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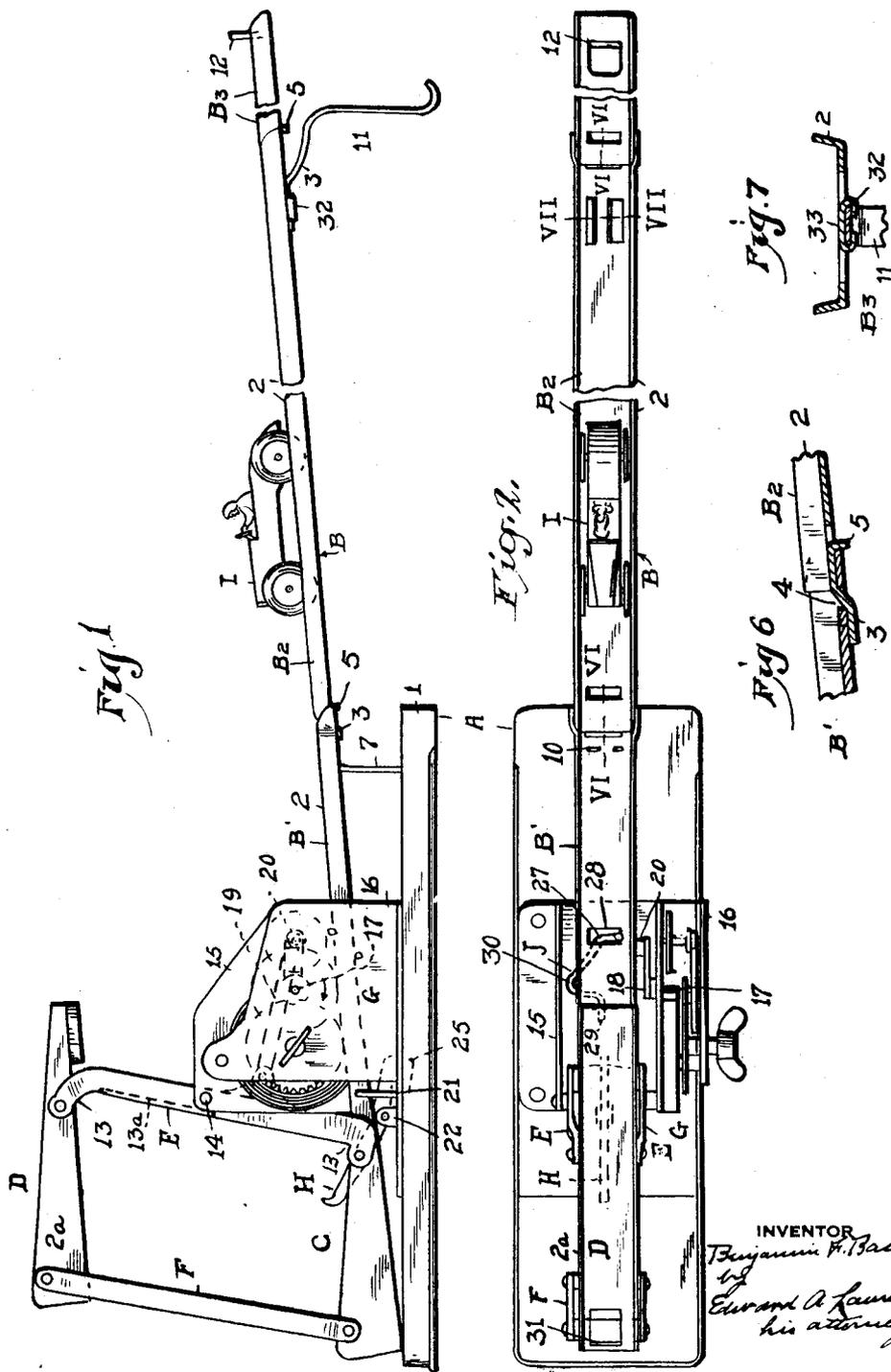
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MECHANICAL TOY

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MECHANICAL TOY.

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To all whom it may concern:

Be it known that I, BENJAMIN F. BAIN, a citizen of the United States, and residing in the city of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered the new, useful, and Improved Mechanical Toy, of which the following is a specification.

My invention consists in a new and improved mechanical toy wherein a car or other travelling element is caused to continuously traverse a track on the "over and under" principle.

Generally speaking, my invention presents the following novel features.

The car or other travelling element runs by gravity down a fixed track, and at the foot of the latter runs onto an elevator, which is itself a track structure and which is then oscillated to assume an inclination in a direction opposite to that of the fixed track and communicating with the latter, to cause the travelling element to run back onto and up the fixed track.

The elevator is power-oscillated from its receptive position into its discharge position, and vice versa.

Means are provided whereby the elevator retains its receptive position until the travelling element runs onto the same.

Means are also provided to prevent the travelling element running off the fixed track until the elevator has assumed its receptive position.

Means are provided at the upper end of the fixed track to prevent the travelling element passing off the same, and means are also provided to prevent the travelling element passing off the outer end of the elevator.

Other novel features of construction, and also of arrangement and assemblage of parts will appear from the following description.

In the accompanying drawings, wherein, for the sake of illustration, I show the preferred embodiment of the principles of my invention, Fig. 1 is a side elevation of a mechanical toy embodying said principles and showing the travelling element or car running down the fixed track toward the elevator which is in its receptive position; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged, partial side elevation showing the

elevator in its intermediate position; Fig. 4 is a similar view showing the elevator in its discharge position; Fig. 5 is a detail in longitudinal section showing the means for locking the elevator in its receptive position until the car has run onto the same, and also showing the means for retaining the car on the fixed track until the elevator has assumed its receptive position, and Fig. 6 is a detail in section along the line VI—VI in Fig. 2, showing the method of assembling the sections of the fixed track. Fig. 7 is an enlarged section on the line VII—VII in Fig. 2.

The following is a detailed description of the drawings.

A is the base shown comprised of a horizontal platform which is supported in spaced relation from the floor, or other surface upon which the toy is placed, by means of the depending side flanges 1, whose bottom edges may be rolled to form a foot.

The fixed track is indicated generally by the letter B, and may be composed of two or more sections, such as B', B² and B³, detachably assembled together. The track section may be pressed of sheet metal with side flanges 2 to retain the car on the track.

The lower section B' is preferably permanently mounted on the base at the proper inclination to the horizontal to induce the desired travel of the car, while the intermediate section or extension B² is detachably connected to the upper end of the section B'. Thus I have shown in Fig. 6 the lower end of the section B² telescoped in the upper end of the section B' and the angular tongue 3 on the end of B² hooked through a slot 4 in the floor of B'. 5 is a second tongue cut from the floor of B² and bent downwardly to engage the upper end of the floor of B'. The third section B³ may be similarly connected to the upper end of B².

The section B' is shown supported from the base A by the brackets 6 and 7. The bracket 6 is at the lower end of the section B' and is formed by a downturned extension of the floor of the section B' whose lower end is reduced and inserted through a transverse slot 8 in the base A and upset at 9 to prevent disengagement. The bracket 7 is cut from the base A and turned up vertically with its upper end provided with spaced

spurs 10 which extend up through holes in the floor of the extension B'.

The section B² is shown supported at its outer end by the leg 11, to maintain the desired inclination.

The upper and outer end of the fixed track is provided with means for preventing the car running off the same. Thus I have shown a tongue cut from the floor of the section B² and bent up at right angle to form a bumper 12.

The elevator is located so as to receive the car when it reaches the lower end of the fixed track B.

In the embodiment of my invention illustrated in the drawings, the elevator is comprised of a pair of track sections C and D coupled together with a parallel link connection. The sections C and D are stamped of sheet metal having side retaining flanges 2^a which are however of increased height toward the outer ends of said sections.

The parallel link connections between the track sections C and D are formed by the pair of front links E and the pair of rear links F.

The front links E are provided with angular end portions 13 by means of which they are pivotally connected to the side flanges 2^a near the front ends of the track sections while the ends of the links F are pivotally connected to the flanges 2^a near the rear ends of the track sections, the said points of connection being a greater distance above the floors of the track sections. This difference in the attachment of the links F to the track sections prevents the front and rear links becoming alined when the track sections are alined in their discharge position and thereby prevents the track sections from assuming a dead center. The links E may be integrally connected for a portion of their lengths by the cross-web 13^a which serves to stiffen and strengthen them.

At their longitudinal centers the links E are provided with outwardly extending trunnions 14 which are journaled in bearing holes in the vertical side plates 15 extending up from the base A and which are spaced apart sufficiently to receive the ends of the track sections B' and C.

G is a spring motor or other source of rotary power, mounted between one of the side plates 15 and a second vertical plate 16 spaced outwardly therefrom. 17 is the driving shaft of the motor which is provided with a crank 18, which crank is connected by a link 19 to an arm 20 on the adjacent link E.

The crank 18 is assumed in the drawings to revolve in a clockwise direction, and the evident result is that the track sections C and D are oscillated from their respective positions shown in Figs. 1 and 2, which

show the track section C in its receptive position, through their intermediate positions shown in Fig. 3, into their alined and discharge position shown in Fig. 4, and vice versa; such oscillation being continued as long as the motor applies power, except, as will be explained, when the elevator is locked in its receptive position.

When the elevator is in its receptive position, the track section C is in registry with the lower end of the inclined track B, the inner end of the section C being slightly lower than the end of the track B, and being received by the chair 21 rising from the base A, the chair being notched at its center to form a recessed seat into which the end of the track section C sinks and which serves to properly position the section. The outer end of the section C rests on the base A, when in its receptive position, and thus the floor of the section C forms a continuation of the incline of the floor of the fixed track.

When the elevator is in its discharge position, the two track sections C and D are alined, as shown in Fig. 4, in a position reversely inclined to the inclination of the fixed track B, and at a greater angle, and communicating with the fixed track B.

Means are provided for retaining the elevator in its receptive position until the car or other travelling element runs off the fixed track onto the section C. Thus I show an angular latch H pivoted to swing on a horizontal axis between the twin stands 22 extending up from the base A, and adapted to extend up through a longitudinal slot 23 in the floor of the section C, a notch 24 of said latch engaging the front end of said slot 23 to lock the section C in its receptive position. The lower end of said latch is weighted, as at 25, to cause it to automatically assume and retain its locking engagement, the base A being apertured to provide clearance for the weighted end of the latch. When the car I runs down the track B and onto the section C, it engages and releases the latch H, thus releasing the section C and thereby permitting the motor G to oscillate the elevator until the sections C and D assume their discharge position, with the result that the car I is propelled down onto the track B and then up the latter. The elevator is immediately oscillated back into its receptive position and locked therein by the latch H until the car again descends the track B and runs onto the section C.

It is important that means be provided for preventing the car I from running off the track B until the elevator has assumed its receptive position and the section C is in place to receive the car. For this purpose I provide the member J which intercepts the car at the lower end of the track B unless the section C is in place to receive the car,

but which is retracted out of the path of the car when the section C is in place.

The member J is shown formed of a length of heavy wire or light metal rod and is journaled in bearing holes in the bracket 6 and also in a slot in a stand 26 extending up from the base A. The front end of the member J is bent to form a finger 27 which is adapted to protrude upwardly through a slot 28 in the floor of the track section B' into the path of the car I, but which by a partial rotation of the member J, may be depressed out of possible engagement with the car.

The other or rear end of the member J is bent to form an angular leg 29, which, when the finger 27 is in its car-engaging position, extends into the path of section C as the latter descends into its receptive position. The section C, as it assumes its receptive position, swings the leg 29 downwardly and retracts the finger 27 out of its car-engaging position. The intermediate portion of the member J, between its bearings, is offset, as shown at 30, to form a weight which normally holds the finger 27 in its car-engaging position when the section C is out of its receptive position and which also returns the finger 27 to its car-engaging position when the section C rises from its receptive position.

To prevent the car running off the rear end of the track section C, I provide a bumper 31 formed by cutting a tongue of metal from the floor of the section and bending it up at right angles. I provide new and improved means for attaching the bent upper end of the leg 11 to the track section B'. Thus as shown in Fig. 7 I show tongues 32 cut from the floor of the track section on either side of a central web 33 against which web the upper end portion of the leg fits from beneath, and said tongues are then bent around under the leg to clamp it to the track section.

I have shown, as a convenient and attractive travelling element, a toy automobile I, but it will be understood that any object or article adapted for travel along a track or pathway may be substituted.

It is evident that after the motor has been wound up and the car started down the fixed track, the operation of the toy will continue until the stored power of the motor is dissipated. The car will run down the fixed track onto the elevator, and will be elevated and returned to the fixed track with sufficient momentum to carry it back up the same; whence it will again run down onto the elevator.

It is further evident that any other suitable source of power, such for instance as an electric motor may be substituted for the spring motor shown.

Although, for the purpose of fully dis-

closing the principles of my invention, I have described in detail the embodiment thereof illustrated in the drawings, I do not wish to limit myself thereby, but claim broadly:—

1. In a mechanical toy, the combination with a travelling element, of a track structure for said element comprising an inclined track down which the element runs, a movable track adapted to be lowered into registration with the lower end of the inclined track to receive the element therefrom and to be raised to an inclination, the reverse of that of the inclined track, to return the element onto the inclined track, and means for shifting said movable track from its lowered to its raised position and vice versa.

2. In a mechanical toy, the combination with a travelling element, of a track structure for the element comprising an inclined track down which the element runs, a movable track adapted to be lowered into registration with the lower end of the inclined track to receive the element therefrom and to be raised to an inclination the reverse of that of the inclined track to return the element onto the inclined track, means for shifting said movable track from its lowered to its raised position and vice versa, and means for retaining said movable track in its receptive position until the element is received by the same.

3. In a mechanical toy, the combination with a travelling element, of a track structure for the element comprising an inclined track down which the element runs, a movable track adapted to be lowered into registration with the lower end of the inclined track to receive the element therefrom and to be raised to an inclination, the reverse of that of the inclined track, to return the element onto the inclined track, means for shifting said movable track from its lowered position to its raised position and vice versa, and means for preventing the element from running off the inclined track until the movable track is in position to receive it.

4. In a mechanical toy, the combination with a travelling element, of a track structure for the element comprising an inclined track down which the element runs, a movable track adapted to be lowered into registration with the lower end of the inclined track to receive the element therefrom and to be raised to an inclination the reverse of that of the inclined track, to return the element onto the inclined track, means for shifting said movable track from its lowered to its raised position, and means for preventing the element from running off the inclined track until the movable track is in position to receive it and for retaining said movable track in its receptive position until the element enters the same.

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5. In a mechanical toy, the combination with a travelling element, of a track structure for said element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to reascend the same, said means consisting of a movable track adapted to be lowered into registration with the inclined track to receive the element therefrom and to be raised to position to return the element to the inclined track, and power-means for shifting said movable track from its lowered to its raised position and vice versa.

6. In a mechanical toy, the combination with a travelling element, of a track structure for said element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to travel up the same, said means consisting of a movable track adapted to be lowered into registration with the inclined track to receive the element therefrom and to be raised into position to return the car to the inclined track, power-means for shifting said movable track from its lowered to its raised position and vice versa, and means for retaining the movable track in its lowered position until the element has entered the same.

7. In a mechanical toy, the combination with a travelling element, of a track structure for said element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to travel up the same, said means consisting of a movable track adapted to be lowered into registration with the inclined track to receive the element therefrom and to be raised into position to return the element to the inclined track, power-means for shifting said movable track from its lowered to its raised position and vice versa, and means for preventing the element from running off the inclined track until the movable track has been lowered in position to receive it.

8. In a mechanical toy, the combination with a travelling element, of a track structure for said element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to travel up the same, said means consisting of a movable track adapted to be lowered into registration with the inclined track to receive the element therefrom and to be raised into position to return the element to the inclined track with sufficient momentum to cause it to travel up the latter, power-means for shifting said movable track from its lowered to its raised position and vice versa, and means for preventing the element from running off the inclined track until the

movable track has been lowered in position to receive it and means for retaining the movable track in its lowered position until the element has entered the same.

9. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of the inclined track, said means consisting of a pair of movable track sections connected together for simultaneous movement, and means for shifting said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the element therefrom into a discharge position wherein the movable track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith whereby the object is returned to the inclined track, and vice versa.

10. In a mechanical toy, the combination with a travelling element, of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of the inclined track, said means consisting of a pair of movable track sections connected together for simultaneous movement, and means for shifting said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the element therefrom into a discharge position wherein the movable track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith whereby the element is returned to the inclined track, and vice versa, and connections whereby the element is retained on the inclined track until the movable track section is in position to receive it.

11. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of the inclined track, said means consisting of a pair of movable track sections connected together for simultaneous movement, and means for shifting said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the element therefrom into a discharge position wherein the movable track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith whereby the element is returned to the inclined track, and vice versa, and connections whereby the movable track section is retained in its re-

ceptive position until the element enters the same.

12. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of the inclined track, said means consisting of a pair of movable track sections connected together for simultaneous movement, and means for shifting said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the element therefrom into a discharge position wherein the movable track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith whereby the element is returned to the inclined track, and vice versa, and means whereby the element is retained on the fixed track until the movable track section is in position to receive it and the movable track section is retained in its receptive position until the element enters the same.

13. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to run back up the same, said means consisting of a pair of movable track sections, parallel link connection between the same for simultaneous movement, and means for oscillating said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the car therefrom into a discharge position wherein said track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith for causing the return of the element to the inclined track, and vice versa.

14. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to run back up the same, said means consisting of a pair of movable track sections, parallel link connection between the same for simultaneous movement, and means for oscillating said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the car therefrom into a discharge position wherein said track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith for causing the return of the element to the in-

clined track, and vice versa, and means for retaining the element on the inclined track until the movable track section is in position to receive it.

15. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to run back up the same, said means consisting of a pair of movable track sections, parallel link connection between the same for simultaneous movement, and means for oscillating said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the car therefrom into a discharge position wherein said track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith for causing the return of the element to the inclined track, and vice versa, and means for retaining the movable track sections in their receptive position until the car enters the latter.

16. In a mechanical toy, the combination with a travelling element of a track structure for the element comprising an inclined track down which the element runs, and means for receiving the element at the lower end of said inclined track and for causing it to run back up the same, said means consisting of a pair of movable track sections, parallel link connection between the same for simultaneous movement, and means for oscillating said movable track sections from a receptive position wherein one of said sections is in registration with the lower end of the inclined track to receive the car therefrom into a discharge position wherein said track sections are alined to form an incline the reverse of the inclination of the inclined track and communicating therewith for causing the return of the element to the inclined track, and vice versa, and means for retaining the element on the inclined track until the movable track section is in position to receive it and for retaining the movable track section in its receptive position until the element enters the latter.

17. In the track structure of a mechanical toy characterized by the travel of a moving element along a trackway, the combination of an inclined track, a movable track section, means for moving said track section into and out of registration with the lower end of the inclined track, a stop member to prevent the element from travelling off the inclined track, and connections whereby when the movable track is in registration with the inclined track said stop member is retracted out of the path of said element, but when said movable track section is

moved out of said registration said stop element is projected into the path of said element.

18. In the track structure of a mechanical toy characterized by the travel of a moving element along a trackway, the combination of an inclined track, a movable track section, means for moving said track section into and out of registration with the lower end of the inclined track, an oscillating stop member to prevent the element running off the inclined track, and connections whereby when the track section is out of registration with the inclined track said stop member assumes its operative position but when said track section is in registration with the inclined track said stop member is rendered inoperative.

19. In the track structure of a mechanical toy characterized by the travel of a moving element along a trackway, the combination of a track section, a second track section movable in relation to the first track section and adapted to be brought into registration therewith to receive the travelling element therefrom, means for shifting the movable track section into and out of registration with the first named track section, and connections whereby the movable track section is locked in its registered position until the moving element travels onto the same.

20. In the track structure of a mechanical toy characterized by the travel of a moving

element along a trackway, the combination of a track section, a second track section movable in relation to the first track section and adapted to be brought into registration therewith to receive the travelling element therefrom, means for shifting the movable track section into and out of registration with the first named track section, a latch member adapted to hold the movable track section in its registered position, and means whereby the travel of the moving element onto the movable track section releases said latch.

21. In the track structure of a mechanical toy characterized by the travel of a moving element along a trackway, the combination of a track section, a second track section movable in relation to the first track section and adapted to be brought into registration therewith to receive the travelling element therefrom, means for shifting the movable track section into and out of registration with the first named track section, and a latch member adapted to lock the movable track section in its registered position and projecting in the path of the moving element whereby when the moving element is received by the movable track section said latch is released.

Signed at Pittsburgh, Pa., this 5th day of February, 1924.

BENJAMIN F. BAIN.