Feb. 26, 1929. 1,703,378

H. N. BARNUM

AMUSEMENT DEVICE

Filed May 21, 1928 2 Sheets-Sheet 1

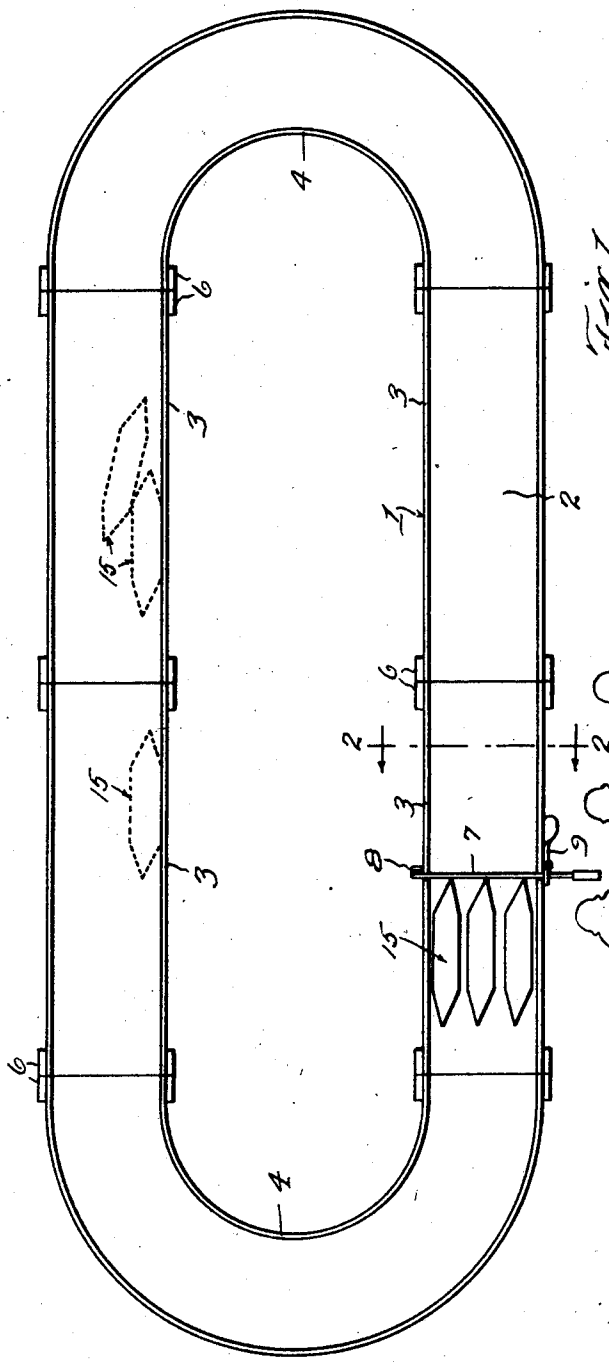


Fig. 1

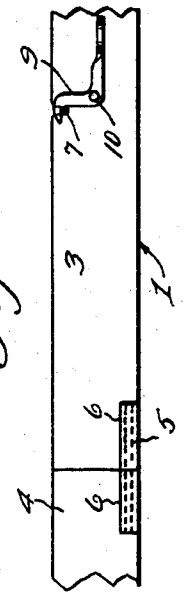


Fig. 3

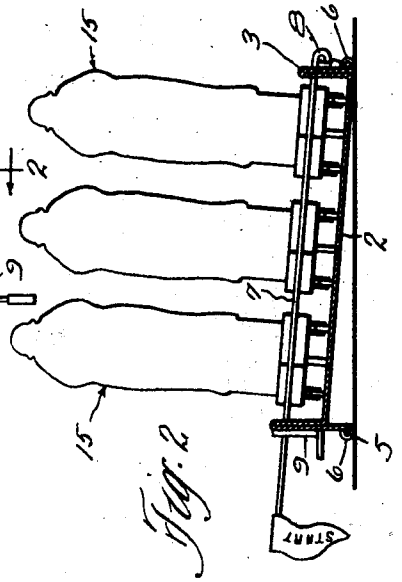


Fig. 2

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Fig. 4

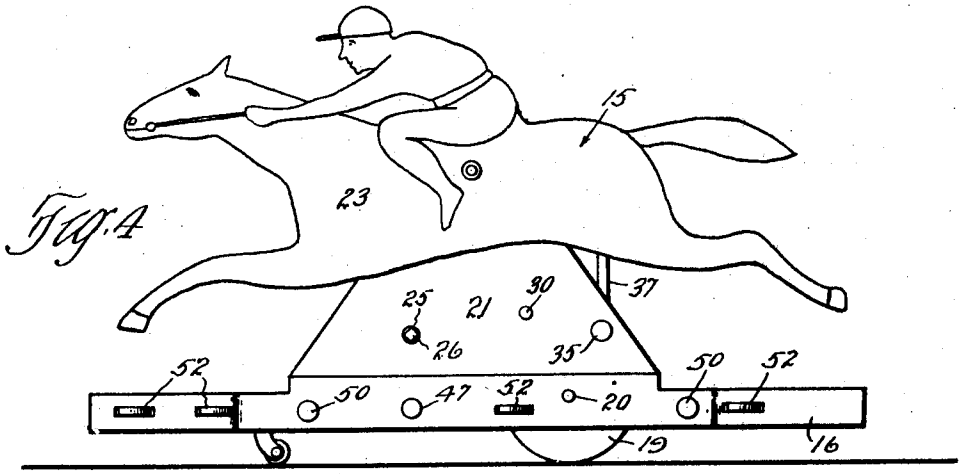


Fig. 5

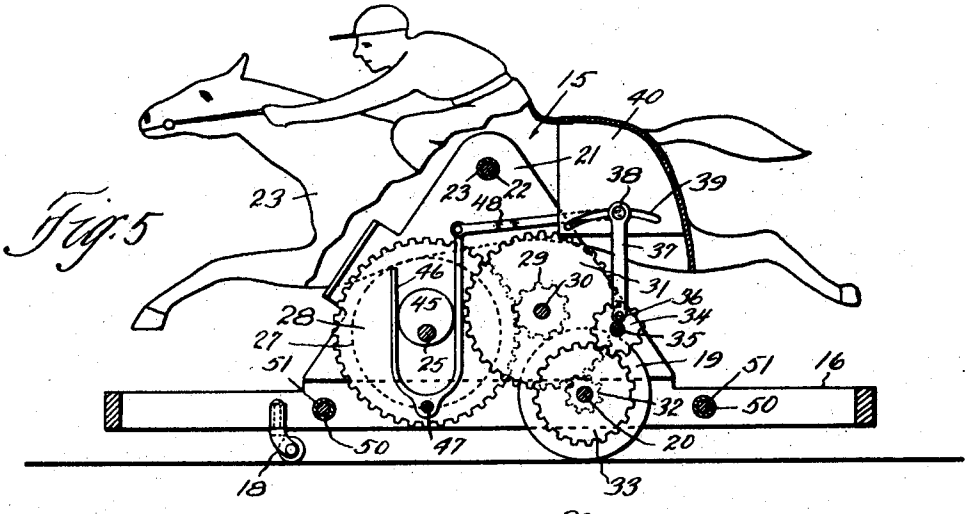
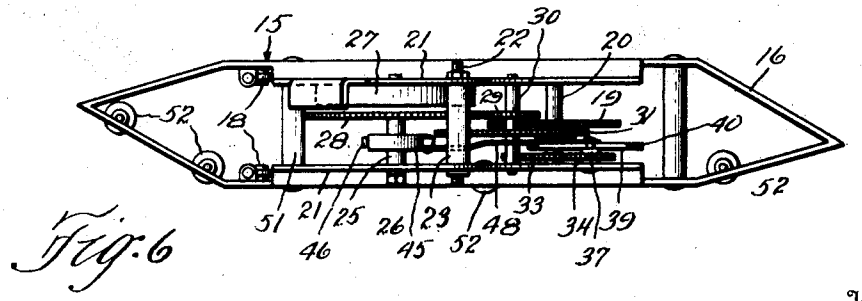


Fig. 6



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UNITED STATES PATENT OFFICE.

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AMUSEMENT DEVICE.

Application filed May 21, 1928. Serial No. 279,302.

This invention pertains to an amusement device that is in the nature of a racing toy or game, and its primary purpose is to provide a device of this character involving a plurality of self-propelled objects, each of which runs with a varying speed so that at times it travels faster than at other times, and by reason of which, great interest is excited among the observers or participants in the game because, while the objects may be lined up and started at the same instant, doubt prevails as to which object will win the race until practically the finish thereof.

Other aims of the invention are to provide a relatively inexpensive self-propelled object involving simple governing means for automatically varying its speed; to provide an amusement device or toy of the character first above described involving a track, and two or more of the self-propelled objects, constructed so that one object may pass another during the course of a race; to make the track in sections so that it may be dismantled and packed in limited space, and also to the end that the track may be enlarged to any size desired by simply adding sections; and to provide a very simple and cheap construction for such a track.

Advantages arising from making the track in sections, and from making each object complete of itself to the inclusion of its own propelling mechanism, are that outfits of different sizes may be manufactured by means of the same tools and equipment (since it is only a matter of selecting the desired number of track sections and objects to make up an outfit of the desired size) and sold at correspondingly different prices; that an outfit may be enlarged by an owner from time to time by purchasing additional track sections and objects; and that any track sections or objects that become damaged or broken may be replaced at nominal expense.

Another aim of the invention is to provide a self-propelled device or toy involving an oscillating member, preferably in imitation of an animated object that gallops or rocks in travel, and in which the oscillation of such member is utilized to govern the speed of the device; and, more specifically, to incorporate means actuated by the propelling mechanism for automatically changing the period of vibration of said member, thereby to vary the speed of the device.

Other objects and advantages will appear as I proceed to describe the invention in detail, reference being had to the accompanying drawings wherein Fig. 1 is a plan view of a track with objects, shown in full lines, arranged thereon in starting position and, in dotted lines, in positions they may assume during the course of a race; Fig. 2 is a transverse section on the line 2—2 of Fig. 1, and on a scale considerably enlarged over that of the former view; Fig. 3 is a fragmentary side elevation of the track as viewed from the left of Fig. 2; Figs. 4 and 5 are side elevational views of one of the racing objects, the latter view being partly in section; and Fig. 6 is a plan view of one of the racing objects with the oscillating member omitted.

The track, designated generally by the reference numeral 1, is preferably made of sheet metal and is of channel formation, the roadway 2 of the track, which is constituted of the web of the channel, being inclined downwardly from the outer toward the inner side of the track. The side flanges of the track are formed, according to the present disclosure, by bending the material of the track upwardly and thence outwardly and downwardly against itself, as clearly shown in Fig. 2. The track is preferably made up of a number of straight sections 3 and curved end sections 4. and the sections are adapted to be detachably connected together by dowel pins 5 that are engaged within sleeve-like members or sockets 6 that are formed on the opposite sides of the ends of each track section.

One of the track sections, as, for example, the lower left hand straight section 3 as the track is viewed in Fig. 1, is equipped with a gate 7 that may conveniently be formed by the straight portion of a spring wire that is coiled at 8 and secured to the inner side flange of said track section, the opposed flanges being notched to accommodate the gate when the same is held in closed position, as indicated in the drawings, by a latch 9 that is pivoted at 10 to the outer flange of the track.

The racing objects are designated generally by the numeral 15, and one of said objects is shown in detail in Figs. 4 to 6. Each object involves a supporting structure, and a member pivotally connected thereto for oscillation. The supporting structure incorporates a base frame 16 that is pointed at each end, the point of the forward end being a material distance to one side of the longitudinal axis of the frame, while the point of the other end is some distance on the other side of said axis, as clearly appears from the plan view of Fig.

6. The reason for this will presently appear.

The forward end of the frame is supported by casters 18, while the rear end is sustained by a traction wheel 19 that is fastened to a shaft 20 that is rotatably supported by and between the side members of the base frame. Side plates or housings 21 rise from the opposite sides of the base frame, and their upper ends are secured against separation by a tie rod 22, and are spaced apart by a sleeve 23 that is applied to said tie rod between said plates. An oscillating member 23 is pivotally supported upon the tie rod 22 so that it is free to rock with respect to the supporting structure.

The member 23 is preferably formed in imitation of an animated object, as a race horse, dog, or the like, the first named object being selected for the purpose of the present illustration, although the oscillating member may take the form of a boat, for example, which would have a rocking movement when the racing object is in action similar to that of a boat when riding waves.

Rotatably supported by and between the housings or side plates 21 is a spring arbor 25 which has one of its ends, designated 26, squared or otherwise formed for the application of a key or other winding means. 27 is a coil spring that has one of its ends secured to the arbor 25 and its opposite end fastened to a large spur gear 28 that is rotatably mounted upon the arbor 25 and meshes with a pinion 29 on a shaft 30 that is journaled at its ends in apertures in the side plates or housings 21. A relatively large spur gear 31 is secured to the shaft 30 and meshes with a pinion 32 on the previously mentioned shaft 20. This latter shaft also carries a gear 33 that drives a pinion 34 that is journaled on a stub shaft 35 which projects inwardly from the adjacent side plate or housing 21. This latter gear carries a crank pin 36 to which is pivotally connected one end of a link 37 whose opposite end is equipped with a pin 38 that extends through a slot 39 in a plate 40 that is fastened to the oscillating member 23.

A cam or eccentric 45 is secured to the spring arbor 25 and operates between the opposed branches of a yoke 46 that is pivoted at its lower end on a stud 47 that extends inwardly from the adjacent side member of the base frame 16; and the upper end of the yoke has connection, through a link 48, with the upper end of the previously mentioned link 37, the connection between said links being effected, in the present instance, through the medium of the pin 38 that extends through the slot 39, the respective links being arranged on opposed sides of the plate 40. Tie rods and spacers 50 and 51, respectively, rigidly secure together in properly spaced relation the opposed sides of the base frame 16. A suitable number of anti-friction rollers 52 are arranged along one side of the base frame 16 and protrude through slots therein beyond the outer surface of the frame, as clearly shown in Fig. 6.

If the device is to be used as a game, each player selects a racing object 15, winds up the spring 27 thereof by the application of a key to the arbor 25 and places the object with its forward end against the gate 7, as indicated in full lines in Fig. 1. The friction of the traction wheel 19 of each of the objects with the roadway of the track 1 prevents the spring from unwinding, but as soon as the latch 9 is operated to release the gate 7, the gate swings upwardly out of the way and frees the racing objects whereupon their spring motors will function to propel the objects along the track, the drive in each case being from the spring, through the arbor 25, gear 28, pinion 29 and shaft 30, gear 31, and pinion 32, to the shaft 20 to which the traction wheel 19 is secured. As the object progresses along the course the spring gradually unwinds and as it does the cam or eccentric 45 is rotated relatively slowly to rock the yoke 46. The movement of the yoke is transmitted, through the link 48, to the pin 38 so as to adjust said pin along the slot 39 toward and from the center of oscillation of the member 23 which center, as will be remembered, is defined by the axis of the tie rod 22. As the shaft 20 is rotated it drives the gear 33 secured thereto and, through said gear, the pinion 34 which carries the crank pin 36 to which the lower end of the link 37 is connected. This will cause said link to be moved up and down and impart like movement to the member 23 by reason of its connection therewith through the pin 38 and slotted plate 40. Obviously, when said pin is nearer the center of oscillation of the member 23, said member will be caused to swing a greater distance than when the pin is more remote from said center; and since this affects the speed of rotation of the pinion 34, which is positively geared to the propelling mechanism, it will be seen that speed of said mechanism is governed by the oscillation of the member 23. In other words, the propelling mechanism actuates the means for varying the period of vibration of the oscillating member and, in turn, the oscillating member governs the speed of the propelling mechanism.

As the objects leave the starting position at somewhat different speeds, they coast laterally against the inner flange of the track by reason of the transverse inclination of the bed thereof, the casters 18 yielding to the gravitational action of the objects. As a following object acquires a speed superior to that of an object ahead, the inner side of the inclined forward end of its base frame will overlap the outer inclined rear end of the base frame of the preceding object so that the object traveling at faster speed may pass

around the other. The rollers 52 reduce the frictional contact of the objects with the inner flange of the track and of each object with another as it is passing the same.

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

1. In a device of the class set forth, the combination of a plurality of objects that are adapted to travel along a course, and propelling mechanism incorporated in each object that operates normally with a variable speed.

2. In a device of the class set forth, the combination of a track, a plurality of objects adapted to travel upon said track, propelling mechanism incorporated in each object, and means in said mechanism for causing it to operate normally with a variable speed.

3. In a device of the class set forth, the combination of a track having a depressed course, and a plurality of variable speed self-propelled objects adapted to travel along said track and seek by gravity the depressed course thereof, the objects being so designed that each may cooperate with and pass another.

4. In a device of the class set forth, the combination of a transversely inclined track, and a plurality of variable speed self-propelled objects adapted to travel upon said track and seek by gravity the lower side thereof, the objects being so designed that each may cooperate with and pass another.

5. In a device of the class set forth, the combination of a track having a depressed course, a plurality of variable speed self-propelled objects adapted to travel upon said track and seek by gravity the depressed course thereof, the objects being so designed that each may cooperate with and pass another, and means associated with the track for lining up a plurality of objects at a starting position and release them substantially simultaneously.

6. In a device of the class set forth, the combination of a track, a plurality of self-propelled objects adapted to travel upon said track, a gate for lining up said objects at a starting position, means for swinging said gate from object obstructing position, and a releasable latch for holding the gate in said position.

In testimony whereof, I hereunto affix my signature.

HOWARD N. BARNUM.