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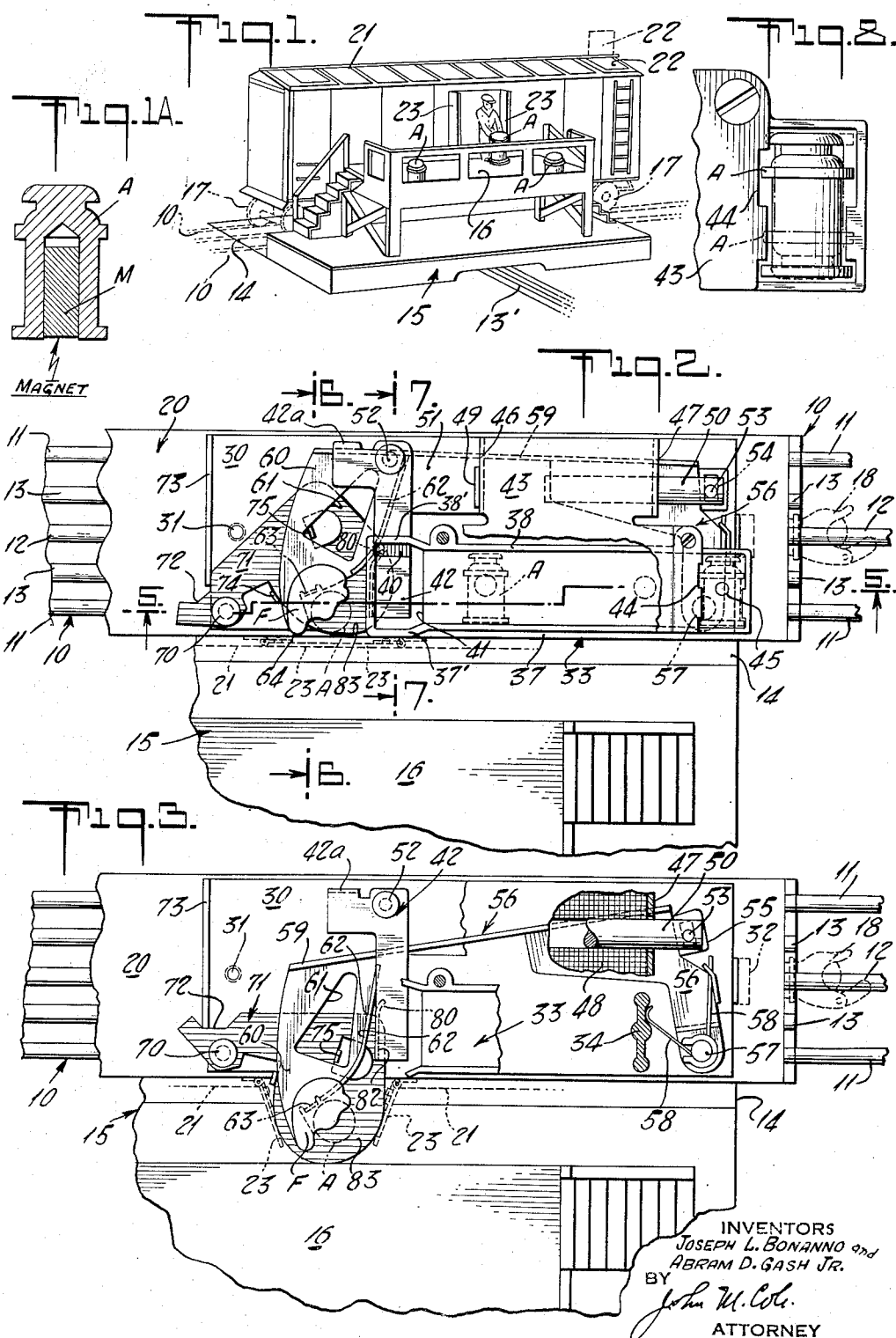
J. L. BONANNO ET AL

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TOY FOR HANDLING TOY MERCHANDISE

Filed July 7, 1948

3 Sheets-Sheet 1



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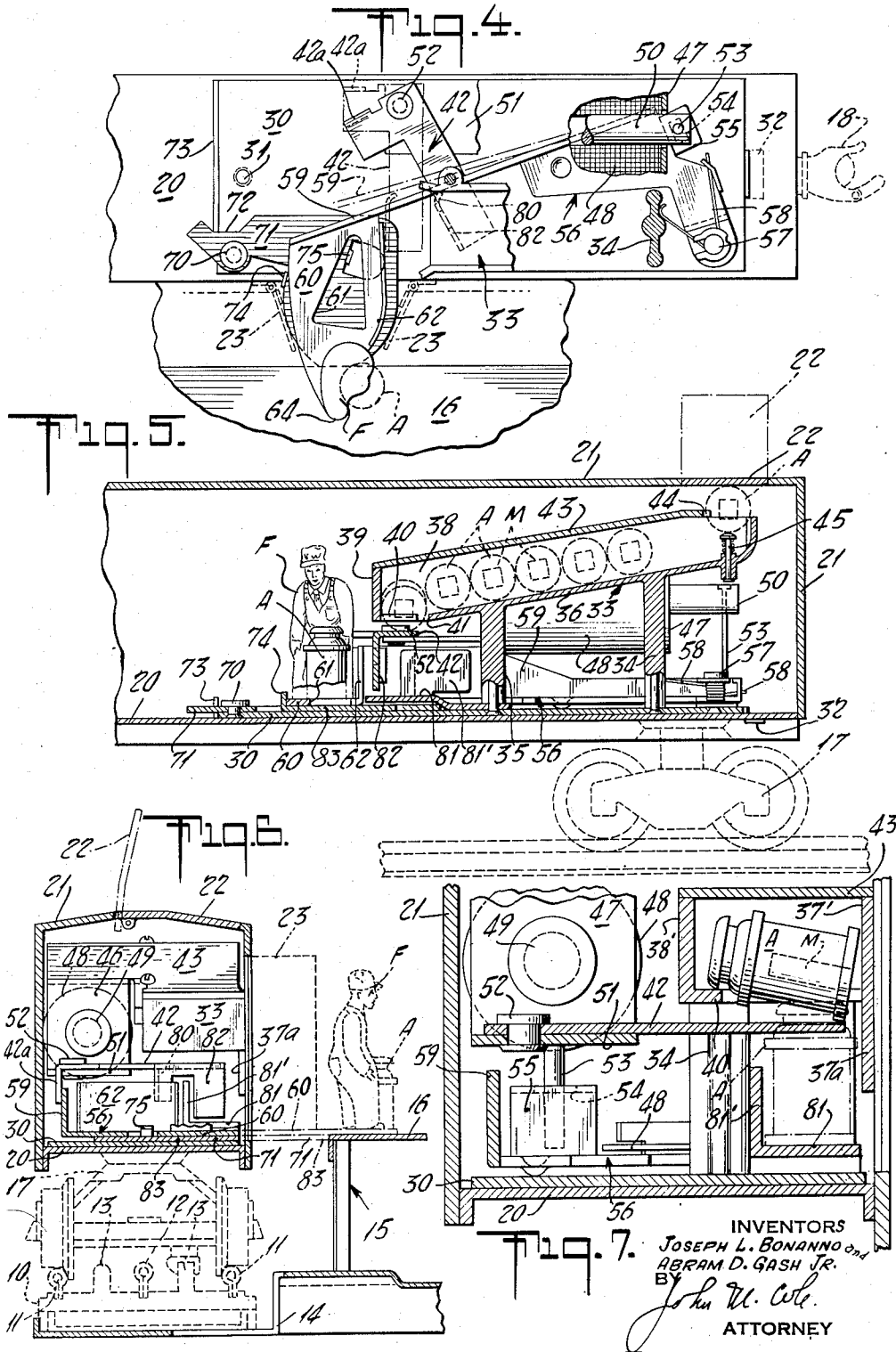
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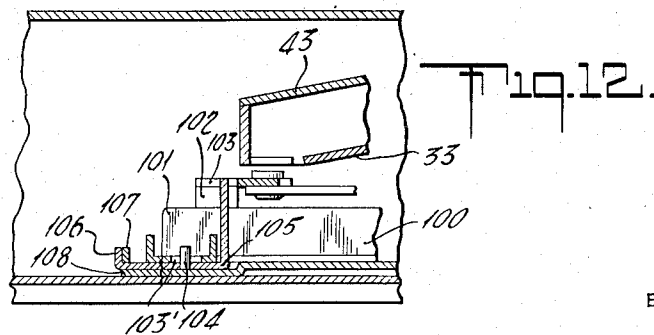
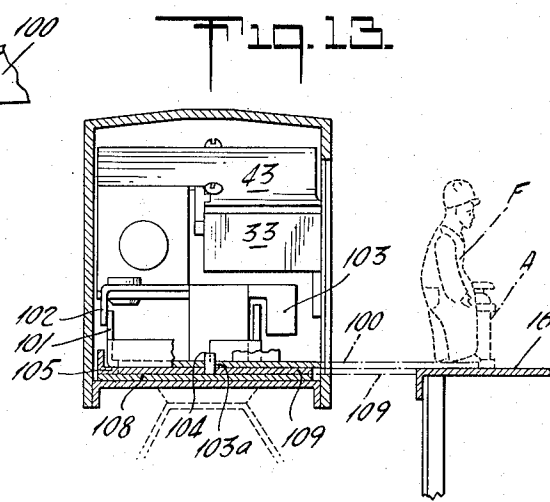
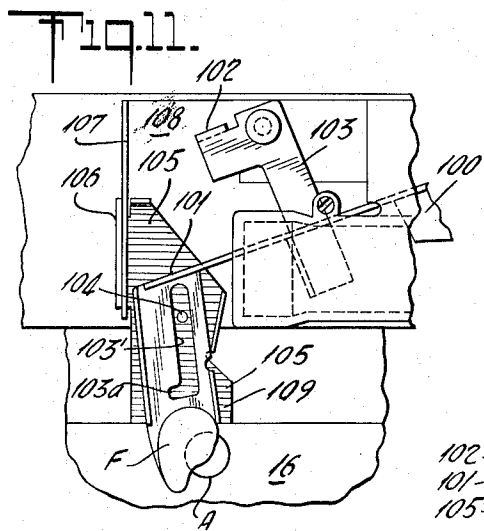
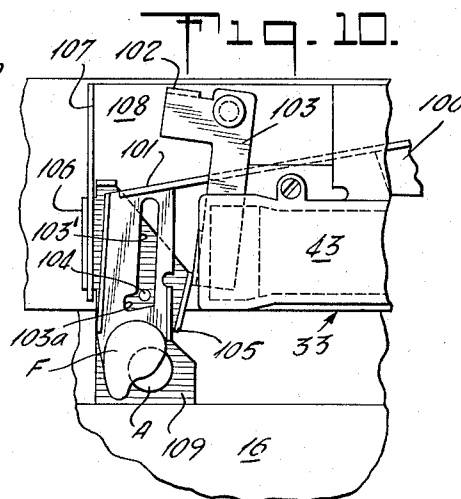
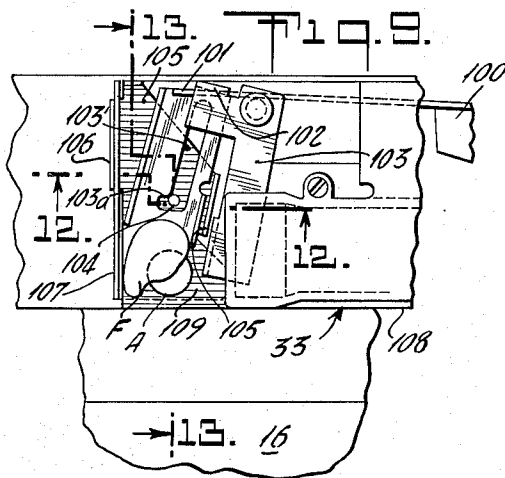
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TOY FOR HANDLING TOY MERCHANDISE

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UNITED STATES PATENT OFFICE

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TOY FOR HANDLING TOY MERCHANDISE

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16 Claims. (Cl. 46—45)

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The present invention relates to toy railroad accessories, and is more particularly directed toward toy railroad accessories including a toy railroad car which can be automatically unloaded preferably onto a platform alongside the track.

It is customary to handle milk and cream in cans carried in express or freight cars, and in such railroad operations as the cans cannot be tipped over or rolled on their sides, they are unloaded by rolling them on their chimes from inside the car onto an unloading platform alongside the track.

The present invention is more particularly directed toward a combined toy car and toy unloading platform designed to carry out operations simulating the customary operation of unloading milk cans from milk cars.

In carrying out the above objects the present invention contemplates the inclusion in the track layout of a toy platform carried alongside the track layout in a fixed position relative to the rails and having an elevation above the track level the same as that of the car platform. The toy railroad accessories shown herein are an improvement on the type of accessories described and claimed in the Smith Patent No. 2,444,961, granted July 13, 1948, on application Serial No. 555,068 filed September 21, 1944.

The present invention contemplates toy railroad accessories for handling cylindrical objects such as toy milk cans, wherein the accessory has a magazine into which such articles may be inserted horizontally and allowed to roll down to the bottom of the magazine. According to the present invention, electro-magnetic means is provided for releasing the toy articles one at a time and placing them in position to be discharged laterally from the car through a door opening. When the articles are discharged laterally they are supported by a movable member or platform slide which is moved to span the gap between the car and the receiving platform. They are then suddenly pushed off by an ejecting action.

The present invention also contemplates arranging the parts so that an asymmetric article such as a toy milk can may be inserted into the mechanism in only one way so that all the articles will be oriented in the same way in the mechanism and delivered correspondingly.

In order to reduce the likelihood of having the toy articles tipped over or knocked about on the platform, each article includes a small permanent magnet located near the bottom, and the platform is made of magnetizable material.

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In view of the employment of such magnetic articles, the storage magazine and certain parts handling the articles are made of non-magnetic material so the toy articles do not stick or adhere.

Other and further objects will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, two 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 the accompanying drawings:

Figure 1 is a perspective view illustrating a toy car and platform;

Figure 1-a is a sectional view through a toy milk can provided with a magnet;

Figure 2 is a top plan view with the body of the car removed, parts being broken away, and showing the mechanism in normal position;

Figure 3 is a view similar to Figure 2, parts being broken away and showing the mechanism in an intermediate position in which the doors of the car have been opened and the mechanism extended beyond the side of the car.

Figure 4 is a view similar to Figure 3, showing in full lines the ejecting mechanism fully advanced and an article on end below the magazine, and also showing in dotted lines the mechanism in a position just prior to coming to its extreme position;

Figure 5 is a longitudinal section on the line 5—5 of Figure 2;

Figures 6 and 7 are transverse sectional views on the lines 6—6 and 7—7 of Figure 2;

Figure 8 is an enlarged top plan view of the receiving end of the storage magazine;

Figures 9 to 11, are fragmentary views similar to Figures 2, 3 and 4, showing a modified form of construction;

Figure 12 is a fragmentary sectional view on the line 12—12 of Figure 9; and

Figure 13 is a transverse sectional view on the line 13—13 of Figure 9.

In the drawings, a section of toy railroad track such as shown in Patent No. 2,232,508 of February 18, 1941, is shown at 10. This is a five rail track having two wheel-bearing rails 11—11, a power rail 12, control rails 13—13, and wiring 13' leading to a remote controller, not shown. The track section is received on a base plate 14 which extends laterally of the track and carries a receiving or unloading platform designated generally by the reference character 15. The floor 16 of this platform is preferably a piece of

chromium plated steel so as to be magnetizable and scratch resistant. The platform is thus carried at a definite elevation and lateral spacing with respect to the rails of the track.

The toy car with the usual trucks 17 couplers 18 and controls carries a storage and unloading mechanism. The toy car has a platform 20 and car body 21. The roof of the car body carries a trap door opening 22 and the side of the body carries doors 23—23 adapted to swing about vertical axes and spring biased toward closed position, so that the car presents the appearance of a refrigerator car as used on railroads.

All of the mechanism for storing and delivering the articles is carried inside the car so as to be concealed when the doors are closed. It has a base plate 30 slightly narrower than the car platform and secured to it by a screw indicated at 31 and prong 32. The plate 30 carries on the side near the door opening and disposed laterally of the door opening a die casting 33. This casting has a long leg 34 at the right and a short leg 35 at the left, a sloping bottom 36, upwardly extending side walls 37 and 38, and a lower end wall 39. The lower portions of the side walls are spaced wider apart as indicated at 37' and 38' and the rear side wall 38' is provided with an inwardly extending shelf 40. The magazine has a delivery opening formed by the lower edge 41 of the bottom wall, the shelf 40, the end wall 39 and the front side wall portion 37'.

Articles such as A, shown in the drawings, shaped to simulate milk cans are just the proper size to roll down the chute of the storage magazine. The cans are always put into the chute in one orientation as will be explained, and when the lower can passes below the edge 41 of the chute, the rear end of the can comes onto the shelf 40 and the front end of the can drops down as indicated in Figure 7. It, however, does not drop all the way because it is intercepted by a can sweep arm 42 to be described hereinafter.

The chute of the magazine is covered by a sheet metal plate 43, which extends nearly to the upper right-hand end of the chute as shown in the drawings. The configuration of the end 44 of this plate is shown more clearly in Figure 8. The upper end of the magazine and the right-hand end of the plate 43 have such configuration that the milk-canlike article can be inserted in only one position. This is indicated in full lines in Figure 8 with the top of the milk-canlike article to the rear. If one were to attempt to insert the object in the wrong direction, as shown in dotted lines in Figure 8, the upper ring of the can would not permit entry of the can. This assures that the articles will all be put into the magazine with the bottom of the can forward.

These milk-canlike articles are preferably made of metal such as aluminum and are provided with a central opening in which is received a small permanent magnet M. A spring pressed plunger 45 is carried in the chute in a position to hinder the insertion of improperly shaped articles and assist in the ejection of such articles.

The cover plate 43 has two downwardly bent portions 46 and 47 between which is mounted a solenoid coil 48. This coil is provided with pole piece 49 and plunger 50. The portion 46 of the cover plate has a bracket 51, and the lever or plate 42 is pivotally secured to this bracket as indicated at 52. The plunger 50, operated by the solenoid, carries a downwardly extending pin 53 which enters a slot 54 in an ear 55 struck out of a sweep arm 56 pivoted to the plate 30 at 57.

The arm 56 is biased in a clockwise direction by a spring indicated at 58. The arm 56 extends over the top of the base 30 behind the chute and below the solenoid as indicated in the drawings. It has a vertical flange portion 59 and a horizontal end portion 60 beyond the lower end of the chute. When the electromagnet is de-energized the spring 58 holds the sweep arm in the position indicated in Figure 2, at which time the flange 59 is against a depending flange 42-a carried by the can sweep arm 42. The flat portion 60 of the sweep arm 56 has a triangular shaped opening 61, a flange 62 along its right edge, and an upwardly extending prong 63 to which is secured a figure F shaped to simulate a trainman unloading a milk can. Under the figure F the flat portion 60 of the sweep arm 56 is shaped as indicated.

The left end of the base plate 30 has a pivot post 70 on which is mounted a shifting plate or platform slide 71. This plate has a notch indicated at 72 co-operable with the flange 73 on the plate 30 to limit the swinging movement of the plate 71. The plate 71 has an upwardly bent prong 74 close to the nose portion 64 of the arm 56. It also has a prong 75 which extends up through the opening 61 in the arm 56. The plate 71 also extends to the right as indicated in the drawings so as to provide a platform in front of the chute and the end of the arm 56.

When the parts are in the position indicated in Figure 2 and the objects such as the toy milk cans are placed in the magazine, the lower-most article drops part way out of the magazine as indicated in Figure 7, its lower end resting on the arm 42 and its rear end resting on the shelf 40. On the first energization of the solenoid coil, the arm 56 swings through the positions indicated in Figures 3 and 6 (full lines) and 4 and 6 (dotted lines). Near the end of the first swing of the arm 56, the vertical flange 59 of this arm engages as shown in dotted lines in Figure 4 with a depending cam-like element 80 carried by the arm 42, and swings this arm from the position shown in Figures 2 and 3 to the position shown in Figure 4 in full lines. This moves the arm 42 out from under the article in the magazine and allows the article to drop down to the position indicated in dotted lines in Figures 5 and 7. It is received by a non-magnetic plate 81. This plate has an upstanding flange 81' behind the can and the chute has a depending flange 37-a in front of the can. These flanges, together with the leg 35 of the magazine and the sweep arm flange 62, form a chamber in which the can is held against accidental displacement. When the electromagnet is de-energized, the spring 58 returns the parts to normal position and the flange 59 on the arm 56 engages the depending flange 42-a on the member 42, and swings it back to position. This brings a depending flange 82 carried by the member 42 against the can standing on the platform 81 and pushes the can from this platform 81 on to the adjacent platform portion 83 of the lever 71. It also brings flange 82 against flange 62 carried by the sweep arm 56. As flanges 42-a and 59 are also in engagement, the sweep arm 56 can move no farther. Such a position of the can is indicated in dotted lines in Figure 2.

During this first operation of the mechanism, by which the toy can has been deposited in position to be ejected, the ejector parts have gone through an idle operation which will now be described. The extreme end of the arm 56 engages

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the upwardly extending prong 74 on lever 71 and swings this lever in a clockwise direction, moving it rapidly to its extreme position, at which time the platform portion 83 of the member 71 projects laterally of the car body. It has at the same time opened the doors. When the member 71 has been brought against the stop 73, the parts have moved far enough so that the arm 56 is free for continued movement. This carries it from the position shown in Figure 3 to the position shown in Figure 4 so that the end 64 of the arm 56 is beyond the end of the plate 71 and above the floor 16 of the platform 15. When the spring returns the arm 56 to position, the upwardly extending lug 75 carried by the plate 71 is engaged by the front wall of the opening 61 and this carries the arm 71 back to normal position.

During the second and subsequent operations of the mechanism, the article which has been placed on the member 71 in front of the figure F carried by the arm 56 is first transported out of and across the space between the car and receiving platform and is then given a sudden movement to push it off the member 71 and onto the platform floor 16. As the article being shifted has a magnet M and the receiving platform is magnetizable, the shifted article adheres to the platform instead of tending to fall down and roll about.

The modified form of construction in Figures 9 to 13 is generally similar to that above described. Here magazine 33, the cover 43, and the solenoid coil and operating means for the sweep arm are the same as before. The sweep arm 100, however, is modified to some extent. It has a rear flange 101 adapted to engage the downwardly extending flange 102 carried by the can sweep arm 103 to hold the latter in normal position. The arm 100 also has a slot 103', 103-a to receive a pin 104, carried by a reciprocatory plate 105. This plate has a flange 106 outside the flange 107 carried by the base plate 108, so as to be guided for reciprocation transversely of the car body. The reciprocatory plate 105 has a platform portion 109 adapted to receive the can as it is swept onto it by the sweep arm 103 in the manner above described.

When the parts are in normal position, the pin 104 is in the leftwardly extending portion 103-a of the slot 103' so that on the initial movement of the sweep arm 100, the plate 105 is moved from the position shown in Figure 9 to the position shown in Figure 10. After the pin clears the lateral part of the slot 103', the sweep arm 100 continues in its movement to an extreme position where the figure F is suddenly carried beyond the plate 105 so as to move the can from the platform 109 and eject it onto the platform 16.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, we wish it to be understood that the particular forms shown are but two of these forms, and various modifications and changes being possible, we do not otherwise limit ourselves in any way with respect thereto.

What is claimed is:

1. A merchandise handling toy for delivering cylindrical toy articles of merchandise standing on end, which comprises an inclined storage magazine into which the articles are inserted side by side so as to roll down the same, the magazine having a discharge opening through which the one end only of the lower-most article

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may pass while it is on its side, a movable intercepting plate below the opening which in one position holds the article against passage completely through the opening and in its other position releases the article to fall in an erect position, a receiver onto which the erected article falls, a member movable with the plate and acting on the return movement of the plate to shift the erect article from said receiver, a laterally movable article support onto which the article is shifted, and electro-magnetic means to shift the article support to a limited extent and to thereafter eject the article therefrom end down.

2. A merchandise handling toy, as claimed in claim 1, having means actuated by the electro-magnetic means near the end of the ejecting movement for shifting the intercepting plate from below the opening and other means acting near the end of the return movement for returning the intercepting plate.

3. A merchandise handling toy for delivering asymmetric cylindrical toy articles of merchandise standing on end, which comprises an inclined storage magazine into which the articles are inserted side by side so as to roll down the same, the magazine having an inlet opening shaped to receive the articles in oriented position only, a discharge opening through which one end only of the lower-most article may pass while it is on its side, a movable intercepting plate below the opening which in one position holds the article against passage completely through the opening and in its other position releases the article to fall in an erect position, a receiver onto which the erected article falls, a member movable with the plate and acting on the return movement of the plate to shift the erect article from said receiver, a laterally movable article support onto which the article is shifted, and electro-magnetic means to shift the article support to a limited extent and to thereafter eject the article therefrom with a predetermined end down.

4. A merchandise handling toy for delivering endwise asymmetric, cylindrical toy articles of merchandise standing on end and wherein the articles are each characterized by having a magnet at the end thereof, which comprises an inclined storage magazine into which the articles are inserted side by side so as to roll down the same, the magazine having an inlet opening shaped to receive the articles in oriented position only, a discharge opening through which the magnetic end only of the lower-most article may pass while it is on its side and in said oriented position, a movable intercepting plate below the opening which in one position holds the article against passage completely through the opening and in its other position releases the article to fall in an erect position, a non-magnetic receiving plate onto which the erect article drops, a member movable with the first plate for shifting the erect article in one direction, a laterally movable article support onto which the article is shifted, and electro-magnetic means to shift the article support to a limited extent and thereafter eject the erect article therefrom.

5. In a toy for storing and delivering cylindrical toy articles of merchandise of asymmetric contour, each having an axially disposed magnet nearer one end than the other, a non-magnetic magazine having an asymmetric opening to admit the article in only one orientation and a sloping bottom along which the articles roll without magnetic drag or sticking, the magazine hav-

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ing an asymmetrically placed discharge opening through which the magnet bearing end of the article drops so that the article is erected to locate the magnet at its bottom end as it passes through.

6. A merchandise handling toy having means to shift a cylindrical toy merchandise article from its side to its end, means to shift the up-ended article in one direction, a supporting plate movable between a normal position of rest in which it receives the article and a shifted position to which it carries the article, stops limiting plate movement, an electro-magnetically operated ejector including a pusher above the plate and having a normal position behind the article when it is received on the plate and shiftable laterally, the ejector and plate being interconnected so that upon initial ejecting movement of the ejector the plate is shifted toward the corresponding stop at a greater speed so as to advance the article in front of the ejector and bring the plate against said stop, at which time the ejector is free for further sudden movement so that the article is pushed off the plate, the ejector and plate being interconnected so that on return movement of the ejector the plate is restored to normal position.

7. A merchandise handling toy, as claimed in claim 6, wherein the ejector is pivoted about a vertical axis and the article receiving plate is pivoted about a vertical axis substantially in line with the ejector axis and the end of the ejector when in retracted position.

8. A merchandise handling toy, as claimed in claim 6, wherein the ejector is pivoted about a vertical axis and the article receiving plate is mounted for longitudinal reciprocation in a direction substantially tangent to the arc through which the pusher swings.

9. A toy for storing and unloading cylindrical articles of merchandise in an upright position, comprising a storage magazine down which the articles are adapted to roll in side by side relation, the magazine having a stop against which the lower-most article comes to rest and an opening at one side of the bottom of the magazine wider when measured transversely of the axis of the article than the diameter of the article and shorter when measured in the direction of the axis than the length of the article so that one end of this article can lower therethrough, a plate below the opening to intercept the lowered end of the article, and means to shift the plate so that the article may drop downwardly with its axis vertical.

10. A platform, a storage and delivery mechanism supported above the platform and comprising a downwardly inclined storage magazine along which cylindrical articles are adapted to roll, means normally closing the magazine to prevent gravity discharge of the articles, a solenoid supported alongside the magazine, a horizontal rocker plate above the platform and actuated in one direction by the solenoid, a spring for actuating it in the other direction, rocker plate actuated means for actuating the magazine closing means to release a single article; and a rocker plate operated receiver for the released article and movable by the rocker plate to shift the article beyond the edge of the platform.

11. A merchandise handling toy railroad toy for transporting and delivering endwise asymmetric, cylindrical toy articles standing on end and wherein the articles are each characterized by having a magnet at the end thereof, compris-

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ing a toy freight car having in the side wall thereof a door hinged about a vertical axis to swing out and spring biased toward closed position, a car carried inclined non-magnetic storage magazine into which the articles are inserted side by side so as to roll down the same without magnetic drag or sticking, the magazine having an inlet opening shaped to receive the articles in oriented position only, a discharge opening through which the magnetic end only of the lowermost article may pass while it is on its side, a movable intercepting plate below the discharge opening which in one position holds the article against passage completely through the opening and in its other position releases the article to fall in an erect position, a non-magnetic receiving plate onto which the article drops, a member movable with the first plate for shifting an erect article on said receiving plate in one direction, a laterally movable article support disposed opposite the door and onto which the article is shifted, an electro-magnetically operated device having means to open the door and means to shift the article support to a limited extent and thereafter eject the article therefrom through the open door with the magnetic end down, and a horizontal magnetizable platform onto which the magnetic article passes after it leaves the support, the lower end of the magnetic article magnetizing the platform so that the article remains upright.

12. In a merchandise handling toy, a receiving platform made of magnetizable material, a movable vehicle adapted to be placed alongside the platform, and toy merchandise elements each having an asymmetric contour and including a magnet asymmetrically disposed with respect to the center of gravity thereof, the vehicle having means for storing the merchandise elements in oriented position only, means for shifting them one at a time to a magnet down, unloading position, and means for shifting them laterally from said magnet down, unloading position onto the platform so they are magnetically held in position thereon.

13. In combination, a toy merchandise moving vehicle, unloading mechanism carried by the vehicle, toy merchandise elements each being of asymmetric contour and having a magnet asymmetrically disposed with respect to the center of gravity thereof, the unloading mechanism having means to orient the toy merchandise elements so that the magnet is at bottom and means to discharge the oriented merchandise elements laterally, and a receiving platform onto which the merchandise is transferred, the platform being magnetizable so that the article of merchandise adheres to it.

14. An article storage and delivery mechanism for use on toy cars, comprising an elongated base plate adapted to be secured to a toy car platform, an arm pivoted to one end of the base plate, a reciprocatory member secured to the other end of the base plate and drivingly connected to the arm through a lost motion connection to be driven back and forth thereby through a forward movement and a return movement with overtravel in both directions, an electro-magnet for actuating the arm through its forward movement, a spring acting on the arm to restore it and the reciprocatory member to normal position, a storage magazine carried by the base plate, means responsive to overtravel of said arm in its forward movement to eject from the reciprocatory member an article previously placed thereon, means ac-

tuated by the arm near the end of its forward movement for releasing another article from the magazine, and means actuated by the arm near the end of its return movement for shifting the released article onto the reciprocatory member.

15. In combination, a base plate, a base-plate supported, downwardly-sloping storage chute having a bottom along which cylindrical articles may freely roll, a drop-out opening at the lower end of the bottom of the chute and at one side so that the lower-most article drops out onto its end, a solenoid coil, an armature therefor, an armature actuated arm, a spring for returning the armature and arm to a normal position, stops limiting the movements of the arm, and two arm actuated members, one carrying an article intercepting element normally under the drop-out opening in the chute and shiftable by the arm near the end of its armature actuated movement to release the article, the other arm actuated member having an article receiving platform adjacent but not under the drop-out opening, two stops and a lost motion connection with the arm whereby the second member has limited movement during each swing of the arm and the arm moves beyond, the first arm actuated member being shiftable to normal position when the arm returns and having an article engaging element for shifting the article from the dropped position onto the other arm actuated member.

16. In combination, a plurality of toy articles each being of asymmetric contour and including a permanent magnet, asymmetrically located

with respect to the contour of the article, a storage magazine having means including an asymmetric opening which admits the articles in only one orientation, means to deliver them one at a time oriented in magnet down position, ejector means for acting on the positioned article to suddenly shift it laterally, and a magnetizable receiving platform onto which the so oriented articles are received from the ejector and to which they adhere.

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