A combined toy model catcher/launcher includes a catching chute and a launching chute. An internal drive wheel is selectively rotated by a switch controlled by a user. When a toy model is received in the catching chute, it is put into tangential contact with an engaging surface of the drive wheel and is accelerated through a semi-circular shaped track around the drive wheel and ejected out the launching chute. Two or more catcher/launchers can be used in a free form environment without requiring tracks or other guide means to receive the toy model in the catching chute. An adjustable implementation allows for a change in angular directions between the catching and launching performed by the single device.
COMBINED TOY MODEL CATCHER/LAUNCHER

BACKGROUND

[0001] 1. Technical Field

The present principles relate to toy models. More particularly, they relate to an apparatus for catching and launching toy models such as toy cars.

[0002] 2. Description of Related Art

Toy car launching devices are known and have been employed in toy car or model racing tracks. Examples of such devices are shown in U.S. Pat. Nos. 5,052,972, 6,695,675 and 3,590,524.

SUMMARY

[0005] According to one aspect of the present principles, the combined toy model catcher/launcher includes a catching chute for receiving a toy model traveling in a first direction, a drive mechanism in communication with the catching chute for receiving the toy model and applying accelerating forces to the same, a launching chute in communication with said drive mechanism and configured to enable the toy model to be ejected from the launching chute in a second direction that is different than the first direction, and a control mechanism connected to the drive mechanism for selectively activating said drive mechanism.

[0006] The drive mechanism can include a drive wheel having a drive gear centered about a rotation axis and a circumferential toy model engaging surface, and a motor having at least one gear in communication with the drive gear and being in electrical communication with the control mechanism.

[0007] The body includes internal sides defining an internal semi-circular track, where the semi-circular track is in communication on one side with the catching chute and in communication on the other side with the launching chute. The drive mechanism is configured within the body to tangentially impart acceleration forces on the toy model as it moves around the semi-circular internal track.

[0008] The control mechanism can include handle fixedly connected to the body, and a trigger disposed on the handle and configured so as to selectively activate the drive mechanism.

[0009] According to one implementation, the first direction and the second direction are opposite directions. According to another implementation, the second direction is in a range of 180-0 degrees with respect to the first direction.

[0010] According to a further aspect, the combined catcher/launcher includes a catching chute for receiving a toy model traveling in a first direction, a launching chute for launching the received toy model in a second direction different than said first direction, and drive means for accelerating a speed of the received toy model as it travels between the catching chute and the launching chute.

[0011] Other aspects and features of the present principles will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the present principles, for which reference should be made to the appended claims. It should be further understood that the drawings are not necessarily drawn to scale and that, unless otherwise indicated, they are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] In the drawings wherein like reference numerals denote similar components throughout the views:

[0013] FIG. 1 is perspective view of the combined toy model catcher/launcher according to an implementation of the present principles;

[0014] FIG. 2 is a perspective view of the internal workings of the combined toy model catcher/launcher according to an implementation of the present principles;

[0015] FIG. 3 is a sectional view of the combined toy model catcher/launcher according to an implementation of the present principles;

[0016] FIG. 4 is plan view of two combined toy model catcher/launcher devices showing an exemplary use of the same; and

[0017] FIG. 5 is a plan view of three combined toy model catcher/launcher devices showing another exemplary use of the same.

DETAILED DESCRIPTION

[0018] FIG. 1 shows a perspective view of the combined model catcher/launcher 10 according to an implementation of the present principles. The catcher/launcher 10 includes a body 12 having a catching chute 14 and launching chute 16. A handle 18 is connected to the top of the body 12 and includes a trigger 20 for selectively activating the same. A battery compartment 22 is positioned at one side of the device and can alternatively be provided in any area of the body without departing from the scope of the present disclosure. A power switch 19 is in electrical communication with the batteries 34 contained in the battery compartment 22 and is a simple on/off switch for turning the device on and off.

[0019] In the implementation shown, the body 12 is not adjustable and is fixed in the semi-circular shape shown. This provides for a semi-circular internal track along which the toy model 44 (see FIG. 4) will travel from the catching chute 14 through and out the launching chute 16. This implementation and other contemplated implementations are discussed in greater detail below with reference to FIGS. 4 and 5.

[0020] FIGS. 2 and 3 shows the internal workings of the combined catcher/launcher 10 showing the drive wheel 26 having a drive gear 29 concentrically connected to the same. When engaged, the drive gear 29 causes the drive wheel 26 rotates about a central axis 27 in a rotation direction R, which is counterclockwise in the current implementation. The rotation direction R is such that it is in the same direction of the launching chute 16. The drive wheel 26 includes a circumferential model engaging surface 28 that frictionally engages the toy model in a tangential manner as it received in the catching chute 14. By way of example, the circumferential model engaging surface can include plurality of rubber or resilient tines 28 as shown. However, the actual engaging surface 28 can be other known materials that have some degree of resiliency, for example, a foam, sponge like substances rubber, soft plastics, elastic polymers (chemical soft/resilient materials) and/or any other suitable material.

[0021] The trigger 20 is in communication with an electric switch 32 that provides power from the batteries 34 to the motor 30. The motor 30 has a gear (not shown) that drives a
transmission gear 31, which is communication with the driver gear 29. During operation, the trigger 20 is activated by a user to rotate the drive wheel 26. A toy model entering the catching chute 14 will tangentially come into contact with the model engaging surface 28 of the drive wheel 26. Once activated, the semi-circular shape of the internal track formed by the body 12 will cause the toy model to travel along the same while increasing its speed. Once the toy model comes out of tangential contact with the drive wheel 26 it is launched out the launching chute 16. It will be clear to those of skill in the art that the rotational speed of the drive wheel 26 will have a direct effect on the speed at which the toy model is launched from the launching chute 16.

[0022] In other contemplated implementations, a speed switch 40 can be provided on body 12 and can include, for example, a low and high setting. The speed switch 40 can electrically alter the speed of motor 30 and/or have a transmission changing effect on gear 31 such that the user’s activation of trigger 20 results in a corresponding speed transmission to drive gear 26. Examples of a low and high setting could be a 100 rpm for low and 200 rpm for high. However, those of skill in the art will recognize that the rpm values can be changed based on the toy model or desired operation of the combined catcher/launcher and are not provided as a limitation of the present principles.

[0023] Referring to FIG. 4, there are shown two model launcher/catchers 10a and 10b positioned facing each other according to one implementation of the present principles. The distance between the two devices 10a and 10b is dependent on the toy model being used (e.g., its own coefficient of friction between the wheels and mechanisms allowing the wheels to rotate), the speed at which the device is being operated (i.e., the speed of the drive wheel 26), and the coefficient of friction for the surface on which the toy model is traveling. According to the present implementation, the distance between the device 10a and 10b can be anywhere in a range from 1-40 feet and maybe higher depending on the factors mentioned above. When using two catcher/launchers 10a and 10b, it can be seen that the launching chute 16a of the first device 10a is positioned on the same side as the catching chute 14b of the opposing device 10b. The same relation will be obvious for the launching chute 16b and catching chute 14a. Thus, a user playing device 10a can launch a toy model (from chute 16a) to another user playing device 10b who can catch the same with catching chute 14b.

[0024] It will be clear from the above description that upon catching the toy model in chute 14b, the subsequent launching out launching chute 16b will occur very quickly depending on the speed of the drive wheel 26, thus providing a fast action, fast paced game experience for the players. The devices 10a and 10b shown in FIG. 4 are fixed devices and as such have a fixed semi-circular shape with corresponding semi-circular internal track for the toy model 44 to travel along. Thus, the devices 10a and 10b are configured such that the toy model is turned a complete 180 degrees between the incoming (catching) and outgoing (launching) positions. In this configuration, the toy model 44 is launched in a direction L that is opposed to the catching direction C, but is substantially parallel to the same with respect to each device 10. This fixed implementation provides the highest amount of tangential contact (e.g., substantially 180 degrees of contact with the rotating drive wheel 26) between the engaging surface 28 of the drive wheel and the toy model 44 as it travels from the catching chute 14 to the launching chute 16.

[0025] Another aspect of the present principles is that the catcher/launchers 10 are free form devices and are not fixed to or require any type of track or other guide means in order for the toy model to be received by the catching chute. As such, the users/players have complete freedom of operation of the devices in an open floor or space.

[0026] FIG. 5 shows another embodiment of the devices 10a, 10b, and 10c where the launching chute 16 and catching chute 14 can be angularly adjusted with respect to each other such that the launching direction L of the toy model is not in the directly opposite and parallel to the catching direction C. This angular displacement can be achieved by forming body 12 into two parts that slidably mate with each other and include an indexing or other similar type system to retain a selected position.

[0027] As shown, an angle A between one extreme position of the launching chute 16 and the other extreme position can be anywhere from 0-180 degrees (shown in FIG. 5 as 0-90 degrees). Thus, the launching direction L has a range of 180 degrees with respect to the catching direction C, where the initial or starting launching direction L position is 180 degrees different than the catching direction C.

[0028] In this manner, more than two devices 10a, 10b, 10c can be used to provide fast paced action for 3, and potentially more, players. By changing the angular displacement of the launching (L) and catching (C) directions with respect to each other, the actual physical contact between the toy model 44 and the engaging surface 28 of the drive wheel 26 will be decreased from the above mentioned 180 degrees of contact provided in the fixed implementation. As such, those of skill in the art will recognize that the larger the angle A, the lower the amount of tangential (driving) contact the toy model will have with the drive wheel.

[0029] Although this idea of the adjustable device 10 shown in FIG. 5 as reducing the physical contact of the drive wheel with the toy model may seem to suggest that higher toy model speeds may be compromised, through the use of more than two devices (e.g., 10a-10c), it is actually possible that the toy model speeds may be increased (compared to the use of just two devices) by such implementation.

[0030] While there have been shown, described and pointed out fundamental novel features of the present principles, it will be understood that various omissions, substitutions and changes in the form and details of the methods described and devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the same. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the present principles. Moreover, it should be recognized that structures and/or elements and/or method steps shown and/or described in connection with any disclosed form or implementation of the present principles may be incorporated in any other disclosed, described or suggested form or implementation as a general matter of design choice. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

What is claimed is:
1. A combined toy model catcher/launcher comprising:
a catching chute for receiving a toy model traveling in a first direction,
a drive mechanism in communication with the catching chute for receiving the toy model and applying accelerating forces to the same;
a launching chute in communication with said drive mechanism and configured to enable the toy model to be ejected from the launching chute in a second direction that is different than the first direction; and
a control mechanism connected to the drive mechanism for selectively activating said drive mechanism.

2. The catcher/launcher of claim 1, wherein the drive mechanism comprises:
a drive wheel having a drive gear centered about a rotation axis and a circumferential toy model engaging surface; a motor having at least one gear in communication with the drive gear and being in electrical communication with said control mechanism.

3. The catcher/launcher of claim 2, further comprising a body having internal sides defining an internal semi-circular track, the semi-circular track being in communication on one side with the catching chute and in communication on the other side with the launching chute, said drive mechanism being configured to tangentially impart acceleration forces the toy model as it moves around the semi-circular internal track.

4. The catcher/launcher of claim 2, further comprising a battery in electrical communication with said control mechanism and said motor.

5. The catcher/launcher of claim 1, wherein said control mechanism comprises:
a handle fixedly connected to a body forming the catching chute and the launching chute; and
a trigger disposed on said handle and configured so as to selectively activate the drive mechanism.

6. The catcher/launcher of claim 1, wherein the first direction and the second direction are opposite directions.

7. The catcher/launcher of claim 1, wherein the second direction is in a range of 180-0 degrees with respect to the first direction.

8. A combined toy model catcher/launcher comprising:
a catching chute for receiving a toy model traveling in a first direction;
a launching chute for launching the received toy model in a second direction different than said first direction; and
drive means for accelerating a speed of the received toy model as it travels between the catching chute and the launching chute.

9. The catcher/launcher according to claim 8, further comprising control means connected to a body forming said catching chute and said launching chute and housing said drive means, said control means providing selective activation of said drive means.

10. The catcher/launcher according to claim 8, wherein said second direction is 180 degrees different than said first direction.

11. The catcher/launcher according to claim 8, wherein said second direction is in a range of 180-0 degrees with respect to said first direction.

12. The catcher/launcher of claim 9, wherein said control means comprises:
a handle fixedly connected to the body; and
a trigger disposed on said handle and configured so as to selectively activate said drive means.

13. The catcher/launcher of claim 8, wherein said drive means comprises:
a drive wheel having a drive gear centered about a rotation axis and a circumferential toy model engaging surface; and
a motor having at least one gear in communication with the drive gear and being in electrical communication with said control mechanism.