J. C. TURNER.

CONTINUOUS TRIP GRAVITY TRAIN.

APPLICATION FILED MAR. 29, 1917.

1,290,687. Patented Jan. 7, 1919.

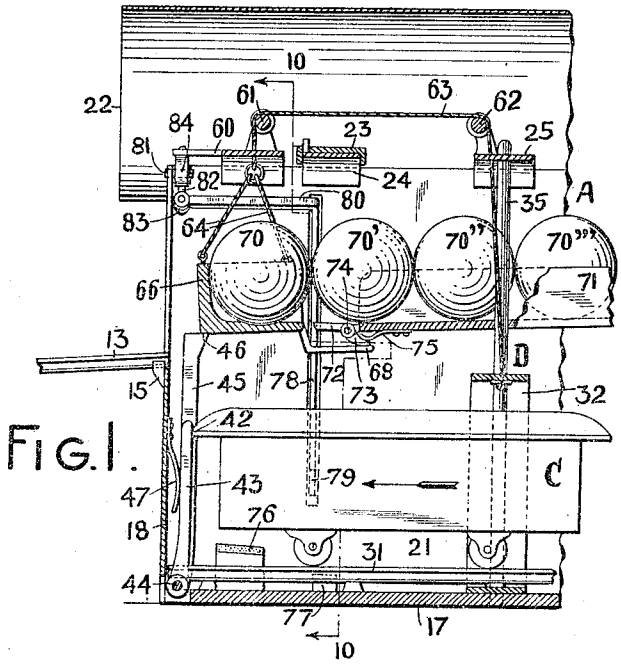


FIG. 1.

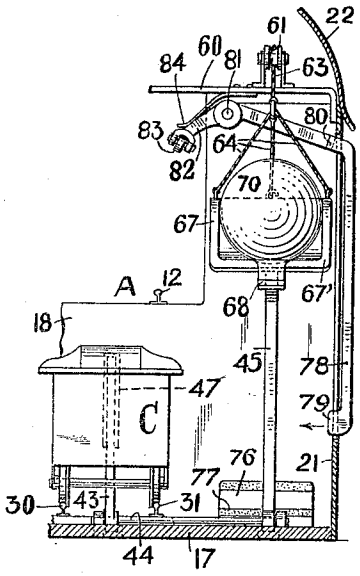


FIG. 3.

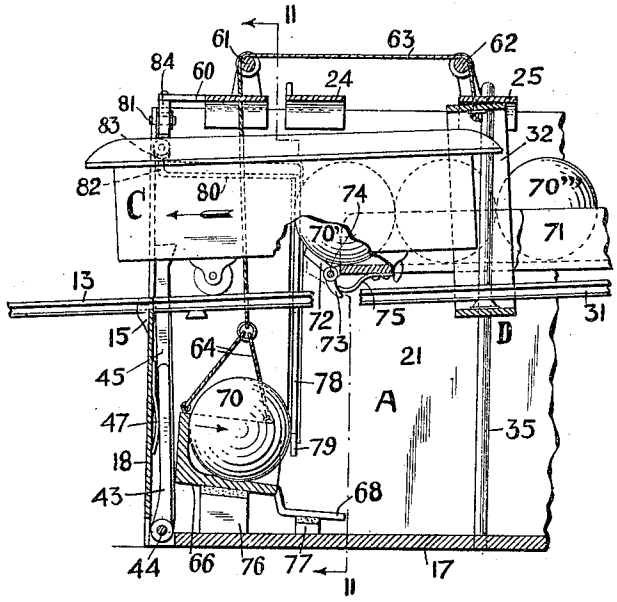


FIG. 2.

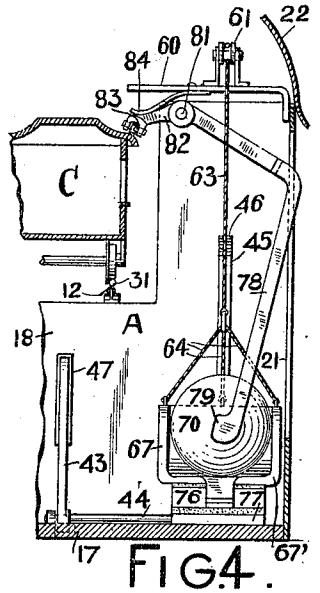


FIG. 4.

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CONTINUOUS-TRIP GRAVITY TRAIN.

1,290,687. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed March 29, 1917. Serial No. 158,182.

To all whom it may concern:

Be it known that I, JOHN C. TURNER, a citizen of the United States, and residing at Dayton, in the county of Montgomery and State of Ohio, have invented a new and Improved Continuous-Trip Gravity Train, of which the following specification is a full disclosure.

This invention relates to automatic toys and it proposes a mechanism for causing the toy to successively perform a predetermined operation without further attention after being suitably loaded.

A primary object of this invention is simulating the station track and tram car and embodying mechanism whereby said car will repeatedly travel around the track and stop momentarily in the station house all in an entirely automatic manner and without any attention other than involved in an initial loading.

Another object is to devise an automatic toy mechanism of the foregoing nature which will be simple and which will operate through a plurality of appropriate weights to cause the apparatus to function in repeated cycles.

Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred form have been annexed as a part of this disclosure, and in such drawings, like characters of reference denote corresponding parts throughout all the views, of which:—

Figure 1, is a side elevation in section of the operating mechanism of this toy. Fig. 2, is a similar vertical section showing the car elevator uplifted for discharging purposes. Fig. 3 is a transverse section on line 10—10 of Fig. 1. Fig. 4, is a transverse section on line 11—11 of Fig. 2.

Continuing by way of more detailed explanation, it may be stated that the drawings exemplify an invention in the guise of a railway having a station house and a car adapted to enter and leave said station house. The drawings illustrate so much of this system as is required for the purposes of explaining the mechanism more particularly involved herein, to wit, the automatic toy elevating mechanism. In these drawings, A denotes a station house from one end of which starts the inclined railway comprising rails 12 and 13; said track following the form of an inclined loop and terminating at its lowest end to deliver a gravity car C into the station house. This is in accordance with the general arrangement of my copending application executed and filed of even date herewith, Serial No. 158,180. This station house consists of a base 17 from which uprise side walls 20 and 21 and end walls 18 and 19; the side walls being connected at their upper ends by means of bridge-pieces 25, 24 and 60. The bridge-pieces 25 serve to position guide rods 35 for a car elevator constructed as explained in said copending case. This elevator D consists of a stirrup 32 having upper and lower cross pieces perforated (the upper perforation being elongated) so that it may slide readily up and down on the rods 35 and assume a tilting or car-discharging position thereon. This elevator is raised and lowered by means of a cord 63 that runs through a perforation in the bridge-piece 25 and is carried by the pulleys 62 and 61 and finally passes through a perforation in the bridge-piece 60 so as to suspend the cradle 66 by means of the cords 64.

This cradle 66 is normally held in its upraised position by means of a latch 46 forming a part of the lever 45 which is secured to a rock shaft 44 which carries a trip lever 43. A spring 47 presses against the trip lever 43 and serves normally to hold the latch 46 under the cradle 66. This cradle is kept supplied with a weight 70 when it is in its uplifted position and this weight serves to uplift the elevator and is then automatically discharged after the car has left the elevator, as will be explained.

A gravity car C enters under its own inertia from the lower end of the track and it rolls upon the rails 30 and 31 of the elevator until it impacts the trip lever 43 at the point 42. This releases the catch 46 and the cradle is now free to descend under the influence of the weight 70. This has the effect of up-

lifting the elevator. It is to be observed that the weight 70′ must not be permitted to roll off of its chute 70 when the cradle 66 is displaced, nor should the weight 70 leave the cradle 66 and permit the elevator to drop before the gravity car C has cleared the elevator. These functions are achieved as follows:

The weight 70 is kept in the cradle 66 during its descent by reason of the fact that the cradle is normally tilted up slightly as will be perceived by Fig. 1, but when the cradle reaches its lowermost position it comes to rest upon an oppositely inclined support or platform 76 which has the effect of tilting the cradle until its lip 68 rests upon the stop 77. This tilts the cradle and the spherical weight 70 would immediately leave the cradle and permit the elevator to drop were it not for the fact that the trigger 78 has in the mean time been swung into position to arrest the departure of the weight 70. This trigger is pivoted at 81 and it has a short arm 82 provided with a roller 83 that hits against the roof of the car just before the cradle hits the platform 76. This swings the trigger 78 from the position shown in Fig. 3 onto the position shown in Fig. 4 thereby positioning the end 79 in the path of the spherical weight 70 and holding it from leaving the cradle. Now, as soon as the car leaves the elevator, the roller 83 will be permitted to drop back into its normal position under the action of the spring 84 with the effect that the trigger will be withdrawn to the position shown by Fig. 3, and the weight 70 will roll out of the cradle to one side of the elevator D and the elevator will now descend of its own weight (being heavier than the cradle) and this will uplift the cradle into its upper position where it is to receive another weight.

When the elevator started to descend, it withdrew the lip 68 from pressure against the short arm 73 of the trigger 72 pivoted at 74, this enabled the spring 75 to swing this trigger into the position shown by Fig. 2 thereby bringing the part 72 into the path of the next weight 70′ and thus preventing the travel of said weight. When the cradle rises, however, its lip 68 again releases the trigger 72 with the consequence that the weight 70′ is now enabled to roll onto the cradle which, however, is now locked against descent by the latch 46. As soon as the car completes its voyage, it will again operate the latch 46, and the cycle will be repeated.

This apparatus will thus be seen to be fully automatic inasmuch as any desired number of weights 70, 70′ and 70″, etc., can be placed in the chute 71 and the apparatus will perform in repeated cycles until these several weights have all been used up. The child can furthermore add weights to the chute as often as they are discharged by the cradle and thus keep the apparatus continuously in operation as long as desired, thereby obtaining a very pleasing and entertaining effect.

Without further elaboration, the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

Having thus revealed my invention, I claim as new and desire to secure by Letters Patent of the United States:—

1. An automatic toy combining an elevator; a cradle connected therewith; a magazine; latch mechanism for normally holding the cradle uplifted; trip mechanism for supplying the cradle when uplifted with a weight from the magazine; and a looped gravity trackway adapted to discharge a car under said elevator whereby said car may actuate said latch to enable the cradle to automatically uplift said elevator.

2. An automatic toy combining a looped inclined track; an elevator connecting its ends; a cradle for operating said elevator through a weight obtained from said magazine; a latch normally restraining the descent of said elevator and adapted to be released by abutment with the gravity car on said elevator to permit the uplift of said elevator; and means operated by said car for preventing the discharge of the weight from said cradle until the car has left said elevator.

3. An automatic toy combining a magazine containing a plurality of weights: a trigger normally restraining the discharge of said weights; a cradle adapted, when uplifted to release said trigger when in position to receive a weight from said magazine; a latch normally blocking the descent of said weighted cradle; an elevator operated by said cradle; and a car adapted when received by said elevator to release said latch.

In witness whereof, I hereunto subscribe my name, as attested by the two subscribing witnesses.

JOHN C. TURNER.

Witnesses:
B. COOKE,
N. SCHWARTZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."