

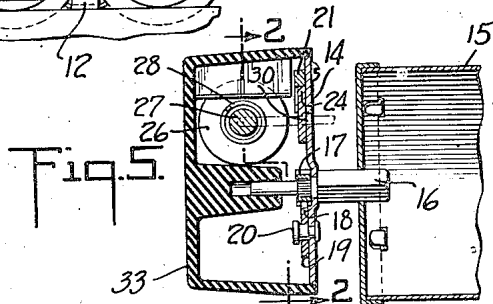
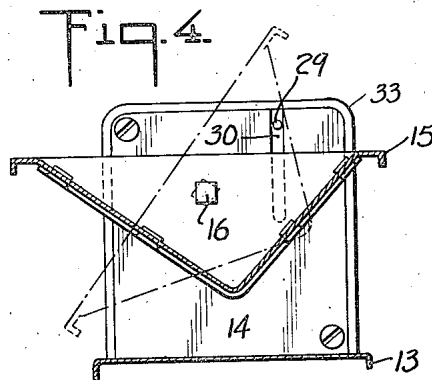
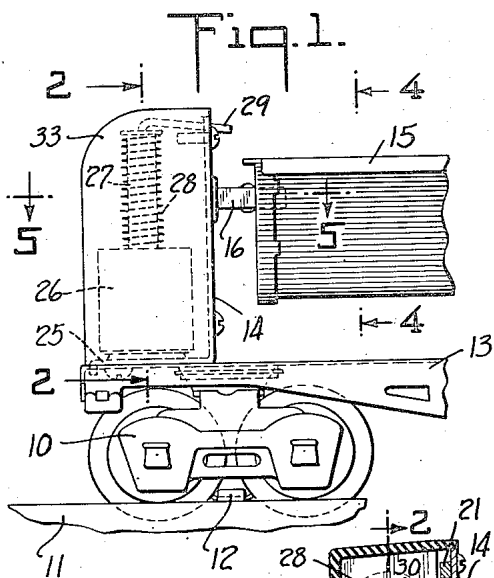
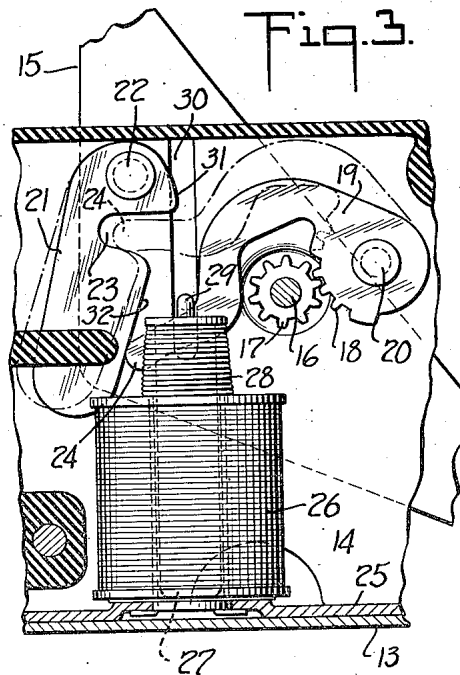
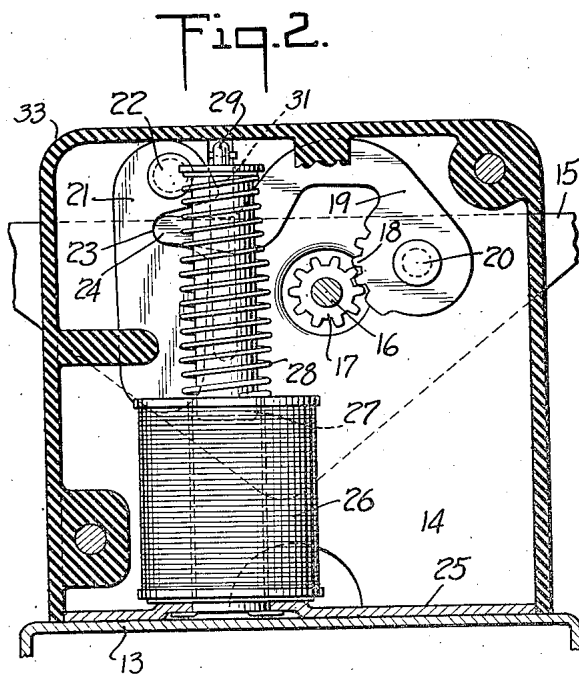
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TOY DUMP CAR

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# UNITED STATES PATENT OFFICE

2,222,311

## TOY DUMP CAR

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6 Claims. (Cl. 46—214)

The present invention relates to toy dump cars, and is more particularly directed toward electromagnetically operated dump cars adapted for use on toy railroads.

The present invention contemplates a mechanism for the above purpose whereby the hopper which is normally biased to position for carrying materials may be locked in this position, and this lock may be released by the electromagnetic means which then operates to tilt the hopper into dumping position.

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

In the drawing:

Figure 1 is a side elevational view of one end of a toy car having the hopper and hopper operating mechanism;

Figures 2 and 3 are sectional views taken on the lines 2—2 of Figures 1 and 5 showing the mechanism in the normal and in the dumping positions, respectively;

Figure 4 is a cross section taken on the line 4—4 of Figure 1; and

Figure 5 is a horizontal cross section on the line 5—5 of Figure 1.

In the drawing one of the trucks of a toy car is indicated at 10, the rails at 11 and the current collector at 12. The body of the car is indicated at 13. At the ends of the body are two uprights 14, only one of which appears in the drawing, and between these uprights is carried the hopper 15 of the dump car, this hopper being supported on shafts, one of which appears at 16. The shafts pass through the vertical plates 14 and support the hopper above the body of the car. The pivotal support is placed so that the hopper has a tendency to swing to the position shown in Figures 1, 2, 4 and 5.

The shaft 16 which extends through the vertical plate 14 shown in the drawing has a pinion 17 which is in mesh with a toothed sector 18 carried on an arm 19 pivoted at 20 to the plate 14. This arm is adapted to swing back and forth adjacent the plate 14. The plate 14 also carries a locking plate 21 pivotally supported at 22 and adapted to normally hang down in the position shown in Figure 2. This plate has a notch 23 which normally receives the end 24 of the oscillatory operating arm 19 so as to lock this arm in the full line position of Figure 2.

The plate 14 which supports these elements is preferably L-shaped, and has a base portion 25 which extends along the car body 13 and which supports a solenoid coil 26 whose axis is between the axis of the shaft 16 and the axis of the pivot 22. This coil has an armature 27 normally held in the upper position, as shown by the spring 28, which armature has a laterally extending arm 29 which passes through a slot 30 in the plate 14 and the locking plate 21 has a cam-like element 31 which, when the plate is in the position shown in Figure 2, is in the path of the arm 29. When the coil 26 is energized the armature is pulled down from the position of Figure 2 to the position of Figure 3, and in its initial movement it brings the arm 29 against the camming surface 31 and swings the plate to the dot-and-dash line position of Figure 3. It then engages with the arm 19 and this arm swings the locking lever further to the left and is brought down to the position shown in Figure 3, thereby shifting the hopper to the position shown in Figure 3 in full lines and in Figure 4 in dot-and-dash lines.

When the circuit for the coil is opened, the spring 28 pushes up the armature and during this movement the hopper will cause the end 24 of the arm 19 to pass along the edge 32 of the locking plate to hold it out of the way, so that the arm 29 can pass by the camming surface 31. After the end 24 of the arm has entered the notch 23 of the plate, the parts are locked in position. The entire operating mechanism may be carried on the end of the car, as indicated in the drawing, and concealed by a cover 33 which may be of insulating material.

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 dump car comprising a pivotally supported hopper biased to a normal position for carrying materials, a pinion drivingly connected to the hopper, a pivoted arm carrying a sector meshing with the pinion, a gravity controlled locking plate normally engaging the end of the arm to hold it and the hopper in normal position, a solenoid coil having an armature engageable with the locking plate to shift it to release the arm and then engageable with the arm to swing the hopper to dumping position, and a spring for

restoring the armature to normal position when the coil is deenergized.

2. A mechanism for operating an oscillatory device from a normal position of rest to a different position, comprising a pinion, a sector meshing with the pinion, an arm carried by the sector, a gravity controlled lock acting on the arm to normally hold it locked with the oscillatory device in its normal position, a solenoid coil having an armature operating on the lock to release the arm and then on the arm to turn the pinion on its axis, and a spring for restoring the armature to normal position when the coil is deenergized.

3. In a device of the class described, a car body carrying a vertical plate, a horizontal shaft rotatably carried by the plate, a pinion on the shaft, a sectored arm pivoted to the plate and meshing with the pinion, a locking plate pivoted to the vertical plate and having a notch to engage the end of the arm and a cam forming edge, and a vertically reciprocable armature adapted to engage with the cam forming edge to push the locking plate away from the arm and to then engage with the arm to swing the same.

4. In a toy dump car, a tiltable hopper biased to a normal position for carrying materials, an oscillatory hopper operator for tilting the hopper to dumping position, a gravity controlled lock for the operator, and electromagnetically operated means for shifting the lock to release the operator

and for then shifting the operator to dump the contents of the hopper.

5. A toy dump car comprising a car body provided with uprights at the ends thereof, one of the uprights being L-shaped, a hopper pivotally supported in the uprights, the hopper having a normal position of rest for carrying materials and a dumping position, a lock carried by the vertical part of the L-shaped upright and acting to hold the hopper in the normal position, and electromagnetic means carried by the bottom part of the L-shaped upright and acting to unlock the hopper and shifting it to the dump position.

6. A toy dump car comprising a car body provided with uprights at the ends thereof, a hopper pivotally supported in the uprights, the hopper being biased to a normal position for carrying materials, a pinion drivably connected to the hopper, an arm pivotally secured to one of the uprights and carrying a sector meshing with the pinion, an arm lock pivoted to said upright and acting to hold the hopper in normal position, an electromagnet supported from the base of said upright and having an armature for releasing the lock and operating the arm to shift the hopper to dump position, and a spring for normally holding the armature away from said arm lock and arm.

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