United States Patent [19]

Becker

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[54] **VEHICLE LANDING CONTROL**

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[22] Filed: **Aug. 20, 1971**

[21] Appl. No.: **173,406**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 879,413, Nov. 13, 1969, Pat. No. 3,600,843.

[52] **U.S. Cl.** ..... **273/95 B,** 46/77, 46/81, 46/1 H

[51] **Int. Cl.** **A63b 71/02**

[58] **Field of Search** ..... 46/1 B, 1 H, 1 J, 1 R, 46/76, 77, 81, 86; 35/12; 273/95 B, 98, 108

[56] **References Cited**

UNITED STATES PATENTS

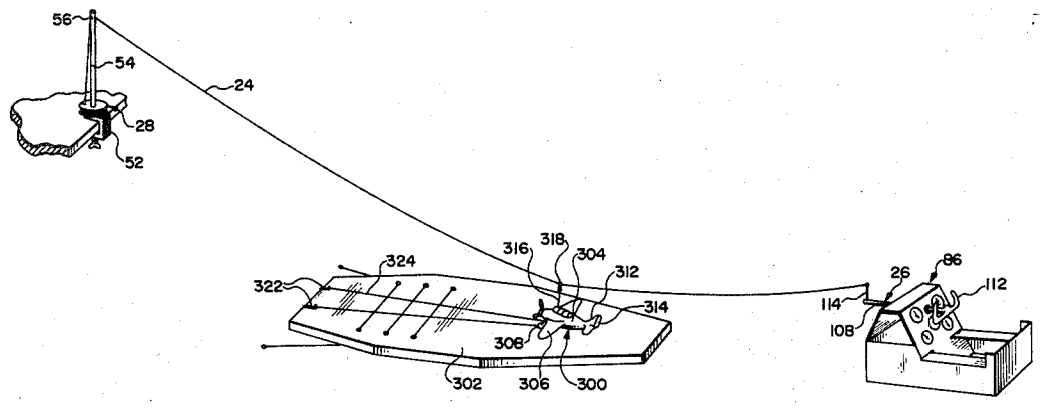
2,101,276	12/1937	Walter	273/95 B
2,388,513	11/1945	Swickel	273/95 B
2,512,421	6/1950	Fay	273/95 B
2,527,683	10/1950	Malo	273/95 B
2,634,127	4/1953	Shapiro	273/95 B
3,600,843	8/1971	Becker	46/1 H

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[57] **ABSTRACT**

A toy which is entertaining and educational in that the toy may be used to teach basic principles of flying and landing an airplane. A model airplane having a support is slideably supported on a monofilament support line. One end of the support line is secured to a fixed vertical support, and the other end is attached to a movable control. A landing surface is positioned below the support line for receiving the model airplane in a landing. The control regulates the tautness of the support line, thereby controlling the rate of vertical movement of the model airplane, which in turn controls the rate of movement of the model airplane along the support line.

19 Claims, 11 Drawing Figures



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SHEET 1 OF 4

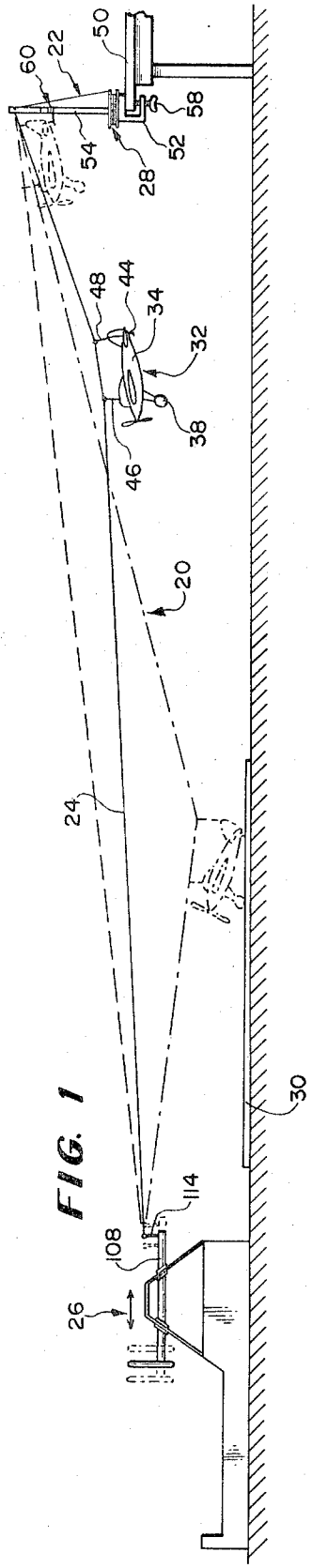


FIG. 1

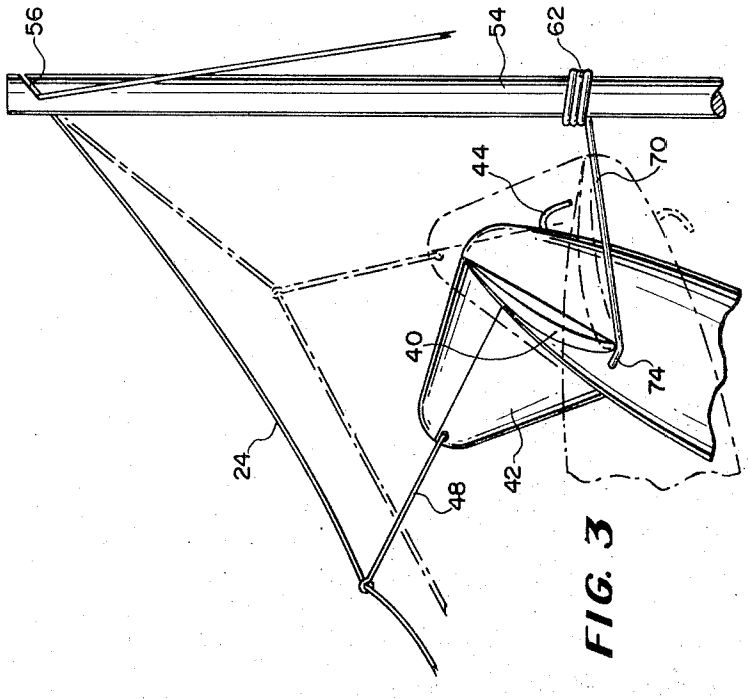


FIG. 3

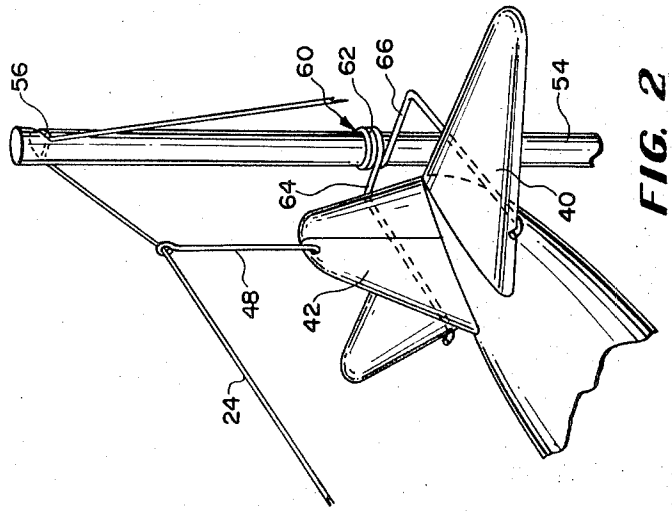


FIG. 2

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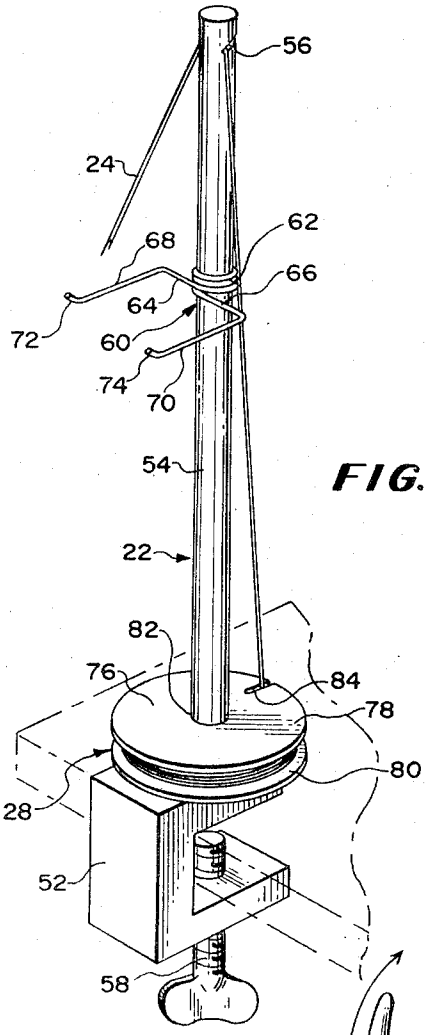


FIG. 4

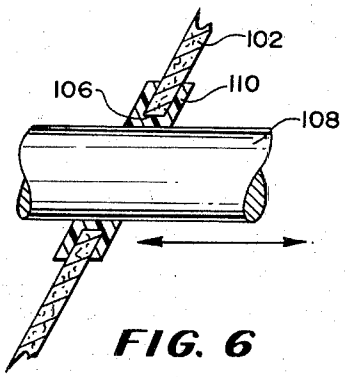


FIG. 6

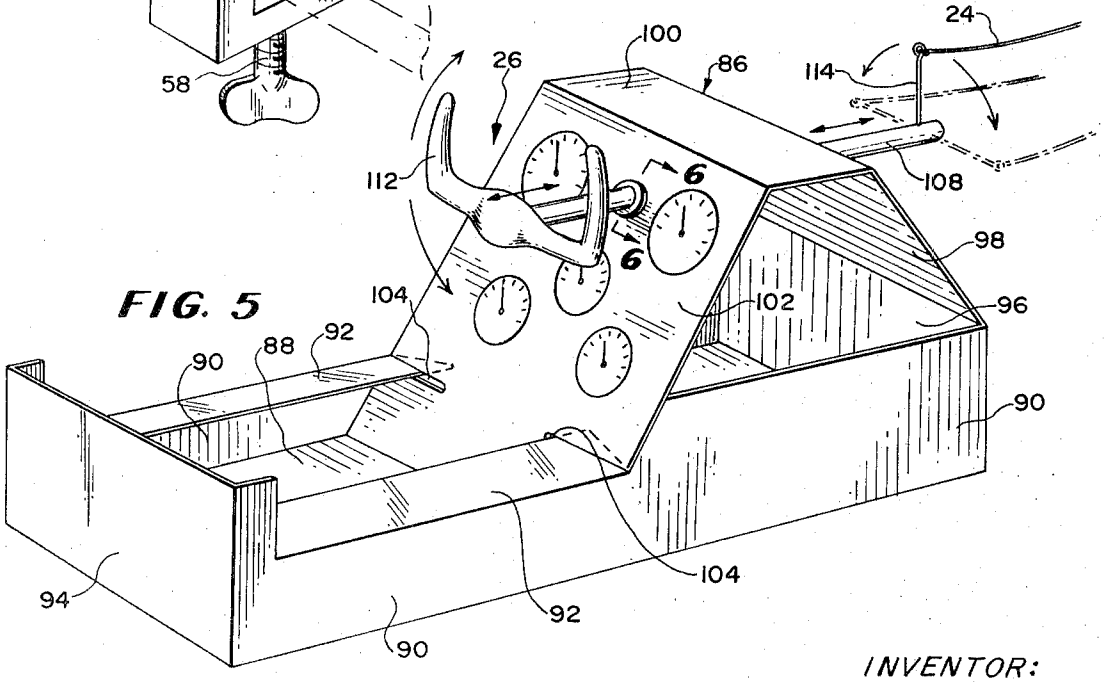


FIG. 5

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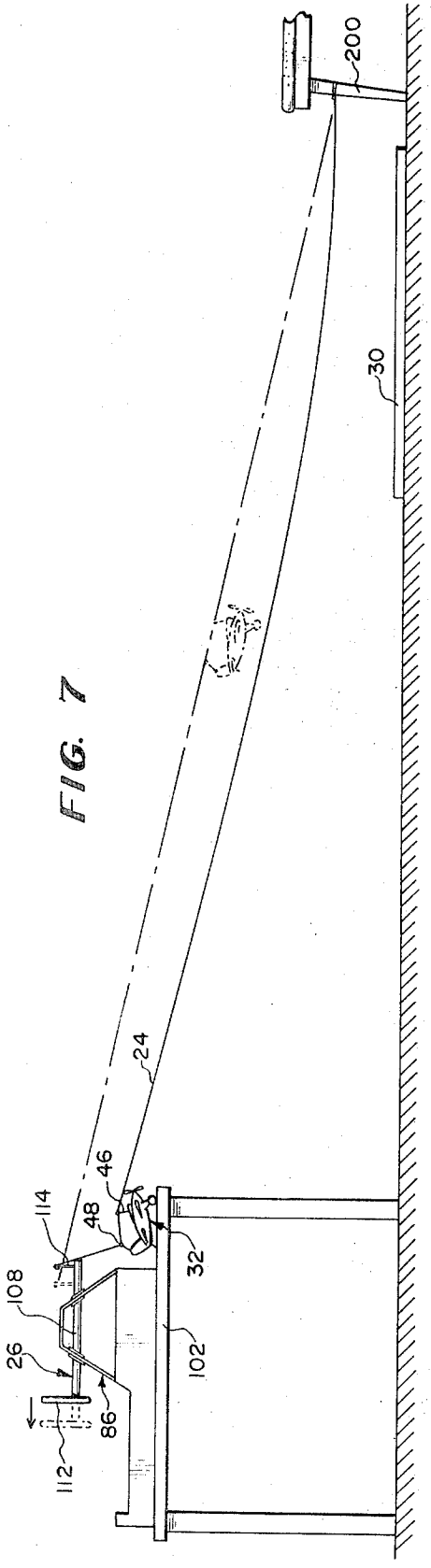


FIG. 7

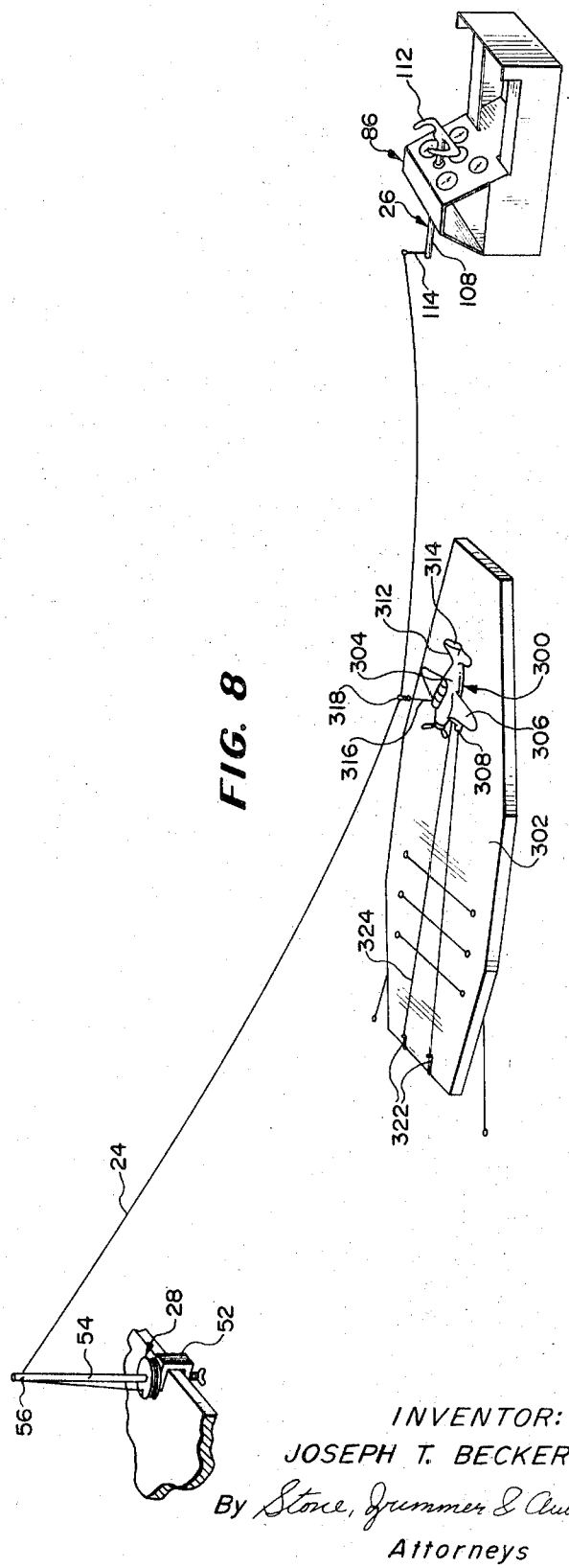


FIG. 8

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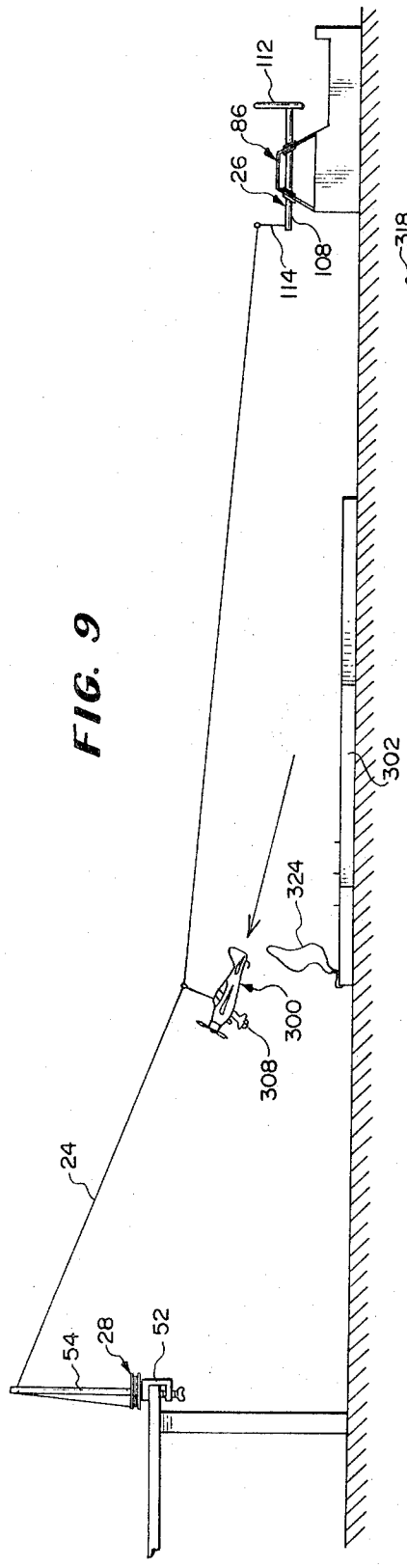


FIG. 9

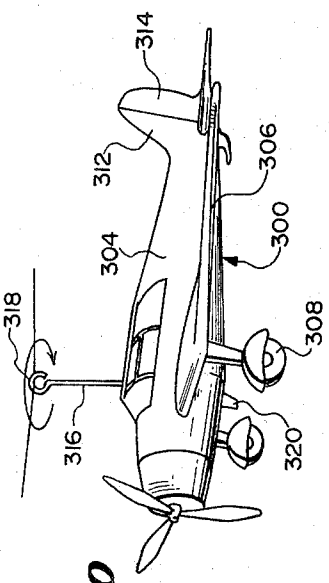


FIG. 10

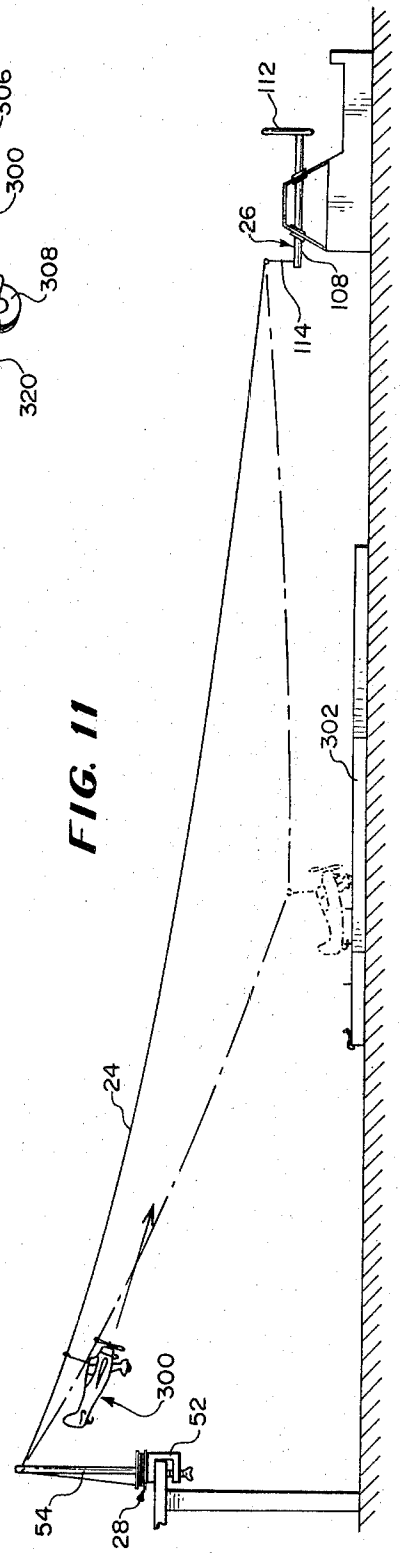


FIG. 11

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VEHICLE LANDING CONTROL

CROSS-REFERENCE TO RELATED APPLICATION

This is a continuation-in-part of U.S. Pat. application Ser. No. 879,413, filed Nov. 13, 1969, to be U.S. Pat. No. 3,600,843, issued Aug. 24, 1971, entitled TOY.

BACKGROUND OF THE INVENTION

Toys have been used heretofore to provide instruction to its operator in the form of a game. Model airplanes have been used to provide a source of entertainment for the operators. In order to simulate flight of the model airplanes, certain model airplanes have been mounted in various fashions on one or more support lines. Model airplanes which have been used heretofore have been arranged so as to go back and forth on a support line by raising and lowering one end of the support line. In certain instances, two lines have been used, wherein one line supported the model airplane and the other provided the means for moving the model. In other instances, the model airplane has carried a model bomb load. By shaking or appropriately moving the support line or a connecting line, the bomb load was dropped onto a target. None of the devices heretofore known provides a construction whereby the operator has a sense or simulation of actually controlling an airplane in flight. In the previously-mentioned patent, the patentee provided a model airplane which actually provided a simulation of flight and a simulation of landing.

SUMMARY OF THE INVENTION

The present invention provides an educational toy construction wherein the operator is able to simulate a landing of an airplane by controlling a model airplane during its landing. The invention includes a line which is attached to a fixed vertical support. The other end of the line is attached to a movable control, which is arranged to simulate the wheel of an airplane. A model airplane is suspended on a support line. A landing surface is provided beneath the support line. One end of the support line is higher than the other. As the model airplane is released from the upper end of the support line, the airplane slides along the support line. Movement of the control causes a response in the movement of the airplane to go up and down or from side to side in a manner similar to that of an actual airplane. The operator then guides the airplane to a touchdown on a landing strip, simulating actual landing of the airplane. The present invention also provides a launcher to launch an airplane off a landing strip along the support line so that the airplane in effect flies upward along the support line, then comes to a stop on the support line, turns and flies back to the landing strip, by sliding along the support line. The operator controls the simulated flight of the model airplane and controls the landing of the model airplane on the landing strip.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of a toy embodying the herein-disclosed invention;

FIG. 2 is a perspective view of a catch for holding a model airplane prior to descent and showing a portion of a model airplane;

FIG. 3 is a side elevational view of a portion of the catch and a fixed vertical support, showing the model airplane in a rest position and showing the model airplane in dotted form in a raised position prior to release for travelling along a support line;

FIG. 4 is a perspective view, showing a fixed vertical support and a clamp for securing the fixed vertical support to a supporting surface, such as a table, with the catch mounted on the upper portion of the fixed vertical support and a reel rotatably mounted on the fixed vertical support;

FIG. 5 is a perspective view of a control for the toy;

FIG. 6 is an enlarged fragmentary cross-sectional view taken on Line 6—6 of FIG. 5;

FIG. 7 is a side elevational view of the herein-disclosed invention, showing the control mounted at a higher level to start the descent of the model airplane from a keeper adjacent to the control;

FIG. 8 is a perspective view of the herein-disclosed invention, showing a landing strip having a launcher connected thereto for propelling the model airplane upward along the support line;

FIG. 9 is a side elevational view of the toy shown in FIG. 8, but with the model airplane moving upward along the support line;

FIG. 10 is an enlarged perspective view of the model airplane, showing a single support for the model airplane; and

FIG. 11 is a side elevational view similar to FIG. 9, but showing the model airplane turned and moving downward along the support line and showing the model airplane in a landed attitude in dotted form.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and especially to FIG. 1, a toy generally indicated by numeral 20 is shown therein, which toy is a specific embodiment of the invention disclosed herein. The toy 20 generally includes a keeper 22, a support line 24 connected to the keeper, and a control 26 connected to one end of the support line. A reel 28 is mounted on the keeper and stores the support line. A landing strip 30 is positioned below the line 24 and adjacent to the control 26. A vehicle, that is, a model airplane 32, is slideably supported on the support line 24 and is engageable with the landing surface 30.

The model airplane 32 is conventional in its construction in that it includes a fuselage 34. Wings 36 are mounted on the fuselage and provide lift for the model airplane as the model airplane travels along the support line. A pair of wheels 38 is connected to the fuselage to provide landing gear for the model airplane. The model airplane also includes a convention horizontal stabilizer 40 and a vertical stabilizer 42. Fixed to the fuselage near the tail portion thereof is a hook 44. The model airplane has a pair of wire support hooks 46 and 48 fixed thereon. The support hook 46 is fixed to a central portion of the fuselage, and the support hook 48 is fixed to the vertical stabilizer 42. The hooks 46 and 48 are in sliding engagement with the support line 24.

The keeper 22 is best seen in FIG. 4 and is shown mounted on a table 50. The table 50 is of a conventional table height. The keeper is secured to an edge of the table by a C-member 52, which has press-fitted therein a support rod 54, thereby providing a fixed vertical support. The support rod has a notch 56 in its upper end to receive the support line 24. A conven-

tional thumb screw **58** is mounted in the C-member and is in engagement with the table to hold the C-member in position and thereby hold the support rod **54** in a fixed vertical attitude.

A vehicle catch **60** is mounted on the support rod below the notch **54.** The vehicle catch is a formed wire member having a looped portion **62** which resiliently engages the support rod **54.** A pair of oppositely extending branches **64** and **66** are formed integral with the loop. A pair of identical cantilever arms **68** and **70** is formed integral with the branches **64** and **66,** respectively. The cantilever arms **68** and **70** have hooks **72** and **74** formed integral with their respective free ends. As may be seen in FIG. **3,** the cantilever arms **68** and **70** slope downward from the support rod **54.** The arms **68** and **70** are spaced to receive the tail portion of the model airplane **32** therebetween. The horizontal stabilizer **40** of the model airplane engages the arms and is prevented from slipping off the arms by hooks **72** and **74.**

The reel **28** is conventional in its construction and includes a cylindrical body **76** and a pair of side flanges **78** and **80** formed integral with the body. The body has a central aperture **82** for rotatably receiving the support rod **54.** A line slot **84** is formed in the flange **78** to receive the line **28** for holding the line onto the reel.

The control **26** is slideably and rotatably mounted on a simulated cockpit **86.** The simulated cockpit includes a floor **88** having a pair of side walls **90** formed integral therewith. Each of the side walls has a lock flap **92** formed integral with the side wall. A rear wall **94** is formed integral with the floor **88** and the side walls **90.** A front wall **96** is formed integral with the side walls **90** and the floor **88,** and is opposed to the rear wall **94.** A support panel **98** is formed integral with the front wall and has a top panel **100** formed integral with one edge thereof. An instrument panel **102** is formed integral with the top panel **100** and has simulated instruments printed on the top panel. The instrument panel includes a pair of lock slots **104** which receive the lock flaps **92** of the side walls. The instrument panel includes a control aperture **106,** and the forward panel also has a control aperture aligned with the control aperture **106** of the instrument panel. In this instance, the cockpit **86** is made of cardboard and folded in order to make up the cockpit. It is readily apparent that the cockpit and instrument panel which provide a support for the control **26** may be made of any convenient material, such as, sheet plastic material.

The control **26** includes a drive shaft **108,** which is slideably and rotatably mounted in the control support, that is, the instrument panel **102** and the forward panel **98.** As may be seen in FIG. **6,** the instrument panel **102** has a bushing **110** mounted in the aperture **106** to receive slideably the drive shaft **108.** A wheel **112** is fixed to one end of the drive shaft, and a vertical support or post **114** is fixed to the other end of the drive shaft. The line **24** is secured to the post **114,** as may be clearly seen in FIG. **5.**

The toy **20** is set up for operation by attaching the support rod **54** to the table **50.** The line **24** is released from the reel **28** until sufficient line is unwound to position the control **26** an appropriate distance from the support rod. The model airplane **32** is connected to the support line by placing the hooks **46** and **48** into engagement with the support line **24.** The horizontal stabilizer of the model airplane is then mounted on the vehicle catch. When the line **24** is left slack, the model airplane simply hangs in a position, as shown in solid form in FIG. **3.** The operator then pulls back on the wheel to pull the drive shaft back to make the line **24** taut. As the line is made taut, the hook **48** is lifted to level out the plane, as shown in dotted form in FIG. **3.** The tautness of the line tends to lift the hook **46** so that the horizontal stabilizer of the model airplane then slides over the hooks **72** and **74** and slides along the line **24.**

The rate of descent is controlled by the operator. As the wheel **112** is moved forward, the line is slackened, and the nose of the plane is allowed to go down, which also increases the speed of the model airplane just as occurs in landing a real airplane. When the operator pulls back on the wheel, the line **24** is made taut, the nose of the plane is raised slightly, and the plane slows down. This operation is identical to the operation of a real airplane during landing. As the model airplane descends, the wings provide some lift to the model so that the friction between the line and the hooks **46** and **48** is at a minimum and the model is partially flying with the control providing guidance to the model. The operator may also turn the wheel **112,** thereby rotating the drive shaft **100** to move the post **114** from side to side, thereby simulating sidewise movement of an airplane. The operator must exercise a degree of skill and judgment in order to guide the model airplane to a touchdown on the landing surface **30.** It may be appreciated that if the model airplane touches down too soon, it touches down prior to the landing surface, thereby simulating a crash. On the other hand, if the touchdown is too late, the model airplane overshoots the end of the runway.

Turning now to FIG. **7,** which shows a modification of the present device, the model airplane **32** is shown connected to a guide line **24,** which has one end connected to the control **26** and the other end is connected to a chair leg **200** rather than the support rod **54.** The control **26** is mounted on a table top **202,** which is at a level above the chair leg **200,** and the landing strip **30** is positioned adjacent to the chair leg **200.** The table top acts as a keeper for the model airplane **32.** All of the parts are identical to those described above, except that the control **26** is positioned above the chair leg so that the model airplane travels from the control downward toward the chair leg.

The operation of the toy shown in FIG. **7** is described below. The model airplane **32** rests on the table top **202,** which acts as the keeper. The wheel **112** is pulled back to increase the tautness of the line **24** so that the model airplane **32** is raised off the table top **202** and begins to slide down the line **24,** as described above. The operator controls the model airplane, as described above, and lands the model airplane on the landing surface **30** in the same manner as described above. The rate of descent is controlled by the operator; and, of course, the airplane may be guided from side to side in making its approach to the landing strip.

Looking now to FIGS. **8** through **11,** another form of the present toy is shown therein. The control **26** and keeper **22** are identical to that described above. A model airplane **300** is shown attached to line **24** for being launched from and landing on a landing surface **302.** The model airplane **300** is a conventional model airplane having a fuselage **304** with a pair of wings **306** mounted on the fuselage to provide lift for the model

airplane as the model airplane travels along a support line. A pair of wheels **308** is connected to the fuselage to provide landing gear for the model airplane. The model airplane also includes a conventional horizontal stabilizer **310** and a vertical stabilizer **312.** The vertical stabilizer includes a positionable rudder **314.** A hook **316** is connected to the fuselage near the center of gravity of the model airplane. The hook **316** includes an eye **318** which is formed integral with the hook and is engageable with the support line. The centerline of eye **318** is showed relative to the support line. The model airplane has a stud **320** formed integral with the fuselage for reasons which will become apparent hereinafter.

The landing surface **302** is a flat landing surface and has a launcher mounted thereon. The launcher includes a pair of hooks **322** attached to one edge of the landing surface and an elastic band **324** is connected to the hooks. The band **324** is engageable with the stud **320** for propelling the model airplane along the support line. Though an elastic band is shown herein, it may be appreciated that a spring-operated device or the like may be used to propel the model airplane.

The instant toy is set up as described above, with the landing surface positioned adjacent to the control **26.** The eye **318** of the hook is mounted on the support line. The elastic band **324** is placed into engagement with the stud **320** and the elastic band is stretched. The model airplane is released, and the elastic band then pulls the model airplane upward along the support line toward the support rod **54.** Prior to release, the rudder **314** is adjusted so that the model airplane has the eye **318** in sliding engagement with the support rod. As the inertia of the model airplane is used up by the frictional force of the hook in engagement with the support line and by moving the model airplane against the force of gravity, the model airplane slows down and eventually comes to a stop. The model airplane then turns on the line 180° and starts to slide back down the support line by gravity. Movement of the model airplane along the support line causes the rudder to hold the hook in skewed engagement with the support line. As the model airplane comes down along the support line, the operator then has an opportunity to land the airplane on the landing surface **302.** The model airplane is landed in the manner described above, with the operator controlling the rate of descent by adjustment of the slack in the support line. It may be appreciated that the operator also may control the rate of movement upward when the model airplane leaves the elastic band by controlling the slackness in the line.

Although a specific embodiment of the hereindisclosed invention has been shown and described in detail above, it is readily apparent that those skilled in the art may make various modifications and changes without departing from the spirit and scope of the present invention. It is to be expressly understood that the instant invention is limited only by the appended claims.

What is claimed is:

1. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, said vehicle keeper being a support surface, a control connected to the support line for regulating the rate of movement of the vehicle along the support line, and a launcher releasably engageable with the vehicle to propel the vehicle upward along the support line.

2. A toy as defined in claim **1** wherein the support surface provides a landing surface for the vehicle and the launcher is an elongated elastic member releasably engageable with the vehicle.

3. A toy as defined in claim **2,** including a stud mounted on the vehicle for releasable engagement with the elastic member.

4. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, a control connected to the support line for regulating the rate of movement of the vehicle along the support line, said control including a drive shaft support, and a drive shaft axially slideably mounted in the drive shaft support, said drive shaft being connected to the support line to regulate the amount of slack in the support line to control the rate of movement of the vehicle along the support line.

5. A toy as defined in claim **4** and including a post mounted on the drive shaft, said post being connected to the support line, whereby rotation of the drive shaft causes the support line to be moved in a lateral direction for moving the vehicle supported on the support line in a lateral direction.

6. A toy as defined in claim **4** wherein the vehicle keeper is a support surface, and including a launcher releasably engageable with the vehicle to propel the vehicle along the support line.

7. A toy as defined in claim **4,** including a simulated instrument panel connected to the drive shaft support.

8. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, and a control connected to the support line for regulating the rate of movement of the vehicle along the support line, said vehicle keeper being positioned adjacent to the control, said support line having one end connected to the control and the other end connected to a line arrestment positioned below the level of the control.

9. A toy as defined in claim **8** wherein the control includes a drive shaft support and a drive shaft axially slideably mounted in the drive shaft support, said drive shaft being connected to the one end of the support line.

10. A toy as defined in claim **8,** including a reel connected to the control line to store the support line.

11. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, said vehicle keeper including a fixed vertical support and a vehicle catch mounted on the fixed vertical support adjacent to the upper portion of the fixed vertical support, said catch being engageable with the vehicle to hold releasably the vehicle adjacent to the fixed vertical support, a reel rotatably

mounted on the fixed vertical support, said reel having its axis of rotation coincidental with the axis of the fixed vertical support, said reel being connected to the support line for storing the support line, and a control connected to the support line for regulating the rate of movement of the vehicle along the support line.

12. A toy as defined in claim **11** wherein the fixed vertical support contains a slot near the upper end thereof for holding the support line.

13. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, said support being a single member having a single hook in engagement with the support line, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, and a control connected to the support line for regulating the rate of movement of the vehicle along the support line.

14. A toy as defined in claim **13** wherein the vehicle includes a control surface for holding the hook in a nonperpendicular engagement with the support line.

15. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, a control connected to the support line for regulating the rate of movement of the vehicle along the support line, said control including a drive shaft support and a drive shaft axially slideably mounted in the drive shaft support, said drive shaft being connected to one end of the support line, said vehicle keeper including a fixed vertical support and a vehicle catch mounted on the fixed vertical support, said vehicle catch being engageable with the vehicle to hold releasably the vehicle adjacent to the fixed vehicle support, said vertical support being engageable with the support line, and a reel connected to the support line for storing the support line.

16. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, a control connected to the support line for regulating the rate of movement of the vehicle along the support line, said vehicle keeper being positioned adjacent to the control, said support line has one end connected to the control and the other end connected to a line arrestment positioned below the level of the control, and a landing surface positioned adjacent to the line arrestment.

17. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, said vehicle keeper including a fixed vertical support and a vehicle catch mounted on the fixed vertical support, said vehicle catch being engageable with the vehicle to hold releasably the vehicle adjacent to the fixed vertical support, a reel rotatably connected to the fixed vertical support, said reel connected to the support line for releasably storing the support line, and a control connected to the support line for regulating the rate of movement of the vehicle along the support line.

18. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, and a control connected to the support line for regulating the rate of movement of the vehicle along the support line, said control including a drive shaft support having a simulated instrument panel mounted on the surface thereof; a drive shaft axially, slideably and rotatably mounted in the drive shaft support; a handle connected to the drive shaft on one end adjacent to the instrument panel; a post mounted on the other end of the drive shaft; the support line being connected to the post; whereby rotation of the post moves the support line laterally and axial movement of the drive shaft regulates the amount of slack in the support line to control the rate of movement of a vehicle along the support line.

19. A toy comprising, in combination, a support line, a vehicle having a support movably engaging the support line and being movably supported thereby, a vehicle keeper releasably engageable with the vehicle for holding the vehicle prior to the vehicle's movement along the support line, the vehicle keeper is a support surface which also provides a landing surface for the vehicle, a control connected to the support line for regulating the rate of movement of the vehicle along the support line, a fixed vertical support positioned above the level of the control and being spaced away from the control having the support line connected thereto, said support surface being positioned adjacent to the control and being at substantially the same level as the control, and a launcher connected to the support surface releasably engageable with the vehicle for propelling the vehicle along the support line toward the fixed vertical support.

* * * * *