

Jan. 8, 1963

N. M. GELFAND ETAL

3,071,895

SPACE TOY

Filed March 14, 1961

7 Sheets-Sheet 1

FIG. 2

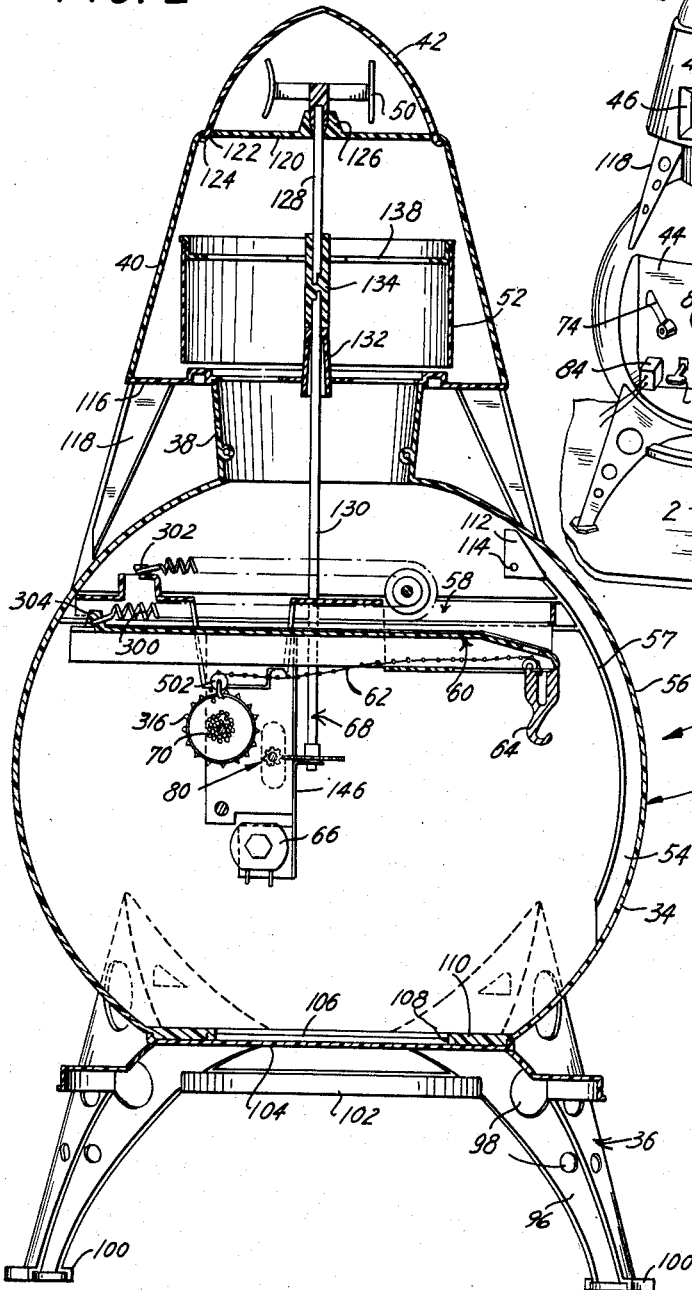
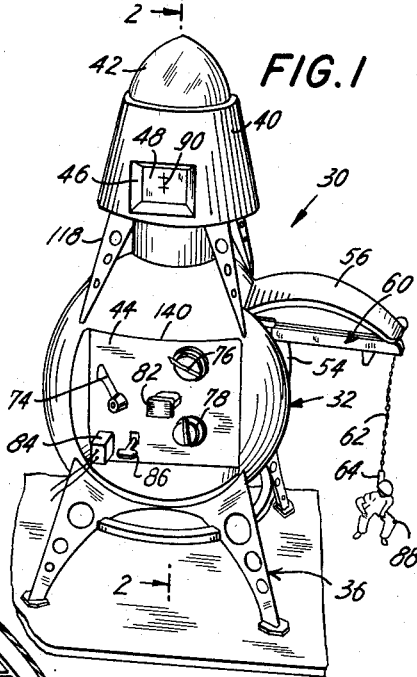


FIG. 1



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FIG. 3

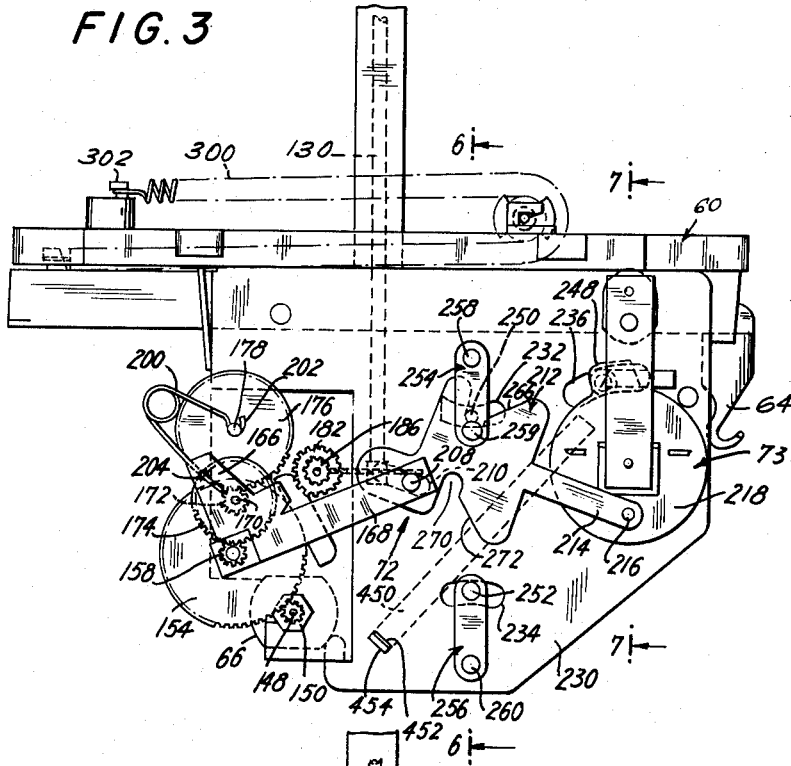
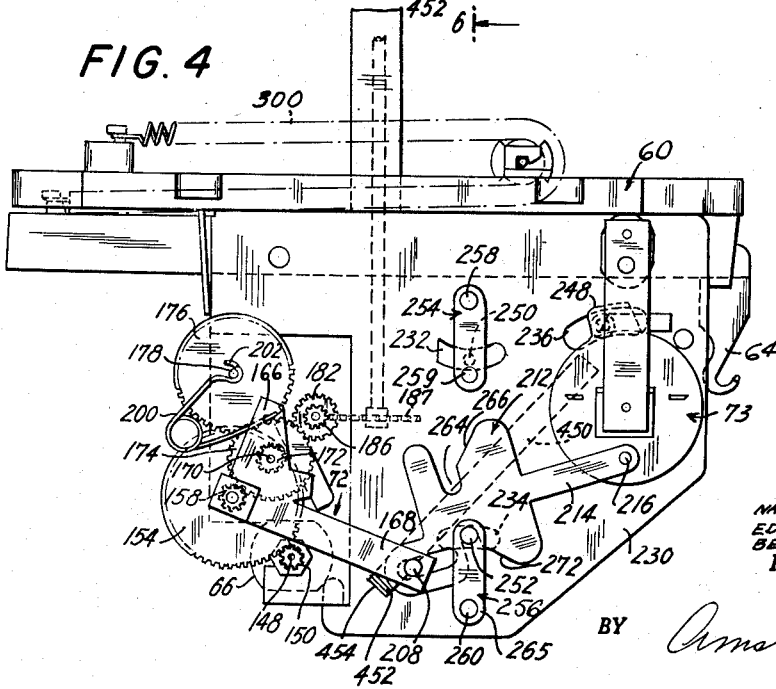


FIG. 4



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FIG. 8

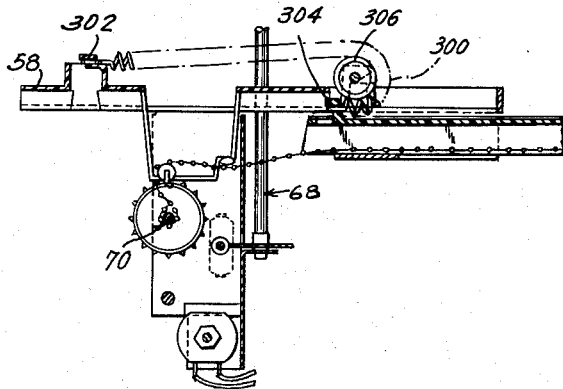
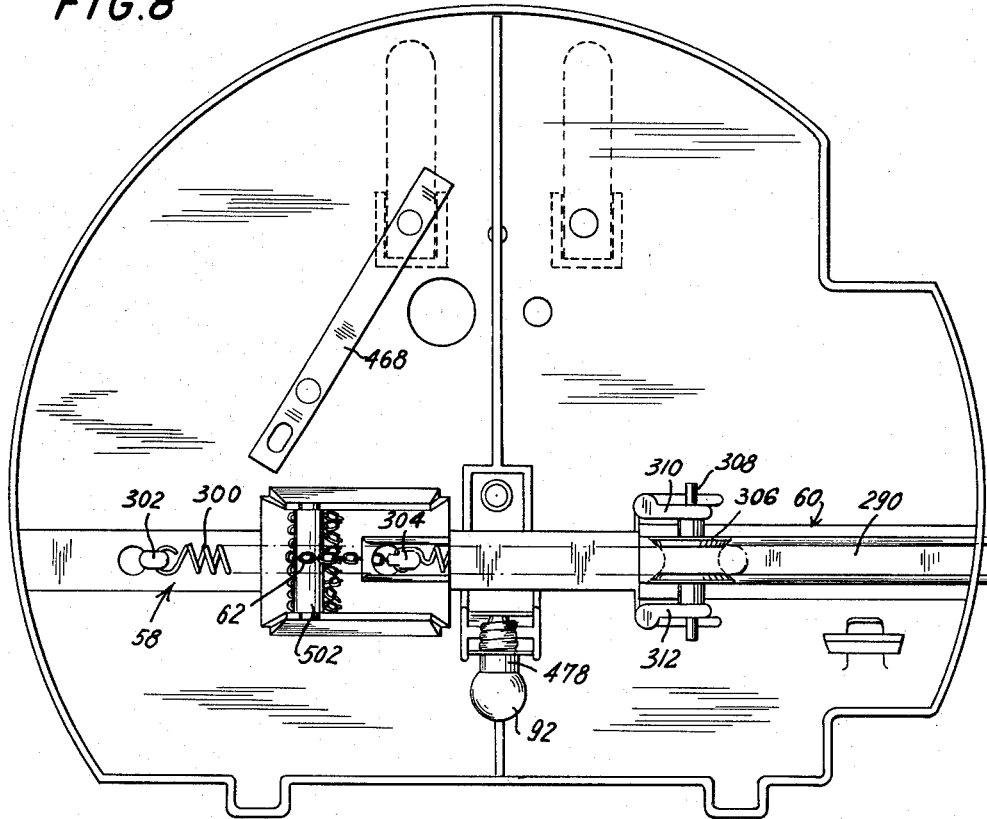
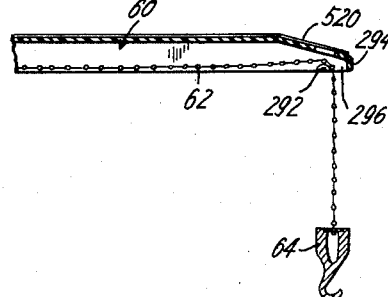


FIG. 9



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FIG. 10

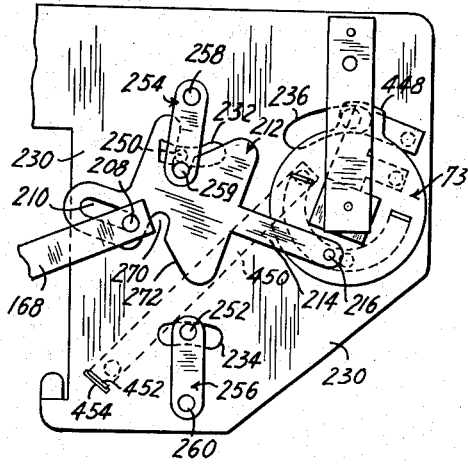


FIG. 11

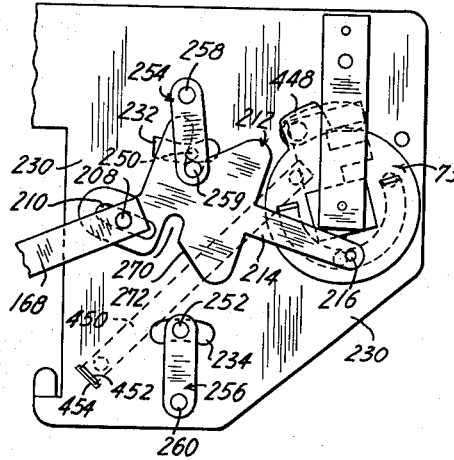


FIG. 12

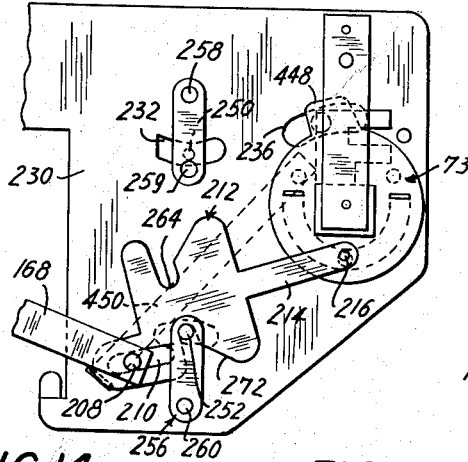


FIG. 13

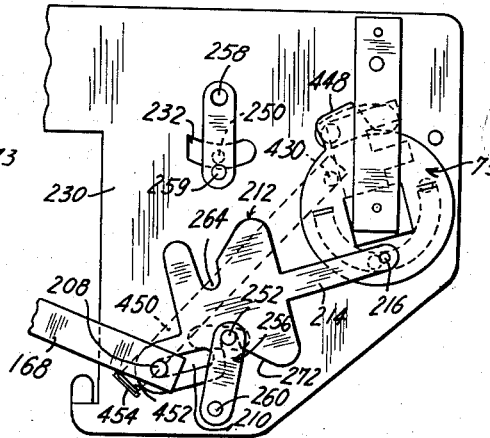


FIG. 14

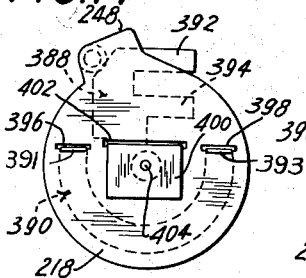


FIG. 15

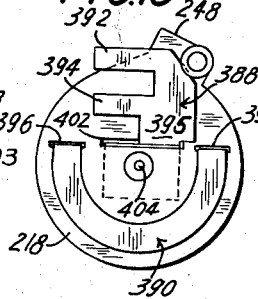
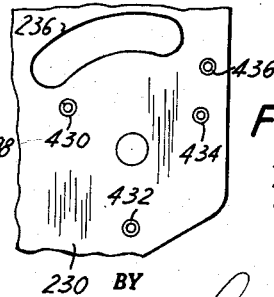


FIG. 16



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FIG. 17

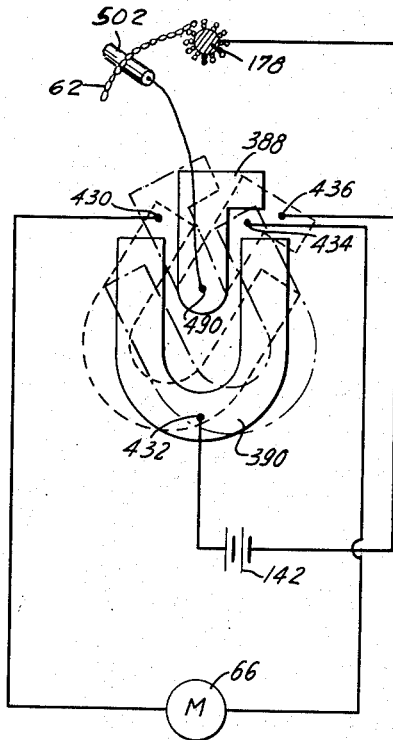


FIG. 18

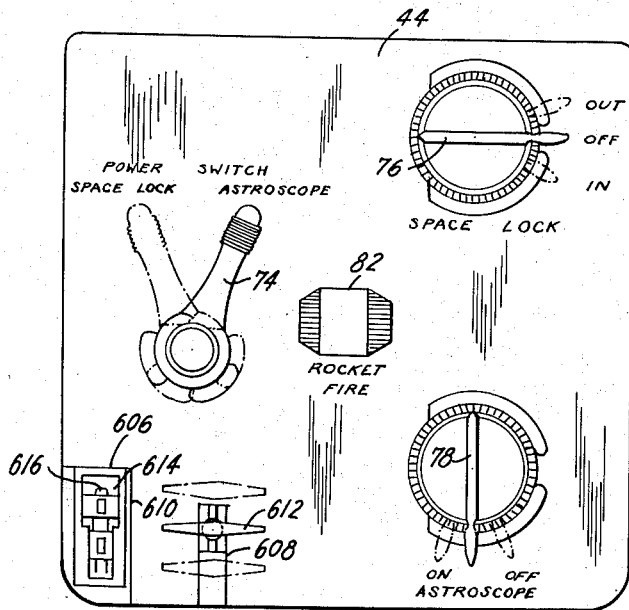
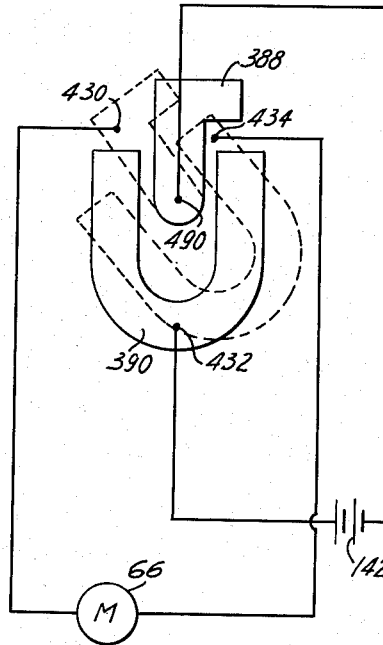


FIG. 19

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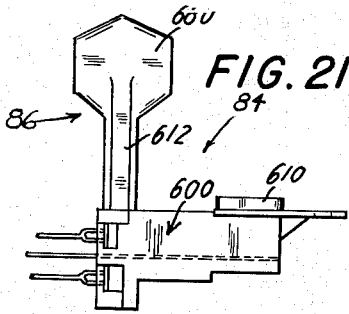


FIG. 21

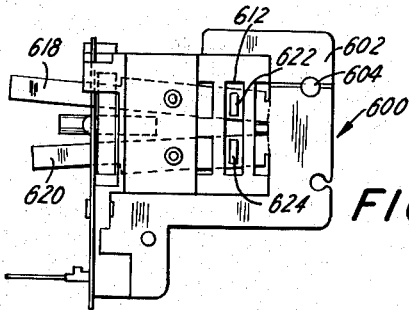


FIG. 22

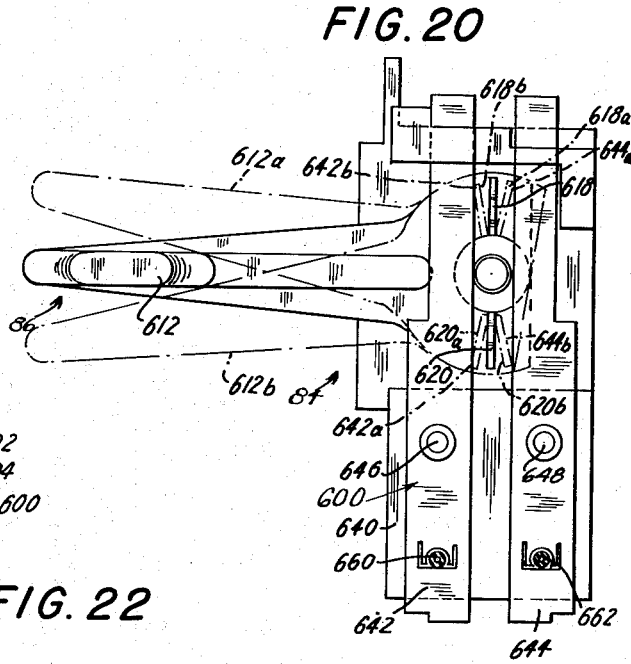
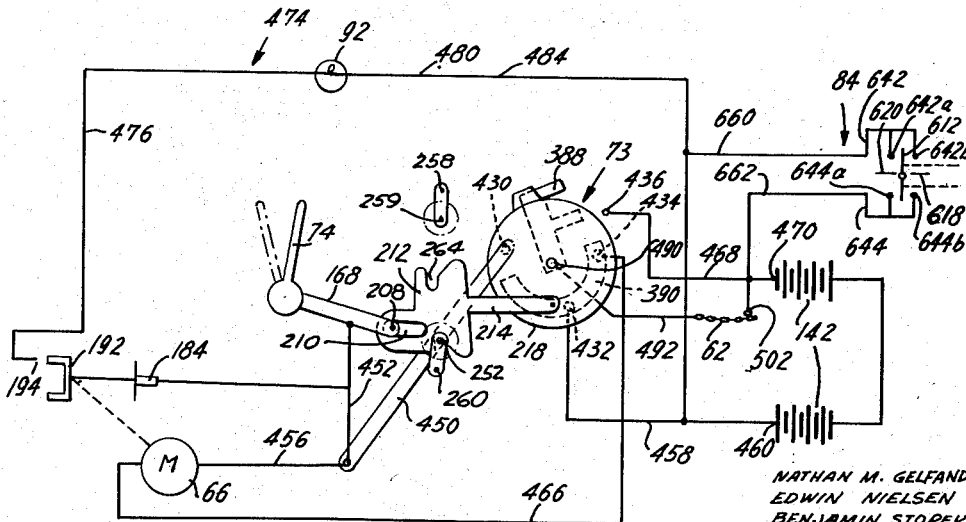


FIG. 20

FIG. 23



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3,071,895
SPACE TOY

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Filed Mar. 14, 1961, Ser. No. 95,572
5 Claims. (Cl. 46—243)

This invention relates to a toy and more particularly to an entertainment device for enabling the miniaturized simulation of a station in space.

The primary object of the present invention is to provide a toy for affording entertainment especially to young boys enabling the simulation of adventure in outer space and for otherwise affording entertainment in this space age.

The embodiment of this invention employs a housing of a configuration simulating a space ship. The housing is provided with an instrument panel thereon for enabling operation of the various elements of the invention. One of the features of the toy is a "space lock" in the form of a hinged door on the housing which is automatically opened and shut by operation of a motorized boom. The boom is adapted to move outwardly and inwardly of the housing through the "space lock" and carries a hook for raising and lowering a model of an astronaut into a scout car adapted to be used with the invention and for otherwise enabling the raising and lowering of various items of equipment. There is further employed in conjunction with the invention an "astroscope" which is in the form of a rotating viewing screen showing space ships, planets, stars, space stations, satellites, and the like. Behind the viewing screen is a lamp which is adapted to be intermittently excited to provide a visual indication of rocket fire or other weapon fire while in front of the space screen there is provided a window with crosshairs. These crosshairs enable the alignment of the various items on the viewing screen with the flashing light so as to enable the user to simulate rocket fire towards the various space ships, satellites and the like represented on the viewing screen. Further, there is provided audible signal means which function in conjunction with the visual signal means provided by the lamp to represent the sound of rocket fire.

The construction of this invention features a snap action assembly which operates in conjunction with a switch assembly so as to enable the boom or the viewing screen to be selectively operated. Further, there is incorporated in the invention a scout car plug-in assembly for use in enabling remote control of a scout car and there is provided a reverse polarity switch assembly for intermittently changing the polarity of the electrical power supply to the scout car.

An additional object of the invention resides in the provision of a housing having a novel hinged door provided with a track for actuation by a boom which moves inwardly and outwardly of the housing. The boom serves to open the door upon movement outwardly of the housing to realistically simulate a "space lock."

Another object of the present invention resides in the provision of a snap action assembly including a switch lever which is cammed into engagement with either of two control knob assemblies so as to selectively control a single switch assembly.

A further object of the invention resides in the provision of a toy having a large number of moving parts yet which is controlled by simple electrical circuits for affording operation of the moving parts of the invention.

Still further objects and features of the invention reside in the provision of a toy that is highly attractive in ap-

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pearance, capable of providing a great amount of entertainment for children of all ages, which can be manufactured for the most part by molding out of synthetic plastic materials, and which is strong and durable and capable of being operated by dry cell batteries thereby rendering the toy electrically safe and harmless.

These together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds are attained by this toy, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

FIG. 1 is a perspective view of the toy comprising the present invention;

FIG. 2 is an enlarged vertical sectional view of the toy taken along the plane of line 2—2 in FIG. 1;

FIG. 3 is an enlarged elevational view of a portion of the invention including a support, snap action assembly and switch assembly with a front plate removed illustrating the snap action assembly and switch assembly in the "space lock" position;

FIG. 4 is a view similar to that of FIG. 3, but illustrating the snap action assembly and switch assembly in the "astroscope" position;

FIG. 5 is an end elevational view of the support, boom, winch and snap action assembly comprising important operating structures of the present invention;

FIG. 6 is a vertical sectional view taken along the plane of line 6—6 in FIG. 3 particularly illustrating the construction of the drive means for the viewing screen;

FIG. 7 is a vertical sectional view taken along the plane of line 7—7 in FIG. 3 illustrating the construction of the switch assembly;

FIG. 8 is a top plan view of the support and boom and associated elements;

FIG. 9 is a vertical sectional view of the boom, winch and driving elements therefore;

FIG. 10 is a schematic view of the switch assembly and switch operating lever in a "space lock" position with the control knob turned to the IN position;

FIG. 11 is a view similar to FIG. 10 but showing the switch assembly in position with the space lock control knob turned to an OUT position;

FIG. 12 is a schematic illustration of the switch assembly and the switch operating lever in a "astroscope" position with the control knob for the astrocope turned to an OFF position;

FIG. 13 is a view similar to FIG. 12 but with the control knob for the astrocope turned to an ON position;

FIG. 14 is an enlarged elevational view of the switch assembly;

FIG. 15 is another elevational view of the switch assembly illustrating the switch elements in detail and looking at the opposite side of the switch assembly from that of FIG. 14;

FIG. 16 is a view of the switch assembly mounting plate showing the eyelet contacts with the switch disc removed from the mounting plate;

FIG. 17 is a schematic diagram of the various electrical contact elements of the switch assembly shown in the "space lock" position;

FIG. 18 is another schematic diagram illustrating the switch assembly in the "astroscope" position;

FIG. 19 is an elevational view of the instrument panel;

FIG. 20 is an end elevational view of the socket switch assembly for use in conjunction with the plug from a scout car;

FIG. 21 is a plan view of the socket switch assembly;

FIG. 22 is a rear elevational view of the socket switch assembly; and,

FIG. 23 is a schematic wiring diagram of the various electrical components of the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, the toy comprising the present invention is generally designated at 30 and includes a housing 32.

The housing 32 is of a shape which simulates the appearance of a popular conception of how the "space ship" of the future will appear. The housing 32 has a main substantially spherical body 34 supported on leg assembly 36.

A tower 38 rises from the body 34 and carries an observation cabin 40 above which there is positioned a transparent dome 42. There is provided on the body 34 an instrument panel 44 and a window 46 provided with a transparent pane 48 is formed in the observation cabin 40.

Positioned in the dome 40 is a simulated radar antenna 50.

A motorized viewing screen 52 is mounted in alignment with the window 46.

The body 38 has an opening 54 therein. A door 56 is hingedly secured to the body 38 for closing the opening 54. There is provided a track 57 integrally formed on the door. Within the body 38 there is positioned a support 58 having a motorized boom 60 movably mounted thereon for movement through the opening 54. The boom is provided with a chain 62 having a hook 64 on the end thereof.

A motor 66 is provided and mounted on the support 58 for driving the shaft 68 on which the antenna 50 and viewing screen 52 are mounted and for operating a winch 70. The winch 70 is supported on the support 58 and controls the boom 60. A snap action assembly generally indicated by reference numeral 72, FIGS. 3 and 4 is provided for selectively engaging the motor with the shaft 68 and the winch 70. A switch assembly 73 is provided for controlling the flow of electrical power to the motor. The snap action assembly 72 is controlled by a power shaft lever 74 while the switch assembly 73 is controlled by knobs 76 and 78. An audible signal assembly 80 is provided and controlled by push button 82 for simulating rocket fire.

The toy provides considerable entertainment and may be utilized in conjunction with a remote controlled motorized scout car as disclosed in U.S. Patent No. 2,775,848 which receives electrical power by means of socket switch assembly 84 including a remote control switch arm 86. The boom 60 is adapted to be used in lowering an astronaut 88 into the scout car and returning the astronaut back into the body 34. The viewing screen 52 is provided with illustrations simulating space ships in flight, planets, stars, and space stations, and upon depressing push button 82 with a portion of the viewing screen 52 centered in crosshairs 90 on the pane 48, the audible signal assembly 80 provides an audible simulation of rocket or weapon fire while the viewing screen 52 is stopped and a lamp 92, FIG. 5 flashes on and off providing a visual simulation of rocket or weapon fire.

The housing 32 is molded out of a synthetic plastic material in several sections. The material used is relatively rigid and of considerable strength and may be chosen from polyvinyl chloride, polystyrene, polyethylene, polyurethane or other commercially available materials. The various sections of the housing can be bonded to each other, mechanically interlocked, or secured together by suitable fasteners as desired to suit the needs of mass production. The leg assembly 36 includes four spaced diverging fins 96 of V-shape in cross section and which preferably taper to reduce the amount of material used and to lighten the weight of the structure. Lightning holes may also be provided.

Secured to or integrally formed with the fins 96 are feet 100 of sufficient size to form a solid support for the toy. The diverging fins 96 provide for a relatively

wide stable base structure for the toy. The fins 96 are integrally joined by a lower ring shaped brace 102 and by an upper disk shaped plate 104.

The body 34 is generally of a spherical shape having a flattened bottom portion which rests on the disc 104. The body 34 is formed in two halves, which are joined together by suitable fasteners. In order to reduce the weight and the amount of material used, a central opening 106 is formed in the body 34 defined by the peripheral rim 108 of the base portion 110 of the body part which rests on the disc 104.

The door 56 is provided with a pair of hinge members 112 through which a pintle 114 extends, the pintle being seated in lugs, not shown, preferably integrally formed with the body 34.

Integrally formed with the body 34 is the tower 38. Supported on the tower 38 is a mounting plate 116 for the cabin 40. The mounting plate 116 has a plurality of integral struts 118 which are secured in any convenient manner to the body 34.

The cabin 40 is of truncated conical shape and is provided with a ceiling 120 which has spaced slots 122 therein for receiving locking detents 124 integrally formed with the dome 42 for lockingly supporting the dome on the ceiling 120. The dome 42 is preferably of an ogive shape.

The ceiling 120 has integrally formed therewith a bearing 126 for the shaft 68 on which the simulated radar antenna 50 is secured. The shaft 68 is formed in two sections 128 and 130, the lower section 130 extends upwardly through a bearing 132 integrally formed with the floor 116 of the cabin 40 and extends into a central cylindrical member 134. The cylindrical member 134 is connected by a web 138 to the viewing screen 52 and is removable from the shaft section 130. The other shaft section 128 is also insertable into the cylindrical member 134 to complete the drive shaft 68.

The body 34 is provided with an enlarged opening therein as at 140 in which the instrument panel 44, preferably formed of metal is secured in any convenient manner as by screws or other fasteners. On the opposite side of the body from the instrument panel 44 there is provided another door, to a compartment in which batteries illustrated schematically in the wiring diagram at 142 are secured. The batteries 142 provide all of the electrical power for the toy and are connected to the motor 66 and the switch assembly 73.

The motor 66 is suspended from the support 58 by means of a channel shaped structural element 146 which is secured to the support 58, preferably by rivets. The motor 66 as can be seen in FIG. 5 drives a shaft 148 having a gear 150 fixed thereto. The structural element 146 has fixed thereto an axle 152 carrying a gear assembly 154 including a relatively large gear 156 and a small gear 158 which are rotatable together and which are freely rotatable on the axle 152. The snap action assembly 72 is pivotally mounted on the axle 152 and includes an operating head 160 formed of metal and which is adapted to be engaged in a square socket provided in the power shift lever 74, the head 160 being also of a square configuration so that rotation of a lever 74 will cause operation of the snap action assembly 72.

Extending from the head 160 of the snap action assembly 72 are a pair of arms 166 and 168 FIGS. 3 and 4. The arm 166 has provided thereon a stub axle on which a small gear 172 and a larger gear 174 are rotatably mounted. The gear 174 is maintained in mesh with the small gear 158 so that the larger gear 174 as well as the small gear 172 are continuously driven by the motor 66. In the "space lock" position of FIG. 3, the small gear 172 is pivoted so that it meshes with the gear 176 mounted on the shaft 178 of the winch 70. Thus, in the "space lock" position of FIG. 3 the motor 66 drives the winch 70.

With the snap action assembly 72 pivoted to the "astro-

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scope" position of FIG. 4 the gear 172 is pivoted out of engagement with the gear 176 and the gear 174 meshes with a gear 182 fixed to a shaft 184 journaled in the channel shaped structural element 146. A worm 186 is formed on or secured to the shaft 184 which worm 186 rotates with the shaft 184. The worm 186 drives a horizontally disposed gear 186 fixedly secured on the shaft 68 for rotating the shaft 68.

The shaft 184 is slidably mounted in the channel shaped structural element 146 and a spring 190 is concentrically disposed about the shaft 184 resiliently yieldingly engaging the structural element 146 at one end and the gear 182 at the other end thereby normally urging the shaft 184 towards the right as shown in FIG. 5 with the position thereof being limited by a clicker 192 fixed to shaft 184. The clicker 192 is one of the elements used for producing the audible signal simulating rocket fire or weapon fire. The clicker 192 is adapted to engage a resilient leaf spring 194 depending from the support 58 and engageable with a drum 196 integrally formed on support 58. The drum 196 is hollow in construction whereby when the leaf spring which is of a Z-shape is contacted by the clicker 192 it will snap against the drum 196 making the audible signal. The shaft 184 is connected to the push button 82 and upon depression of the push-button 82, the shaft 184 slides towards the left as shown in FIG. 5. Moving the clicker 192 into engagement with the leaf spring 194 and disengaging the worm 186 from the gear 86 whereby the shaft 68 will no longer be driven.

The snap action operation of the snap action assembly 72 is facilitated by means of a spring 200 which has one end 202 engaged about the shaft 178 with the other end of the spring as at 204 being secured to the arm 166. The other arm 168 has a pin 208 secured thereto which pin rides in a slot 210 formed in a switch actuating lever 212. The switch actuating lever 212 has an arm 214 which is pivoted by means of a pin 216 to the disc 218 of the switch assembly 73.

Secured to the channel shaped structural element 146 and forming a part of the support 58 is a vertical plate 230 which is provided with arcuate slots 232 and 234 therein as well as with a relatively larger arcuate slot 236 forming a guide for a tubular stop member 248 secured to the disc 218. The slots 232 and 234 form guides and function to form limit stops for cylindrical stop members 250 and 252 respectively which stop members are fixed to actuating members 254 and 256 pivoted as at 258 and 260 to the vertical plate 230. The actuating members 254 and 256 control the movement of the switch actuating lever 212 and are in turn connected to knobs 76 and 78 by means of stubs 259 and 261 so that rotation of the knobs will cause movement of the actuating members 254 and 256 with respect to the vertical plate 230 with the degree of movement being controlled by stops 250 and 252 in the slots 232 and 234.

The switch operating lever 212 is provided with a recess 264 in the upper surface thereof and a cam surface 266 leading to the recess 264 so that when the switch lever 212 is in the "spaced lock" position, as shown in FIG. 3, the switch lever 212 will engage the tubular stop 250 so that the lever 212 will be governed by the stop 250. Further, the lever 212 is provided with another recess 270 therein and a cam surface 272 leading to the recess 270 so that when the snap action assembly 72 is operated, the cam surface 272 will first engage the stop 250 and guide it into the recess 270 locking the lever 212 for movement with the stop 252 and hence in accordance with the knob 78.

The support 58 includes a channel shaped guide 280 integrally molded therewith and adapted to guidingly support the boom 60. This can be seen best in FIG. 7. The channel guide 280 includes a slot 282 therein through which a lug 284 preferably integral with the boom 80 extends. The lug 284 is adapted to engage a detent 286 at-

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tached to the disc 218 of the switch assembly 73. The boom 60 is generally of a channel shape in cross section and is provided with a recess 290 in the upper surface thereof and a stop member 292 is provided on the lower portion of the boom which in conjunction with the end 294 of the boom forms an opening 296 through which the chain 62 extends. The opening 296 is of smaller size than the dimensions of the hook 64 so that when the chain 62 is wound up on the winch 70, the hook 64 engages the boom 60 and further winding of the chain 62 will cause withdrawal of the boom 60 toward the winch 70. An elongated coil spring 300 is anchored at 302 to the support 58 and its other end is anchored at 304 to the boom 60. The spring 300 is entrained about a roller 306 mounted on a shaft 308 which is rotatably journaled in trunnions 310 and 312 which are preferably integrally molded on the support 58. Hence, the spring 300 will normally urge the boom 60 to the OUT position as shown in FIG. 9, it being realized that when the boom 60 is drawn inside the body 34 as shown in FIG. 2, the spring 300 is under considerable tension and continuously urges the boom outwardly of the body 34 against the action of the winch 70. In order to prevent the spring 300 from causing rotation of the winch 70 when such is not desired, there is provided a ratchet 316 fixed to the winch shaft 178 and engageable with a pawl 318 which is secured to the channel shaped structural element 146 as by rivet 320.

As can be seen best in FIGS. 6 and 7, by means of spacers 350 integrally formed with the vertical plate 230 a front mounting plate 362 is secured to the vertical plate 230 sandwiching the switch actuating lever 212 therebetween. The front plate 362 is provided with openings 364 and 366 through which the actuating stubs 259 and 261 engaged by the knobs 76 and 78 extend. The openings 364 and 366 may be of a size to form stops for these stubs 259 and 261. By means of space and fasteners, the instrument panel 44 is secured to the front plate 362.

The switch actuating lever 212 is pivoted by pin 216 to the switch disc 218 which is provided with a center opening 380. A cylindrical stub shaft 382 surrounds the central opening 380 and extends through an opening 384 in the vertical plate 230, FIG. 7. As can be seen best in FIGS. 14 and 15, the side of the disc 218 lying against the vertical plate 230 is provided with two contact members 388 and 390. The contact member 388 is of an irregular F-shape provided with a pair of contact arms 392 and 394 projecting from a main contact portion 395. The contact 390 is a semi-circular strip. The contact member 390 is held to the disc 218 by the end portions thereof 391 and 393 which are bent over and extend through slots 396 and 398 in the disc 218 while the contact member 388 has a rectangular portion 400 which extends through the slot 402 in the central portion of the disc 218. The rectangular portion 400 forms a bearing support and is provided with a through aperture 404 for receiving the fit 406 at the end of a spring 408 secured by rivet 410 to the upper portion 420 of the vertical plate which is also provided with a lug 422 which extends through an opening 424 in the spring to hold the spring in place so that it continuously bears on the disc 218 pressing the disc towards the vertical plate 230 to make sure that the contact members 388 and 390 engage the eyelet or rivet type contacts 430, 432, 434, and 436 which are fixed to the vertical plate 230.

Connected to the contact 430 is a shunt 450 formed of brass or other suitable material which has an inwardly bent end at 452 which extends through a slot 454 in the vertical plate 230 and is adapted to engage the arm 168 which is of electrically conductive material. The motor 66 is connected to the shunt 450 by means of a conductor 456. The contact 432 is connected by means of a conductor 458 to the terminal 460 of the batteries 142. The contact 434 is connected by means of a conductor 466 to

the motor 66 while the contact 436 is connected by means of a conductor 468 to the other terminal 470 of the batteries 142. Connected across the conductors 456 and 458 is the electric lamp bulb distribution circuit 474 for exciting the lamp 92. The lamp 92 is mounted on an electrically conductive standard 476 which is secured to the support 58 and rises upwardly therefrom so that the lamp bulb 92 is encircled by the viewing screen 52. A socket 478 is provided on the standard 476 for the light bulb and the shell of the lamp 92, engages the socket 476 in the conventional manner. Engaging the base of the lamp 92 is a spring contact 480 carried by an insulative member 482 fixed to the conductive standard 476 to which electrical conductor 484 is attached. As can be readily seen, the clicker 192 is grounded to the snap action assembly 72 and thereby connected to the shunt 450.

The electrical system described has been chosen for the purpose of convenience it being recognized that various other conductors and conductive elements may be utilized to achieve the purposes of the invention.

With this toy in an initial position with the door 56 closed and the boom 60 withdrawn and with the power shift lever 74 in the "space locked" position as shown in FIGS. 1 and 3, the switch actuating lever 212 engages the stop 250. In this position, there is an open circuit between the batteries 142 and the motor 66. With the knob 76 turned to the "space lock" OUT position as shown in FIG. 11 an operative electrical circuit will be completed between the batteries 142 and the motor 66. This circuit can be traced from the terminal 460 of the batteries 142 through the contact 432 and the arcuate contact 390 to the rivet contact 434, and then through the conductor 466 to the motor 66, and by way of conductor 456 and shunt 450 to the contact 430 and thence through the contact 388 and terminal 490 back through conductor 492 to the terminal 470 of the battery 142. At this point, the winch will be driven by the motor 66 and will rotate in a first direction determined by the polarity of the circuit connecting the batteries 142 to motor 66.

On moving the knob 76 to the "space lock" IN position as shown in FIG. 10, an operative electrical circuit of opposite polarity is provided between the batteries 142 and the motor 66. As can be readily seen the terminal 470 is connected through the conductor 436 to the rivet contact 436 which is engaged by the contact strip 388, (see FIG. 10). The contact strip 388 engages rivet contact 434 and by means of conductor 436, the motor 66 and conductor 466 is connected to the rivet contact 434 and the motor 66. The motor 66 in turn is connected back to the terminal 460 of the batteries through conductor 456, shunt 450, rivet contact 430, contact strip 390, and rivet 432, and conductor 458.

When the power shift lever 74 is turned clockwise to the "astroscope" position from the position shown in FIG. 1, the snap action mechanism 72 will be actuated moving the switch lever 212 to the position as shown in FIG. 4. With the control knob 78 in the OFF position the astroscope is turned off as shown in FIG. 12 since the contact strip 390 does not engage either of the two rivet contacts 430 and 434 thereby opening the circuit from the batteries 132 to the motor 66 and/or the lamp 92. With the knob 78 rotated to move the 252 to the ON position, the switch control lever 212 is actuated causing the disc 218 to be rotated to the position as shown in FIG. 13 where there is now an operative electrical circuit to the motor 66. This can be traced from the terminal 460 of the batteries 142 through conductors 458 to rivet contact 432, thence through contact strip 390 to rivet contact 434, and thence through conductor 466 to the motor 66. The motor 66 is connected through conductor 456 to the shunt 450 and hence to the rivet contact 430. The contact strip 388 engages the rivet contact 430 and conductor 492 is connected to the contact strip 388 and to the terminal 470 of the battery. This causes rotation of the vertical shaft 68 as well as rotation of the shaft 184.

When the push button 82 for simulated rocket fire is depressed, it pushes the clicker 192 into engagement with the leaf spring 194 completing an operative electrical circuit to the lamp 92 which may be traced from the batteries 142 through conductor 484 and the lamp 92 through conductor 476 to the leaf spring 194 which is engaged by the clicker 192 which in turn is grounded through the shunt 450, connected to rivet contact 430 which is engaged by the contact strip 438 which in turn is connected to the batteries through a conductor 492. The conductor 492 is composed of chain 62 which is entrained over a roller 502, FIG. 2 and 23. The chain 62 is lifted off of the roller 502 to open this circuit.

Therefore, operative electrical circuits are provided from the battery 142 to the motor 66 when the power shift lever is in the "space lock" position and the control knob 76 is either in the OUT position or in the IN position as shown in FIG. 19. When control knob 76 for the "space lock" is in the OFF position there is an open circuit to the motor 66.

When the power shift lever 74 is swung to the "astroscope" position as shown in FIG. 19, there is an open circuit to the motor when the control knob 78 is in the OFF position, but an operative electrical circuit is provided to the motor 66 when the knob is turned to the ON position.

The power shift lever 74 may be thrown into either the "space lock" or "astroscope" position, (FIG. 19). With the lever 74 in the "space lock" position, the snap action assembly 72 is in the position as shown in FIG. 3 with the knob 76 in the OFF position. When the knob 76 is turned to the OUT position, an operative electrical circuit to the motor 66 is completed at which time the motor turns its shaft 148 which rotates the gear 150 driving the gear 154 and gear 158. Gear 158 drives the gear 174 and gear 172 coupled therewith which in turn drives gear 176 fixed to the winch shaft 178 rotating the winch and releasing the chain 62 permitting the spring 300 to urge the boom 60 outwardly. The cam shaped end 520 of the boom 60 engages the track 57 on the door 56 lifting and opening the door 56 permitting the boom 60 to extend outwardly of the body. After the boom has extended its full length, the mounting 302 for the end of the spring 300 strikes the guide roller 308 limiting further outward movement of the boom. The winch will rotate until the chain 62 is completely extended, the chain 62 being pulled out by the weight of the hook 64. The chain 62 and hook 64 are used to raise and lower the astronaut 88 and other parts of the motorized scout car used in conjunction with the toy. When it is desired to retract the boom 60, the knob 76 is turned clockwise to the IN position at which time an operative electrical circuit of different polarity is provided to the motor 66 so that the chain 62 is hoisted up until the hook 64 engages the stop 292 on the boom 60 and further withdrawal of the chain will cause the boom 60 to be withdrawn into the housing tensioning the spring 300. As the boom 60 is entirely retracted, the lug 284 on the boom 60 will engage the stop member 286 fixed to the disc 218 so that as the boom 60 is completely withdrawn the disc 218 will be rotated to the off position.

When it is desired to use the "astroscope," the power shift lever 74 is thrown to the "astroscope" position. In the OFF position of control knob 78, there is an open electrical circuit to the motor 66 and to the lamp 92. However, when the knob 78 is turned to the ON position and with the snap action assembly 72 in the position as shown in FIG. 4, the shaft 148 drives the gear 150 which in turn drives gear 154. The gear 154 is coupled to gear 158 driving gear 174 which drives the gear 182 on shaft 184. Worm 186 is mounted on the shaft 184 and rotates therewith. The worm 186 drives the gear 187 which in turn causes the shaft 68 to rotate, rotating the viewing screen 52. When the simulated rocket fire push-button 82 is depressed, the shaft 184 is moved longitudinally disengaging the worm 186 from the gear 187 so that

the shaft 68 is no longer rotated. At the same time, the clicker 192 engages the leaf spring 194 to complete an operative electrical circuit from the batteries 142 to the lamp 92. Inasmuch as the clicker 192 intermittently engages the leaf spring 194, the lamp 92 is intermittently excited providing a visual simulation of rocket fire. Further, the clicker 192 engaging the leaf spring 194 causes the leaf spring to pound on the drum 196 making the simulated rocket fire sound.

Referring now to FIGS. 1 and 20 through 23, it will be noted that the socket switch assembly 84 is provided for remote control of a scout car. The socket switch assembly 84 is adapted to receive a conventional plug having a pair of prongs adapted to seat within the receptacle body 600 of the socket switch assembly. The body 600 is preferably molded out of any suitable insulative synthetic plastic material and includes an attachment plate portion 602 having an opening 604 therethrough for receiving a screw or like fastener for attaching the body 600 to the instrument panel 44. The instrument panel 44 is provided with openings 606 and 608 therein for reception of a portion 610 of the body 600 and for receiving the switch handle 612 of the switch lever 86. The body portion 610 has a recess 614 therein, and further has an opening 616 therethrough. In alignment with the opening 616 there are disposed two electrically conductive contact members 618 and 620 which are arranged in spaced relationship, but which are slightly diverging. These contact members are provided with slots 622 and 624 therein for receiving the prongs of the plug to complete an operative electrical circuit from the prongs to the contact elements 618 and 620.

By means of a pin 624 the switch lever 612 is pivoted to the body 600. The contact elements 618 and 620 extend through slots 622 and 624 in the switch lever 612 so that rotation of the switch handle 612 will move the contact members to the positions as shown in dotted lines in FIG. 20. Riveted or otherwise fixed to the vertically extending surface 640 of the main body 600 are a pair of spaced parallel resilient conductive strips 642 and 644. The strips 642 and 644 are in turn secured to the main body 600 by rivets 646 and 648 or by other suitable fastening means.

As can be readily seen from an inspection of FIG. 23, the contact 642 is connected to the terminal 460 of the batteries 142 by means of a conductor 660, while conductor 662 connects the contact strip 644 to the terminal 470 of the batteries 142. Thus, the switch handle 612 in its two different operative positions will cause an electrical circuit to be completed across the conductors 618 and 620 to be obtained and hence a direct current motor plugged into the contact strip openings 622 and 624 will receive current of predetermined polarity dependent upon the position of the switch handle 612. This is because in the position of the switch handle 612 as indicated by the phantom lines and designated by reference numeral 612a, the contact member 620 is at a position 620a engaging the contact strip 642 at the point 642a with the contact member 618 being in the position 618a and engaging the contact strip 644 in the position 644a. When the switch lever 612 is moved to the position 612b, the contact member 618 is in the position 618b and engages the contact strip 642 at 642b while the contact member 620 is in the position 620b and engages the contact strip 644 at 644b. Thus circuits of reversed polarity are achieved. Of course, the lever 612 may be provided with an enlarged portion 680 for facilitating the grasping of the lever to enable easy operation thereof.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

What we claim is:

1. A toy comprising a housing, a motor mounted in said housing, a support in said housing, a boom movably carried by said support from a retracted position within said housing to an extended position protruding outwardly from said housing, a winch in said housing driven by said motor, drive means interconnecting said motor and said winch, flexible means entrained about said winch, spring means connected to said support and said boom for urging said boom outwardly of said housing to said extended position, said flexible means being engageable with said boom for retaining and withdrawing said boom into said housing.

2. A toy comprising a housing, a motor mounted in said housing, a support in said housing, a boom movably carried by said support between a retracted position to an extended position projecting outwardly of said housing, a winch in said housing driven by said motor, drive means interconnecting said motor and said winch, flexible means entrained about said winch, biasing means for urging said boom outwardly of said housing to said extended position, said flexible means being engageable with said boom for retaining and withdrawing said boom into said housing to said retracted position, said housing having an opening therein, a door hingedly secured to said housing for closing said opening, a track on said door, said boom riding on said track to pivot said door for opening said door as said boom moves outwardly of said housing.

3. A toy comprising a housing, a motor mounted in said housing, a support in said housing, a boom carried by said support and movable between a retracted position within said housing and an extended position projecting outwardly of said housing, a winch in said housing driven by said motor, drive means interconnecting said motor and said winch, a chain entrained about said winch, spring means connected to said support and to said boom for urging said boom outwardly of said housing to said extended position, a hook on the end of said chain, stop means on said boom, said hook engaging said stop means for retaining and withdrawing said boom within said housing.

4. A powered toy comprising a shell housing, an opening formed in said housing, a door movably secured to said housing adjacent to and coextensive with said opening, said door being biased to cover said opening, a track formed within said housing, a boom mounted on said track for movement between a retracted position within said housing and an extended position protruding outwardly of said housing, spring bias means connected between said boom and said housing for urging said boom into said extended position, a motor within said housing, electric power means for said motor, a winch driven by said motor, and a flexible connector secured at one end about said winch and threaded through said boom, said flexible connector having an enlarged member at the other end thereof and said boom having a stop engageable with said member for withdrawing said boom from said extended position upon rotation of said winch to said retracted position in opposition to said spring bias means and to allow said door to close, said boom engaging said door as it is extended to open said door.

5. A powered toy comprising a shell housing, an opening formed in said housing, a door movably secured to said housing adjacent to and coextensive with said opening, said door being biased to cover said opening, a track formed within said housing, a boom mounted on said track for movement between a retracted position within said housing and an extended position protruding outwardly of said housing, spring bias means connected between said boom and said housing for urging said boom into said extended position, a motor within said housing, electric power means for said motor, a winch driven by said motor, and a flexible connector secured at one end about said winch and threaded through said boom, said flexible connector having an enlarged member at the other

end thereof and said boom having a stop engageable with said member for withdrawing said boom from said extended position upon rotation of said winch to said retracted position in opposition to said spring bias means and to allow said door to close, said boom engaging said door as it is extended to open said door, said flexible connector depending from said boom as said winch unwinds after said boom has reached said extended position.

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