Sept. 29, 1942. H. J. FERRI 2,297,138

TOY LOG LOADING DEVICE

Filed March 4, 1941 2 Sheets-Sheet 1

Fig. 1.

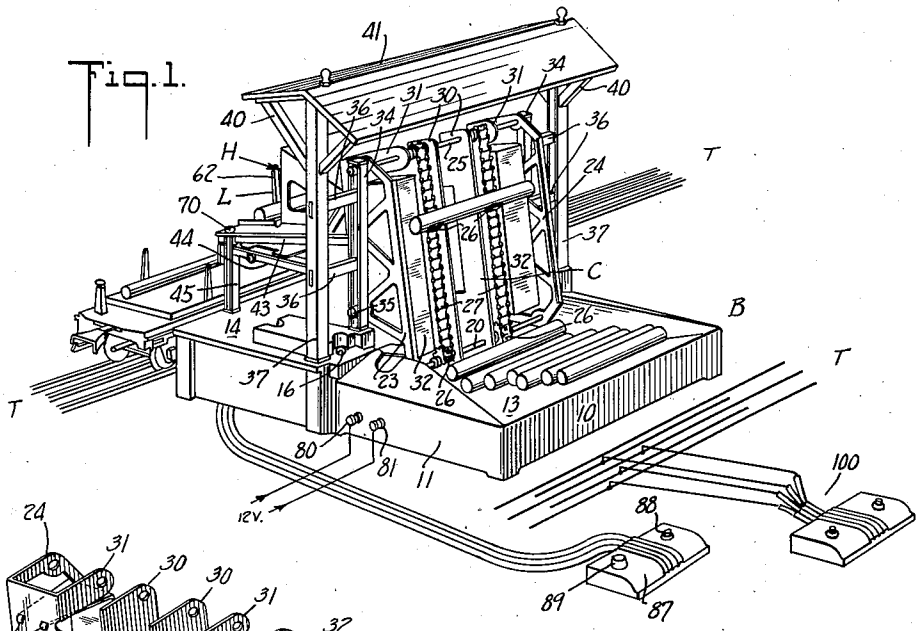


Fig. 3.

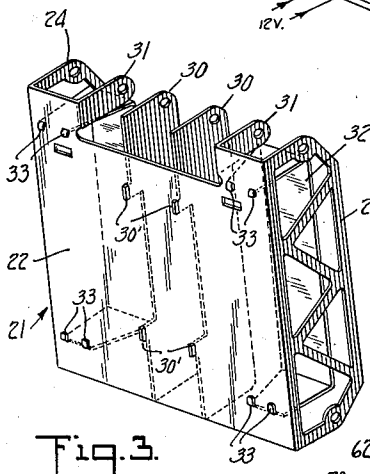


Fig. 2.

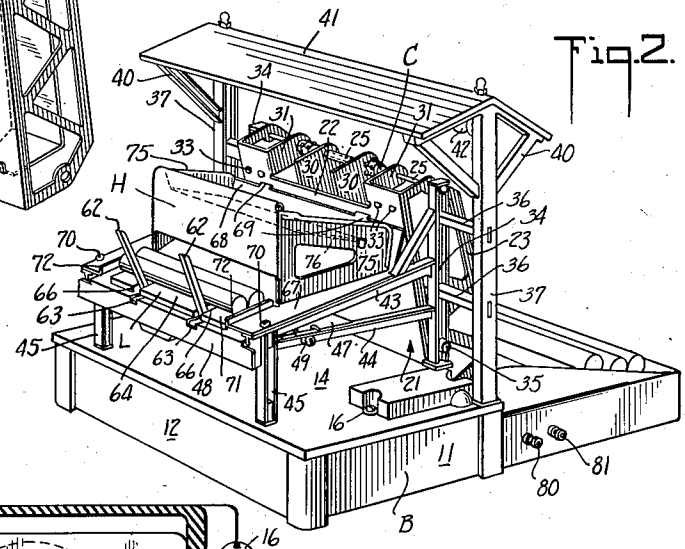
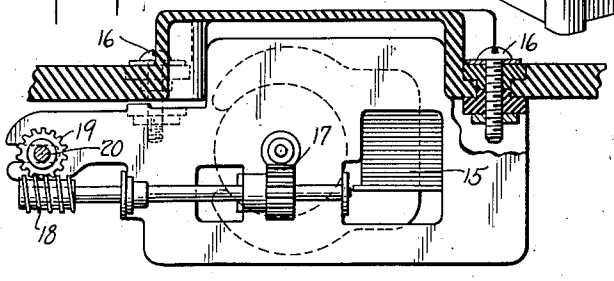


Fig. 6.



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Fig. 4.

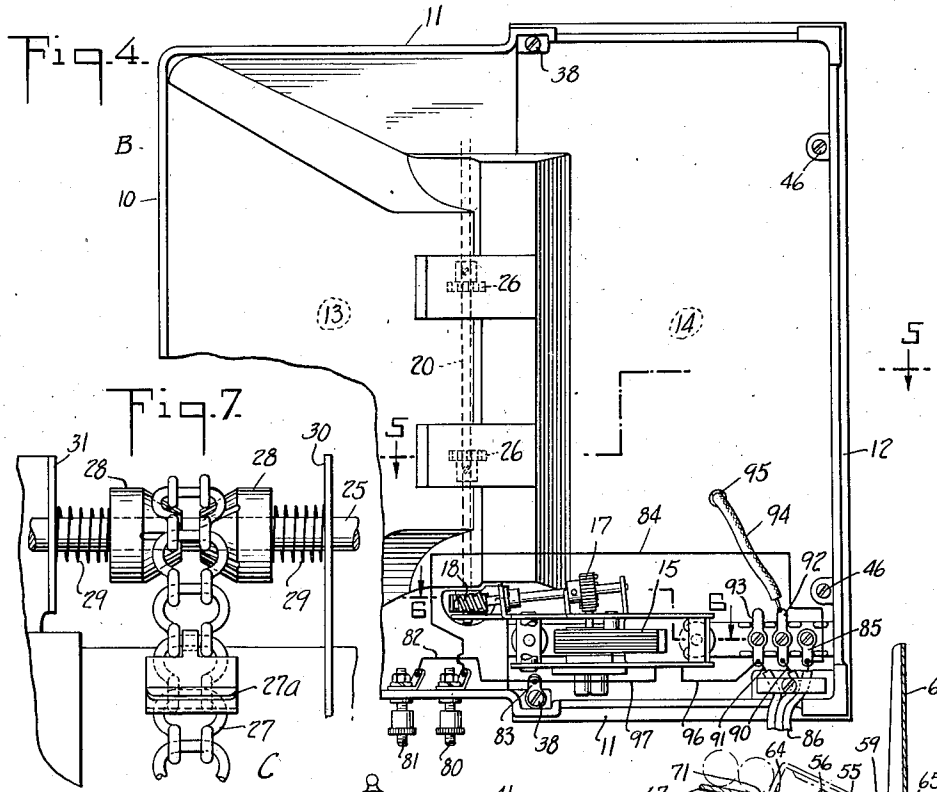


Fig. 7.

Fig. 5.

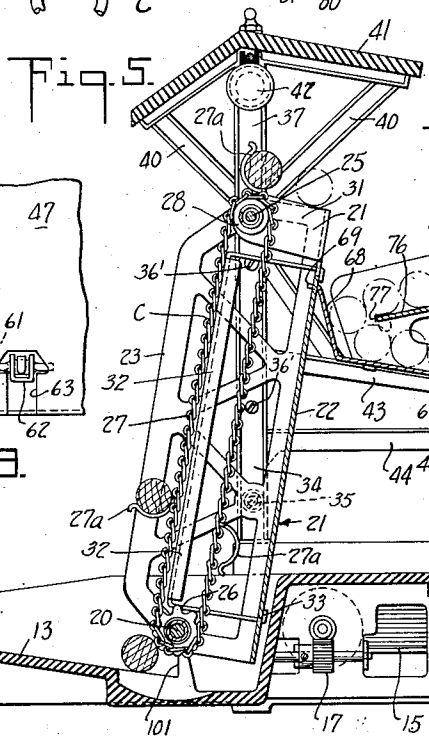


Fig. 8.

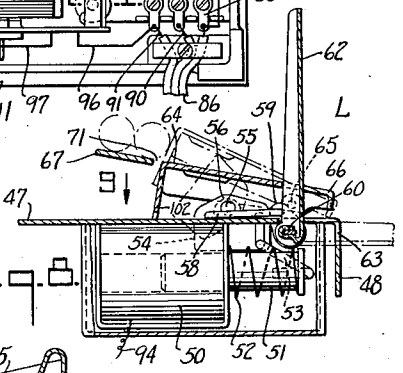
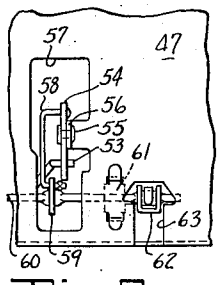


Fig. 9.



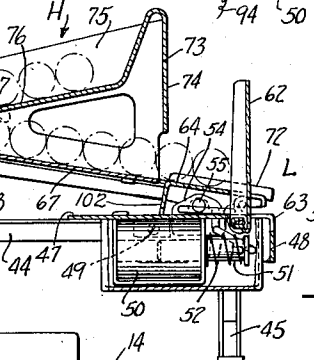
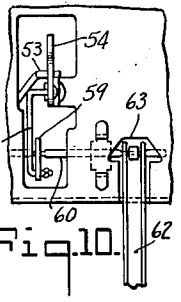


Fig. 10.



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UNITED STATES PATENT OFFICE

2,297,138

TOY LOG LOADING DEVICE

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Application March 4, 1941, Serial No. 381,631

11 Claims. (Cl. 214—41)

The present invention relates to toy log loading devices, and is more particularly directed toward log loading devices having a bin adapted to receive toy logs, a conveyor to transport the logs upwardly from the bin, a hopper to receive the logs from the conveyor and a car loading device below the hopper by which the logs can be delivered into a toy car.

The present invention contemplates that the log loader can be made up into a complete unitary toy adapted for use with toy railroads and having remotely controlled electrical devices for operating the conveyor and for operating the car loader.

In its preferred embodiment the present invention has a molded base which forms the bin to receive the logs and which supports the conveyor, hopper and car loader.

The accompanying drawings show, for purposes of illustrating the present invention, one of the many embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a perspective view of the log loader from the rear showing the bin and conveyor in detail;

Figure 2 is a perspective view of the log loader from the delivery side showing the hopper and the car loader more in detail;

Figure 3 is a fragmentary perspective view illustrating the front of the conveyor in greater detail than shown in Figure 2;

Figure 4 is an inverted plan view;

Figures 5 and 6 are sections taken along the lines 5—5 and 6—6 of Figure 4 looking in the direction of the arrows;

Figure 7 is an enlarged fragmentary view showing the upper part of the chain and its guides;

Figure 8 is a sectional view illustrating the car loading device;

Figure 9 is a fragmentary top plan view taken in the direction of the arrow 9 of Figure 8, the stakes being in the normal position; and

Figure 10 is a fragmentary view illustrating some of the parts of Figure 9 in the position assumed when the stakes are lowered.

As illustrated in the drawings the toy log loader has a molded base indicated generally at B, a conveyor indicated generally at C, a hopper indicated generally at H and a car loader indicated generally at L. The device is adapted to be received between two parallel toy railroad tracks indicated at T—T in Figure 1 and is of a size to occupy the space between the tracks leaving room for the passage of the trains.

The base B has a rear wall indicated at 10, side walls indicated at 11, 11 and a front wall indicated at 12. Extending downwardly and forwardly from the top of the rear wall 10 is a bin 13 formed by a sloping portion of the base. Near the front the base has a flat upper wall or top portion 14.

An electric motor 15 is secured to the base B by screws indicated at 16, 16. This motor has reduction gearing indicated at 17 to operate a worm 18, and the worm is in mesh with a worm gear 19 on a horizontal shaft 20.

The shaft 20 is located above the bottom of the bin 13 as will be apparent from the drawings. It is carried in a frame 21 forming a part of the conveyor C, this frame being made of a piece of sheet metal having a substantially vertical central portion 22 and two rearwardly flanged portions 23 and 24 perforated so as to have a lattice appearance. The frame 21 also supports an upper shaft 25. The lower shaft carries two sprocket wheels indicated at 26, 26 adapted to drive chains 27, 27. These chains have log lifting hooks 27a and pass around cone-shaped rollers 28, 28 urged toward the chains by springs 29, 29. These springs press against sheet metal plates 30, 30 having prongs 30' passing through the plate 21 and against inwardly bent elements 31, 31 folded out of the sheet metal piece forming the frame. The strips 30, 30 are apertured to receive the two shafts and form members simulating runners extending between the shafts.

On the outer side of each of the chains the frame carries sheet metal runners 32, 32 secured to the plate 21 by bent over prongs as indicated at 33. The frame 21 and parts carried thereby may form a subassembly to be incorporated into the complete device.

The subassembly forming the conveyor frame and parts carried thereby is secured to two uprights 34, 34 by screws indicated at 35, the upper shaft 25 being long enough to pass through suitable openings in the upper part of the uprights. These uprights 34, 34 are secured to horizontal bars 36, 36 by screws 36'. These bars are carried by posts 37, 37, and these posts are secured to the base B by screws indicated at 38, 38, Figure 4. The posts have brackets at the top as indicated at 40, 40, and these brackets support a roof indicated at 41 and lamps indicated at 42, 42. The uprights 34, 34 are preferably in the form of die castings and have forwardly extending mem-

bers indicated at 43 and 44 which join a vertical post 45. These posts are secured at the front of the base by screws indicated at 46. The lower forwardly extending members 44, 44 support a sheet metal plate 47 with a downwardly bent flange 48 at the front, this plate being secured in place by screws indicated at 49.

The plate 47 supports a magnet coil 50 having an armature 51 urged outwardly by a spring 52. The armature is connected by a bent link 53 with a plate 54 pivoted at 55 to an upwardly bent ear 56 formed out of the stamping 47. This stamping has an opening 57 to accommodate the parts. To the rear of the pivot 55 the plate 54 is connected to a link 58 which extends forwardly, as indicated in Figures 8 and 9, where it is connected to a crank arm 59 secured to a shaft 60. This shaft is underneath the stamping 47 and is pivoted in bearings indicated at 61, Figure 9. The shaft 60 carries two stakes 62, 62 which extend up through openings 63 in the stamping 47. When the parts are in the position shown in Figures 8 and 9 these stakes are locked against outward movement by the link 58, which passes under the pivot 55 and above the upper end of the link 53. Any tendency of the stakes to swing to the right, as shown in Figure 8, is resisted by the interengagement of the parts.

When the coil 50 is energized the armature is pulled to the left, as shown in Figure 8, and this swings the plate 54 to the dot-and-dash line position of Figure 8, or to the position indicated in Figure 10. This lowers the stakes and at the same times brings the plate 54 against a sloping plate 64 pivoted to the plate 47 at 65, thereby moving the plate 64 up to the dotted line position of Figure 8. The plate 64 has slots indicated at 66 to accommodate the stakes.

The upper sloping members 43 extending forwardly from the uprights 34 are employed to support the hopper H. This hopper is made of sheet metal and has a bottom plate 67 with an upwardly and rearwardly inclined portion 68 provided with prongs 69 to pass through holes in the frame plate 21. The length of the stamping 67 is such that it rests on the inclined members 43, 43 and it is secured to them by screws indicated at 70. It is notched, as indicated at 71, to accommodate the shiftable plate 64 and preferably has upwardly extending flanges 72 to guide the logs. The stamping 67 supports an upper stamping 73 having a vertical wall 74, rearwardly diverging side walls 75, 75 and a downwardly and rearwardly sloping plate 76. The edge 77 of this plate is spaced from the plate 67 and its flange 68 as will be apparent from the drawings.

The toy log loader is provided with binding posts 80 and 81 by which it is connected to a suitable terminal on the transformer or current reducer. The post 81 is connected by a wire 82 and lug 83 under the screw 38 so that the posts, uprights and frame are grounded. The binding post 80 is connected by a wire 84 with a soldering lug 85 secured to the base as indicated in Figure 4. This soldering lug is connected by a wire 86 with an external controller 87. The controller has a push button indicated at 88 and a turn knob indicated at 89 to close the circuit through the return wires 90 and 91, respectively, these wires being secured to soldering lugs 92 and 93. The soldering lug 92 is connected to a wire 94 which leads up through a hole 95 in the base and supplies current to the coil 50. The soldering lug 91 is connected by a wire 96 to the motor 15 and the motor is connected by a wire 97 with the soldering lug 83.

When the toy is in use the track T—T is preferably provided with a special section on the front opposite the bin of the log loader, and this special section of track is connected through a controller 100 whereby the logs carried on a toy car, such as shown in the application of Frank Pettit, Serial No. 303,616 filed November 9, 1939, may be deposited. The logs roll down the bin and are stopped either by engagement with the chains, as indicated in Figure 5, or, if smaller, they roll down against a stop indicated at 101. The knob 89 on the remote controller may then be operated to energize the motor 15, and this will operate the conveyor and carry the logs up one at a time where they will be discharged forwardly over the sloping upper parts of the frame 21 and the runners 30. These logs usually roll fast enough so that they strike the plate 76 in the hopper and roll slightly up this plate. They then roll down the plate and drop on to the platform 67 and roll down to the stakes 62. The carrying up of the logs may be continued until a layer of logs is deposited on the platform 67 and then the logs pile up into the upper part of the hopper as there is insufficient room for the log to roll under the edge 77 of the plate 76 after the layer has been deposited on the platform.

When the logs roll down the platform they will again be aligned by the tapering sides 75, 75 of the hopper. The width of the liftable plate 64 is preferably such as to accommodate two logs at a time and when the button 88 is pressed the coil 50 is energized to lower the stakes and lift the platform 64. This causes the logs to roll out across the stakes into a car, such as indicated at the left of Figure 1. The depending flange 102 on plate 64 moves up so as to provide a stop and prevent logs on the rear part of the platform from rolling down.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A toy log loader comprising a base having a log receiving bin sloping downwardly from one edge toward the middle, a horizontal shaft disposed above the bottom of the bin, a motor for operating the shaft at a slow speed, a second horizontal shaft above the first, a pair of spaced chains extending about the shafts and drivingly connected with the lower shaft, hooks carried by the chains opposite one another and adapted to pass under the lowermost log in the bin and carry it upwardly, strips extending between the shafts and disposed adjacent the chains to simulate runners along which the logs appear to pass, downwardly sloping guides above the upper shaft and onto which the hooks deposit the logs, and a hopper to receive the logs from the guides.

2. A toy log loader comprising a base having a log receiving bin sloping downwardly from one edge toward the middle, a horizontal shaft disposed above the bottom of the bin, a motor for operating the shaft at a slow speed, a second horizontal shaft above the first, a pair of spaced chains extending about the shafts and drivingly

connected with the lower shaft, hooks carried by the chains opposite one another and adapted to pass under the lowermost log in the bin and carry it upwardly, sheet metal stampings extending between the shafts and apertured to form simulations of latticed columns, downwardly sloping guides above the upper shaft and onto which the hooks deposit the logs, and a hopper to receive the logs from the guides.

3. A toy log loader comprising a base having a log receiving bin sloping downwardly from one edge toward the middle, a horizontal shaft disposed above the bottom of the bin, a motor for operating the shaft at a slow speed, a second horizontal shaft above the first, a pair of spaced chains extending about the shafts and drivingly connected with the lower shaft, hooks carried by the chains opposite one another and adapted to pass under the lowermost log in the bin and carry it upwardly, posts extending upwardly from the base, and a roof simulating member carried by the posts above the shafts, downwardly sloping guides above the upper shaft and onto which the hooks deposit the logs, and a hopper to receive the logs from the guides.

4. A toy log loader comprising a base, having a log storage bin, a log hoist including means adapted to transfer toy logs from the bin to guides spaced a substantial distance above the base and over which the logs roll, a hopper above the base and below the guides, the hopper having a sloping bottom and converging walls so that the logs rolling down the hopper are aligned lengthwise, and upwardly extending, downwardly swingable stakes across the bottom of the hopper to retain the logs in the hopper.

5. A loader such as claimed in claim 4, wherein the hopper bottom includes a pivoted plate adjacent the stakes and interconnected with the stakes to be lifted when the stakes are lowered to check for logs remote from the stakes and provide a steeper rollway for the logs to be discharged.

6. A loader such as claimed in claim 4, wherein the hopper includes a sloping plate against which the logs drop from the guides and off which they roll to strike the hopper bottom, the plate being spaced from the hopper bottom to limit the depth of the logs below the plate.

7. In a toy log loader, a base having a log storage bin, two uprights carried by the base adjacent the ends of the bin, a sheet metal frame having sides spaced to fit between the uprights and secured thereto, the lower part of the frame extending down into the bin, a shaft carried by the frame adjacent the bottom of the bin and carrying two sprocket wheels, a second shaft carried by the upper part of the frame, rollers carried by the upper shaft, a pair of sprocket chains passing about the sprocket wheels and rollers and carrying log lifting hooks, and runner simulating elements in the form of sheet metal strips secured on edge to the back wall of the frame and extending forwardly on the outer sides of the chains.

8. A loader such as claimed in claim 7, having similar runner simulating strips similarly mounted between the chains and apertured to receive the shafts.

9. In a toy log loader, a base having a log storage bin, two uprights carried by the base, a frame secured between the uprights and extending down into the bin, a shaft carried by the frame adjacent the bottom of the bin and carrying two sprocket wheels, a second shaft carried by the upper part of the frame, rollers carried by the upper shaft, a pair of sprocket chains passing about the sprocket wheels and rollers and carrying log lifting hooks, the frame having runner simulating elements on the outer sides of the chains, the uprights having forwardly extending braces secured to the base, and a hopper carried by the braces below and in front of the upper shaft and into which the logs are delivered from the chains.

10. In a toy log loader, a base having a log storage bin, two uprights carried by the base, a frame secured between the uprights and extending down into the bin, a conveyor carried by the frame and adapted to transport the logs one at a time from the bin to the top of the frame, the frame carrying guides over which the logs roll forwardly from the top of the conveyor, a forwardly extending brace connecting the upper part of each upright with the base, a sloping platform carried by the braces adapted to receive the logs delivered by the conveyor, and stakes pivotally carried at the bottom of the platform.

11. As an article of manufacture for use with toy railroads, a toy log loader comprising a generally rectangular base adapted to rest on the floor or table, the base being hollow from underneath and having between one such edge and the center a downwardly sloping, log-receiving bin, with converging end walls so that logs may roll toward the center of the base and their ends be substantially aligned, columns extending upwardly from the base adjacent the ends of the bin, a conveyor for transporting logs from the bin to an upper level comprising a frame secured between the columns, a frame carried lower shaft carrying sprocket wheels, a sprocket chain driven from the sprocket wheels and passing about rollers carried by an upper shaft supported by the frame, a motor housed below the base and drivingly connected with the lower shaft, short columns carried by the base adjacent the side edge opposite the bin, and a storage hopper carried by the short and long columns into which the conveyor deposits the logs.

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