June 9, 1942. H. A. KROLL 2,285,988

TOY AMUSEMENT DEVICE FOR SIMULATING AIRCRAFT IN FLIGHT

Filed Dec. 16, 1939 2 Sheets-Sheet 1

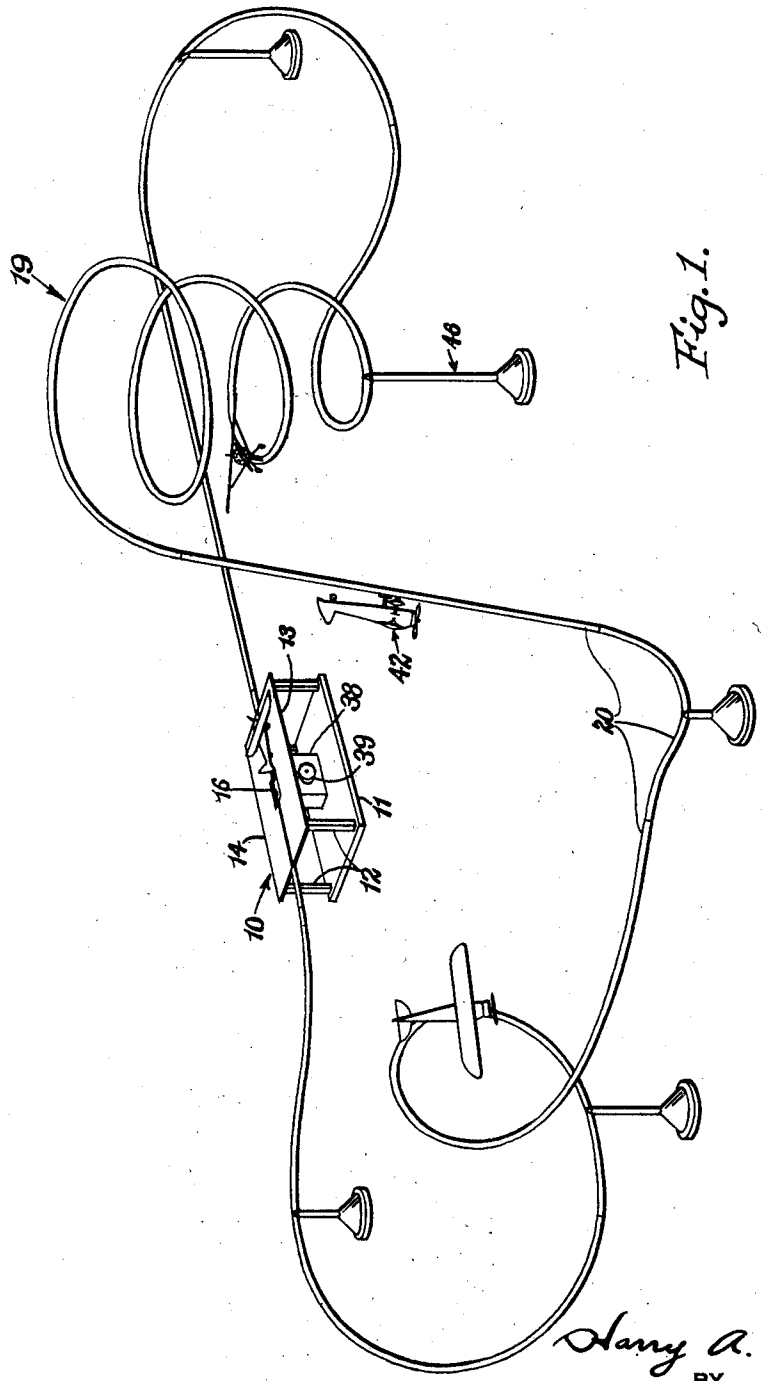


Fig. 1.

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Fig. 2.

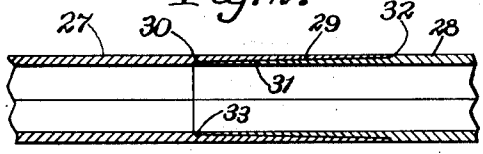


Fig. 3.

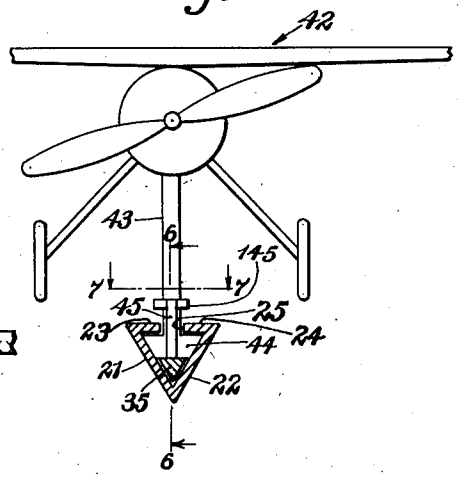
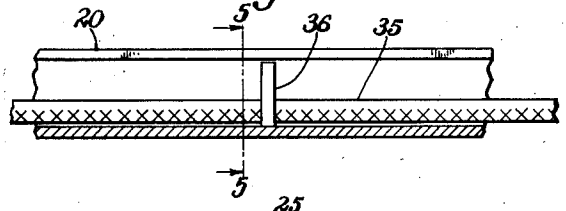


Fig. 4.



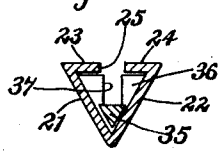


Fig. 5.

Fig. 6.

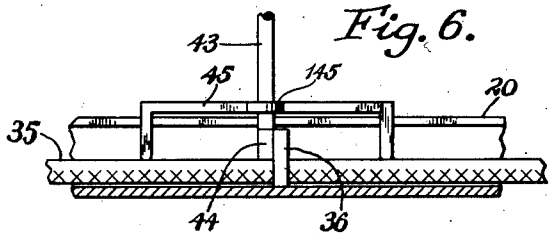


Fig. 7.

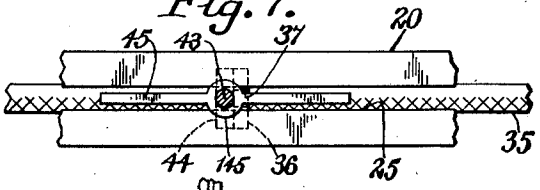


Fig. 8.

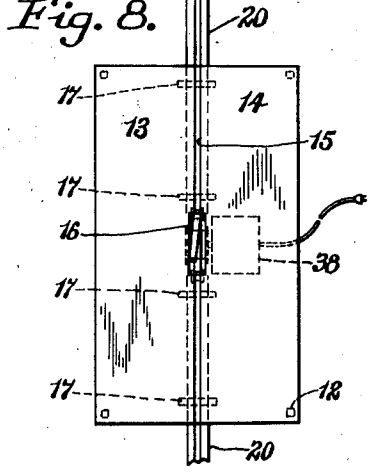
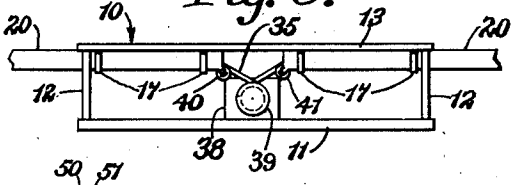


Fig. 9.



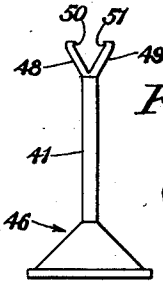


Fig. 10.

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UNITED STATES PATENT OFFICE

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TOY AMUSEMENT DEVICE FOR SIMULATING AIRCRAFT IN FLIGHT

Harry A. Kroll, Buffalo, N. Y.

Application December 16, 1939, Serial No. 309,648

3 Claims. (Cl. 46—77)

This invention relates to a toy amusement device and more particularly to a cable operated amusement device whereby a toy airplane is propelled along an irregularly circuitous track by means of a cable within the track to simulate the movements of a stunting airplane.

It is therefore the principal object of the invention to provide an amusement device for simulating an aircraft in flight comprising a circuitous track along which the miniature aircraft is propelled, the track being preferably made up of tubular track sections joined together through which an endless cable or cord is propelled.

Another object of the invention is to provide a novel amusement device which can be readily set up for operation by joining together a plurality of differently shaped thin metal tubes in such a manner as to construct a circuitous track of any contour desired.

Another object of the invention is to provide such an amusement device in which the ends of the tubular sections are joined together in a novel manner.

Another object of the invention is to provide such an amusement device in which the endless cable or cord carries engagers attached at desired intervals along its length for engaging companion engagers on the toy airplanes to move them along the track.

Another purpose of the invention is to provide the toy airplane in such an amusement device with means to balance it and keep it from tilting backwardly or forwardly as it is propelled along the track.

Another object of the invention is to provide a landing platform for the toy airplanes which also houses the means for propelling the cable or cord through the track.

A further aim of the invention is to provide such an amusement device in which the track is supported by weighted standards at desired intervals along its length, thereby maintaining the track in a rigid condition.

A further aim of the invention is to provide an amusement device of the character described which is simple in construction, durable and inexpensive.

In the accompanying drawings:

Fig. 1 is a perspective view of the amusement device embodying my invention and showing several airplanes in different positions on the circuitous track.

Fig. 2 is a fragmentary, horizontal, longitudinal section of a joint between two tubular sections with the cable removed.

Fig. 3 is a vertical transverse section of the track showing a toy airplane mounted on the track.

Fig. 4 is a fragmentary, vertical, longitudinal section of the track showing a portion of the cable and a cable engager attached thereto.

Fig. 5 is a vertical transverse section, taken along the correspondingly numbered line in Fig. 4.

Fig. 6 is a fragmentary, vertical, longitudinal section, taken along the correspondingly numbered line in Fig. 3.

Fig. 7 is a fragmentary, horizontal section, taken along the correspondingly numbered line in Fig. 3.

Fig. 8 is a top plan view of the landing platform.

Fig. 9 is a side elevation of the landing platform.

Fig. 10 is a side view of one of the standards adapted to support the track.

The amusement device embodying my invention includes a landing platform indicated generally by the numeral **10** which comprises a rectangular base **11**, from each corner of which rises a post **12** which posts jointly support a platform made up of two substantially rectangular sections **13** and **14**. The sections **13** and **14** are in the same horizontal plane but are in spaced relation to each other to provide a central longitudinal slot **15**. The central portion of the inside margin of each of the sections **13** and **14** is recessed so as to provide a rectangular opening **16** when the two sections **13** and **14** are assembled. The two sections **13** and **14** are held securely in position by a number of brackets **17** which span the slot **15** and also support the opposite ends of the track indicated generally at **19**. The brackets **17** are mounted on the underside of the sections **13** and **14**.

The tortuous track **19** is made up of a plurality of tubular sections **20** joined together, the sections varying in curvature. The tubular sections are shown as triangular in cross section, although they may be of other forms. As shown, each section **20** comprises two laterally outwardly inclined side walls **21** and **22** joined at their lower edges, the upper portion of each side wall being bent inwardly to provide shoulders **23** and **24** spaced to leave a slot **25** therebetween, as shown in Fig. 5. The slot **25** extends continuously from one end of the track **19** to the other.

To effect a simple and smooth joint between the several track sections **20**, the opposite ends of each track section are of female and male

form, as indicated at 27 and 28, to interfit. For this purpose, as best shown in Fig. 2, each track section 20 is provided at one end with an internally tapered face 29 which flares outwardly toward the end of the track section, the taper extending longitudinally of the track section a reasonable distance to provide a substantial surface area. A shallow transverse groove 30 is provided at the inner edge of the internally tapered face 29, which groove extends across all of the inner surfaces of the triangular tubular track section. The other male end 28 of each triangular tubular track section 20 is adapted to be fitted into the female end 27 of another track section and is formed with an externally tapered face 31, which flares outwardly from the end of the track section and terminates in a shoulder 32 which extends transversely around the exterior of the track section on all sides, this shoulder 32 forming a stop or abutment for the end edge of the female end 27 joined thereto. The male end 28 of each track section is provided with an external bead 33 which is adapted to interfit the corresponding groove 30 in the female end of the tubular track section 27 fitted thereto. Thus, when the track sections are joined together the male end 28 of each track section is inserted within the female end 27 of another track section and pushed inwardly until the bead 33 snaps into the groove 30 in which position the internally tapered face 29 will be closely engaged by the externally tapered face 31. It will be noted that this arrangement provides a secure joint between the several triangular tubular sections 20 to provide a continuous track 19 having smooth internal and external surfaces.

As a means for propelling the toy airplane along the track 19, the track is internally provided with an endless cable or cord 35 which can be made of any suitable flexible material. When used in a triangular track, as shown in the drawings, the cable is preferably also of triangular cross section. The cable 35 passes through all of the joined triangular tubular sections 20 making up the circuitous track 19. At desired intervals along the length of the cable 35 one or more cable engagers 36 are attached thereto. Each of these cable engagers 36 is triangular in outline and is adapted to slide along the internal surfaces of the triangular tubular track 19 and is provided with a vertical central slot 37 which extends from the upper edge thereof downwardly to the top of the cable 35 thereby exposing a portion of the upper surface of the cable.

The endless cable 35 can be moved through the track 19 by any suitable driving means, the driving means shown comprising a small electric motor 38 mounted on the base 11 of the landing platform, indicated generally at 10, and a pulley 39 fast to the shaft of the motor 38. As the endless cable 35 leaves the end of the track 19 it passes over a small pulley 40 which is suitably mounted on this end of the track 19. The cable then passes around the driving pulley 39 and thence enters the beginning end of the track 19 by passing over another small pulley 41 suitably mounted on the beginning end of the track 19. In place of the electric motor 38, a hand driven mechanism or any other suitable driving means can be employed.

Each of the toy airplanes, generally indicated by the numeral 42, is provided with a depending post 43, the lower end of which is enlarged to provide a plane engager 44. Each plane engager 44 rests on the cable 35 and is essentially trapezoidal in form to slidingly engage a portion of the internal surfaces of the side walls 21 and 22 of the track. Each plane engager 44 is integral with the post 43 and is so formed as to prevent the toy airplane from rocking from side to side. To prevent the airplane 42 from rocking backwardly or forwardly a balancer 45 is employed which consists of a substantially C-shaped member, the central portion of which is swivelly mounted on the post 43, as indicated at 145, the rounded ends of the depending prongs of the balancer 45 resting on the cable 35.

Weighted standards 46 of any suitable form are clipped to the track at various points and serve to support it and keep it stationary. Rising from the weighted base of the standard is a central post 47 terminating in a bifurcated end consisting of a pair of prongs 48 and 49 thereby providing a V-shaped rest for the track 19. The ends of the prongs 48 and 49 are provided with small lips 50 and 51 projecting inwardly therefrom so that when the standard receives the triangular track 19 the lips 50 and 51 snap over the upper edges of the track thereby firmly yet removably holding it stationary.

When setting up the amusement device for operation the triangular tubular sections are joined together to form the track of any contour desired. There may be tubular sections which are straight, curved, irregularly sinusoidal, etc. The cable 35 with one or more cable engagers 36 attached thereto is then threaded through the tubes and around the pulleys 39, 40 and 41 and its ends joined to form an endless drive cable. The plane engager 44 of a toy airplane is then inserted through the opening 16 in the landing platform 10, and the toy airplane pushed forwardly until the plane engager 44 enters the beginning end of the track 19. The electric motor 38 or other suitable driving means is started, thereby causing the cable 35 to be moved through the track. As a cable engager 36 approaches the plane engager 44 the vertical slot 37 provided in the cable engager is of sufficient width to permit the depending forward prong of the relatively narrow airplane balancer 45 to pass therethrough, the cable engager continuing to move forwardly relative to the plane engager until it engages the rear face of the plane engager 44 thereby propelling the toy airplane along the track. The toy airplane is thus propelled along the entire course of the track by the pushing action of the cable engager against the plane engager, except where the airplane is descending a slope so steep as to cause it to "dive," due to the force of gravity, at a faster speed than the speed of travel of the cable 35 through the track. This action simulates a "power dive" and makes more real the movements of the airplane.

The toy airplane 42 continues to be propelled along the track and as it approaches the landing platform it presents the appearance of an airplane landing. The central longitudinal slot 15 in the roof of the landing platform is of the same width as the slot 25 in the track 19. The beginning and terminating ends of the track 19 are secured to the underside of the roof of the landing platform made up of the two sections 13 and 14 by means of the brackets 17.

In order to prevent the toy airplanes 42 from falling through the central opening 16 in the platform 10 after the cable engager 36 leaves the plane engager 44 to pass around the pulley 39, each airplane is provided with wheels both at the front and rear ends thereof which will land

on and roll along the platform and carry the toy airplane on an even keel until the plane engager 44 is again engaged by the cable engager 36, the momentum of the airplane as it lands being sufficient to propel it, without the aid of the cable engager 36, across the opening 16 in the platform 10.

If it is desired to remove the toy airplane from the track it can be done at this point by lifting the airplane together with its plane engager 44 attached thereto through the opening 16.

It is to be noted that one or more cable engagers 36 can be attached to the cable as close together as desired. Where two cable engagers are relatively close together so that the plane engager of a toy airplane is engaged by each, the two airplanes, one closely following the other, will depict a "dog fight" or stunting airplanes as they are propelled along the track. By joining together the tubular sections desired the operator can construct a track of any desired contour and simulate any desired stunt or combat flyings.

As a further means for making the actions and movements of the toy airplane more realistic, the electric motor 38 can be equipped with a rheostat (not shown) which can be adjusted by the operator to cause the airplane to move slowly on the climbs and faster on the dives.

The tubular sections which when joined together form the track can be made of materials other than metal, and further, the cross sectional form may be other than triangular.

It will be obvious that many changes can be made within the scope of the claims, particularly in the manner of driving the toy airplanes. For example, the airplanes could be driven by individual motors supplied with power from any suitable source and driving the airplane either through a propeller on the airplane or positively through the track.

From the foregoing it will be seen that the present invention provides a simple and inexpensive amusement device for simulating the movements of a stunting or combat airplane in flight by propelling a toy airplane along an irregularly circuitous track made up of a plurality of track sections of different curving shapes joined together.

I claim as my invention:

1. A toy amusement device for simulating an aircraft in flight, comprising a miniature aircraft, a single hollow rigid track, means for movably supporting the entire weight of said miniature aircraft on said track, means within and moving along said track for propelling said miniature aircraft along said track including an endless cable within said track and means attached to said cable for engaging with said supporting means, means for supporting the opposite ends of said track in spaced alined relationship including a platform adapted to receive said miniature aircraft, and means mounted on said platform for moving said cable through said track through the spaced opposite ends thereof.

2. A toy amusement device for simulating an aircraft in flight, comprising a miniature aircraft, a hollow rigid track slotted along one side from end to end thereof, means for movably supporting said miniature aircraft on said track, an endless cable within said track, means attached to said cable for engaging with said supporting means, means for supporting the opposite ends of said track in spaced alined relationship including a platform adapted to receive said miniature aircraft, said platform being provided with a slot in perpendicularly alined relationship with said slot provided in said track, and means interposed between said opposite ends of said track for moving said cable through said track.

3. A toy amusement device for simulating an aircraft in flight, comprising a miniature aircraft, a hollow rigid track slotted along one side from end to end thereof, means extending through said slot for movably supporting said miniature aircraft on said track, an endless cable within said track, means attached to said cable for engaging with said supporting means, means for supporting the opposite ends of said track in horizontally spaced alined relationship, comprising a base and a platform disposed over said base, said platform being adapted to receive said miniature aircraft and being provided with a slot in perpendicularly alined relationship with said slot provided in said track, said slot in said platform being enlarged to provide an opening between the spaced ends of said track to permit of removal of said miniature aircraft, and means interposed between the spaced ends of said track for moving said cable through said track comprising a pulley adjacent each of the ends of said track and a driving mechanism mounted on said base and engaging said cable.

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