Dec. 31, 1940. W. E. REXFORD 2,226,875

TRACKSIDE DUMP MECHANISM FOR TOY RAILROADS

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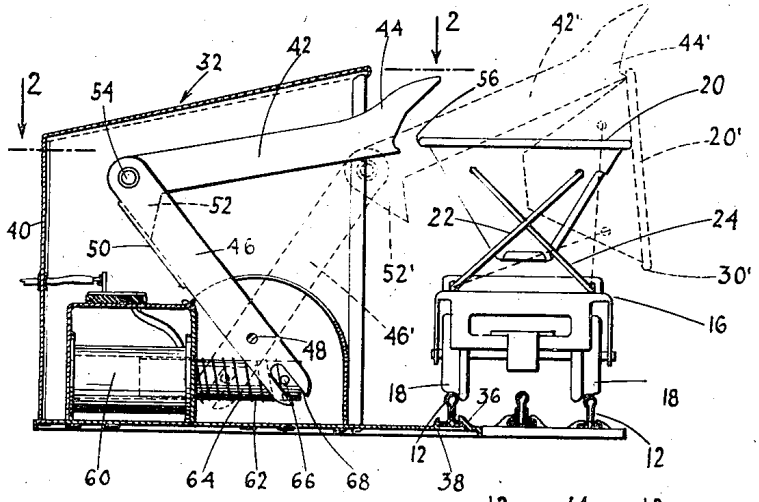

Fig. 1

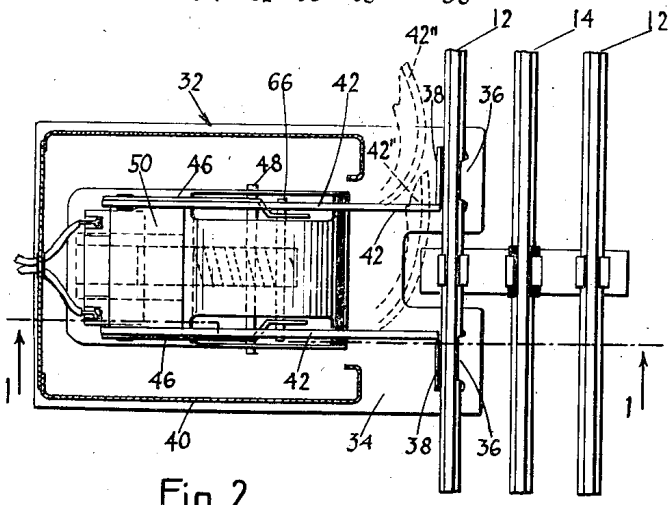

Fig. 2

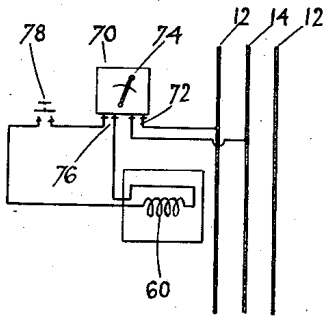

Fig. 4

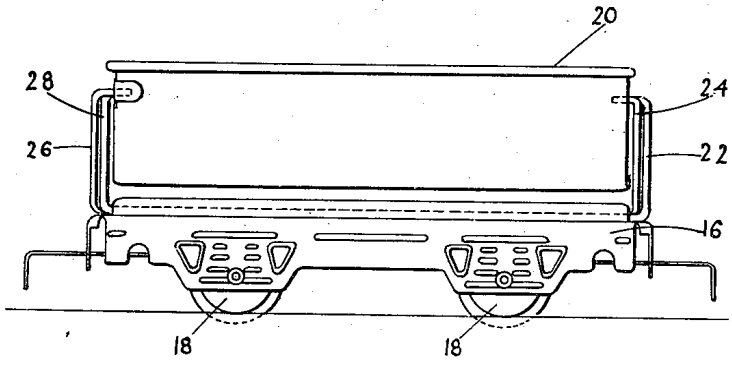

Fig. 3

INVENTOR
WILLIS E. REXFORD
BY James and Franklin
ATTORNEY

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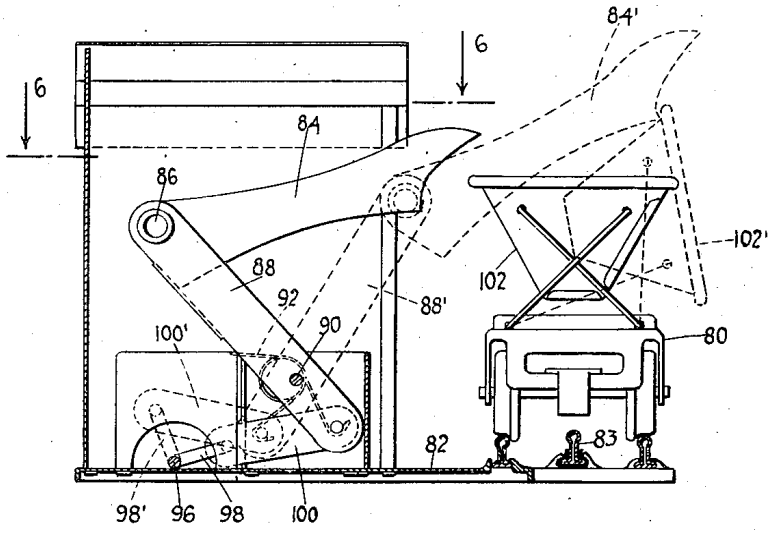
Fig. 5



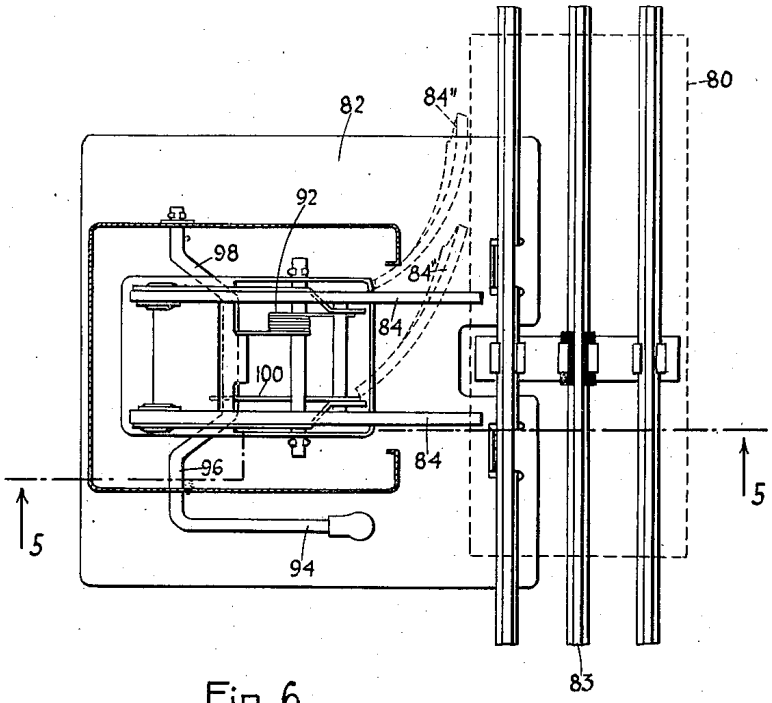


Fig. 6

INVENTOR
WILLIS E. REXFORD
BY James and Franklin
ATTORNEY

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TRACKSIDE DUMP MECHANISM FOR TOY RAILROADS

Willis E. Rexford, Girard, Pa., assignor to Louis Marx & Company, Inc., New York, N. Y., a corporation of New York

Application July 8, 1939, Serial No. 283,353

17 Claims. (Cl. 46—214)

This invention relates to toy railroads, and more particularly to a dump car system therefor.

The primary object of my invention is to generally improve toy railroads and dumping mechanism for the same.

Toy railroads have been made with dump cars including a tiltable dump body which must be manually tilted to dump the contents of the body. Such an arrangement lacks realism. It has also been proposed to provide the dump car with a solenoid which may be energized under remote control and which functions to cause dumping of the dump body. Such a car is disclosed in my co-pending application Serial No. 283,354, filed concurrently herewith. This arrangement is costly because each car must be provided with a complete dumping mechanism. Moreover, if the car is of the gravity tilting type, then it can dump on one side only, and is apt to dump accidentally at the wrong time. If the car is of the self-righting type which gravitationally seeks its upright position, then considerable power is needed at the car-carried solenoid to dump the body.

Further objects of my invention are to overcome these difficulties, and in accordance with the present invention, the dump cars are of the inexpensive manually tiltable type, while the track system is provided with a trackside dumping mechanism for mechanically tilting the dump body. The trackside accessory comprises a simulated building with pushers housed therein together with mechanism in the building for ejecting the pushers and thereby tilting the dump body toward the opposite side of the track. The mechanism for ejecting the pushers may be electrically operated under remote control, or may be mechanically operated at the building, the latter arrangement being particularly suitable for inexpensive trains such as the mechanically driven or spring-wound type.

Still another object is to so construct the pushers that they will not wreck or derail a passing train in the event that the pushers are inadvertently operated at an improper time.

To the accomplishment of the foregoing and other more particular objects which will hereinafter appear, my invention consists in the toy railroad dump car system and the related elements thereof, as are hereinafter more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings in which:

Fig. 1 is a transverse section through a remote control dumping mechanism embodying features of my invention, this section being taken in the plane of the line 1—1 of Fig. 2;

Fig. 2 is an approximately horizontal section taken in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a side elevation of a dump car suitable to be used in connection with the present invention;

Fig. 4 is a schematic wiring diagram explanatory of the invention;

Fig. 5 is a vertical section through a modified form of the invention arranged for mechanical operation, this section being taken in the plane of the line 5—5 of Fig. 6; and

Fig. 6 is a horizontal section taken in the plane of the line 6—6 of Fig. 5.

Referring to the drawings, and more particularly to Figs. 1, 2 and 3, the railroad system comprises conventional toy railroad trackage, a locomotive (not shown), and a train of cars including a plurality of dump cars only one of which is shown. The train is electrically operated, and the trackage comprises outer or service rails 12 and an insulated center or third rail 14. The dump car comprises a chassis 16 carried on wheels 18 running on rails 12, and dump body 20 which is pivotally mounted on chassis 16. The pivotal mounting may be conventional, but in the present case is of a novel type disclosed and claimed in my companion co-pending application Serial Number 283,354, filed concurrently herewith. In the said dump car, the dump body is supported at one end by crossed arms 22 and 24, and at the other end by similar crossed arms 26 and 28. The upper ends of these arms are pivotally received in the ends of the dump body, while the lower ends of the arms are pivotally mounted on chassis 16. The arrangement is such that when the body 20 is tilted, it not only tips, but is also moved to one side, thus bringing the edge 30' of the body safely outside the chassis 16 and the track bearing the car. To increase the strength and solidity of the mounting and to insure parallel movement at both ends, the arms 22 and 26 are preferably connected together, as by means of a horizontal shaft extending longitudinally of chassis 16, and similarly, the arms 24 and 28 are connected together by a shaft extending longitudinally of the chassis. In simplest form, the arms and shaft connecting the same may be bent up out of a piece of heavy round wire, and the upper ends of the arms are turned inwardly and received in holes in the ends of the body. The longitudinally extending shafts are carried and concealed

between parallel upper and lower plates forming a part of the chassis 16, all as is described in detail in my aforesaid co-pending application.

A trackside accessory generally designated 32 is located at any desired point on the track system where the dump cars are to be dumped. In order to secure the same to and to space the same properly from the track, the accessory is preferably provided with a base 34 the forward edge of which has locating tongues or lugs 36 and 38 adapted to detachably receive the adjacent service rail 12 and to anchor the base and rail together.

The accessory further comprises a simulated building 40 carrying a pair of pushers 42 which are normally drawn into the building and substantially concealed thereby except for the notched tips or ends 44 which may project somewhat from the building, as shown. If desired, the mechanism may be so arranged as to withdraw the pushers entirely within the building, and in any event when they project somewhat from the building as here shown, the amount of projection is so limited as not to interfere with passing trains.

The pushers 42 are pivotally mounted at the upper ends of a pair of arms 46 which in turn are pivotally mounted within the building on a pin 48. The arms 46 may be formed integrally with a connecting plate or web 50, the latter functioning not only to properly space the arms 46 and to hold the same against relative movement, but also to cooperate with stop surfaces 52 formed on pushers 42. These bear against plate 50 as shown in Fig. 1, in order to hold the pushers 42 against downward movement despite the pivotal connection at 54.

Suitable mechanism is provided for swinging the arms 46 from the solid line position to the broken line position 46'. This causes the pushers 44 to move outwardly so that the notched ends thereof engage the adjacent edge 56 of the dump body 20 and push the same outwardly, as is indicated by the change from the solid line position 42 to the broken line position 42' of the pushers, and the change from the solid line position 20 to the broken line position 20' of the dump body. When the pushers are retracted, the dump body is restored to upright position, it being so mounted as to gravitationally seek its upright position.

In the present case, the mechanism for swinging the arms 46 is of the remote control electrically operated type. Specifically, I provide a solenoid 60 adapted to act upon a solenoid core 62. The core is normally moved to the outer position shown in Fig. 1, as by means of a spring 64 coiled about the core. A pin 66 projects sidewardly from the end of core 62 and is received in slots 68 formed in the lower ends of the arms 46. It will be evident that upon energization of the solenoid 60, the core 62 is drawn into the solenoid, thus causing the pin 66 to move the arms from the solid line position 46 to the broken line position 46'.

The manner in which the solenoid is energized is indicated in Fig. 4. The toy railroad system includes a conventional transformer 70. This is provided with a pair of terminals 72 on which is impressed a variable potential controlled by a speed control handle 74. Terminals 72 are connected to the service rails 12 and third rail 14 in conventional fashion. The transformer 70 is also provided with a pair of terminals 76 which are continuously energized at constant potential. Such terminals are conventionally provided on these transformers for the express purpose of energizing accessories. They make it possible to energize an accessory even when the train is stopped and the power is cut off from the terminals 72 by means of the speed control handle 74. In the present case, the terminals 76 are connected to the solenoid 60 through a suitable switch 78, said switch preferably being a push button of the normally open-circuit type. It will be evident that by depressing the button 78, the solenoid is energized and the pushers 42 are caused to be ejected from the simulated building. The transformer 70 and the push button 78 may, of course, be located a substantial distance from the building, and this remote control enhances the realism of the system when operated.

As so far described, the pushers 42 may be made of rigid material such as metal or fibre board. However, these pushers may, if desired, be made of a flexible material such as sheet rubber. The thickness and flexibility of the rubber is so selected that the arms are adequate to tilt the dump body in accordance with the normal operation of the toy as so far described. The cross-section of the pushers is substantial in vertical direction, but is comparatively small in horizontal direction. The pushers are therefore readily bent sidewardly as is indicated in broken lines at 42'' in Fig. 2. The pushers yield readily enough to avoid wrecking or derailing a passing train in the event that the button 78 is pressed at an improper time, as when a locomotive is approaching the dumping station. The pushers are simply brushed aside by the locomotive and the succeeding cars. In such case even a sensitive dump car is not affected because the pushers will not be in the elevated position shown at 42' in Fig. 1, and instead, will be in a downward position because the abutment surfaces 52 will be resting against the plate 50. In other words, it is only the lowermost part of the cars that will bear against the ends of the pushers. The reason the pusher assumes the elevated position shown at 42' in Fig. 1 is that the notched end of the pusher engages the edge of the dump body and is supported by the dump body during the tilting operation, as is shown at 44'.

While desirable, it is not essential that the dump mechanism be operated under remote control. It may instead be operated by mechanical means localized at the dumping station. Such an arrangement is shown in Figs. 5 and 6, referring to which it will be seen that the dump car 80 is similar to that previously described; also that the base 82 of the accessory is anchored to the track just as was previously explained. The track is shown as comprising service rails and insulated third rail for electrical operation of the train, but it will be understood that the present form of the invention may also be used with, and in fact is particularly suitable for, mechanically operated trains in which no electrical power for remote control is available. The sole difference in respect to the drawings in such case would be the omission of the center or power rail 83 of the track. The building simulation may be like that already described, although in the present case it is provided with a gable instead of a sloping roof. The pushers 84 are similar and are similarly pivotally mounted at 86 on oscillatable arms 88. These are pivoted on pin 90 and

are normally urged to retracted position by a coiled spring wire 92.

In the present case, however, there is no solenoid to swing the arms 88. Instead, I provide a handle 95 (Fig. 6) outside the simulated building, this handle being secured to a shaft 96 provided with a crank 98 which in turn is connected to the lower ends of arms 88 by a suitable link 100. In the present case the handle 94, shaft 96 and crank 98 are all formed of a single piece of heavy wire suitably bent for the intended purpose. It will be evident that by swinging the handle 94 in a counterclockwise direction, the crank 98 will be moved to the broken line position 98', thus pulling the link 100 to the broken line position 100', and so swinging the arms 88 to the broken line position 88', which in turn causes the pushers 84 to move to the position 84', and they in turn tilt the dump body from the solid line position 102 to the broken line position 102'. Upon release of the handle 94, the spring 92 restores the parts to their normal position within the building, and the dump body 102 returns gravitationally to upright position.

Here again, the arms 84 may, if desired, be made of flexible material so that they can bend from the position 84 to the position 84'', shown in Fig. 6, in the event that the handle 94 is operated at an improper time. In such case, the pushers are simply bent aside by the passing locomotive and cars, as is clearly shown in Fig. 6.

It is believed that the construction and operation, as well as the many advantages of my improved trackside dumping apparatus, will be apparent from the foregoing detailed description thereof. The train is stopped with a dump car at the trackside dumping apparatus, whereupon said apparatus is used to dump the car. If there are additional dump cars, the train is then moved up a little further to bring the next dump car opposite the trackside dumping apparatus, whereupon the second car is dumped, and so on. This procedure may be followed with either form of dumping apparatus. Electrical control of the train is of advantage in making it more conveniently possible to stop each car at the dumping apparatus. The dump cars themselves are simple and inexpensive, and it is not necessary to provide a special ramp or power rail to energize car-carried solenoids.

It is apparent that while I have shown and described my invention in several preferred forms, many changes and modifications may be made in the structures disclosed, without departing from the spirit of the invention as sought to be defined in the following claims.

I claim:

1. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, the body gravitationally seeking its upright position, and being so pivoted that a substantially sideward push on the upper edge of the body will tip the body, and a trackside accessory for dumping the dump car when desired, said accessory comprising a stationary base adapted to be fixed at any desired point in the track system, and pusher means thereon movable longitudinally in a generally horizontal direction into engagement with the upper edge of the dump car in such a manner as to cause dumping of the dump body.

2. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, the body being so pivoted that a substantially sideward push on the upper edge of the body will tip the body, and a trackside accessory for dumping the dump body when desired, said accessory comprising an approximately horizontal pusher normally disposed out of the way of passing cars, but movable longitudinally in a generally horizontal direction against the upper edge of the dump body in such a manner as to dump the same, said pusher being pivotally mounted at its inner end to afford any necessary change in angularity of the pusher as it moves with the dump body.

3. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising an approximately horizontal pusher at one side of the track normally withdrawn out of the way of passing cars, and means for moving the pusher longitudinally in a generally horizontal direction toward and against the upper edge of the dump body to thereby dump the dump body toward the opposite side of the track, said pusher being pivotally mounted at its inner end to afford any necessary change in angularity of the pusher as it moves with the dump body, and said pusher normally seeking to move downwardly, stop means to limit the downward movement to an amount which will insure engagement of the pusher with the upper edge of the dump body, said stop means being so arranged as not to interfere with upward movement of the pusher.

4. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising a simulated building at one side of the track, means normally withdrawn into the building out of the way of passing cars, and additional means for moving the aforesaid means outwardly and against the edge of the dump body in such a manner as to dump the same.

5. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising a simulated building, means securing the same to and spacing the same from the track, arms oscillatably mounted within the building, notched pushers pivotally connected to said arms and normally withdrawn into the building out of the way of passing cars, and means for oscillating said arms in such direction as to move the pushers outwardly against the edge of the dump body and to thereby dump the dump body toward the side of a track away from a simulated building.

6. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising means normally withdrawn out of the way of passing cars but movable against the dump body in such a manner as to dump the same, a solenoid, a solenoid core adapted to be moved by said solenoid, means connecting said solenoid core to the aforesaid means, and means including a switch for energizing the solenoid when desired.

7. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car

when desired, said accessory comprising pushers at one side of the track normally withdrawn out of the way of passing cars, and means for moving the pushers toward and against the edge of the dump body and to thereby dump the dump body, said means including a solenoid within the building, a solenoid core adapted to be moved by said solenoid, means connecting said solenoid core to the pushers, and means including a switch for energizing the solenoid when desired.

8. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising a simulated building at one side of the track, means normally withdrawn into the building out of the way of passing cars, and means for moving the aforesaid means outwardly and against the edge of the dump body in such a manner as to dump the same, said means including a solenoid within the building, a solenoid core adapted to be moved by said solenoid, means connecting said solenoid core to the aforesaid means, and means including a switch for energizing the solenoid when desired.

9. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising a simulated building, means securing the same to and spacing the same from the track, arms oscillatably mounted within the building, notched pushers pivotally connected to said arms and normally withdrawn into tht building out of the way of passing cars, and means for oscillating said arms in such direction as to move the pushers outwardly against the edge of the dump body and to thereby dump the dump body toward the side of a track away from a simulated building, said means including a solenoid within the building, a solenoid core adapted to be moved by said solenoid, means connecting said solenoid core to the pivoted arms, and means including a remote control switch for energizing the solenoid when desired in order to project the pushers out of the building and against the dump body.

10. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, the body being so pivoted that a substantially sideward push on the upper edge of the body will tip of the body, and a trackside accessory for dumping the dump body when desired, said accessory comprising an approximately horizontal pusher normally withdrawn out of the way of passing cars, but movable longitudinally in a generally horizontal direction against the upper edge of the dump body in such a manner as to dump the same, and a handle and linkage so arranged that movement of the handle moves the aforesaid pusher.

11. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising a simulated building at one side of the track, pushers normally withdrawn out of the way of passing cars, and means for moving the pushers toward and against the edge of the dump body to thereby dump the dump body toward the opposite side of the track, said means including a handle located at the simulated building, and linkage so arranged that movement of the handle moves the pushers.

12. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising a simulated building at one side of the track, means normally withdrawn into the building out of the way of passing cars, and means for moving the aforesaid means outwardly and against the edge of the dump body in such a manner as to dump the same, said means including a handle located at the side of the simulated building, and linkage so arranged that movement of the handle ejects the aforesaid means from the building.

13. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising a simulated building, means securing the same to and spacing the same from the track, arms oscillatably mounted within the building, notched pushers pivotally connected to said arms and normally withdrawn into the building out of the way of passing cars, and means for oscillating said arms in such direction as to move the pushers outwardly against the edge of the dump body and to thereby dump the dump body toward the side of the track away from a simulated building, said means including a handle located at the side of the simulated building and so arranged that movement of the handle tilts the arms in order to eject the pushers from the building and against the dump body.

14. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising means normally withdrawn out of the way of passing cars, but movable against the dump body in such a manner as to dump the same, said means being yieldable whereby they are readily moved aside by a passing car in the event that they are operated in front of the moving car.

15. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump car when desired, said accessory comprising pushers at one side of the track normally withdrawn out of the way of passing cars, and means for moving the pushers toward and against the edge of the dump body and to thereby dump the dump body toward the opposite side of the track, said pushers being yieldable in a lateral direction so that they are readily moved aside by a moving car in the event that the pushers are ejected while a train is in motion in front of the same.

16. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, a trackside accessory for dumping the dump car when desired, said accessory comprising a simulated building at one side of the track, means normally withdrawn into the building out of the way of passing cars, and additional means for moving the aforesaid means outwardly and against the edge of the dump body in such a

manner as to dump the same, said means being yieldable in a lateral direction, so that they are readily moved aside by a moving car in the event that they are ejected from the simulated building while a train is in motion in front of the building.

17. A toy railroad dump car system comprising a track, a dump car including a chassis and a dump body oscillatably mounted thereon, and a trackside accessory for dumping the dump body when desired, said accessory comprising a simulated building, means securing the same to and spacing the same from the track, arms oscillatably mounted within the building, notched pushers pivotally connected to said arms and normally withdrawn into the building out of the way of passing cars, and means for oscillating said arms in such direction as to move the pushers outwardly against the edge of the dump body and to thereby dump the dump body toward the side of the track away from the simulated building, said pushers being made of moderately soft rubber and having a cross-section which is substantial in vertical direction but slight in horizontal direction, whereby the pushers are rigid enough to dump the dump body, but are flexible enough in a lateral direction so that they are readily bent aside by a moving car in the event that the pushers are ejected from the simulated building while a train is in motion in front of the building.

WILLIS E. REXFORD.