

May 12, 1964

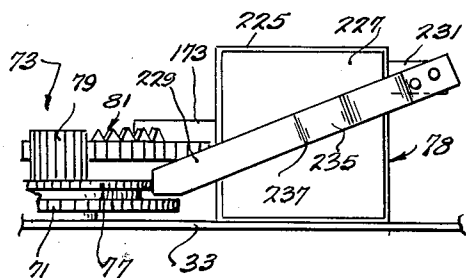
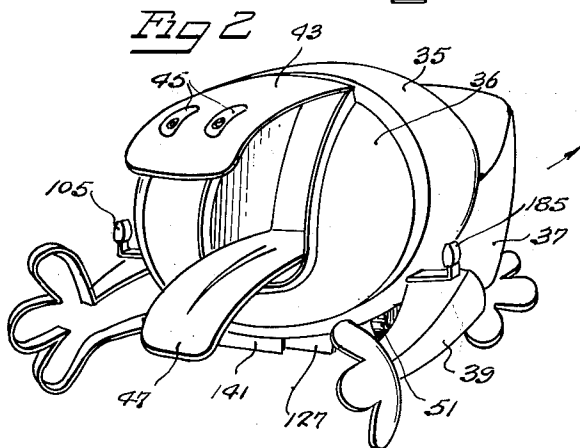
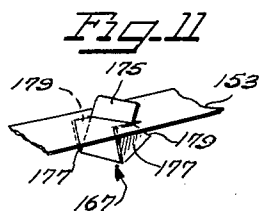
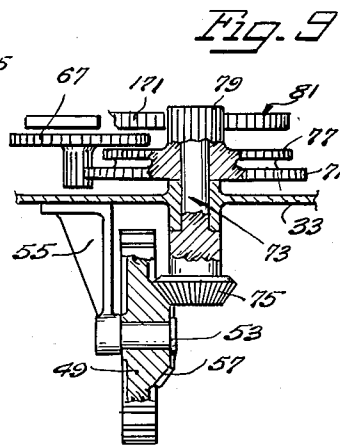
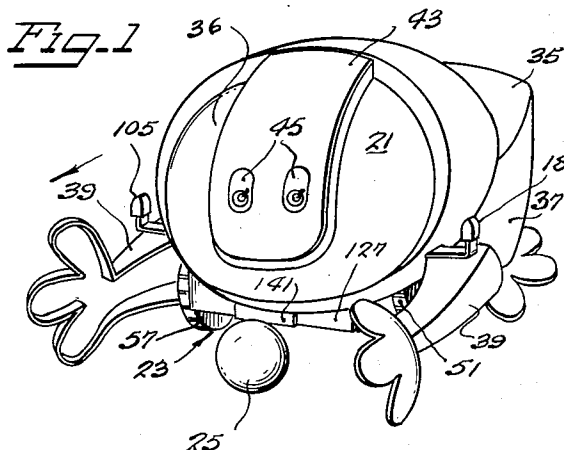
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3,132,864

WHEELED TOY TARGET WITH BALL RETAINING AND SOUNDING MEANS

Filed Nov. 1, 1961

4 Sheets-Sheet 1



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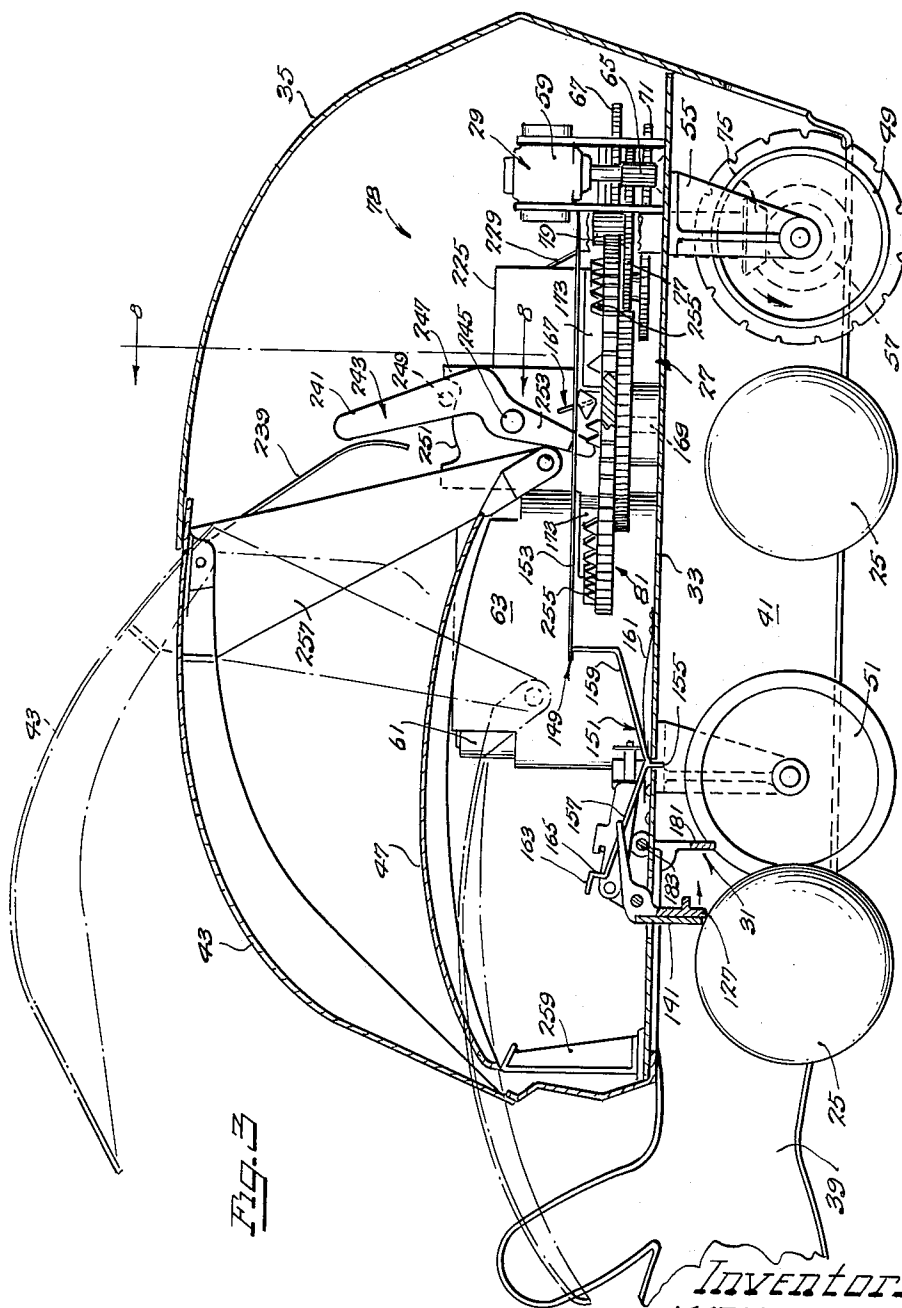
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WHEELED TOY TARGET WITH BALL RETAINING AND SOUNDING MEANS

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4 Sheets-Sheet 2



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Fig 4

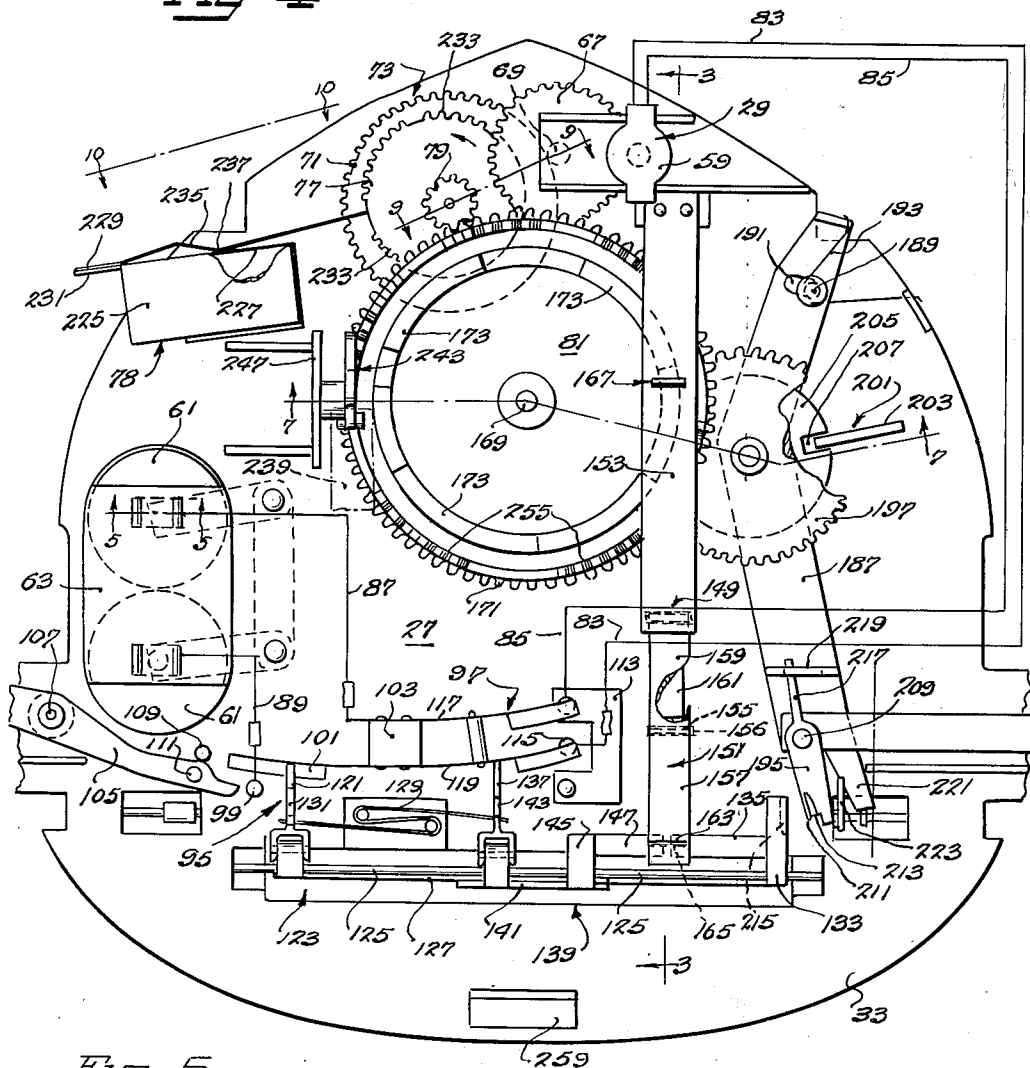
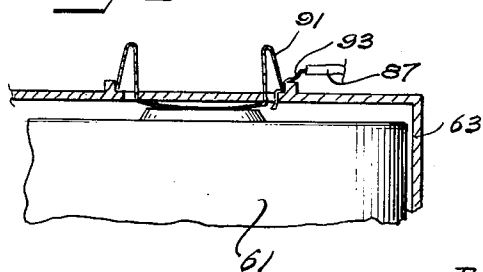


Fig. 5



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Fig. 6

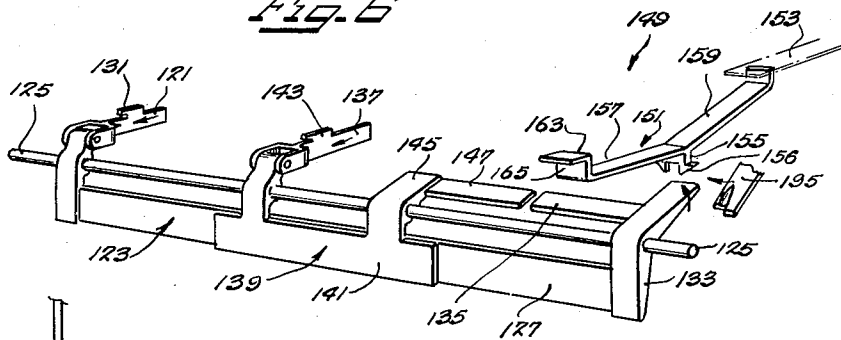


Fig. 7

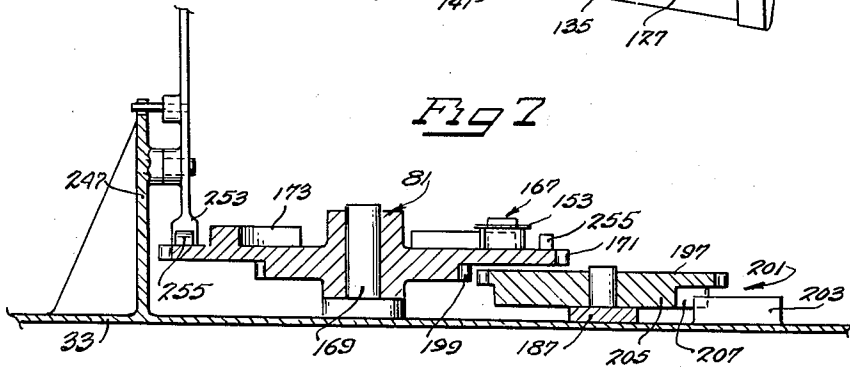
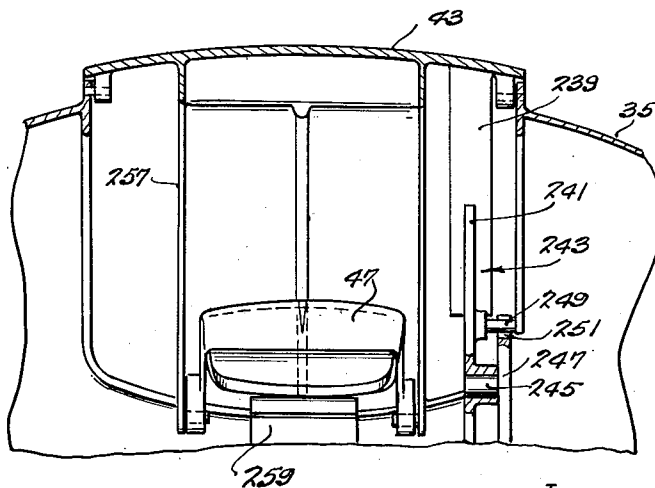


Fig. 8



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WHEELED TOY TARGET WITH BALL RETAINING AND SOUNDING MEANS

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Filed Nov. 1, 1961, Ser. No. 149,364
9 Claims. (Cl. 273-127)

The invention relates generally to toys and more particularly to self-propellable target toys.

Target toys and games have been well known for many years, and have included targets which have either been stationary, releasable for travel or movably displaceable in one direction, or have been capable of being halted from travel, as a result of the striking of an object against a target area. Although previous target toys and games including a moving target area have often provided some single action in response to the striking of any part of the whole of the target area, such previous toys and games have, in general, failed to provide for different actions when different parts of the target area were struck. Nor have the target toys and games of the past included a self-propellable unit which is operable, in response to the striking of a "bull's-eye" part of the target area, to provide one effect, and, in response to striking of the target area in some part other than the "bull's-eye," to provide another effect.

Accordingly, the general object of the invention is the provision of a novel target toy. A further object of the invention is the provision of a target toy which is self-propellable in selected directions in response to the striking of selected parts of a target area. A still further object of the invention is the provision of a self-propellable target toy which is operable to capture objects which strike the target area.

Other objects of the invention include the provision of a target toy which incorporates one or more of the features mentioned in the preceding paragraph and which produces auxiliary visual, and/or auditory effects in response to striking of the target area. A further object of the invention is the provision of a target toy which includes any of the features mentioned in this and the preceding paragraph and which can be inexpensively manufactured and which will provide many long hours of entertaining activity for old and young alike.

Still other objects of the invention will become apparent by reference to the following description of one embodiment of the invention and the accompanying drawings in which:

FIGURE 1 is a perspective view of a toy embodying various of the features of the invention;

FIGURE 2 is a view similar to FIGURE 1 showing a portion of the activity of the toy when moving in the rearward direction;

FIGURE 3 is an enlarged, elevational view, partially broken away and in section, and with certain parts omitted, of the toy shown in FIGURES 1 and 2;

FIGURE 4 is an enlarged plan view of the toy shown in FIGURES 1 and 2, with certain parts omitted and with certain parts broken away to more clearly illustrate a portion of the operating mechanism incorporated therein;

FIGURE 5 is an enlarged fragmentary view, partially in section, taken along line 5-5 of FIGURE 4;

FIGURE 6 is an enlarged perspective view of a portion of the operating mechanism, including the target area;

FIGURE 7 is an enlarged sectional view taken generally along line 7-7 of FIGURE 4;

FIGURE 8 is a fragmentary sectional view taken generally along line 8-8 of FIGURE 3;

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FIGURE 9 is a fragmentary sectional view, with certain parts broken away, taken generally along line 9-9 of FIGURE 4;

FIGURE 10 is a fragmentary view taken generally along line 10-10 of FIGURE 4; and

FIGURE 11 is a perspective view of the ramp which forms a portion of the latch-releasing-arrangement incorporated in the operating mechanism in the toy shown in FIGURES 1 and 2.

The disclosed toy is a self-propellable unit or device and comprises a support means or body 21 having a target area 23 which is adapted to be struck by an object, such as a ball 25, and a related mechanism 27 (see FIGURES 3 and 4), including power means 29, which is operable by the striking of pre-selected parts of the target area 23 to cause selective movement of the toy in either of at least two directions. As will be disclosed hereinafter in detail, the toy also includes means or an arrangement 31 (see FIGURE 3), for "capturing" an object, such as the ball 25, which strikes the target area, and in addition, incorporates various auditory and other visual effects which are produced as an incident to striking of the target area.

More specifically, the body or supporting frame 21 can be constructed of plastic, or other suitable material, and includes a floor or platform 33 which is covered by a generally hollow shell 35 which has an exterior appearance of a fanciful creature, including a simulated head 36, a pair of hind legs 37 and a pair of forwardly extending spaced arms 39 defining an entrance opening to the target area 23. The shell 35 extends substantially below the platform 33 to define a chamber 41 (see FIGURE 3), in which the "captured" objects are normally retained. Carried by the shell is a movable member 43 which constitutes a part of the head and has portrayed thereon a pair of eyes 45. The member 43 is pivotally movable relative to the shell in simulation of the opening and closing of the mouth of the fanciful creature. Also carried by the shell 35 is a tongue-simulating-element 47 which is movable outwardly of the body 21 when the member 43 is moved to its "open-mouth" position. The movable member, and the tongue-simulating-element, and their operation, will be further described in detail hereinafter. Although the body is shown and described as that of a fanciful creature, it is obvious that the unit or device could be in other forms, including that of a vehicle.

The body 21 is supported for movement along a supporting surface by suitable means which, in the disclosed construction, takes the form of a tricycle support, although other forms of support, such as Caterpillar treads or the like, can be employed. More specifically, the disclosed tricycle support includes a single, rearward drive wheel 49 (see FIGURES 3 and 4), and a pair of spaced front wheels 51 which are suitably journaled under the platform 33 in generally straddling relation to the target area. The rearward drive wheel 49 is journaled on a stud 53 projecting from a bracket 55 fixed to the underside of the platform 33. The drive wheel 49 includes a central hub in the form of a bevel gear 57 which is driven by the power means 29.

While various power means can be employed, the disclosed construction utilizes a suitably supported electric motor 59 (see especially FIGURE 4), which is powered by a pair of dry cell batteries 61 located in a battery vault 63 which is accessible through an opening (not shown) in the platform 33. The motor 59 includes an output pinion 65 (see FIGURE 3), which is meshed with a gear part of a gear and pinion assembly 67 (see FIGURE 4), which is rotatably journaled on a stud 69 projecting from the platform 33. In turn, the pinion part of the gear and pinion assembly 67 is meshed, as seen best in FIGURE 9, with a gear part 71 of a rotatable element 73

which extends through and is journaled in the platform 33 and includes, at its lower end, a bevel gear part 75 engaged with the bevel gear 57 on the drive wheel 49. As will appear hereinafter, the rotatable element 73 also includes a disc part 77 which operates a sound producing mechanism 78 (see FIGURES 4 and 10), and an upper pinion part 79 which drives a cam element 81. As will be disclosed hereinafter, the cam element 81 serves to control in part, the operation of the motor 59, as well as the operation of the movable member 43 and the tongue-simulating-element 47.

Control of the operation of the motor 59 is effected through an electric circuit connecting the batteries 61 to the motor. This circuit includes, as seen in FIGURE 4, a pair of leads 83 and 85 extending from the motor, and a pair of leads 87 and 89 extending from the batteries. The leads 87 and 89 extending from the batteries are connected, as seen best in FIGURE 5, to spring-blade contact members 91 engaging the batteries by an arrangement which does not require soldering or the like, but which effectively prevents disconnection of the leads from the contact members. Specifically, as seen in FIGURE 5, the bare wire at the end of the lead is bent through a right angle and anchored in such condition by spring pressure provided by engagement in the apex of the right angle bend, of one of the ends of the spring-blade contact member. Also forming a part of the circuit, as shown in FIGURE 4, are switch means 95 for turning the motor "off" and "on" and switch means 97 for changing the direction of rotation of the motor.

More specifically, the "off-on" switch means 95 includes a contact member 99 which is mounted on the platform and which is connected to the lead 89, and a spring contact blade 101 which is fixed to an insulator block 103 on the platform 33 and which is biased for engagement with the contact 99 to complete the circuit to the motor 59.

When the toy is not in use, the contact blade 101 can be held out of engagement with the contact 99 by a control lever 105 which is pivotally carried by a pin 107 projecting from the platform 33 and which extends exteriorly of the shell in position for manual operation. In order to retain the control lever 105 in the "off" position, against the spring action of the contact blade 101, a projection 109 is provided on the platform and a co-operating detent 111 is incorporated in the control lever. Alternatively, friction of the parts may be utilized to replace the detent action. In FIGURE 4, the control lever 105 is in the "on" position.

The direction change switch means 97 includes a U-shaped contact member 113 which is mounted on the platform 33 and connected to the lead 85 and a second contact 115 which is mounted on the platform between the legs of the U-shaped contact member 113 and which is connected to the lead 83 extending from the motor. Also included in the direction change switch 97 is a pair of spring contact blades 117 and 119 which are mounted on the insulator block 103 and are respectively connected to the lead 87 extending from the batteries 61 and the contact blade 101 which is connectable with the lead 89, through contact 99. In the illustrated construction, the contact blade 119 is integral with the contact blade 101 and the blades are a part of a single stamping. The spring contact blades 117 and 119 are biased for respective engagement of the blades 117 and 119 with the contact 115 and the contact members 113 so as to energize the motor 59 to drive the toy forwardly.

In the absence of the impact of an object against the target area 23, the "off-on" switch 95 is held in the "off" or open position and the direction change switch 97 is held against the biasing action of the contact blades 117 and 119 in a position respectively connecting the contact blades 117 and 119 to the contact member 113 and to the contact 115 (as shown in FIGURE 4), so as to effect operation of the motor to propel the toy in the reverse or

rearward direction incident to closing of the "off-on" switch.

More specifically, the "off-on" switch 95 is held in the "off" position by engagement against the contact blade 101 of a pivotally connected arm 121 extending rearwardly from one side (the left as seen in FIGURES 4 and 6) of a first target member 123 which is pivotally carried on a support rod 125 mounted on the platform 33. The first target member 123 includes a normally downwardly depending target section 127 which is generally co-extensive with the target area 23 and is located between the arms 39 in position for engagement by a ball rolled toward the toy between the arms 39.

The left arm 121 is normally held against the upper surface of the platform 33 and in its rearwardmost position which effects positioning of the contact blade 101 in the "off" position and positioning of the target section 127 in a vertical position by a spring 129 which is heat sealed in position and which engages the forward edge of a projection 131 on the upper edge of the arm 121. When the target section 127 is hit by a ball or the like, it swings counterclockwise, as seen in FIGURES 3 and 6, against the action of the spring 129, to displace the arm 121 forwardly, thereby permitting closing of the "off-on" switch 95 and consequent energizing of the motor 59.

Extending rearwardly from the other side of the first target member 123, the right side, as seen in FIGURES 4 and 6, is a second arm 133 which is engageable with the upper surface of the platform when the target section 127 is in a generally vertical position, thereby restraining the biasing action of the spring 129 and rearward movement of the left arm 121.

Projecting laterally to the left, as seen in FIGURE 6, from the second arm 133 is a latch bar 135 which, as will be seen, co-operates with other components of the mechanism to prevent immediate return of the first target member 123 to its normal position by the action of the spring 129 to thereby de-energize the motor, until after the occurrence of a planned sequence of events which will be described.

The direction change switch 97 is held in the rearward drive position against the biasing action of the spring contact blades 117 and 119 by a pivotally connected arm 137 extending rearwardly from one side, (the left side as seen in FIGURES 4 and 6), of a second target member 139. The second target member is pivotally supported on the rod 125 and includes a target section 141 which is located in front of, and centrally of, the target section 127 of the first target member 123. The left arm 137 extending from the second target member 139 is normally held against the upper surface of the platform 33 and in its rearwardmost position to effect positioning of the contact blades 117 and 119 in their "reverse-drive" position, and positioning of the second target section 141 in a vertical position, by engagement of the other end of the spring 129, which end engages the forward edge of a projection 143 on the upper edge of the left arm 137.

When the second target section 141 is hit by a ball, the target member 139 pivots counterclockwise (as seen in FIGURES 3 and 6), thereby engaging and also swinging the first target member 123 in the counterclockwise direction. As a result, the direction change switch 97 is permitted to move, under its own influence, to the "forward-drive" position, and the "off-on" switch is permitted to close, thereby energizing the motor to drive the toy in the forward direction.

Extending rearwardly from the other side of the second target member 139, as seen best in FIGURES 4 and 6, is another arm 145 which is engageable with the upper surface of the platform 33 when the target section 141 is in a generally vertical position, thereby restraining further biasing action of the spring 129 and consequent rearward movement of the switch control arm 137. Projecting laterally to the right, as seen in FIGURES 4 and 6, from the arm 145 is a latch bar 147 which, as will be fur-

ther explained, co-operates with other components of the mechanism to prevent return of the second target member 139 to its normal position under the action of the spring 129 until after the occurrence of a planned sequence of events.

From the above arrangement it is apparent that the force with which the striking object hits the target area 23 is not transmitted to the electrical switch components and therefore these components are not subject to damage by reason of excessively forceful striking of the target area. It is obvious from the above description that if the object strikes the first target member 123 to either side of the second target section 141, then only the "off-on" switch 95 will be actuated and the toy will be driven in the rearward direction. However, if the second target section 141, located centrally of the target area 23, is hit by an object, both the "off-on" switch 95 and direction change switch 97 are actuated so as to effect movement of the toy in the forward direction.

As before mentioned, after the target members 123 and 139 are struck, they are prevented from immediately returning to their normal positions by a latching arrangement 149 which, as seen in FIGURES 3, 4, and 6, includes a latch member 151 and a latch-releasing-member 153 which operates in co-operation with the previously mentioned cam element 81.

More specifically, the latch member 151 is adapted to engage either or both of the laterally extending latch bars 135 and 147 of the target members 123 and 139. The latch member 151 is a generally Y-shaped member having a stem 155 with an enlarged head 156 which is snap fitted through a slot in the platform 33 to thereby afford pivotal movement of the member and to locate one leg 157 in forwardly extending disposition with the other leg 159 in rearwardly extending disposition. In order to releasably engage and retain the latch bars 135 and 147 when the target members 123 and 139 are pivoted counterclockwise by the impact of an object, the latch member 151 is biased counterclockwise, as seen in FIGURE 3, by a leaf spring 161 bearing against the underside of the rearwardly extending leg 159. In addition, the forwardly extending leg 157 includes an off-set portion 163 including a surface 165 which is engageable with the latch bars 135 and 147 to prevent clockwise movement thereof, as seen in FIGURES 3 and 6. However, when the latch member 151 is rocked clockwise, the latch bars 135 and 147 are disengaged and permitted to return to their normal positions.

Clockwise rocking, as seen in FIGURES 3 and 6, of the latch member 151 against the action of the spring 161 is provided by the action of the latch-releasing-member 153. This member constitutes, as seen in FIGURES 3 and 4, an elongated spring blade which is fixed at its rearward end, which carries a cam follower or ramp 167 intermediate its ends, and which terminates, at its forward or outer end, for engagement thereof with the end edge of the rearwardly projecting leg 159 of the latch member 151. When relaxed, the latch-releasing-member 153 is normally slightly out of engagement with the end edge of the leg 159. However, when the latch-releasing-member 153 is released, after being displaced to a tensioned condition through co-operation of the ramp 167 and cam element 81, the resulting over travel of its forward end, i.e., downwardly past its relaxed position, results in engagement with the latch member 151 and consequent latch-bar-releasing clockwise movement of the latch member. Return latch-bar movement is, as already indicated, accompanied by opening of the circuit to the motor 59, thereby effecting discontinuance of the movement of the toy.

The cam element 81, as seen in FIGURES 3, 4, and 7, is rotatably mounted on a stud 169 projecting from the platform 33 and includes a peripheral tooth section 171 which is meshed with the pinion part 79 of the rotatable element 73 so as to rotate the cam element 81 incident

to operation of the motor 59. Projecting in a circular arrangement from the upper surface of the cam element 81 are a series of spaced cam segments 173 which are engageable by the ramp 167 so as to displace the latch-releasing-member 153 to a tensioned condition, and to subsequently release the latch-releasing-member, thereby halting operation of the motor 59. Each of the cam segments 173 is squared off at each end to afford abrupt release of the latch-releasing-member 153 regardless of the direction in which the cam element 81 is rotated by the motor 59. As the cam segments 173 serve to control operation of the motor by effecting the opening of the electrical circuit to the motor, the length of time of operation of the motor can be controlled by pre-selecting the arcuate lengths of cam segments. In the disclosed construction, three cam segments 173 of various length are employed, so as to provide for variation in the distance moved by the toy in response to striking of the target area 23.

The ramp 167, which operatively connects the cam element 81 to the latch-releasing-member 153, includes, as shown best in FIGURE 11, a central web 175, the upper portion of which extends through the transverse slot in the latch-releasing-member 153 to afford pivotal movement of the ramp relative to the latch-releasing-member. Extending from the lower edges of the sides on the web are a pair of wings 177, each having a gable shaped upper edge 179 which serves to limit pivotal movement of the ramp 167 relative to the latch-releasing-member 153. The wings 177 also serve to guide the engagement of the ramp 167 with the cam segments 173 of the cam element 81. In operation, when the motor 59 is energized and the cam element 81 is accordingly rotated, one end of one of the cam segments 173 engages the ramp 167, pivoting the ramp to its limiting position as an incident to rotary movement of the cam segments relative to the ramp. Further rotary movement of the cam segments 173 relative to the ramp 167 causes the ramp to ride up on one of the cam segments, thereby displacing the latch-releasing-member 153 to a tensioned condition. Subsequently, as rotary movement of the cam element 81 continues, the ramp 167 abruptly rides off the other end of the engaged cam segment, thereby releasing the latch-releasing-member 153 from its tensioned condition and effecting over travel of the latch-releasing-member 153, which over travel is effective, as before explained, to permit return of the target members 123 and 139 to their normal positions, thereby de-energizing the motor to halt the toy.

When using balls 25 of such size as will pass under the target members 123 and 139 when in their elevated retracted positions, such balls are retained in the chamber 41 by the ball capturing arrangement 31, including a gate member 181, which, as shown in FIGURE 3, is supported by a cross rod 183 and is pivotally movable in the counterclockwise direction from a vertical ball retaining position. The gate member 181 functions to retain the balls in the chamber 41 until pivoted to an elevated retracted position by a "resetting" arrangement still to be described.

The "resetting" arrangement permits operation of the toy whereby, after the forward target section 141 has been hit several times to effect advancement of the toy to adjacent the player, the toy is operable to retreat a predetermined distance from the player so as to again be in position for further play. The "resetting" arrangement also serves to effect release of the balls 25 previously retained by the toy in the chamber 41 so as to conveniently make them again available for use by the player.

In the disclosed construction, the "resetting" arrangement includes a button or tab 185 which, as seen in FIGURES 1 and 2, extends exteriorly of the body 21 and which is fixedly connected to the forward end of a bent lever 187 which, as shown in FIGURE 4, is pivotally carried by the platform 33 by reason of the projec-

tion of a stud 189 into an arcuate slot 191 adjacent the rearward end of the lever. The lever 187 is normally biased in an inoperative position, with the tab 185 in an outwardly projecting position, by a spring 193 engaged around the stud 189. However, the lever 187 is pivotally movable in the clockwise direction to an operative position incident to displacement of the tab 185 inwardly toward the body shell 35. Carried by the lever 187 adjacent its forward end is an ear 195 which, as will be more fully described, when the lever 187 is pivoted from its inoperative position, i.e., to the left in FIGURE 4, is engageable with the right arm 133 of the first target member 123 to rotate the target member counterclockwise, thereby permitting closing of the circuit to the motor 59 so as to drive the toy rearwardly.

Carried centrally of the lever 187 is means for assuring at least a given amount of rearward movement of the toy. This means comprises an idler gear 197 which is meshable with a gear formation 199 (see FIGURE 7), on the underside of the cam element 81 and a detent means or arrangement 201 which, immediately after the motor 59 is energized and the idler gear 197 is consequently rotated, serves to prevent return movement of the lever to its inoperative position prior to complete rotation of the idler gear 197 through one revolution. The detent means 201 comprises a stationary lug 203 projecting from the platform 33 and a hub 205 on the under surface of the idler gear 197, which hub 205 includes a slot 207 in which the lug 203 resides when the lever 187 is in its inoperative position. However, pivoting of the lever clockwise, as seen in FIGURE 4, during "resetting" operation of the toy, serves to disengage the lug 203 from the slot 207. The concurrent operation of the motor 59 serves to rotate the idler gear 197 to effect misalignment of the slot 207 with the lug 203 until the idler gear 197 has completed one revolution. During this complete revolution, the lever 187 is prevented from returning to its normal, inoperative position, by engagement of the lug 203 with the periphery of the hub 205.

Retention of the lever 187 in its operative position by the lug 203, and the accompanying engagement of the ear 195 with the first target member 123, prevents deenergizing of the motor 59, regardless of the action of the latch-releasing-member 153. However, when the slot 207 is again aligned with the lug 203 after the completion of one full revolution of the idler gear 197, the lever 187 is then permitted to move again to its normal inoperative position under the influence of the spring 193. Such movement of the lever disengages the ear 195 from the right arm 133 of the first target member 123, which arm is then held by the latch member 151 so as to prevent clockwise pivoting of the first target member 123 to its normal position. Opening of the circuit to the motor 59 is prevented until the latch-releasing-member 153 is again released from a tensioned condition so as to cause release of the target member arm 133 by the latch member 151.

Thus, it will be seen that when the "reset" lever 187 is moved inwardly from its inoperative position, the toy moves rearwardly a given distance determined by one revolution of the idler gear, plus a variable distance determined by the arcuate movement of the cam element 81 which is required to disengage the ramp 167 from the cam segment 173 upon which the ramp is engaged, or is about to be engaged, when one revolution of the idler gear 197 is completed.

In the event that the cam element 81 is so positioned to prevent immediate intermeshing of the gear teeth of the idler gear 187 with the gear formation 199 on the cam element 81, as by reason of abutting engagement of the outer ends of the teeth, the before mentioned engagement of the pivot stud 189 in the arcuate slot 191 permits the lever 187 to pivot about the point of abutting engagement between the idler gear 197 and the gear formation 199 to such extent that the ear 195 will oper-

atively engage the right arm 133 of the first target member 123 so as to energize the motor 59. As a consequence, the resulting rotation of the cam element 81 will relieve the abutting relationship and will permit the idler gear 197 to move into meshing engagement with the gear formation 199 on the cam element 81, thereby providing for normal operation of the resetting action.

The ear 195 which is engageable with the right arm 133 of the first target member 123, incident to pivotal movement of the lever 187 from its inoperative position, is pivotally mounted, as shown in FIGURE 4, about a stud 209 on the forward end of the lever 187 and includes a lip or hook 211 which prevents disengagement of the arm 133 during such pivotal movement of the lever, as for instance, which occurs when the lever snaps into a position of meshing engagement between the idler gear and the gear formation when an abutting relationship therebetween is relieved as just explained.

More specifically, the ear 195 includes, adjacent its outer end, as seen in FIGURE 4, a recess or depression 213, together with the upwardly projecting lip 211. This configuration co-acts with a lengthwise ridge 215 on the under surface of the first target member arm 133, which ridge is shown in dotted outline in FIGURE 4. In operation, the ridge 215 is seated in the depression 213 during an initial part of the movement of the lever 187 from its inoperative position. The pivotal connection of the ear 195 with the lever 187 permits retention of the engagement between the ear 195 and the arm 133 during further movement of the lever from its inoperative position. As seen best in FIGURE 4, the ear 195 also includes a rearward extension 217 which is movable under a yoke 219 on the lever 187, which yoke serves to limit the pivotal movement of the ear 195 relative to the lever 187.

Also carried by the lever 187 at its forward end is a second ear 221 which, as the lever is moved from its normal inoperative position, engages an upward projection 223 extending from the gate member 181 so as to pivot the gate member in the counter-clockwise direction (FIGURE 3), to a retracted elevated position, thereby permitting passage thereunder of the balls previously retained by the toy. As the first target member 123 has also been pivoted in the counterclockwise direction to locate the target section 127 in an elevated, retracted position as an incident to engagement of the right arm 133 by the ear 195, the balls 25 previously retained by the toy in the chamber 41 pass out of the toy, to either side of the first target member 139, as the toy moves rearwardly.

The disclosed toy also operates to produce certain sound effects when the motor 59 is energized. In addition, when the motor is energized to drive the toy rearwardly, the operating mechanism also causes movement of the member 43 to its "open-mouth" position, and outward extension of the tongue-simulating-element 47.

The before mentioned sound mechanism 78 includes a sounding box 225 which, as shown best in FIGURE 10, is mounted on the platform 33. Secured across the otherwise open side of the sounding box is a diaphragm 227, such as fish paper. The diaphragm is struck by a vibrator 229 in the form of a spring blade, which vibrator is fixed at one end to a bracket 231 on the sounding box and extends for engagement of its other end with the disc part 77 of the rotatable element 73. As can best be seen in FIGURE 4, the disc part includes a series of tooth segments 233 along its periphery, which segments are engageable with the vibrator 229 to cause displacement thereof to, and release from, a tensioned condition. Centrally thereof, the vibrator includes a bent part 235 and a connecting elbow 237 which, when the vibrator 229 is untensioned, is disposed in closely adjacent relation to the central area of the diaphragm 227.

The arrangement of the vibrator 229 relative to the diaphragm 227 and disc part 77, coupled with the reversible rotative operation of the disc part, results in the production of sound effects of different quality when the toy

is driven forwardly and when the toy is driven rearwardly. Specifically, the sound produced when the toy is driven rearwardly has a "mocking" quality or characteristic and is generally of deep tone in view of the action of the vibrator against the diaphragm 227, which action occurs in response to counterclockwise rotation of the disc part 77. When the toy is moved forwardly, i.e., when the disc part is rotated clockwise, the vibrator 229 is moved away from the diaphragm and the sound produced has an "irritating" quality or characteristic. The "irritating" sound results from the successive engagement of the vibrator 229 by the disc part 77. The diaphragm 227 is not contacted and does not contribute any noise to the "irritating" sound.

The "mocking" action of the toy which is produced during rearward movement thereof as a consequence of the striking of a ball in the target area other than against the forward target member, is further heightened by the action of the movable member 43 and the tongue-simulating-element 47. In this connection, during rearward movement of the toy, the movable member 43 repeatedly moves to its "open-mouth" position and the tongue-simulating-element 47 is "stuck-out."

More specifically, as seen in FIGURE 3, the movable member 43 is pivotally mounted to the shell 35 and is biased by gravity toward a "closed-mouth" position. Extending from the rearward part of the member 43 is a flat spring 239 which is engageable by the upper arm 241 of a pivotally mounted lever or actuator 243 to cause movement of the member 43 to and from its "open-mouth" position.

The use of the flat spring 239 provides a safety factor in that the member 43 may be depressed from its "open-mouth" position to its closed position without damaging the operating mechanism.

The actuator 243 is pivotally carried on a stud 245 projecting from a supporting bracket 247 on the platform 33. Also included on the actuator 243 is a pin 249 which is movable in an arcuate cut-out 251 in the top edge of the bracket 247 so as to determine the limiting positions of the actuator 243. Pivotal movement of the actuator 243 is provided by engagement of a lower arm 253 with a circular series of serrated sections 255 on the upper surface of the cam element 81. More specifically, the actuator 243 is weighted to normally position the upper arm 241 out of engagement with the spring 239 and to position the tip of the lower arm 253 so that when the cam element 81 is rotated counterclockwise, as seen in FIGURE 4, i.e., when the toy is moving forwardly, the actuator is rocked slightly in the clockwise direction, as seen in FIGURE 3. Such pivotal movement of the actuator has no effect on the operation of the toy. However, when the cam element 81 is rotated clockwise, as seen in FIGURE 4, i.e., when the toy is moving rearwardly, the actuator is rocked in the counterclockwise direction, as seen in FIGURE 3, by engagement of the teeth in the serrated sections 255 with the lower arm 253 of the actuator. Such counterclockwise movement of the actuator 243 engages the upper arm 241 thereof with the spring 239 to rock the movable member 43 toward its "open-mouth" position. The teeth in the serrated sections 255 are dimensioned so as to repeatedly open and close the movable member 43 during rearward movement of the toy.

The tongue-simulating-element 47 can be operated in various fashions, as for instance, by a direct connection with the cam element 81. In the disclosed construction, the tongue-simulating-element is an elongated piece which is pivotally supported at its rearward end by a pair of brackets 257 depending from the under surface of the movable member 43. The tongue-simulating-element 47 is slidably supported at its other or forward end by engagement of its under side with the upper edge of a support bracket 259 located just rearwardly of the forward tip of the movable member, when in its "closed-mouth" position.

In operation, when the movable member 43 is rocked clockwise by the actuator 243, the brackets 257 swing generally in the forward direction, thereby advancing the tongue-simulating-element 47 outwardly of the body in the opening resulting from the generally upward movement of the movable member 43. The combination of the opening of the creature's mouth, the outward projection of the creature's tongue, and the production of a "mocking" sound, provides a very entertaining effect in response to striking of the target area in a part other than the "bull's-eye."

Summarized, the toy operates, when the "off-on" control lever 105 is positioned rearwardly, to move either forwardly or rearwardly upon the impact of a ball 25 or other object in the target area 23. In the disclosed construction, as already explained, the target area 23 is located adjacent the surface supporting the toy and generally between the arms 39 of the toy. If an incoming ball 25 strikes the first portion of the target area, represented by the forwardly located target section 141 of the second target member 139, the toy is driven forwardly by the motor 59 a variable distance determined by the length of engagement of the ramp 167 with the cam segments 173 on the cam element 81, and an "irritated" sound effect is produced by the mechanism 78. If the incoming ball strikes a second portion of the target area, i.e., the area of the rearwardly located target section 127 which is not located behind the forward target section 141, then the toy is driven rearwardly by the motor 59 a variable distance. In addition, a "mocking" sound is produced, and the member 43 is repeatedly swung upwardly to open the mouth of the creature, accompanied by outward projection of the tongue-simulating-element 47.

The toy also operates to capture the balls 25 which strike the target sections 127 and 141. In this regard, striking of the target sections results in such pivotal movement as to permit passage of the striking ball thereunder and past the gate member 181 into the chamber or storage area 41 under the platform 33 and within the shell 35.

When desired, the toy can be operated, by inward pressing of the reset tab 185 to drive the toy rearwardly away from the player so as to be positioned for further play. Operation of the "reset" arrangement, as already explained, serves to pivot the target section 127 and the gate member 181 to their elevated, retracted positions so that the previously contained balls 25 are free to pass out of the chamber 41 as the toy moves rearwardly.

The disclosed toy will provide many hours of entertaining activity for children of all ages. Its mode of operation presents a challenge to children and aids in the development of their co-ordination through the exercise of aiming and throwing or rolling an object, such as the ball 25, at the target area.

One or more of the disclosed toys can be used for competitive games wherein the object is to see which player can first obtain a pre-selected amount of forward movement.

Various of the features of the disclosed construction are set forth in the appended claims.

What is claimed is:

1. A wheeled toy including support means, head-simulating-means on said support means, said head-simulating means including a member movable from a first, simulated "closed-mouth" position to a second, simulated "open-mouth" position, a tongue-simulating element connected to said movable member and movable outwardly of said head-simulating-means incident to movement of said member from said first position, wheel means carrying said support means for travel along a supporting surface, sound producing means on said support means, an electric motor on said support means, means on said support means drivingly connecting said electric motor to said sound producing means, to said movable member, and to said wheel means to effect movement of said toy a variable distance incident to energizing of said electric

motor, normally open switch means on said support means for reversibly energizing said electric motor, target means on said support means, said target means being located adjacent to the supporting surface in position to be struck by a ball rolling along the supporting surface, being movable when struck by the ball to afford passage of the ball thereunder and releasable retention of the ball by said toy, being operable when a first portion thereof is struck, to cause motor-energizing operation of said switch means to effect movement of said toy for a variable distance in the forward direction and operation of said sound producing means, and being operable, when a second portion thereof is struck, to cause motor-energizing operation of said switch means to effect movement of said toy for a variable distance in the rearward direction, and to cause movement of said member to said second position and movement of said tongue-simulating-element outwardly of said head-simulating-means, and repositioning means on said support means for engagement with said switch means to effect movement of said toy in the rearward direction for a distance greater than said variable distance and for releasing any ball retained by said toy.

2. A normally stationary target toy adapted for travel along a supporting surface in response to being struck by a missile, which toy comprises a supporting frame, wheel means on said frame engaging the supporting surface, power means on said frame, means on said frame drivingly connecting said power means to said wheel means so as to propel the toy a predetermined distance along the surface incident to driving operation of said power means, a target device on said frame located in a position for engagement by a missile projected at the toy, said target device including first and second portions adapted for movement when struck by a missile, means on said frame engageable by said movable portions of said target device for actuating said power means, said actuating means operating said power means to initiate movement of the toy for travel a predetermined distance in one direction when said first target portion is struck and operating said power means to initiate movement of the toy for travel a predetermined distance in another direction when said second target portion is struck, and means on said frame to automatically halt operation of said power means when the toy has traveled the predetermined distance.

3. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, means on said frame engaging the supporting surface, power means on said frame, transmission means on said frame drivingly connecting said power means to said surface engaging means so as to propel the toy along the surface incident to operation of said power means, a single sound-producing means on said frame connected to said transmission means, a target device on said frame having first and second portions adapted for movement when struck by an object, and means on said frame engageable by said movable portions of said target device for actuating said power means, said actuating means operating said power means to cause movement of the toy in one direction and production of a sound having one tone by said sound-producing means when said first target portion is struck and operating said power means to cause movement of the toy in another direction and production of another sound having a different tone from said first tone by said sound-producing means when said second target portion is struck.

4. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, means on said frame engaging the supporting surface, power means on said frame drivingly connectable to said surface engaging means so as to propel the toy along the surface, a target device on said frame located adjacent the supporting surface for engagement by a ball rolling along the surface, said target device including first and second portions adapted for movement when struck by a ball, and means on said frame engageable by said movable portions

of said target device for actuating said power means, said actuating means operating said power means to cause movement of the toy in one direction when said first target portion is struck and operating said power means to cause movement of the toy in another direction when said second target portion is struck, said movable target device affording passage of a ball thereunder and retention of the ball by the toy.

5. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, means on said frame engaging the supporting surface, power means on said frame drivingly connectable to said surface engaging means so as to propel the toy along the surface, a target device on said frame having first and second portions adapted for movement when struck by an object, a plurality of missiles suitable for projection at said target device, means on said frame engageable by said movable portions of said target device for actuating said power means, said actuating means operating said power means to cause movement of the toy in one direction when said first target portion is struck and operating said power means to cause movement of the toy in another direction when said second target portion is struck, said frame having a cavity formed therein behind said target device for capturing said missiles after said missiles have struck said target device, and means on said frame for retaining said missiles within said cavity.

6. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, means on said frame engaging the supporting surface, power means on said frame, transmission means on said frame drivingly connecting power means to said surface engaging means so as to propel the toy a pre-selected distance along the surface incident to driving operation of said power means, a target device on said frame having first and second portions adapted for movement when struck by an object and means on said frame engageable by said movable portions of said target device for actuating said power means, said actuating means operating said power means to cause movement of the toy a pre-selected distance in one direction when said first target portion is struck and operating said power means to cause movement of the toy a pre-selected distance in another direction when said second target portion is struck, and repositioning means on said frame connected with said transmission means and operable to cause movement of the toy in one of said directions for a distance greater than said pre-selected distance.

7. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, a head-simulating housing on said frame having an opening therein, a member connected to said housing generally covering said opening and movable from a first "closed-mouth" position to a second "open-mouth" position, a tongue-simulating element member mounted within said housing and movable outward of said housing through said opening, means on said frame engaging the supporting surface, power means on said frame drivingly connectable to said surface engaging means so as to propel the toy along the surface and connectable to said member and said element, a target device on said support means adapted for movement when struck by an object, and means on said frame engageable by said movable target device for actuating said power means so as to cause movement of the toy and to cause movement of said member to said second position and of said element outward of said housing.

8. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, a head-simulating housing on said frame having an opening therein, a member connected to said housing generally covering said opening and movable from a first "closed-mouth" position to a second "open-mouth" position, a tongue-simulating element member mounted within said housing and movable outward of said housing through

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said opening, means on said frame engaging the supporting surface, sound-producing means on said frame, power means on said frame drivingly connectable to said surface engaging means so as to propel the toy along the surface and connectable to said member and said element and said sound-producing means, a target device on said support means adapted for movement when struck by an object, and means on said frame engageable by said movable target device for actuating said power means so as to cause movement of the toy, to cause movement of said member to said second position and of said element outward of said housing, and to cause the production of sound by said sound-producing means.

9. A target toy adapted for travel along a supporting surface, which toy comprises a supporting frame, a head-simulating housing on said frame having an opening therein, a member connected to said housing generally covering said opening and movable from a first "closed-mouth" position to a second "open-mouth" position, a tongue-simulating element member mounted within said housing and movable outward of said housing through said opening, means on said frame engaging the sup-

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porting surface, power means on said frame drivingly connectable to said surface engaging means so as to propel the toy along the surface and connectable to said member and said element, a target device on said support means having first and second portions adapted for movement when struck by an object, and means on said frame engageable by said movable portions of said target device for actuating said power means, said actuating means operating said power means to cause movement of the toy in one direction when said first target portion is struck and operating said power means to cause movement of the toy in another direction when said second target portion is struck and to cause movement of said member to said second position and of said element outward of said housing.

References Cited in the file of this patent

UNITED STATES PATENTS

2,055,848	Marx	Sept. 29, 1936
2,281,757	Fisher	May 5, 1942
2,770,074	Jones et al.	Nov. 13, 1956