

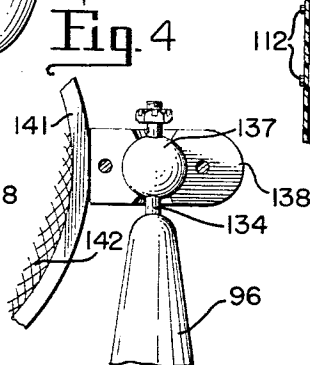
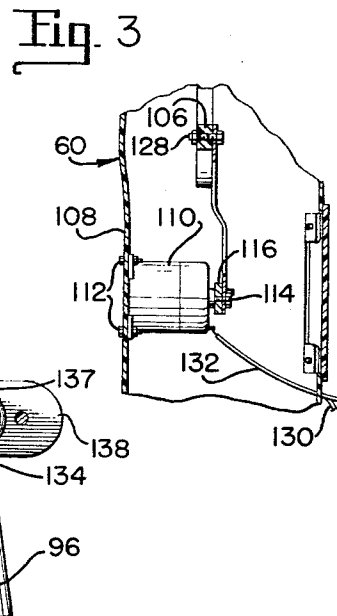
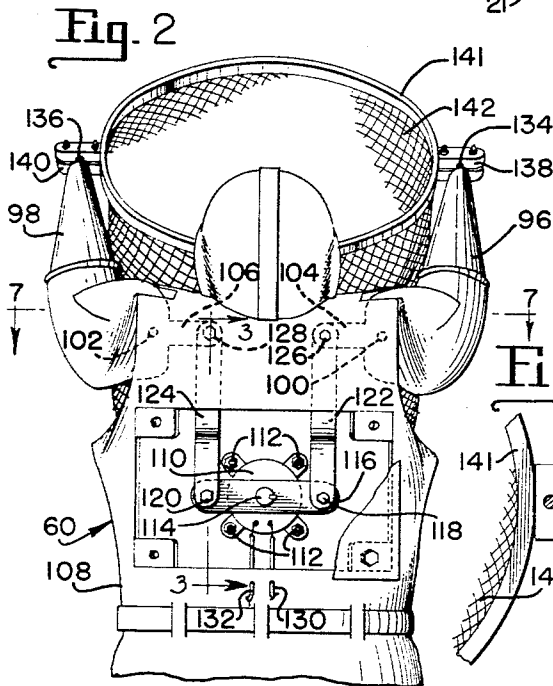
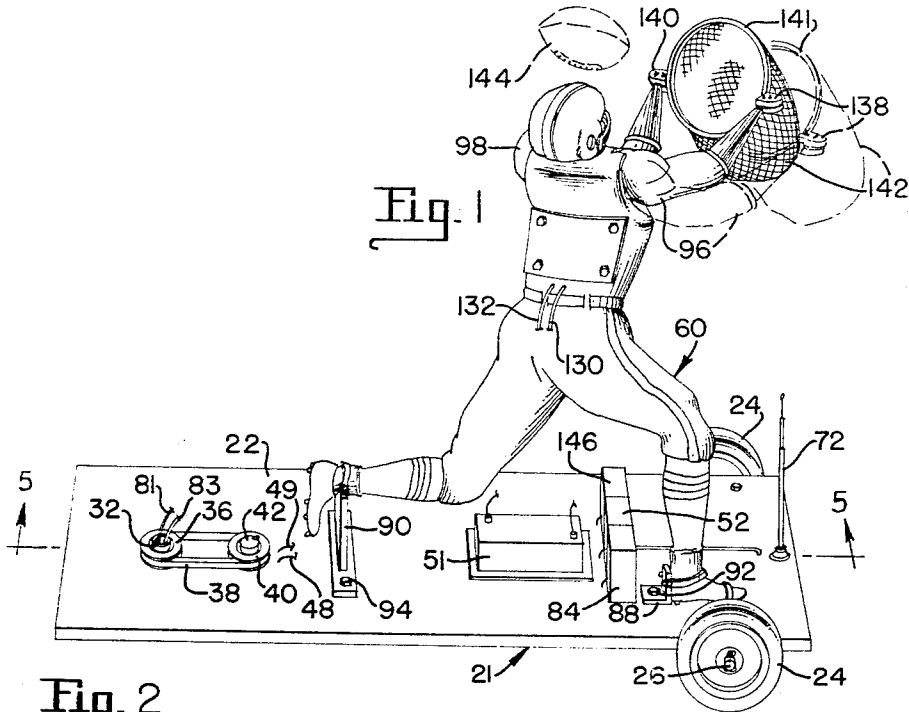
July 9, 1968

W. H. GRIMES
RADIO CONTROLLED, SIMULATED FOOTBALL PLAYER
PASS RECEIVING DEVICE

3,391,936

Filed April 12, 1966

3 Sheets-Sheet 1



WILLIE H. GRIMES
INVENTOR.

BY

Wayland D. Keith
HIS AGENT

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3 Sheets-Sheet 2

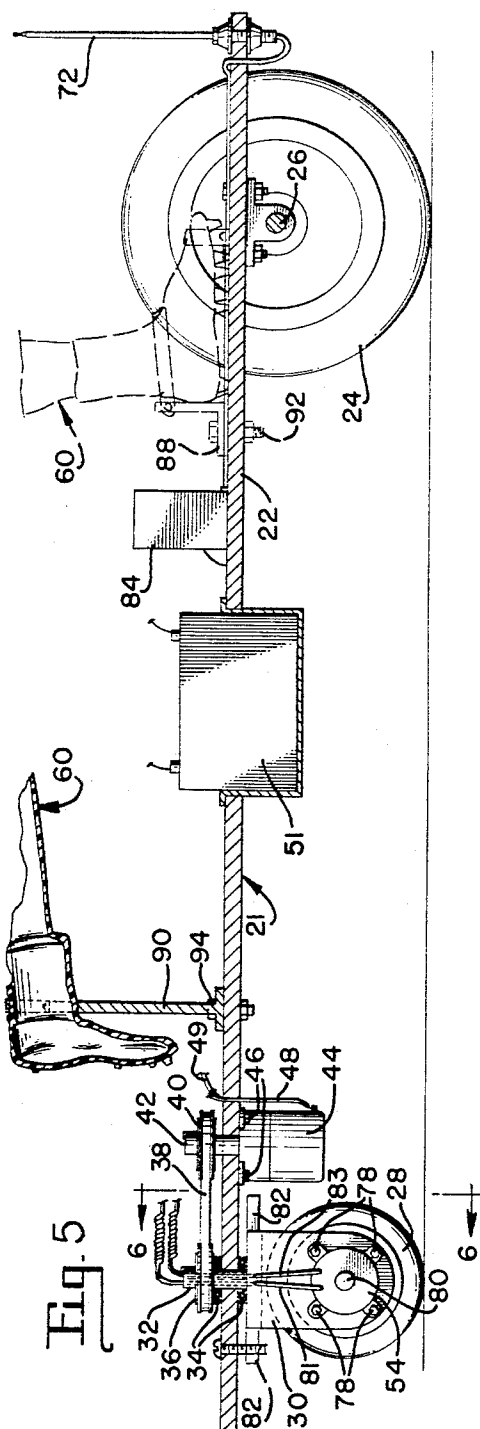


Fig. 5

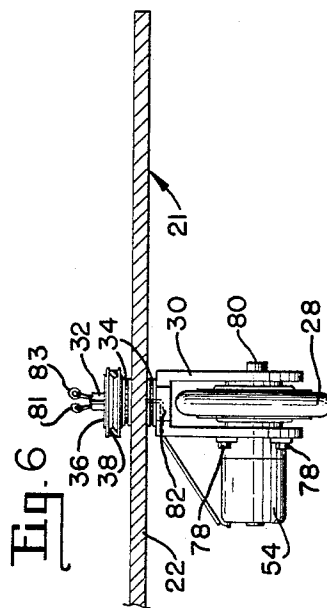


Fig. 6

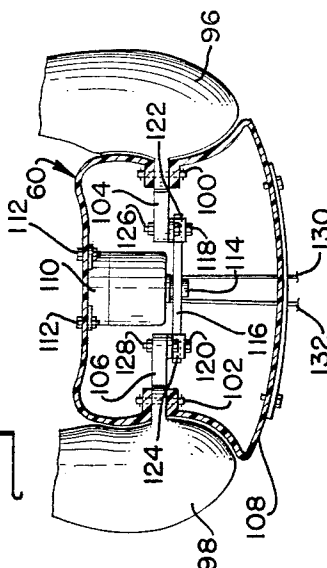


Fig. 7

WILLIE H. GRIMES
INVENTOR.

BY

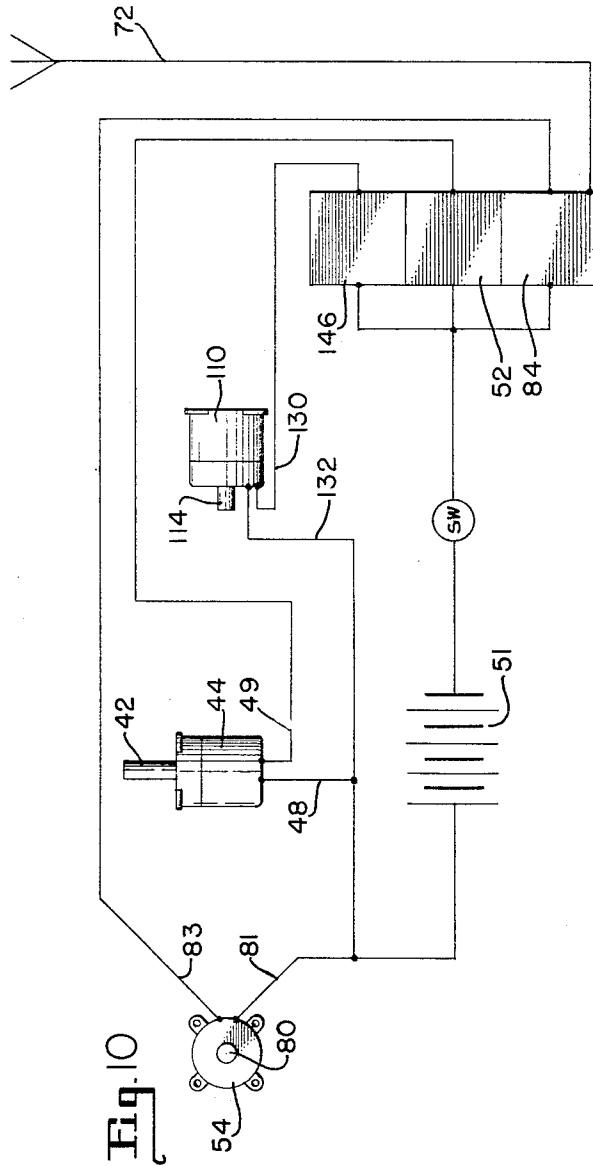
Wayland D. Keith
HIS AGENT

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3 Sheets-Sheet 3

Fig. 8

Fig. 9



BY
Wayland D. Keith
HIS AGENT

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3,391,936

RADIO CONTROLLED, SIMULATED FOOTBALL PLAYER PASS RECEIVING DEVICE

Willie H. Grimes, P.O. Box 790, Stamford, Tex. 79553
Filed Apr. 12, 1966, Ser. No. 542,015
10 Claims. (Cl. 273-105.2)

This invention relates to improvements in football training devices, and more particularly a football training device for training football players in correctly throwing passes to a receiver. In training football players to throw passes, several factors must be considered, first, to get the ball high enough so it cannot be intercepted or knocked down by an opposing player. Second, the ball must be thrown to where a receiver is to be at the time the ball reaches the destined spot for reception. Third, the ball must be within a zone where, by shifting the arms of the player to one side or the other, at the correct height, the ball may be received, and if too high the pass will go wild and if too low, the opposing players may intercept the ball.

The training device embodied in the present invention is so designed as to be manipulated over a football field at speeds up to the maximum at which a player is expected to run. The training device maneuverable by radio controlled impulses so as to move the training device in any of the courses in which a player may normally be expected to maneuver. In addition to the manipulating the training device at various speeds, the training device may also be steered by radio controlled impulses to make various movements in any direction. A simulated football player is mounted on a wheeled frame, which frame also has a motorized mechanism therein, by which to manipulate the arms of the player so as to carry a pass receiving basket from side to side and to receive the ball from the passer.

Radio controlled mechanisms are old in the art and no claim is directed per se to the radio circuit and the method of energizing a switch for the mechanism; however, the present mechanism is so constructed that any of one, two or three operations may be separated and independently controlled so as to put the player with the pass receiver basket at the particular place when the football is to arrive at that spot to be received.

An object of this invention is to provide a football pass receiving device which may be remotely controlled by radio impulses.

Another object of the invention is to provide a radio pass receiving device which is power operated to move over the terrain, which device carries a simulated football player, both the machine and football player being controlled by radio impulses so as to receive a football pass being thrown by a player.

Still another object of the invention is to provide a wheeled frame, one of which wheels is electrically powered by an electric motor to enable the wheel to be driven in either direction, to move the wheeled frame either into forward or reverse position, and which motor is controlled, both as to speed and as to direction of movement, by radio impulses.

Another object of the invention is to provide a simulated football player mounted on a wheeled frame to receive passes from football players who are being trained. Which simulated player can manipulate a receptacle from side to side to simulate the movement of arms of a player receiving a pass in a football game.

Still another object of the invention is to provide a simulated football player with movable arms associated with a motor and with a linkage arrangement to enable

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a receptacle to be attached to the outer extremities of the arms to receive a football therein.

Still another object of the invention is to provide a wheeled frame, carrying a simulated football player, which is battery powered, and which battery is mounted so as to be at least partially below the wheeled frame.

With these objects in mind and others which will become manifest as the description proceeds, reference is to be had to the accompanying drawings in which like reference characters designate like parts in the several views thereof, in which:

FIG. 1 is a perspective view of the radio controlled simulated football pass receiver device taken from a side and above and showing a football in dashed outline and close to the pass receiving basket;

FIG. 2 is a fragmentary, rear elevational view of the upper portion of the pass receiving device with portions broken away to bring out the details of construction;

FIG. 3 is a sectional view of line 3 taken on line 3-3 of FIG. 2 looking in the direction indicated by arrows;

FIG. 4 is an enlarged fragmentary view partially in section of the interconnecting elements between the simulated arms of the pass receiver and the basket with parts broken away and shown in section to bring out the details of construction;

FIG. 5 is a sectional view taken along line 5-5 of FIG. 1 looking in the direction indicated by the arrows;

FIG. 6 is a sectional view taken on line 6-6 of FIG. 5 looking in the direction indicated by the arrows;

FIG. 7 is a sectional view taken approximately on the line 7-7 looking in the direction indicated by the arrows;

FIG. 8 is a perspective and schematic view of a radio transmitter for selectively transmitting radio impulses to a receiver which actuates the mechanism for controlling the pass receiving device;

FIG. 9 is an enlarged fragmentary, elevational view of a selector switch for one of three mechanisms of the pass receiving device; and

FIG. 10 is a diagrammatic view of the electrical system and the radio control system for the pass receiving device.

With more detailed reference to the drawings, the numeral 21 designates generally a wheeled frame, which frame comprises a base 22 with a pair of wheels 24 journaled on axle 26 being secured to the base 22 near one end thereof. The opposite end of the base 22 is supported by a drive wheel 28, which drive wheel 28 is mounted in journaled relation within a fork 30, the upper end of which fork forms a vertical hollow shaft 32 which extends through the base 21 and is journaled for relative rotation with respect thereto by bearings 34.

A V-belt pulley 36 is fixedly secured to the vertical hollow shaft 32 above the base 22 and receives a V-belt 38 thereon and on a V-belt pulley 40 which is mounted on shaft 42 of the motor 44. The motor 44 is secured to base 22 by bolts 46. The motor 44 has electrical wires 48 and 49 leading therefrom to form an electrical circuit to a battery 51 and a radio controller 52 which are of conventional construction. Various radio impulse transmitting and receiving devices, including the necessary relays and switches to perform the function of transmitting radio signals to radio receivers to actuate the switches and relays to energize motor 44 to run the motor either in forward or reverse direction and at a desired speed in accordance with a control switch 56 on a radio signal transmitter unit 58. The control switch 56 and radio signal transmitter unit 58 are remotely situated from the wheeled frame 21, which frame 21 carries a simulated pass receiving football player 60.

The radio transmitter unit may comprise a multiplicity of units 62 and 64, with control switches 66 and 68 there-

on for transmitting radio signals from a sending antenna 70 to the receiving antenna 72, in a manner well understood in the art of electronic control. The radio transmitting units 58, 62 and 64 are supplied with electrical power from a source of supply 74, such as a battery, with a circuit 76 connected to the respective transmitting units.

The switches 56, 66 and 68 may be of a character as shown in FIG. 9, which switches have a multiplicity of positions, thereby to control the radio impulses to control the operation of the various motors both in forward and reverse motion and at the desired speeds.

The transmitter unit may be of the general character of the unit manufactured by the Teletron Company of Fort Lauderdale, Florida, one of which transmitter units is designated as "TP 77 Frequency Selector" which is adapted to selectively operate as many as eight (8) different motor units for opening and closing garage doors. Receivers such as manufactured by the Teletron Company under Patent No. 2,931,956 and such as units designated as "R40-8C Receiver" are capable of receiving impulses to operate the mechanisms of garage doors or devices of this character; therefore, the application will not be burdened with the wiring diagrams for the various transmitters and receivers, which perform the functions required to operate the radio controlled simulated football player, pass receiving device.

A motor 54 is secured to the fork 30 by bolts 78, and has the shaft 80 thereof connected in driving relation with the traction wheel 28. The fork 30 has an outwardly extending abutment 82 thereon which prevents 360° rotation of shaft 32. This obviates the necessity of brushes, as the electrical wires 81 and 83 may extend upward through the vertical hollow shaft 32, to the battery 51, and to the radio receiving unit 84 to perform such switching actions therein as to energize the motor to move the wheeled frame over the terrain. The motors 44 and 54 may be energized simultaneously to steer and drive the wheeled frame 21 in a desired direction.

A radio transmitter unit 62, having a selector switch 66, is utilized to transmit signals through sending antenna 70 to receiving antenna 72, whereupon receiver unit 84 is energized to actuate switches so as to connect motor 54 in an electrical circuit to battery 51. Whereupon, the drive wheel 28 is rotated in either direction, which will move the wheeled frame 21 over the terrain in the desired direction, and since the wheel 28 is both a drive wheel and a steering wheel, by manipulation of switches 56 and 66, the wheeled frame 21 may be driven at any desired speed, in any desired path, within the capabilities of the power supply.

The simulated football player 60 is mounted on the wheeled frame 21 in secure relation, as by brackets 88 and 90, which brackets are secured to the wheeled frame by bolts 92 and 94, respectively.

The simulated football player has arms 96 and 98, which arms are pivotally mounted on the respective shafts 100 and 102. Each arm has an inwardly extending, apertured lever 104 and 106, respectively. Each of which levers extends into the hollow body portion 108.

An electric motor 110 is fixedly secured to the body 108 by means of bolts 112 and has a shaft 114 extending outwardly therefrom, on which shaft 114 is mounted lever 116, which lever is secured thereto and extends outwardly therefrom in opposite directions from the shaft 114. The lever 116 is apertured at each end to receive the respective pins or bolts 118 and 120 therethrough and through the respective linkage members 122 and 124. The linkage members extend upward and are connected to apertured levers 104 and 106, respectively by the respective pins or bolts 126 and 128.

The electric motor 110 is of the geared type as are motors 44 and 54 and, when motor 110 is energized, by electricity passing through wires 130 and 132, will rotate shaft 114 to move lever 116 about the axis thereof. Whereupon, the linkages 122 and 124 will be moved

in opposite directions to move the respective levers 104 and 106 in opposite directions, and since the levers 104 and 106 are made integral with or are attached to the respective arms 96 and 98, one arm will be moved upwardly, while the other arm is moved downwardly.

The outer end of each arm has a shaft 134 and 136, respectively, thereon, each of which has a ball 137 mounted thereon. Each ball is journaled within a separable ball receiving socket bearing 138 and 140 respectively. The bearings 138 and 140 are secured to a ring-like member 141 to which is secured a receptacle 142 to form a football receiving receptacle, which receptacle may be of a net-like material.

Upon movement of arms 96 and 98 in opposite directions, the ring-like member 141 will be tilted from side to side, as indicated in FIG. 1 in dashed outline, and in full outline therein, to receive the football 144.

In this manner, the wheeled frame 21 may be radio controlled by the switch 66 of transmitter 62 to move into the area where the pass will be thrown and a switch 56 may be utilized to control the radio signal from transmitter 58 to steer the wheeled frame 21 to the exact area to which the football will be thrown, and a radio impulse transmitter switch 68 of a transmitter 64 will transmit signals to radio receiving switch mechanism 146 to energize the electrical wires 130 and 132, so as to move the ball receiving receptacle 142 in such manner as to receive the football 144.

The receptacle 142 is the target or zone where the ball is to be thrown to the player receiving the pass. Therefore, in training players to throw passes, it is necessary to throw the ball where the player is to be, and, with the radio control mechanism to control and steer the wheeled frame 21, the radio receiving receptacle can be maneuvered into the correct position to receive the ball, as though the player had received the ball from the passer.

While the invention has been described and shown in some detail, it is to be understood that changes may be made in the details of construction and adaptations made to different installations, without departing from the intent of the invention or the scope of the appended claims.

Having thus fully shown and described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A radio controlled, simulated football player pass receiving device, which device comprises;

- (a) a wheeled frame,
- (b) power means connected in driving relation with at least one of the wheels of said wheeled frame,
- (c) a source of power mounted on said wheeled frame,
- (d) at least one of the wheels of said wheeled frame being steerable,
- (e) power means connected in steering relation with said steerable wheel of said wheeled frame,
- (f) a simulated football player mounted on said wheeled frame,
- (g) a football receiving element positioned on said wheeled frame,
- (h) power means connected to said football receiving element to selectively move said football receiving element,
- (i) a radio controlled switching mechanism mounted on said wheeled frame,
 - (1) circuits interconnecting said source of power with each said power means connected to said wheeled frame, said steerable wheel and said football receiving element,
- (j) radio switching mechanism to control switch mechanisms for said respective circuits, and
- (k) a radio transmitter for selectively transmitting signals to said radio receiving device to selectively control said power means on said wheeled frame.

2. A radio controlled pass receiving device, which device comprises;

- (a) a wheeled frame,

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- (b) a source of electric power mounted on said wheeled frame,
- (c) an electric motor connected in driving relation with at least one of the wheels of said wheeled frame,
- (d) at least one of the wheels of said wheeled frame being steerable,
 - (1) a second electric motor connected in steering relation with said steerable wheel on said wheeled frame,
- (e) a football pass receiving receptacle mounted on said wheeled frame,
 - (1) said pass receiving receptacle being movably mounted with respect to said wheeled frame,
 - (2) electric power means operatively connected to said football pass receiving receptacle to selectively move said receptacle,
- (f) a radio controlled switching mechanism mounted on said wheeled frame,
 - (1) said first electric motor and said second electric motor each being connected within a circuit with said source of electric power and with said radio controlled switching mechanism,
 - (2) said electrical power means, connected to said pass receiving receptacle, connected to said source of electrical power and to said radio controlled switching mechanism,
 - (3) a radio transmitter for selectively transmitting signals to said radio switching mechanism to selectively control the movement of said wheeled frame over the terrain, to selectively steer said wheeled frame with respect to the terrain, and to selectively move said pass receiving receptacle.
- 3. A radio controlled, simulated football player pass receiving device, as defined in claim 1; wherein
 - (a) said source of power on said wheeled frame is an electric battery,
 - (b) said power means connected in driving relation with one of the wheels of said wheeled frame is a reversible electric motor,
 - (1) said electric motor being operatively associated with said electric battery.
- 4. A radio controlled, simulated football player pass receiving device as defined in claim 1; wherein
 - (a) said source of power on said wheeled frame is an electric battery,
 - (b) said power means connected in driving relation with at least one of the wheels of said wheeled frame is an electric motor having a gear reduction unit integral therewith,
 - (1) said electric motor being operatively associated with said electric battery.
- 5. A radio controlled, simulated football player pass receiving device as defined in claim 1; wherein
 - (a) said source of power on said wheeled frame is an electric battery,
 - (b) said power means, connected in steering relation with said steerable wheel of said wheeled frame, is a reversible electric motor having a gear reduction unit integrally connected therewith,
 - (1) said electric motor being operatively associated with said electric battery,
 - (c) said steerable wheel of said wheeled frame has stop means associated therewith so that the movement of the steering mechanism of the steerable wheel will be less than 360 degrees.
- 6. A radio controlled, simulated football player pass receiving device, as defined in claim 1; wherein
 - (a) said source of power on said wheeled frame is an electric battery,
 - (b) the body of the simulated football player has a cavity formed therein,
 - (c) said cavity receiving said power means therein,
 - (1) said power means being a reversible electric motor having a gear reduction unit associated therewith,
 - (2) a lever fixedly secured to the output shaft of said gear reduction unit and extending in opposite directions therefrom,
 - (3) a linkage pivotally connected near each end of said lever,
 - (d) said simulated football player having articulated arms mounted thereon,
 - (1) a lever associated with each said arm and extending inward therefrom,
 - (2) said linkage pivotally connected to each lever on the respective arms, and
 - (e) wherein said football receiving element comprises receptacle pivotally connected near the outer ends of said arms, so when said electric motor in said body cavity, is energized said arms will move in opposite planes, so as to selectively face said football receiving receptacle in different directions.
- 7. A radio controlled, simulated football player pass receiving device as defined in claim 6; wherein
 - (a) said movable arms on said simulated football player are pivotally mounted on a shaft, at the juncture of said arms with the body of the simulated football player, and
 - (b) wherein said pivoted connection at the outer end of each arm to pivot said pass receiving receptacle, is a ball and socket joint.
- 8. A radio controlled, simulated football player pass receiving device, as defined in claim 1; wherein
 - (a) said source of power on said wheeled frame is an electric battery,
 - (b) a pair of axially aligned wheels mounted near one end of said frame,
 - (1) said at least one steerable wheel is mounted on a steering member having a vertical axis, which steering member has a gear reduction electric motor associated therewith in driving relation at least one wheel thereof, and
 - (c) said power means connected in driving relation with one of said wheels of said wheeled frame is a reversible electric motor.
- 9. A radio controlled, pass receiving device as defined in claim 2; wherein
 - (a) said wheeled frame has two axially aligned support wheels mounted near one end thereof,
 - (b) a fork pivotally mounted near the other end of said wheeled frame in journaled relation, for rotation about a vertical axis, the movement of which fork is less than 360 degrees,
 - (1) said steerable wheel comprising at least one ground engaging wheel fitted within said fork in journaled relation with respect thereto,
 - (c) said electric motor, which is connected in driving relation with at least one of the wheels of said wheeled frame, is connected in driving relation with said wheel mounted within said fork,
 - (d) said second electric motor, which is connected in steering relation with said steerable wheel on said wheeled frame is a reversible, gear reduction motor, and
 - (e) cooperative stop means associated with said steerable wheel and said wheeled frame to limit the movement of said steerable wheel about said vertical axis to less than 360 degrees.
- 10. A radio controlled, pass receiving device as defined in claim 9; wherein
 - (a) said fork has a hollow axial shaft extending upward therefrom and through the base of said wheeled frame,
 - (b) said electric motor being mounted on a side of one of the bifurcations of said fork so as to connect said motor in driving relation with said wheel within said fork, and
 - (c) the electric wires from said motor extending up through said hollow axial shaft to connect with said

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source of electrical power and with said radio controlled switching mechanism.

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ANTON O. OECHSLE, *Primary Examiner.*
M. R. PAGE, *Assistant Examiner.*