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Aug. 25, 1925. 1,550,929

F. STRAUSS

MECHANICAL TOY

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Fig. 1.

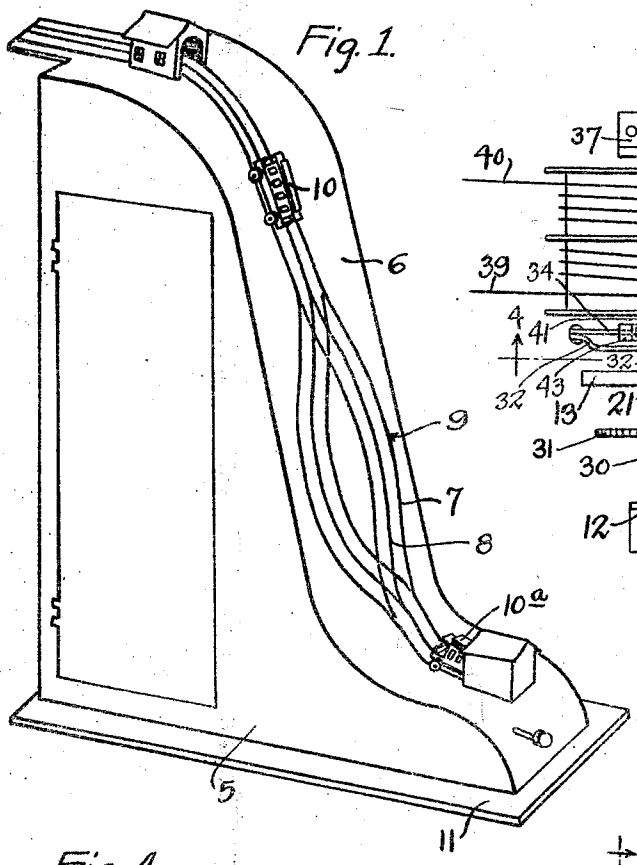


Fig. 3.

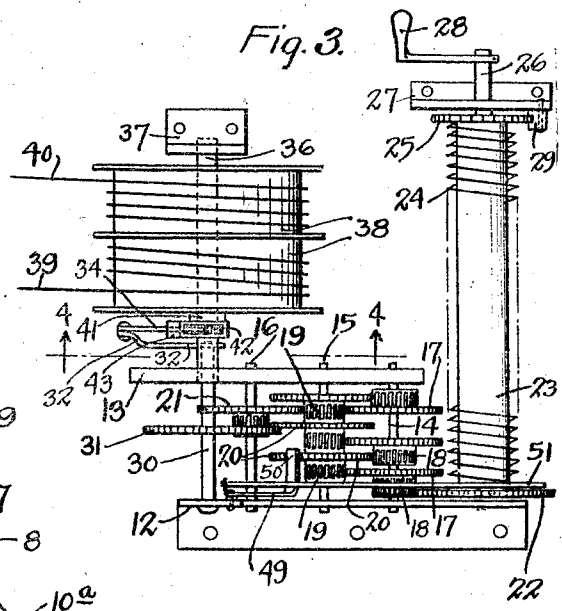


Fig. 4.

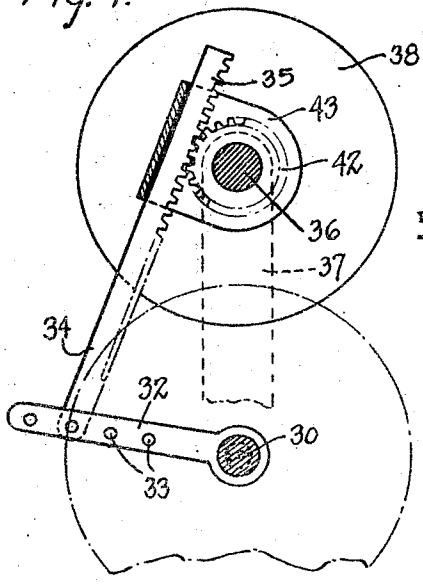
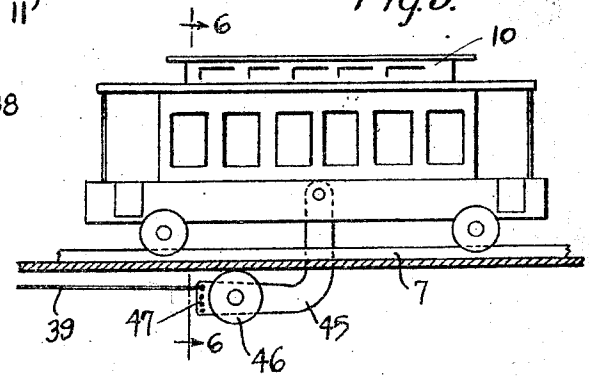


Fig. 5.



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Fig. 2.

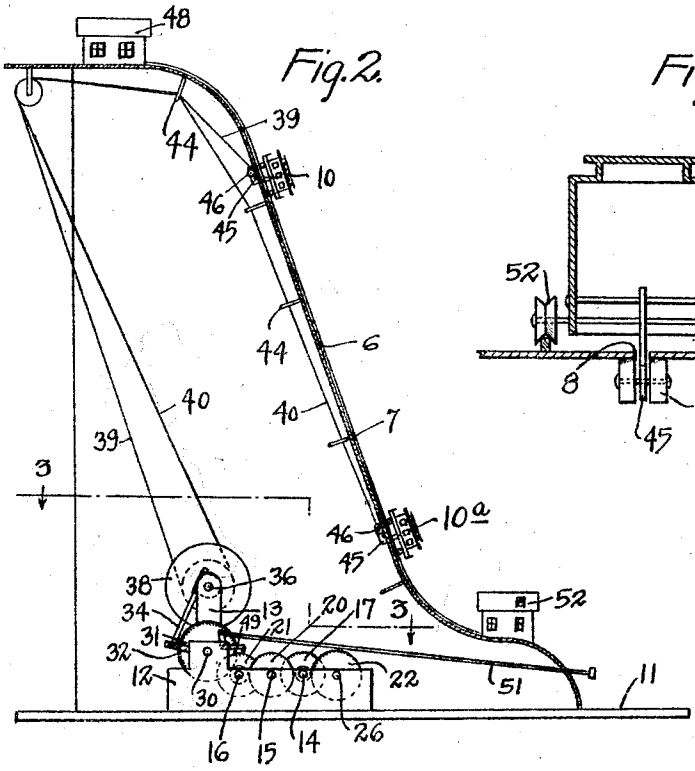
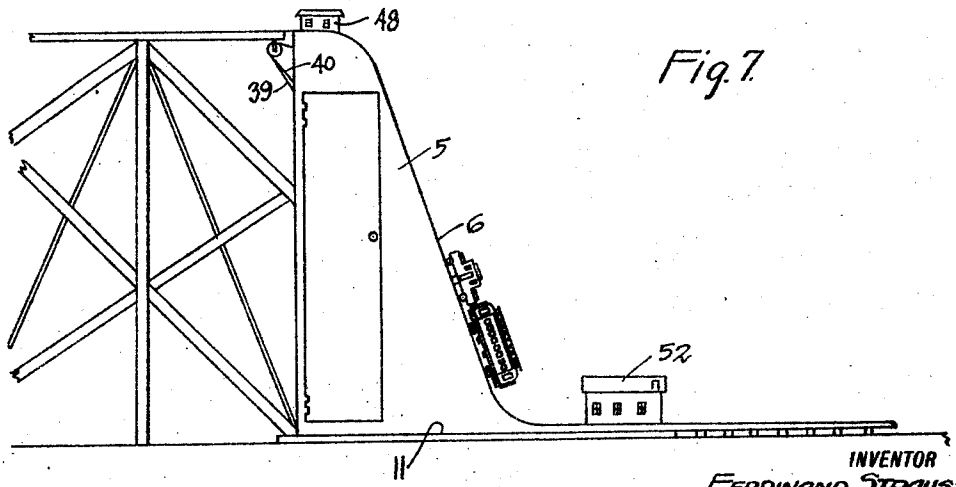


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

FERDINAND STRAUSS, OF NEW YORK, N. Y.

MECHANICAL TOY.

Application filed October 22, 1924. Serial No. 745,137.

To all whom it may concern:

Be it known that I, FERDINAND STRAUSS, a citizen of the United States of America, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Mechanical Toys, of which the following is a specification.

This invention relates to toy railways and in particular to one adapted to operate upon an inclined surface. A particular object of the invention is to provide a toy of this character wherein a plurality of cars may be operated in opposite directions on an incline so that the same will pass each other.

A further object is to provide mechanism whereby the travel of the cars along the incline will be automatic, that is, the cars will travel from the top to bottom of the incline or vice versa, and the operation be continuously performed.

A still further object is to provide mechanism which can be used in combination with the toy railways, means being provided whereby the cars used on the flat railway may be taken up the incline to a higher level.

A still further object is to produce a toy of this character which can be manufactured at a small cost which will be efficient in its operation and not liable to get out of order.

Referring to the drawings wherein I have shown a preferred embodiment of my invention,

Figure 1 is a view in prospective showing the inclined railway, the same being mounted upon a casing or housing in which is provided the operating mechanism, the inclined face of the housing being made to simulate the side of a mountain.

Figure 2 is a view in side elevation of the inclined railway, the side wall thereof being removed to show the arrangement of the interior mechanism of the operating cables or cords.

Figure 3 is a section taken on the line 3—3 of Figure 2 showing in detail the spring motor and its associated parts which is used to operate the cars.

Figure 4 is a section taken on the line 4—4 of Figure 3 and shows the drum reversing mechanism whereby the cars upon reaching their terminals will be reversed in their direction of travel.

Figure 5 is a section through a portion of the inclined railway showing a car thereon and its cable holding element whereby the car is retained in position on the incline and allowed to move up or down according to direction of travel.

Figure 6 is a section taken on the line 6—6 of Figure 5 showing how the rollers on the cable engaging portion of the car are adapted to bear on the under-surface of the casing to reduce the friction which would otherwise impede the progress of the car, and

Figure 7 is a side elevation of my inclined railway used in combination with the ordinary flat toy railways showing how the cars of the latter may be drawn up over the incline to a higher level.

Referring to the drawings in detail, 5 indicates a casing having a front face thereof 6 inclined, and provided with tracks 7, the face of the casing being provided with a slot 8 which is disposed between the rails of the tracks 7. The track extends from the bottom to the top of the inclined face 6 and midway up the inclined face there is provided a siding 9 so that when two cars are travelling, one up and one down the incline, the same will pass each other at the siding, the cars being indicated by the numerals 10 and 10^a. The base 11 of the housing supports within said house, standards 12 and 13, the said standards supporting the gear shafts 14, 15 and 16, there being carried on the shaft 14 three gears 17, with their connected pinions 18, the gears 17 meshing with the pinions 19 which are formed integrally with the gears 20 carried on the adjacent shaft 15. The innermost pinion 19 on the shaft 15 engages and drives a gear 21 carried on the shaft 16.

It will be readily seen that the combination of gears and pinions so arranged reduce the speed of the main drive gear 22 which is carried on the end of the drum 23, said drum being surrounded by the spiral spring 24 which is attached at one end to the gear 22 and at its opposite end to the ratchet 25.

The gear 22, drum 23, and ratchet 25 are carried on a suitable shaft 26 which is supported at one end in the standard 12 and has its other end passing through a suitable standard 27, beyond which standard shaft 26 is provided with a winding handle 28. It is evident that the handle will be used to wind up the spring 24, there being provided on the standard 27

the usual pivoted pawl 29 which engages the ratchet 25 to prevent premature unwinding of the spring. In the standards 12 and 13 there is also supported the stub shaft 30, carrying between said stands the gear 31, said gear engaging a suitable pinion on the shaft 16 whereby the gear is directly driven by the spring motor. The end of the stub shaft 30 beyond the standard 13 carries a radial arm 32, the end of which is provided with space openings 33 into one of which is removably fastened the end of a reversing rack 34, one face of which is provided with teeth 35. The standard 13 also supports above the shaft 30 the drum shaft 36, the opposite end of which is supported in the standard 37, said shaft carrying the drums 38 around which is wound the operating cables 39 and 40. The end of one of the drums is provided with a collar 41 to which is secured in any suitable manner a pinion 42. This pinion is engaged by the tooth face of the reversing arm 34 and the latter is kept in contact therewith through the medium of a suitable jacket piece 43 through which said reversing arm has a sliding movement.

It will be apparent therefore, that when the gear 31 is driven, the shaft 30 will revolve and the operating arm 32 being secured thereto, will also revolve. This will cause a travel of the rack 34 until the arm 32 and rack 34 are in a vertical position after which there will be a reversal of direction of rotation of the drums. This operation causes the cars on the incline after they have reached the limit of their travel in opposite directions to reverse and return to their starting points inasmuch as the operation of the device is continuous. The reversing arm 34 will always operate at the same time and in the same manner and if desired, the connection with the rack 34 to the arm 32 may be varied through the medium of the openings 33 so that the operating speed of the device may be controlled. The inside of the inclined face 6 of the casing is provided with suitable guide members 44 through which pass the operating cables 39 and 40. The cable 40 being attached to the car 10^a while the cable 39 is attached to the car 10 in order that the cars may travel up or down the incline, there must be some means provided for keeping them in position upon the track and also for guiding them so that the proper car will always take the siding and for this purpose I provide the cars each with grooved side wheels 52, the side depending upon which car is the one that will take the siding, the track being arranged accordingly.

In order that the cars may be drawn by the cable, I provide each of said cars with a pivoted depending hook member 45 which extends through the slot 8 in the inclined face 6 of the housing and carries beneath said face in position to engage the same, a pair of rollers 46, the front of the hook member being perforated as at 47 with openings to any of which the end of the cable may be attached.

It will be noted, therefore, that when a car is being drawn up the incline and the cable as shown in Figure 2 tends to rub against the inner base of the incline, the roller 46 will bear against the underface of the inclined surface and will not offer any impediment to the travel of the car. The guiding members 44 may be placed wherever desired on the under-surface of the inclined face 6 of the housing.

It can be readily seen, therefore, that the level tracks of a toy railway may be brought up and attached to the lower and upper terminals of the inclined track so that the cars may be engaged by a simulative toy locomotive on the inclined railway and drawn up to a higher level as shown in Figure 7, it being understood that the length of the incline could be made sufficient to accommodate four or five cars on the siding so that two trains of cars could pass.

The standard 12 is provided with a pivotal brake member 49, the lower end 50 of which is adapted to engage the teeth of the gear 20 to stop the mechanism. The brake is operated from the exterior of the housing through the medium of the rod 51.

From the foregoing it will be seen that I have provided an interesting miniature inclined railway which will have the appearance and effect of a natural mountain side railway and one which will be comparatively inexpensive in production.

To enhance the simulated effect of the toy I provide at suitable points along the incline, station like structures 48 and 52.

Instead of employing a spring motor, an electric motor may be utilized to operate the device and in using the flat toy railways which are themselves operated by electricity, the electric power may be used to drive the motor when the inclined railway is incorporated as shown in Figure 7.

Having now described my invention, what I claim is:—

1. A toy railway comprising a steeply inclined base, tracks on said base, cars movable on said tracks, means for causing travel of the cars up and down said inclined base, and pivoted guide members depending from said cars through said base, and engaging the underside of the base to which said travel causing means is connected.

2. A toy railway comprising a casing the front of which is steeply inclined and arranged to represent the side of a mountain, a track on the front of the casing having a slot therein, cars adapted to travel along said track, means for causing travel of the

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cars along the track up and down said inclined front, a side track midway of said incline and a depending portion on each of said cars passing through said slot whereby said cars are caused to pass each other in their upward and downward travel.

3. In a toy railway, a hollow casing having an inclined face, said face having tracks thereon and slots between said tracks, cars on said tracks having depending pivoted hook members passing through said slots, said hooks carrying rollers which engage the underside of said casing, an operating mechanism in said casing comprising drum members, cables wound about said drums and connected to said hook members whereby, when the mechanism is in operation, said cars will be caused to travel up and down along the tracks on said inclined face.

4. A toy railway comprising a casing, one side of which is steeply inclined to represent the side of a mountain, a track on said side having miniature houses at the terminals thereof, cars adapted to travel on said track, a side track midway of said incline, guiding means for the cars whereby they may pass each other at the side track in their travel up and down the incline, a power mechanism for operating said cars, and means for automatically causing a reversal of operation of said mechanism when the cars have reached their limit of travel in opposite directions.

5. In a toy railway, a casing having a steeply inclined face, a track on said face, a side track midway of said face, cars operable up and down the said inclined face and adapted to pass each other at said side track, an operating mechanism for moving said cars, said mechanism comprising a spring, a handle for winding said spring, a cable drum, and a reversing rack operating the drum whereby the direction of rotation of said drum will be automatically controlled.

6. A toy railway comprising a casing having one face steeply inclined, a track on the inclined face, a siding midway of the incline, cars adapted to run over said track, the casing being slotted in the center of the track, an extension on each of said cars passing through the slot, a cable connected to each of said extensions, guides for said cable, an operating mechanism in said casing comprising a pair of drums around each of which one of said cables is wound, means for reversing the direction of rotation of said drums when the cars have reached the limit of their travel in opposite directions, and means whereby one of the cars will use the siding so that said cars may pass each other in their travel up and down the incline.

In testimony whereof I hereunto affix my signature.

FERDINAND STRAUSS.