same.

A further object is to provide such a dump car with means affording dumping under remote control, this arrangement being particularly applicable to toy railroads of the electrically operated type.

To the accomplishment of the foregoing general and other more particular objects, which will hereinafter appear, my invention consists in the dump car 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 of a dump car embodying features of my invention;

Fig. 2 is a partially sectioned end elevation of the same with the body in upright position, this section being taken in the plane of the line 2—2 of Fig. 1;

Fig. 3 is an end elevation of the car with the body in tilted position;

Fig. 4 is a fragmentary section explanatory of a constructional detail of the car;

Fig. 5 is a plan view of a small portion of a track section and shows the provision of a fourth rail or ramp at the dumping station; and

Fig. 6 is a schematic wiring diagram explanatory of the invention.

Referring to the drawing, and more particularly to Figs. 1 through 4, the dump car comprises a generally flat topped car body or chassis 12, and a dump body 14 pivotally mounted thereon. The dump body is carried at one end by crossed arms 16 and 18, and at the other end by crossed arms 20 and 22. The upper ends of the crossed arms are pivotally secured to the dump body 14, while the lower ends of the crossed arms are pivotally mounted on the chassis 12. The connection to the dump body is well above the center of gravity of the body, and the body therefore tends of itself to remain in the upright position shown in Figs. 1 and 2. However, if the body is tilted to one side it is guided to a position such as that indicated in Fig. 3, thus bringing the edge 24 of the car outside the chassis and the track rails. In other words, the body is moved sidewardly, as well as tilted, thus discharging its contents safely at the side of the car and track.

In order to provide a smooth working and stable support for the dump body and to assure parallel movement at both ends of the body, the arms 16 and 20 are preferably connected together for simultaneous movement, and similarly the arms 18 and 22 are preferably connected together for simultaneous movement. For this purpose the arms 16 and 20 are connected at their lower ends to a shaft 26 extending lengthwise of the chassis, and the arms 18 and 22 are connected at their lower ends to a second shaft 28 extending lengthwise of the chassis.

For the sake of economy in manufacture, the arms may be made of stiff round wire, and may be formed integrally with the shafts 26 and 28. Specifically, a single piece of wire is bent to form an inturned end 30 at the upper end of arm 16, then the arm 16, then the longitudinally extending shaft 26, and is then bent upwardly to form the opposite arm 20, and is finally bent inwardly to form the inturned end 32. The inturned ends 30 and 32 are received in mating holes in the end walls of the car body. Similarly, a single piece of wire is bent to form the arms 18 and 22, together with the longitudinally extending shaft 28 and the inturned ends at the upper extremities of the arms.

As a simple and convenient way of mounting the shafts 26 and 28 in position, and at the same time desirably concealing the same from view, these shafts are preferably located between two horizontal plates forming a part of the chassis 12. Specifically, the chassis is made up of a flat topped piece of sheet metal 34 (Fig. 4), the side edges of which are bent downwardly to form the skirts or walls 36 (and the ends of which are bent downwardly to form the end walls 38, Figs. 1 and 3). When, as in the present case, the car is provided with only four wheels (instead of two trucks with four wheels each) the axles 40 for wheels 42 may be received directly in the side walls 36, and these may be suitably shaped and embossed to simulate car bearings.

A second piece of sheet metal is upwardly dished to form a flat top wall 44 (Fig. 4), and a narrow peripheral edge 46 extending entirely therearound. The end parts of the peripheral edge 46 are notched upwardly slightly from the open bottom edge, as is indicated at 48, thereby forming bearings to receive the longitudinally

extending shafts. The upper member **44** is secured to the lower member **34** by appropriate bent tongue and slot connections, as is indicated at **50** in Fig. 4. It will be understood that to assemble the parts it is merely necessary to place the shafts **26** and **28** on the wall **34** and to cover the same by means of the cover plate **44**, thereafter bending the tongues **50** in order to lock the plates of the chassis together. The body **14** may be applied to the crossed arms by simply springing the arms apart enough to permit the inturned upper ends thereof to be received in the holes in the ends of the dump body.

The end walls **38** of the chassis may be slotted, as is indicated at **52** in Fig. 3, thereby providing an opening through which a coupling bar **54** is received. The end of coupling bar **54** has a tongue which is bent downwardly at **56**, this being adapted to be received in a mating slot cut in the top of another coupling bar, so that successive cars may be coupled together. The coupling bars are pivoted on the bottom wall of the chassis in accordance with conventional practice.

The dump body **14** is pressed up out of sheet metal, and in the present case is formed of a single piece of sheet metal. The peripheral edge at the open top of the body is preferably curled, as shown, to form a rounded protective edge which also functions to stiffen the dump body.

As so far described, the car may be used with either a mechanical or an electrical railroad, and the body may be tipped to either side, it being necessary to physically push the dump body to one side or the other in order to move it from upright position to dumping position. The specific car here shown is, however, provided with additional means for remote control dumping of the car. Referring to the drawing, it will be seen that the car is provided at its bottom with a solenoid **60** arranged with its axis extending transversely of the car body. An armature core **62** is reciprocable within solenoid **60**. It is normally moved outwardly by a comparatively light coiled spring **64** surrounding the armature core. The outer end of the core **62** is appropriately connected to a crank mounted on one of the connecting shafts; in this case, the shaft **28**. This is most simply done by bending an intermediate part of shaft **28** downwardly to form a crank, as is indicated at **66**. The crank **66** is received within a loop **68** secured to the end of core **62**. The loop **68** is so arranged as to permit of relative vertical movement of crank **66** and the core, thus accommodating changes in elevation due to angularity of the crank. In other words, the member **68** functions to form a vertical slot at the end of the core, in which slot the crank **66** is received.

It will be evident that in Fig. 2, the core **62** is in its outward position, and the dump body **14** is in upright position. However, upon energization of the solenoid **60** the core **62** is drawn into the solenoid, thus changing the parts from the position shown in Fig. 2 to that shown in Fig. 3. At this time the crank **66** has been swung in a counter-clockwise direction, thereby swinging the arms **18** and **22** from the position shown in Fig. 2 to that shown in Fig. 3, thereby dumping the car body.

When the body is tilted to the position shown in Fig. 3, the arm **18** is within the bend at the upper end of the arm **16**, and the latter therefore acts as a motion limit means to prevent further tilting of the body beyond the position shown.

In order to energize the solenoid **60** when desired, the car is provided with an insulatedly mounted contact shoe **70**, this contact shoe being adapted to ride on a suitable length of fourth rail or ramp **72**. Referring to Fig. 6, it will be seen that the track is made up of outer or service rails **74** and a third or power rail **76**. These are connected to a transformer **78** at the binding posts **80**. The potential across binding posts **80** may be varied, as by means of a speed control handle **82**. The ramp **72** may be comparatively short in length, it being located at a suitable dumping station where it is desired to dump the contents of the cars. Ramp **72** is engaged by contact shoe **70**, and this in turn is connected to solenoid **60**. The opposite terminal of the solenoid is connected to "ground," the circuit being completed through axle **40**, wheels **42**, service rails **74**, and a wire **84** leading back to binding post **86**. It is customary to provide a toy transformer, such as the transformer **78**, with four terminals, two of which, in this case, the terminals **80**, receive a variable potential for supply to the track, while the other two, in this case, the terminals **86**, receive a constant potential for energizing accessories. Thus the ramp **72** may be energized even when the power supply to the track is cut off in order to bring the car to rest at the ramp.

The supply of current to ramp **72** is controlled by suitable switch, preferably a push-button **90** which is normally open-circuited. In this way the ramp **72** is normally dead, and the train may run around the track without dumping the dump car. However, by pressing the button **90** the ramp **72** is supplied with power, and the solenoid **60** is energized to dump the car. Preferably, the car is stopped during the dumping operation, but this is not essential, and the car may be dumped while under motion by simply pressing the button **90** and holding it pressed as the train passes the dumping station.

The ramp **72** may be constructed in a variety of ways. In the present case it is formed of sheet metal and is mounted on two or more pieces of insulation, such as that shown in **92** of Fig. 5. This piece of insulation is cut away at **94** to receive the conventional tie **96** of one of the track sections. In this way the ramp may be located wherever desired around the toy railroad track. The ramp **72** is provided with suitable means, in this case, a clip **98** which receives the end of conductor **100** leading to the push-button **90**. The ramp **72** is preferably made somewhat higher than the rails **74** and **76**, so that there will be no accidental engagement of the contact shoe **70** with the rails, as when crossing a switch or crossover, or the like.

The wall **34** of the chassis is preferably cut away at the center of the car in order to clear the crank **66**. This is not necessary when the car is used for manual dumping, or for action by an external track-side dumping mechanism, such as is disclosed in my co-pending companion application, Serial Number 283,353, filed concurrently herewith. The solenoid **60** is received in a generally U-shaped frame **102** extending transversely of the car, the upper ends of the U-shaped frame being secured in position by appropriately bent tongue connections **104**. It will be noted that in the present case these are secured through the top wall **44**. This has the advantage of elevating the solenoid and thereby providing ample clearance between the bottom of the solenoid and the track. In such case the entire local area

of wall 34 is cut away at the solenoid, thus clearing not only the crank 66, but also the solenoid mounting. The contact shoe 70 is secured to a piece of insulation 106 (Fig. 2) which in turn is mounted on one upright wall of the U-shaped mounting 102, as by means of bent tongue connections 108. These tongues bear on the ends of the insulation member 106 and do not touch the contact shoe 70, this being, of course, insulatedly mounted and connected by a piece of wire to one end of the solenoid winding.

It is believed that the construction and method of assembly and operation of my improved dump car will be apparent from the foregoing detailed description. It will be understood that the crossed arm mounting for the dump body may be used without arranging the car for remote control, in which case the solenoid mechanism and the track-side ramp may be eliminated. Also the crank 66 on shaft 28 may be eliminated, in which case the bottom wall 34 of the chassis may be left intact, the shafts 26 and 28 both being straight and both being concealed between continuous top wall 44 and bottom wall 34, as is shown in Fig. 4.

It will therefore be understood 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 dump car for toy railroads, said car comprising a flat body, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the flat body, said means comprising crossed arms at each end of the car, the upper ends of said arms being bent inwardly and pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the flat body, shafts extending longitudinally of the flat body and connecting the arms at the ends of the car for simultaneous movement, the two connected arms and the shaft connecting the same being formed of a single piece of stiff wire, the mounting being such that the dump body is moved to one side of the flat body as it is dumped, thus discharging the contents of the dump body outside the flat body and the track carrying the same, the crossed arms being so related that an inner arm bears against the pivot at the upper end of an outer arm when the body is tilted, thereby preventing excess tilting movement.

2. A dump car for toy railroads, said car comprising a chassis, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the chassis, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the chassis, and shafts extending longitudinally of the chassis and connecting the arms at the ends of the car for simultaneous movement.

3. A dump car for toy railroads, said car comprising a chassis, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the chassis, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the chassis, shafts extending longitudinally of the chassis and connecting the arms at the ends of the car for simultaneous movement, each pair of connected arms and the shaft connecting the same being formed of a single piece of stiff wire, the mounting being such that the dump body is moved to one side of the chassis as it is dumped thus discharging the contents of the dump body outside the track carrying the car.

4. A dump car for toy railroads, said car comprising a flat body, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the flat body, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the flat body, shafts extending longitudinally of the flat body and connecting the arms at the ends of the car for simultaneous movement, each pair of connected arms and the shaft connecting the same being formed of a single piece of stiff wire, and a cover plate forming a part of said flat body, said shafts being received beneath said cover plate and concealed thereby.

5. A dump car for toy railroads, said car comprising a flat body, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the flat body, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the flat body, shafts extending longitudinally of the flat body and connecting the arms at the ends of the car for simultaneous movement, each pair of connected arms and the shaft connecting the same being formed of a single piece of stiff wire, and an upwardly dished cover plate secured to said flat body by tongue and slot connections, the ends of said cover plate being notched to fit over the aforesaid shafts in order to provide bearings for the same and to conceal the same.

6. A remotely controllable dump car for toy railroads, said car comprising a chassis, wheels and axles therebeneath for supporting the same, a dump body, and means oscillatably mounting the dump body on the chassis, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the chassis, shafts extending longitudinally of the chassis and connecting the arms at the ends of the car for simultaneous movement, a solenoid mounted on said chassis, a solenoid core adapted to be moved thereby, and means so connecting the core to one of said shafts that energization of the solenoid oscillates the shaft in such a direction as to dump the dump body.

7. A remotely controllable dump car for toy railroads, the car comprising a flat body, wheels and axles therebeneath for supporting the same, a dump body, means oscillatably mounting the dump body on the flat body, said means comprising crossed arms at each end of the car, the upper ends of said arms being bent inwardly and pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the flat body, shafts extending longitudinally of the flat body and connecting the arms at the ends of the car for simultaneous

movement, each pair of connected arms and the shaft connecting the same being formed of a single piece of stiff wire, a solenoid carried by said flat body, a solenoid core adapted to be moved thereby, means so connecting the core to one of said shafts that energization of the solenoid oscillates the shaft in such a direction as to dump the dump body, and a contact shoe electrically connected to said solenoid.

8. A remotely controllable dump car for toy railroads, said car comprising a flat body, wheels and axles therebeneath for supporting the same, a dump body, means oscillatably mounting the dump body on the flat body, said means comprising crossed arms at each end of the car, the upper ends of said arms being pivotally received in the ends of the dump body, and the lower ends of said arms being pivotally mounted on the flat body, shafts extending longitudinally of the flat body and connecting the arms at the ends of the car for simultaneous movement, each pair of connected arms and the shaft connecting the same being formed of a single piece of stiff wire, an upwardly dished cover plate forming a part of said flat car body, said shafts being received therebeneath and concealed thereby, the ends of said cover plate being notched to fit over the aforesaid shafts in order to provide bearings for the same, a solenoid mounted transversely beneath said flat body, a solenoid core adapted to be moved thereby, one of said shafts being bent downwardly near the solenoid to form a crank, the flat body being cut away to clear said crank, and means connecting the core to said crank whereby energization of the solenoid oscillates the shaft in such a direction as to dump the dump body.

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