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Barcus et al.

[11] **3,777,391**

[45] **Dec. 11, 1973**

[54] **SIMPLIFIED TOY LAUNCHER**

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[73] Assignee: **Mattel, Inc.**, Hawthorne, Calif.

[22] Filed: **Aug. 4, 1972**

[21] Appl. No.: **278,158**

[52] **U.S. Cl.** ..... **46/1 K**

[51] **Int. Cl.** **A63h 17/00**

[58] **Field of Search** ..... 46/202, 1 K, 243 LV, 46/206

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Assistant Examiner—D. L. Weinhold
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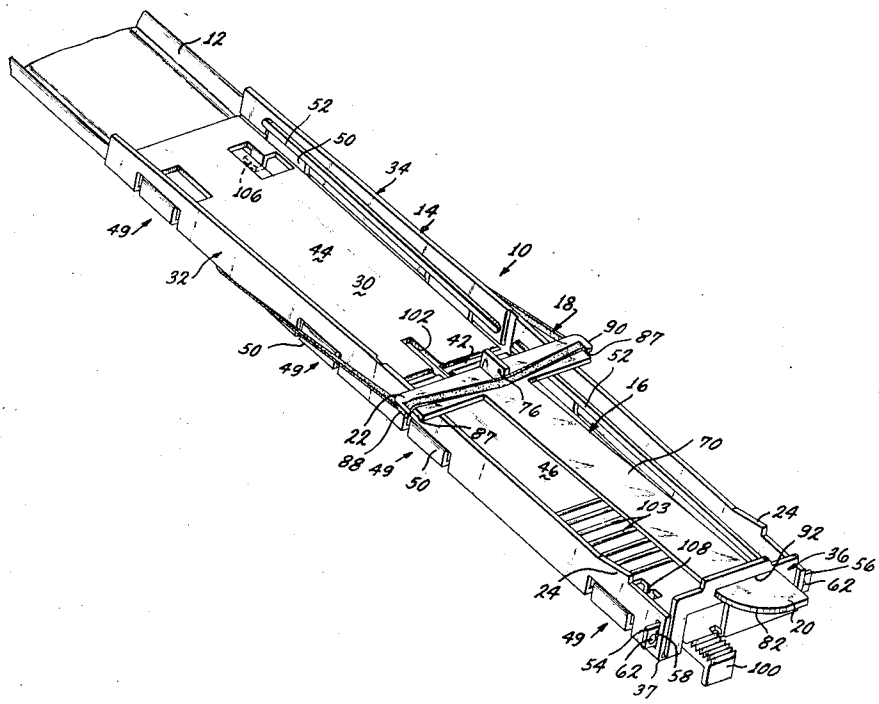
[57] **ABSTRACT**

A toy vehicle launcher which includes a one-piece foldable frame, a slide, and a rubber band for propelling the slide forward to launch a toy vehicle along the frame, wherein the launcher can be easily changed from a small flat package configuration to a longer and taller use configuration. The frame has two base portions, two side walls, and an end wall, connected together by thin webs that form living hinges, and the base portions have projections that snap over portions of the side walls when the side walls are pivoted to an upright position to retain them thereat.

5 Claims, 18 Drawing Figures



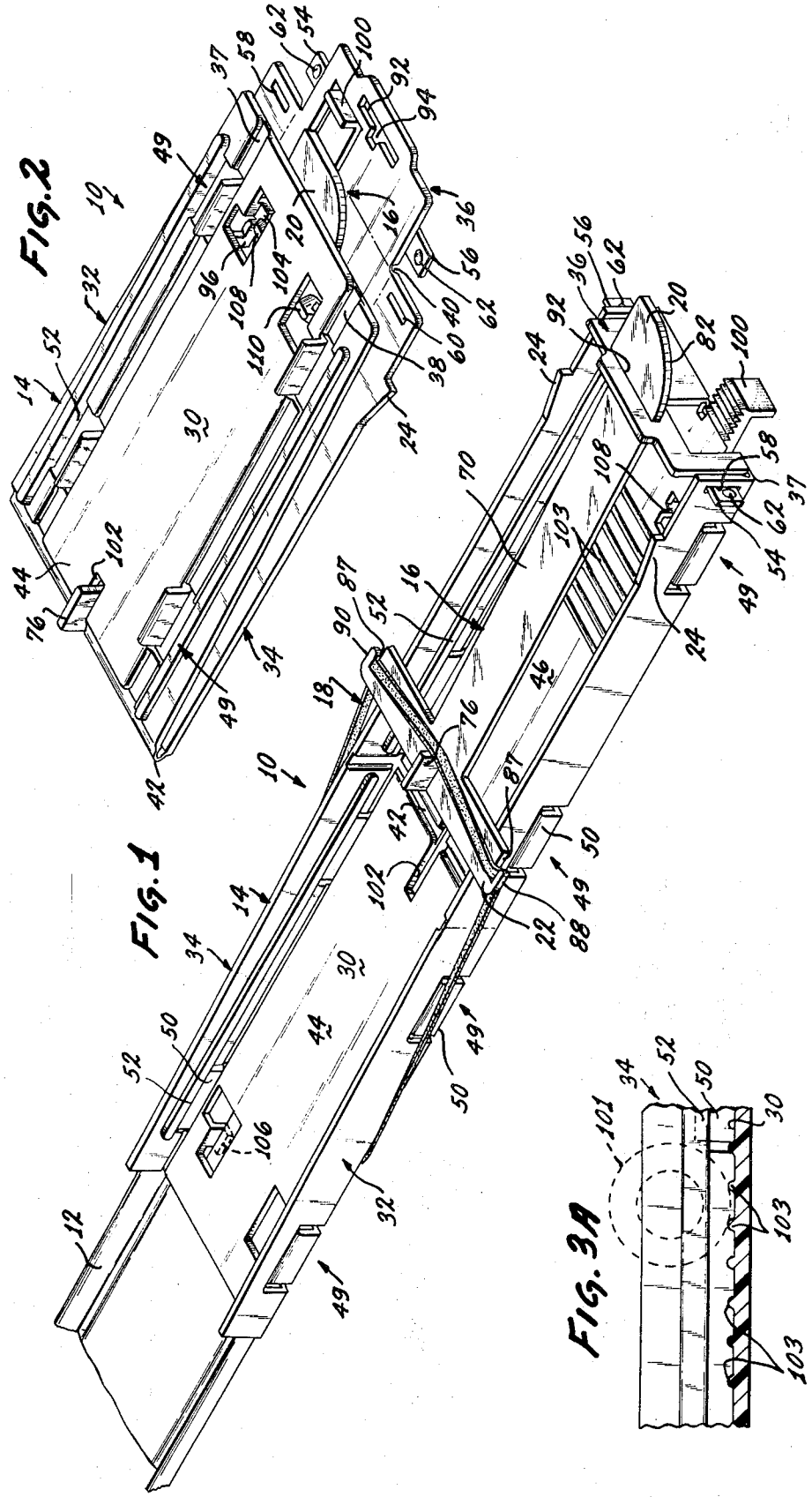


FIG. 1

FIG. 2

FIG. 3A

FIG. 3

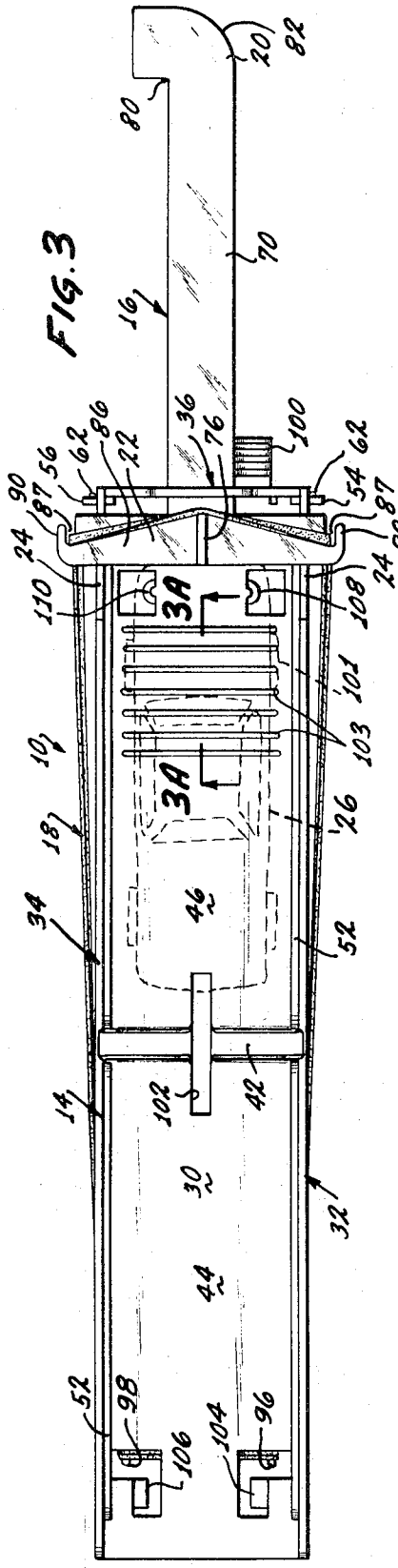


FIG. 4

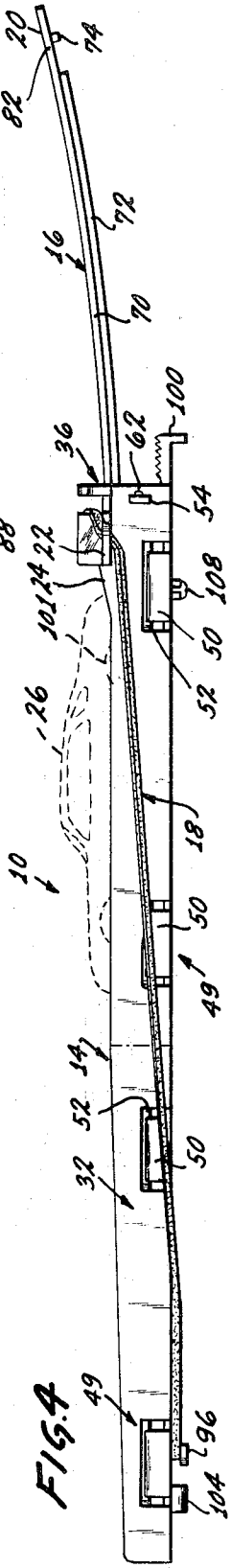
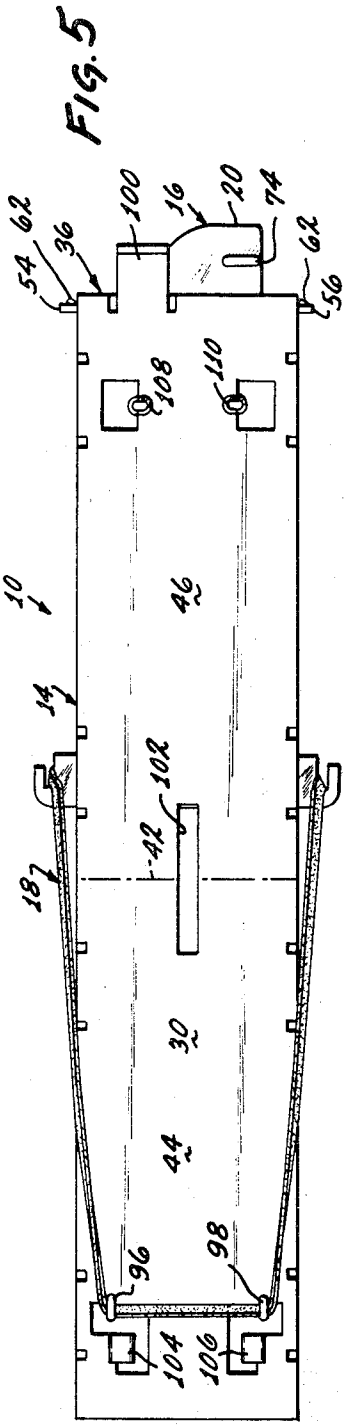


FIG. 5



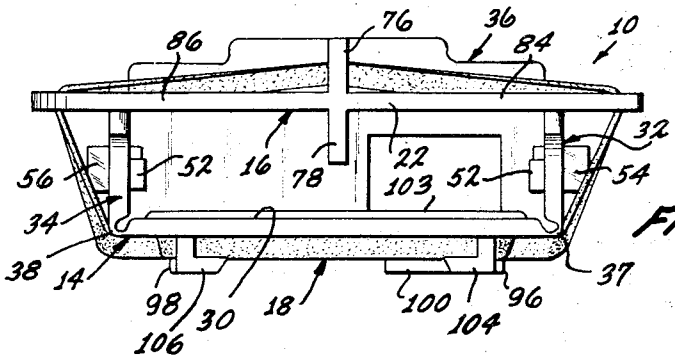


FIG. 6

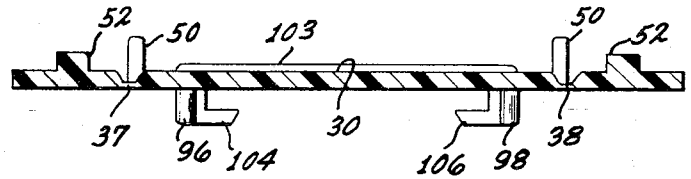


FIG. 8

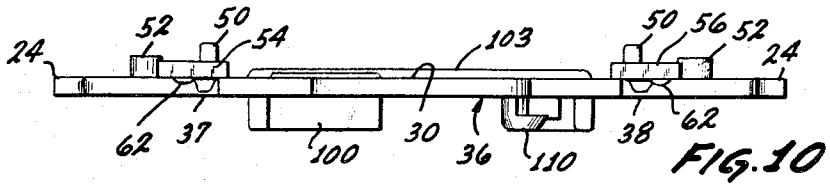


FIG. 10

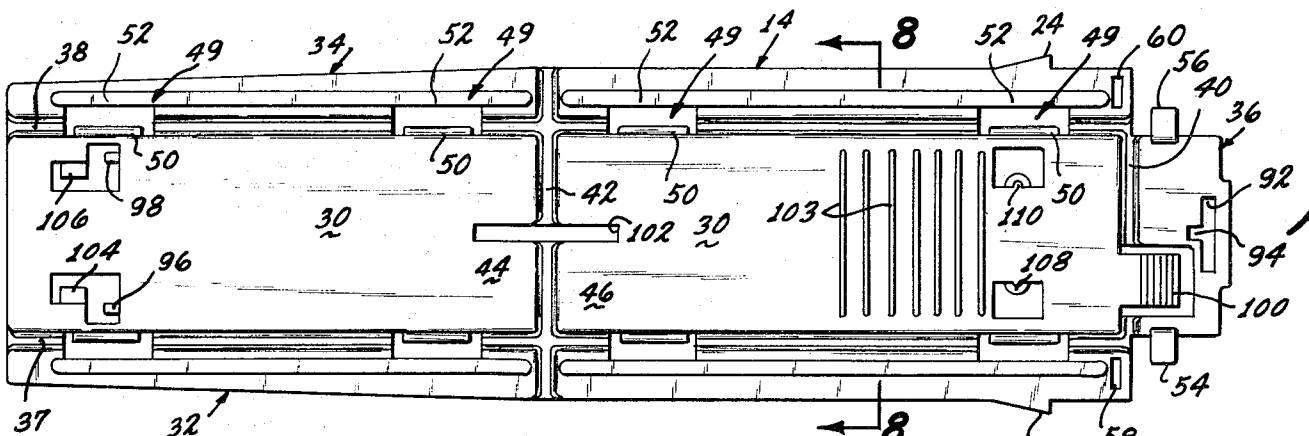


FIG. 7

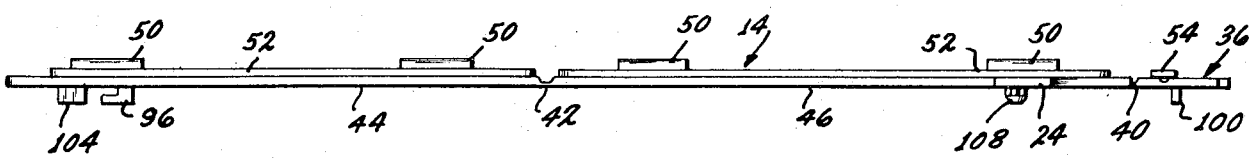


FIG. 9

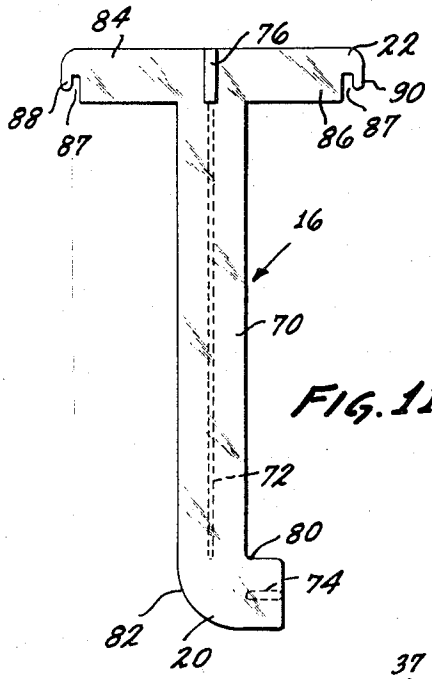


FIG. 11

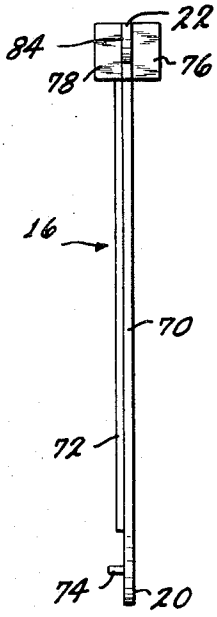


FIG. 12

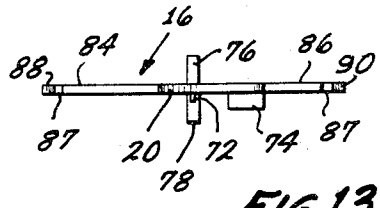


FIG. 13

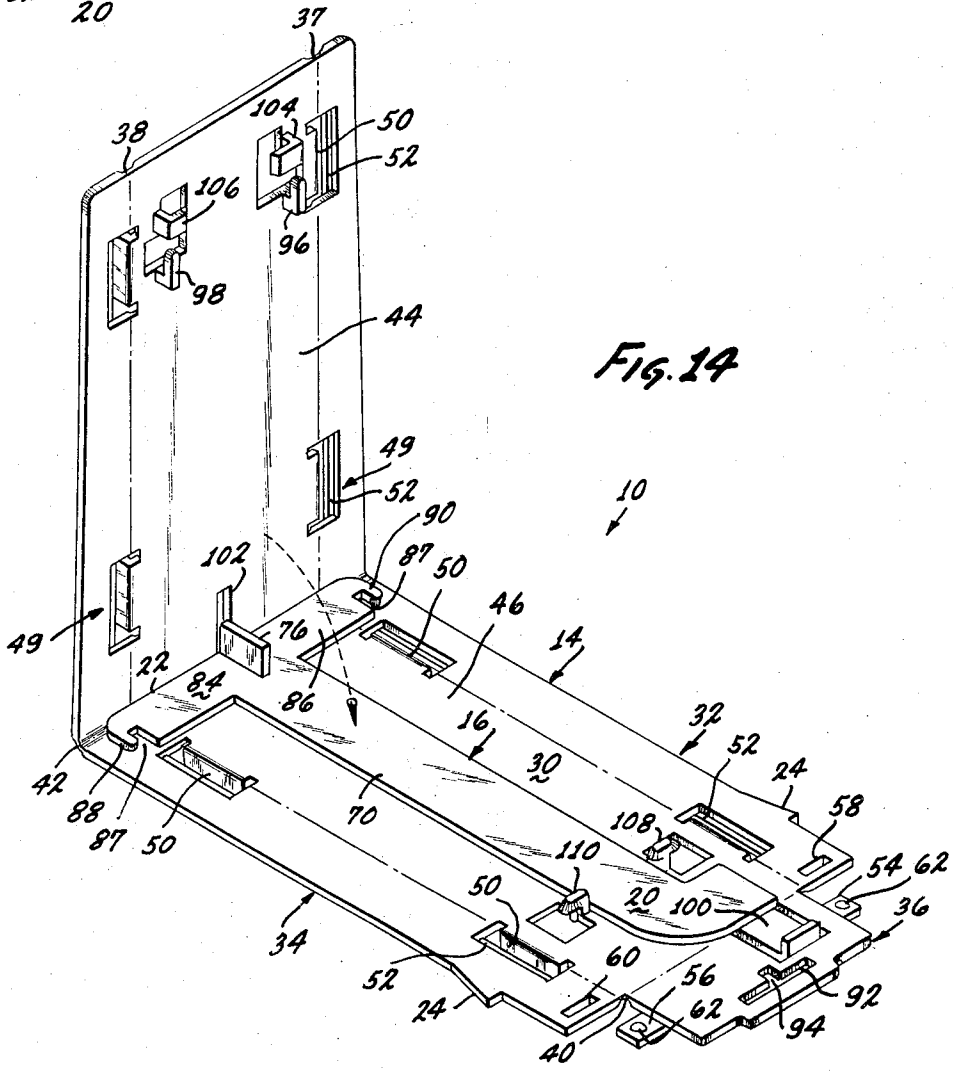


FIG. 14

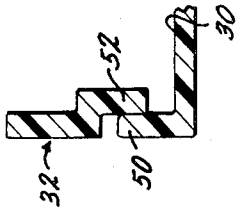


FIG. 16

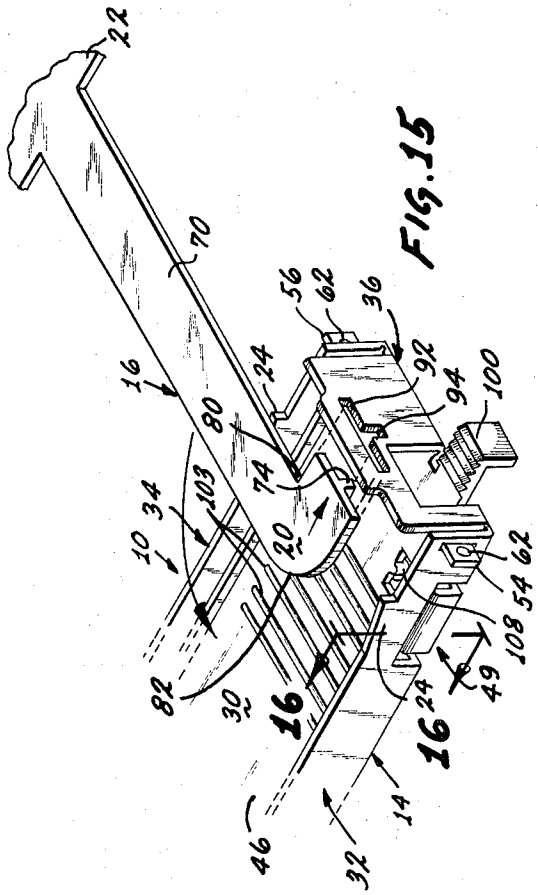


FIG. 15

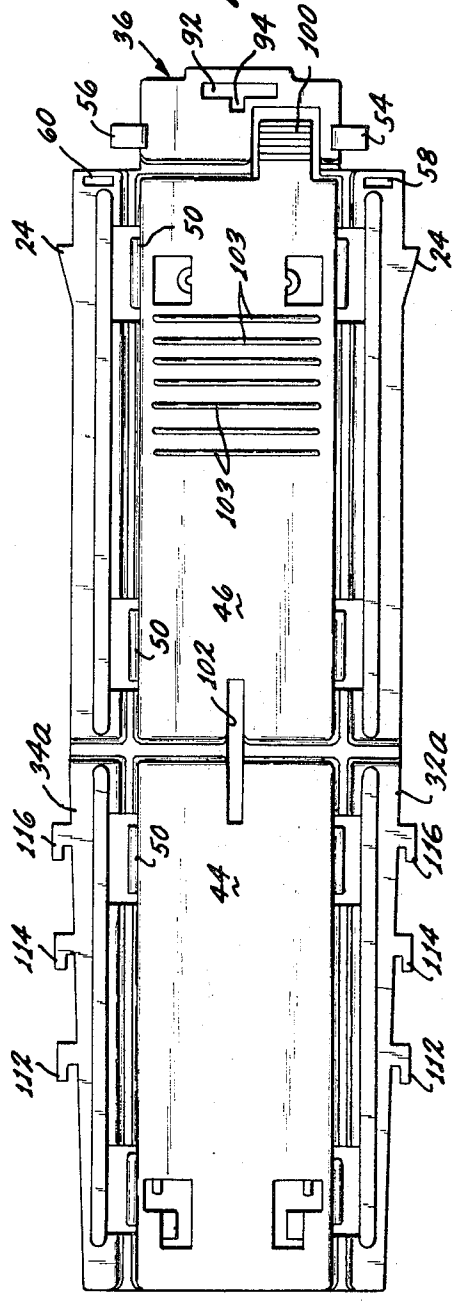


FIG. 17

SIMPLIFIED TOY LAUNCHER

BACKGROUND OF THE INVENTION

Toy vehicles which can roll a long distance after launching have become highly popular toys. Toy vehicle launchers which include a slide that can be drawn back to stretch a rubber band and which can be released to rapidly propel a toy vehicle are entertaining accessories. Toy vehicle launchers generally have a base forming part of the toy vehicle track, side walls for guiding a toy vehicle as it is launched forward, and a slide which must be guided in movement along the launcher and which must be propelled by a spring, rubber band or other means. The ease of use and of marketing the launcher could be greatly increased if it could be easily folded into a small flat package for carrying in the pocket or placement in small packages of other goods as a premium, provided that it could be deployed to a rugged use configuration easily and rapidly. Ruggedness and low cost generally require that a minimum number of easily constructed parts be utilized.

SUMMARY OF THE INVENTION

In accordance with one embodiment of the present invention, a toy vehicle launcher is provided which can be economically manufactured and which can be easily changed from a small flat configuration to a longer and taller configuration. The launcher includes a frame with a base, upstanding side and rear walls, a slide which slides through a slot in the rear wall, and a rubber band extending between the slide and the front of the frame for propelling the slide forwardly. The frame is a unitary member with thin web portions forming living hinges between the base and each of the side walls and end wall, and between forward and rearward halves of the base, to permit folding to a small flat configuration. Retainers formed on the base and side walls enable the side walls to be snapped into a secure upright position on the base, and end wall having other retainers that hold it upright on the side wall. The slide has a long middle portion that slides along the slot in the end wall and a sidewardly extending rear portion, one edge of the rear portion extending sharply to the side while the other edge is rounded.

The novel features of the invention are set forth with particularity in the appended claims. The invention will best be understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a toy launcher of the invention, shown set up but prior to cocking;

FIG. 2 is a perspective view of the launcher of FIG. 1, shown in its completely folded-up configuration;

FIG. 3 is a plan view of the launcher of FIG. 1, shown with the slide in a cocked position;

FIG. 3A is a view taken on the line 3A—3A of FIG. 3;

FIG. 4 is a side elevation view of the launcher of FIG. 3;

FIG. 5 is a bottom view of the launcher of FIG. 1 in the uncocked configuration thereof;

FIG. 6 is a front end view of the launcher of FIG. 5;

FIG. 7 is a plan view of the frame of the launcher of FIG. 1, showing it in a configuration which it assumes prior to setting up in the use position;

FIG. 8 is a sectional view taken on the line 8—8 of FIG. 7;

FIG. 9 is a side elevation view of the frame of FIG. 7;

FIG. 10 is a front elevation view of the frame of FIG. 7;

FIG. 11 is a plan view of the slide of the launcher of FIG. 1;

FIG. 12 is a side elevation view of the slide of FIG. 10;

FIG. 13 is a front elevation view of the slide of FIG. 10;

FIG. 14 is a perspective view of the launcher of FIG. 1, showing how it is folded into a flat package configuration;

FIG. 15 is a partial perspective view of the launcher of FIG. 1, showing how the slide is installed in the frame;

FIG. 16 is a sectional view taken on the lines 14—14 of FIG. 15; and

FIG. 17 is a plan view of a launcher constructed in accordance with another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a toy vehicle launcher 10 which has been set up to launch toy vehicles onto a track 12. The toy vehicle launcher has only three parts, including a frame 14, a slide 16, that can slide along the length of the frame, and a rubber band 18 that propels the slide along the frame to cause the slide to push a toy vehicle. The launcher is utilized by pulling back on a rear portion 20 of the slide, to the position shown in FIGS. 3 and 4 wherein a front portion 22 of the slide rests against a pair of detents 24 of the frame which have smoothly rising forward portions and sharply falling rear portions. A toy vehicle 26 then can be positioned on the frame in front of the slide 16. If a child then flicks down the rear portion 20 of the slide to release it from the detents 24, the slide will be propelled forward by the rubber band 18, and it will propel the toy vehicle. The launcher 10 can be rapidly disassembled and folded up to the configuration shown in FIG. 2, wherein it is flat and has a length about one half the length of the use position. In the folded up configuration of FIG. 2, the launcher can be readily carried in a child's pocket and can be easily packaged either alone or in connection with other merchandise.

As illustrated in FIGS. 7–10, the frame 14 is a unitary member which includes a base 30, a pair of side walls 32, 34, on either side of the base, and an end wall 36 at the rear end of the base. These side walls 32, 34 are separated from the base 30 by reduced-thickness regions or webs 36, 38. The frame 14 is constructed of a material which is flexible in thin sections, such as polypropylene plastic, so that the reduced-thickness regions form living hinges that pivotally connect the side walls to the base 30. A similar living hinge 40 connects the end wall 36 to the base, and still another living hinge 42 extends across the width of the base 30 to divide it into forward and rearward base portions 44, 46. The integral hinges allow the side and end walls to pivot to a flat configuration, and allow the forward and rearward portions of the base to fold on one another to shorten the device for storage.

When the side walls 32, 34 are pivoted to an upright position on the base for use of the device, the side walls

are retained in an upright configuration by eight retainer structures **48**, each including an upstanding projection **50** on the base **30** and a web **52** on the side wall. As a side wall such as wall **32** is pivoted upright to the position indicated in FIG. **16**, the web **52** passes across the top of the projection **50** on the base. The side wall cannot readily pivot back because the projection **50** resists this. The retainer structures engage one another with a "snap" sound and feel, to provide a definite indication of the retaining action. The end wall **36** is held upright by means of a pair of tabs **54, 56** that are received in slots **58, 60** of the side walls. As shown in FIG. **15**, the tabs **54, 56** have rearwardly facing projections **62** that can snap past the walls of the slots **58, 60** to provide a definite indication of retainer engagement. In order to set up the frame **16**, the end wall **36** is first pivoted upright and then the two side walls **32, 34** are pivoted upright, with the slots **58, 60** receiving the tabs **54, 56** on the end wall.

The slide **16**, best shown in FIGS. **11, 12** and **13**, is constructed so it can be rapidly installed on the frame and rapidly engaged with the rubber band. The slide has a flat, straight middle portion **70** extending along most of its length between the forward portion **22** and rearward portion **20**. A pair of ribs **72, 74** lie on the lower face of the slide, which help to assure proper installation of the slide on the frame. A pair of tall but thin projections **76, 78** extend from opposite faces of the forward portion **22**, which help to fix the position of the slide on the frame in the storage configuration. The rear portion **20** extends to one side of the middle portion **70**, this being the right side as viewed from the rear of the slide. The intersection region where the middle portion **70** merges with the rear portion **20**, extends sharply sidewardly at one edge **80** and gradually at the other edge **82**. This allows insertion of the slide into the end wall of the frame while preventing accidental removal or great looseness during use. The forward portion **22** of the slide has a pair of arms **84, 86** extending away from each other far enough so they can ride along the top of the side walls of the frame. A pair of notches **87** at opposite sides form projections **88, 90** that can hold one end of a rubber band that urges the slide forwardly along the frame.

The slide is installed in the manner illustrated in FIG. **15**, by projecting the rear portion **20** through a slot **92** formed in the rear wall **36** of the frame. Such projection is accomplished by orienting the slide **16** so it initially extends approximately perpendicular to the length of the frame **14**, and then turning the slide while pushing it through the slots. A recess **94** formed along the slot receives the ridges **72, 74** at the bottom of the slide, to assure that the slide is not inserted upside-down into the frame, which would cause the rear portion **20** to extend to the left instead of to the right. After the slide is installed, the rubber band **18** is looped over the projections **88, 90**, and under the forward portion of the frame. As shown in FIG. **5**, the frame has a pair of projections **96, 98** that retain the rubber band thereon when it is stretched. With the rubber band thus installed, the launcher is ready for use in launching a toy vehicle. A child can grasp the rear portion **20** of the slide in his right hand while applying a finger of his left hand to a fingerhold **100** which projects at the rear of the base of the frame, to pull back the slide. The slide can be immediately released, or can be locked on the detents **24** and released by flicking down the rear of the slide.

When the slide is pulled back and locked on the detents **24**, and a toy vehicle **26** is laid in front of the slide, the rear wheels **101** of the vehicle will lie between transversely extending ribs **103** formed in the rearward base portion **46**, as shown in FIGS. **3** and **3A**. The ribs **103** serve to hold the toy vehicle against rolling forward if the launcher is held at a slight angle from the horizontal. The ribs **103** also serve to hold the vehicle pointed downtrack along the length of the launcher, so there is a minimum of rubbing of the vehicle on the side walls **32, 34** when the vehicle is launched.

After the launcher has been used, it can be readily folded up for carrying in the pocket. To accomplish this, the rubber band **18** is first removed from the slide and frame, and the slide is then removed by the reverse of the insertion method shown in FIG. **15**. The frame **14** is then unfolded to a flat configuration by forcefully pivoting the side walls **32, 34** to a flat configuration with the base, the retainers **50** allow the webs **52** to snap over them when the side walls are forcefully pushed to a flat or horizontal position. The end wall will then be free to pivot down to a position flat with respect to the base. The frame then can be folded in half at the hinge region **42**. Prior to folding the frame in half, the slide **16** is installed between the forward and rearward portions **44, 46** of the base, as shown in FIG. **14**. The base has a slot **102** extending in a lengthwise direction through the hinge **42**, for receiving the projections **76, 78** on the slide, so that when the base is folded closed, the slide **16** cannot shift position thereon. When the forward and rearward base portions **44, 46** are fully closed on one another, they are retained in a fully closed position by a pair of hook like projections, **104, 106**, on the forward base portion **44**, which engage a pair of hook engagers **108, 110** on the rearward base portion **46**. The base portions are thus snapped to a flat configuration with the slide **16** closely held in position therein. If desired, the rubber band can be wrapped around the folded frame. Inasmuch as rubber bands often have a short storage life, the launcher may be sold without a rubber band wrapped around it, it being intended for the child to obtain an ordinary rubber band to power the launcher. The frame can nevertheless retain itself in a compact closed configuration.

FIG. **17** illustrates a toy vehicle launcher constructed in accordance with another embodiment of the invention, wherein several pair of forward hooks **112, 114** and **116** for engaging the rubber band are formed on the side walls **32*a***, **34*a*** of the frame. These additional pairs of hooks which are spaced at different distances from the rear end of the frame, permit a child to choose different rubber band tensions. This permits a child to utilize rubber bands for a variety of lengths without excessive stretching that could cause breakage or inadequate tension that would result in a low launching speed. In addition, the plurality of hook pairs permits a child to adjust tension for specific situations. For example, a low tension might be used where the track curves without high banking immediately in front of the launcher, to prevent the vehicle from leaving the track, while a high tension might be used where a long straightway track follows the launcher. The launcher of FIG. **17** is otherwise similar to the previously described launcher.

Thus, the invention provides a simple toy launcher having a minimal number of different parts, which can be easily folded to a small flat configuration and opened to a longer and taller use configuration. The only special parts that must be supplied are the frame **14** and slide **16,** each of which can be produced at low cost by injection molding. The frame **14,** in particular, has several parts that can move relative to one another to permit folding between a flat and a taller configuration, and it securely retains itself in the taller use configuration while providing an entertaining snap sound when setting up, and yet the frame can be formed in a single injection molding operation. The toy launcher is especially useful for launching toy vehicles, although launchers can be constructed for launching other toy devices.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and consequently it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A toy launcher comprising: an

a frame having a base, a pair of side walls joined to opposite sides of the base, and a rear wall joined to a end of the base, said rear wall having a slide aperture therein; and

an elongated slide having a middle portion that slides along said slide aperture and having a forward portion with a pair of arms extending over and riding along the tops of the side walls;

said frame and slide having means for engaging a resilient member so the member can urge the slide forwardly on the frame.

2. The toy launcher described in claim **1** wherein:

said slide has a sidewardly-extending rearward portion for abutting the rear wall to stop the slide at the end of a launch stroke, the intersection region where said middle and rear end portions merge extending sharply sidewardly at one edge into said rear end portion and gradually to the side at the other edge, whereby the slide can be installed by inserting the rear end portion through the slide aperture and then pivoting the slide about the sharply angled side, and the slide then resists unintentional removal.

3. The toy launcher described in claim **1** wherein:

the rear portion of each side wall has a detent on its upper surface, each detent having a smoothly rising forward portion and a sharply falling rear portion, for holding the arms of the slide against forward movement when the slide is pulled back.

4. The toy launcher described in claim **1** wherein:

said base forms a plurality of transverse ribs on a rear portion thereof, for receiving the rear wheels of a toy vehicle, whereby to resist rolling of the vehicle and encourage its proper orientation on the base.

5. The toy launcher described in claim **1** wherein:

said means for engaging a resilient member includes a plurality of forward rubber band engaging means spaced at different distances from the rear end of the base whereby to enable adjustment of rubber band tension.

* * * * *