ABSTRACT: An electromechanical simulation of a football game including a plurality of films showing different actual football plays and a projection system for showing the film. Provision is made for selection of offensive and defensive plays respectively from a plurality of choices. The particular selections operate electrical switches, with the combined selection determining the particular film to be shown. The selection is accomplished through a motor driven gearing associated with a circular rack which holds a plurality of films for alignment with the projector. To introduce an additional element of chance into the device, switches are provided which override the offensive and defensive play selections, and position the rack randomly. A mockup of a football field is included so as to show the position of the ball as the game proceeds.
FOOTBALL GAME WITH PLAY PROJECTION

The present invention relates generally to equipment which simulates the action of a sporting contest and more particularly to an electromechanical device which simulates plays conducted by two opposing sides in such a contest.

The increasing popularity of various sporting contests has resulted in the use of indoor equipment for simulating such contests so that opposing players may employ the basic concepts of the game and use their own judgement, to a certain extent, as to the tactics to be used in the game. Most of these indoor games are almost entirely dependent upon chance. In such games it is merely a selection or spin of a dial which results in a determination of the end result of the game.

There have also been developed some games in which two opposing sides each have a choice of some type of move which they intend to make, and the results are then compared in some manner so as to determine the final outcome of any specific play. However, to the best of my knowledge there is no such game on the market which is capable of providing a result independently upon the selection of both of the opposing players so that true strategy is involved in the playing tactics. Further, there is no known game which simulates the results of the selection of the two players and provides a pictorial representation of the action which results from these selections.

Accordingly, it is an object of the present invention to provide an electromechanical game which is played by two opponents and which provides strategical selections for both opponents with the result being pictorially displayed on the device.

Further objects of the invention will become apparent from the following description when taken in conjunction with the drawings wherein:

FIG. 1 is a perspective view of the assembled equipment;
FIG. 2 is a partial side view of the housing of FIG. 1 with one side removed;
FIG. 3 is a sectional view taken along the lines 3-3 of FIG. 2;
FIG. 4 is a detailed perspective of a sample film holder used in the equipment of FIG. 2;
FIG. 5 is an exploded view of the film advance mechanism used in conjunction with the film holder of FIG. 4;
FIG. 6 is a perspective view of one film strip as used in the film holder;
FIG. 7 is a perspective view of the one set of cams used for operation of the film select device;
FIG. 8 is a plan view of a second set of cams used for the film selection device;
FIG. 9 is a perspective view of the details of one of the play select boxes used with the present invention; and
FIG. 10 is an electrical schematic of the control circuit of the present invention.

Turning now more specifically to the drawings, there is shown in FIG. 1 an external view of the three essential basic parts of the game as shown. It is noted that although the equipment is not so limited, for illustrative purposes the invention will be discussed in connection with the game of football. There is shown in FIG. 1 a housing 11 having a projection screen 13 at the front area thereof and a playing field 15 extending outwardly from the housing 11. Also shown are the two play select boxes 17, which will be discussed in detail as the description proceeds. Additionally, there is provided on the face of the housing a place for a clock 18 to time the quarters of the game, indicators for the score of the game proceeds, and designators for the particular quarter in which the game is being played.

FIG. 2 shows the basic mechanisms involved in the present invention including a film drum 19 which is shown in more detail in FIG. 3. Film drum 19 is rotatably supported on shaft 23 and has at the forward outer periphery thereof a toothed gear 25 which meshes with a further gear 27. Gear 27 is driven by the play select motor 29 when it is actuated, and thus causes a rotation of the entire film drum 19.

Film drum 19 carries about its circumference a plurality of film holders such as holder 31 shown in position for projection upon the screen 13. The method of selecting a particular film holder 31 for projection on the screen will be discussed as the description proceeds.

With the film holder 31 in place the film therein is driven by means of a film advance mechanism, the detail of which is shown in FIG. 5 and discussed hereinafter. This film advance mechanism may be driven by means of a film advance motor 55 through a pulley arrangement 53. The rear projection system comprises lamp 33, reflector 35, condensing lens 37, shutter 38, projector lens 39, mirror 41 and the projection screen 13. This type of rear projection movie equipment is well known in the art.

There is further included an additional drum 47 which is, in effect, integral with the drum 19 and rotates therewith about shaft 23. A series of cams 45 are integral with the peripheral surface of drum 47 and, as the drum rotates, actuate an associated plurality of switches 43. In the illustrative embodiment of the football game, the switches 43 will be referred to as the defense selection switches and the details of these switches and the cams 45 are shown in closer detail in FIG. 7.

A further set of cams 50 are integral with the rear face of the drum 47 as shown in detail in FIG. 8. Cams 50 also operate an associated plurality of switches 49 which will be referred to as the offense selection switches. The interrelated operation of these switches will be discussed in detail in connection with the circuit diagrams of FIG. 10. However, it is noted here that it is the particular combination of the two selections with the resultant operation of the switches 43 and 49 which ultimately determine the particular film holder which is to be selected for display.

In order to provide some unknown factors which control even a normal football game, there is further provided a series of cams 59 which operate an associated plurality of switches 61. The cams 59 are driven by a toothed gear 57 which meshes with the gear 25. Switches 61 will be referred to herein as random event switches and, as will become apparent as the description proceeds, may inject certain events such as fumbles, pass interceptions and the like during the period of play.

FIGS. 5 and 6 illustrate the mechanism which provides the advance of the film past the projection system once the film holder 31 has been selected. The film itself has an inline series of sprocket holes 68 with a section of the film including these sprocket holes removed as at 70 from both ends which correspond to the start and the finish of the film strip.

The pulley 69 is driven by belt 73 which is secured to the film advance motor 55 (FIG. 1) which in turn rotates shaft 71. Shaft 71 terminates at its other end in an adapter 73 with a threaded shaft 75 extending axially outwardly therefrom. Shaft 75 passes through borehole 77 in a disc 81 and also through a borehole 79 in a disc 83.

A rounded triangular cam plate 87 is secured between discs 81 and 83 and has a borehole 85 for accepting the shaft 75. A threaded pin 89 is also mounted on the adapter plate 73 and extends parallel with shaft 75. Pin 73 passes through the apertures 91, 93 and 95 of disc 81, cam plate 87 and disc 83, respectively, so as to assure positive rotation of the discs and cam plate with the adapter plate 73.

When the assembly is mounted, the cam plate 87 rests within a square aperture 97 of the film advance plate 99 and is rotatable therein.

Film advance plate 99 has an integral extending arm 100 which terminates in a slot 101 which rests on a shaft 103 mounted to a fixed plate 105. Therefore, as the entire mechanism is turned by the belt 53, the film advance plate will assume a rectilinear motion due to the action of cam plate 87 as shown by the boxed arrows of FIG. 5.

In order to advance the film with the above-discussed rectilinear motion, film advance plate 99 has a plurality of pins extending upwardly therefrom. As shown in the illustration of FIG. 5, two of the pins 107 are fixed and integral with the plate whereas the outer pins 109 and 110 are pivoted about a cen-
When continuity exists between points X and Y, relay 125 will close causing the normally closed contacts 127 to open and the normally open contacts 135 and 137 to close. The relay closing will stop the play select motor 29, thus causing the film drum 19 to stop rotating. Film 6-E is now in position to be shown.

Closing relay 125 also causes the film drive motor to rotate by virtue of the closure of contact 135. The other contact 137 provides a self-locking circuit for the relay to prevent the possibility of energizing the play select motor while a film is in progress.

Switch 139 is normally moved across the "forward" terminals 141 and is moved to the "reverse" terminals 143 upon completion of the film. This is accomplished by either a manual switch or by an automatic switch sensing the film end, thus causing the film drive motor to reverse and hence rewind the film. After the film is rewound, another play is selected by switches 1 through 6. Upon completion of the selection, either reset switch 131 or 133 is momentarily opened. This action breaks the relay locking circuit that the play select motor to rotate and the film drive motor to stop.

Positions G, H, I and J are the random action terminals and are connected to normally open switches 61 which normally do not effect the film selection Switches 61 are closed randomly by cams 59 driven from the play select motor and may represent films depicting fumbles, interceptions, passes, etc. To illustrate, assume play 6-E has been selected by the two players. Continuity between X and Y will occur if cam 50 position No. 6 and any of the switches 61 to terminals G, H, I and J are closed, thus stopping the play select motor at say 6-H (if H is the closed switch). Normal rotation of cam 45 is such that the sequence is G, H, I, J, A, B, C, D, E, F, thus causing G, H, I and J to be presented before the other possible positions. For example, when cam 50 advances one position, the first position presented on cam 45 is G. Thus, film 6-H will be shown instead of the player-selected film 6-E.

It is to be understood that the above description and accompanying drawings are illustrative only and that individual components may be modified and additional refinements may be added without departing from the scope of the invention. For instance, additional films could be included in the above-described football game such as for a punt, field goal, or point after touchdown as shown by the buttons in FIG. 9. Accordingly, the invention is to be limited only by the scope of the following claims.

I claim:
1. A system for simulating the offensive and defensive tactics of a sporting contest involving two opponents comprising: a projector-screen display means; a movable rack for containing separate holders for a plurality of film strips, each strip depicting a different single play; an offensive switch settable to a predetermined number of positions; a defensive switch settable to a predetermined number of positions, motor means for moving said rack, means coupling said motor to thus cause offensive and defensive switches so that the combined position of said switches determines the final position of said rack; a film advance and return motor means associated with said rack for driving the film in said holder as selected by said final rack position so as to be projected onto said screen by said projector; and means for overriding said switches and controlling the position of said rack at random intervals.
2. The system of claim 1 further comprising, cam means mounted on said rack for actuating said offensive and defensive switches in response to movement of said rack.
3. The system of claim 1 wherein said rack is a circular drum and said film holders are mounted about the periphery of said rack.
4. The system of claim 3 wherein said film holders comprise: a first storage chamber; a second storage chamber;
a guide channel between said first and second storage chambers;
an aperture in said guide channel for placing said film between said projector and said screen; and
film advancing means associated with said guide channel for advancing said film through said channel into said second storage chamber and returning said film from said second chamber to said first chamber.

5. The system of claim 4 where said film advancing means comprises:
sprocket holes in said film;
a movable plate;
a plurality of parallel pins extending outwardly from and substantially parallel with said plate, said fingers being spaced so as to engage said sprocket holes in said film; and
motor means for driving said plate in a rectilinear motion in the plane of said plate.

6. The system of claim 5 wherein the outermost of said plurality of pins are oppositely spring biased and rotatable in opposite direction, and further comprising sections at either end of said film strip having the sprocket holes cut out therefrom.

7. A game for providing selection of offensive and defensive tactics comprising:
a film projector including a screen;
a plurality of holders containing individual film strips and movable into projecting alignment with said projector;
motor means for moving said holders;
first switching means movable to a plurality of positions;
second switching means movable to a plurality of positions;
circuit means connecting said first and second switching means so as to control the operation of said motor means in accordance with the position of said first and second switch means; and
third switching means connected to said circuit means for overriding said first and second switching means at random intervals for operation of said motor.