United States Patent [19]

Allison, Jr. et al.

[11] **3,809,395**

[45] **May 7, 1974**

[54] **TELEVISION COMBAT GAME**

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[73] Assignee: **The Magnavox Company,** Fort Wayne, Ind.

[22] Filed: **Sept. 28, 1972**

[21] Appl. No.: **293,202**

[52] **U.S. Cl.** ..... **273/1 E,** 178/6.8, 273/101.2

[51] **Int. Cl.** **A63f 9/00**

[58] **Field of Search** .... 273/1 E, 85 R, 101.1, 101.2, 273/DIG. 28

[56] **References Cited**

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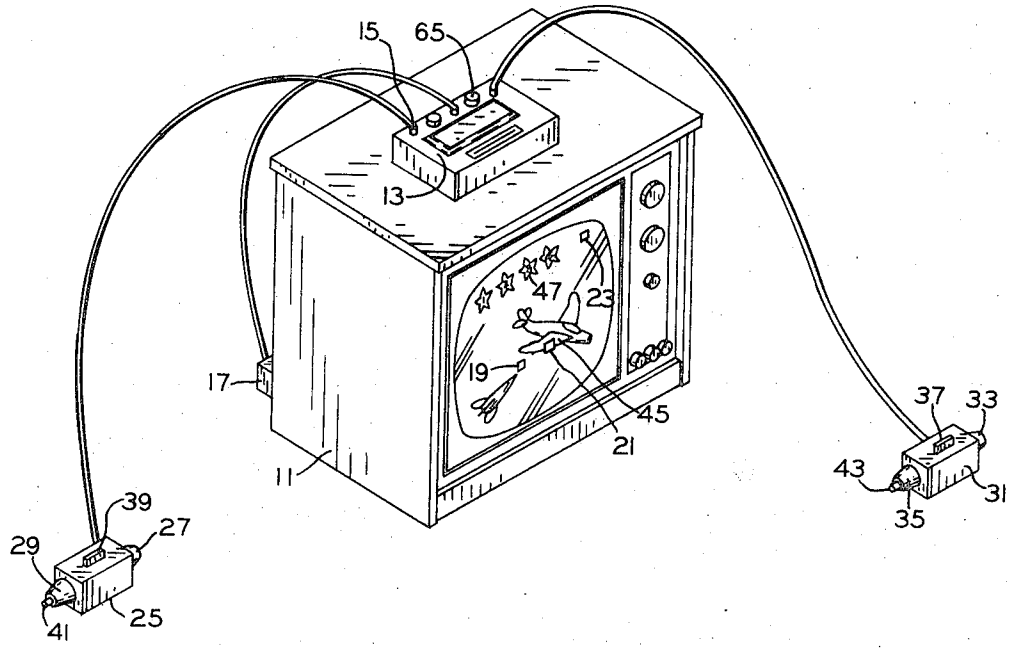
Primary Examiner—Richard C. Pinkham
Assistant Examiner—Harry G. Strappello
Attorney, Agent, or Firm—T. A. Briody; W. W. Holloway; R. T. Seeger

[57] **ABSTRACT**

Apparatus for playing a combat type game on the screen of a television receiver is disclosed comprising circuitry for generating a target on the screen player movable in its horizontal and vertical positions, circuitry means for generating a projectile on the screen which is player controllable in its vertical position but which executes a trajectory having a preset horizontal component, and circuitry for extinguishing the target when the target and projectile are sufficiently close to indicate a "hit." The apparatus may include a circuitry for extinguishing both the target and the projectile and will, of course, employ player actuable circuitry for restoring the extinguished markers. An overlay which may be attached to the screen of the receiver has indicia thereon defining permissible target locations thus restricting the positions to which one player may move the target. This overlay also has score keeping indicia which may be selectively illuminated by moving a score keeping marker behind the appropriate indicium reflecting the current game score, and the overlay may also include indicia indicating the projectile source and indicia near the permissible location indicia indicating the target if the permissible location indicia does not itself suggest a target.

6 Claims, 4 Drawing Figures



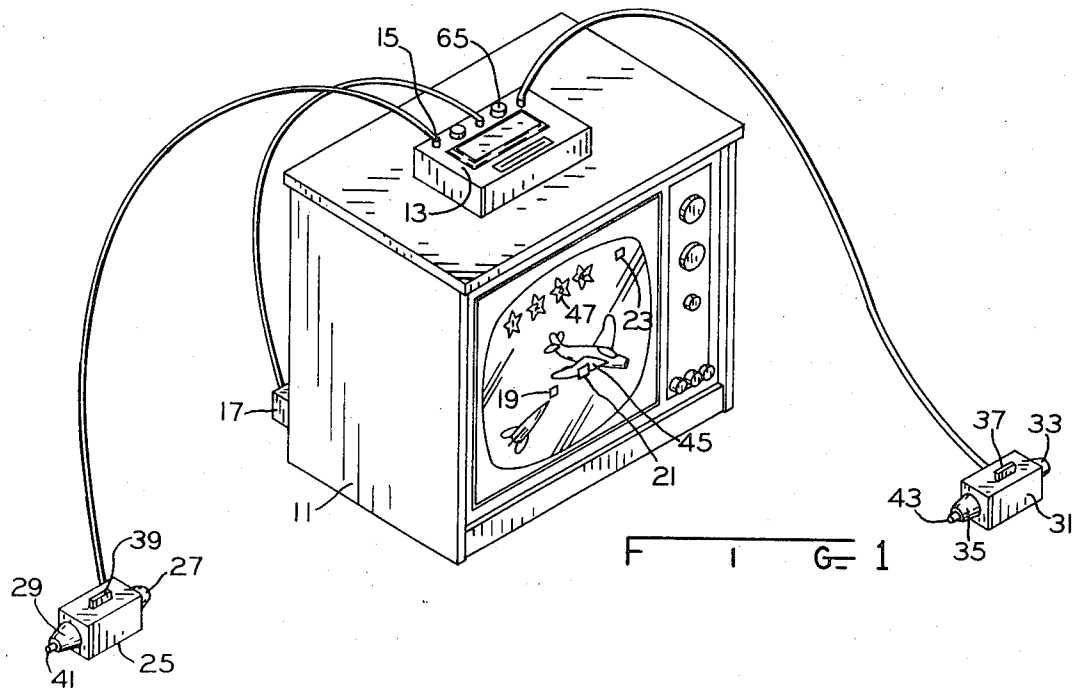

15
65
13
47
23
19
17
45
21
11
37
33
43
31
35
39
27
29
25
41

FIG 1

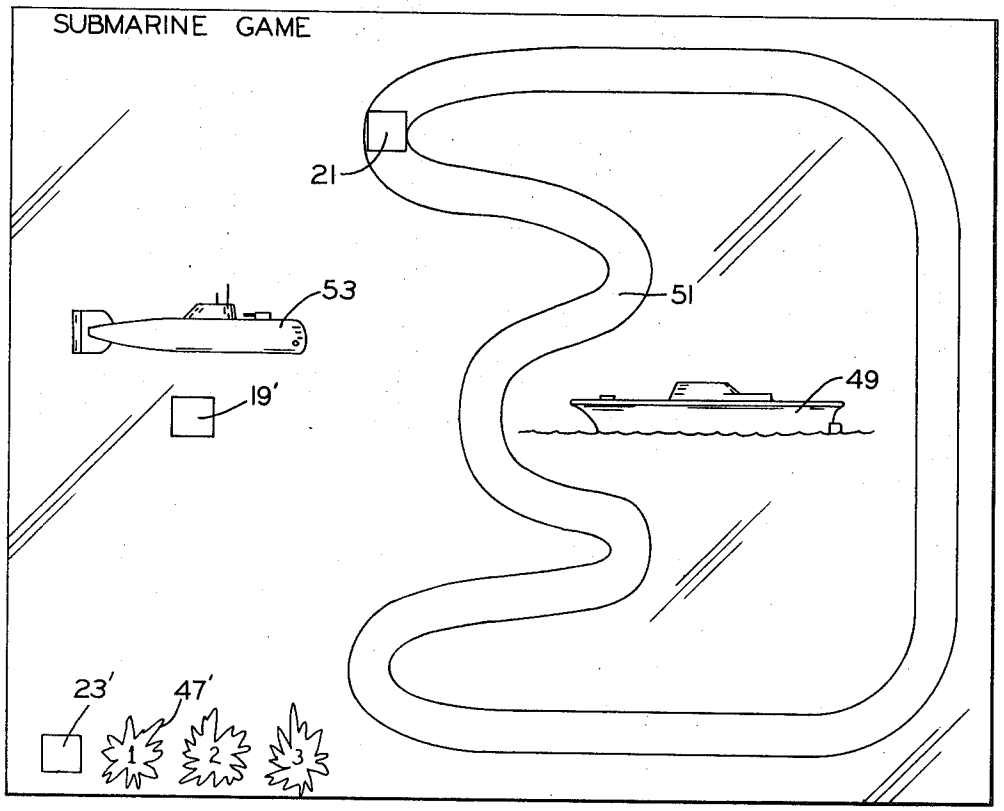

SUBMARINE GAME
21
53
51
19'
49
23'
47'
1
2
3

FIG 2

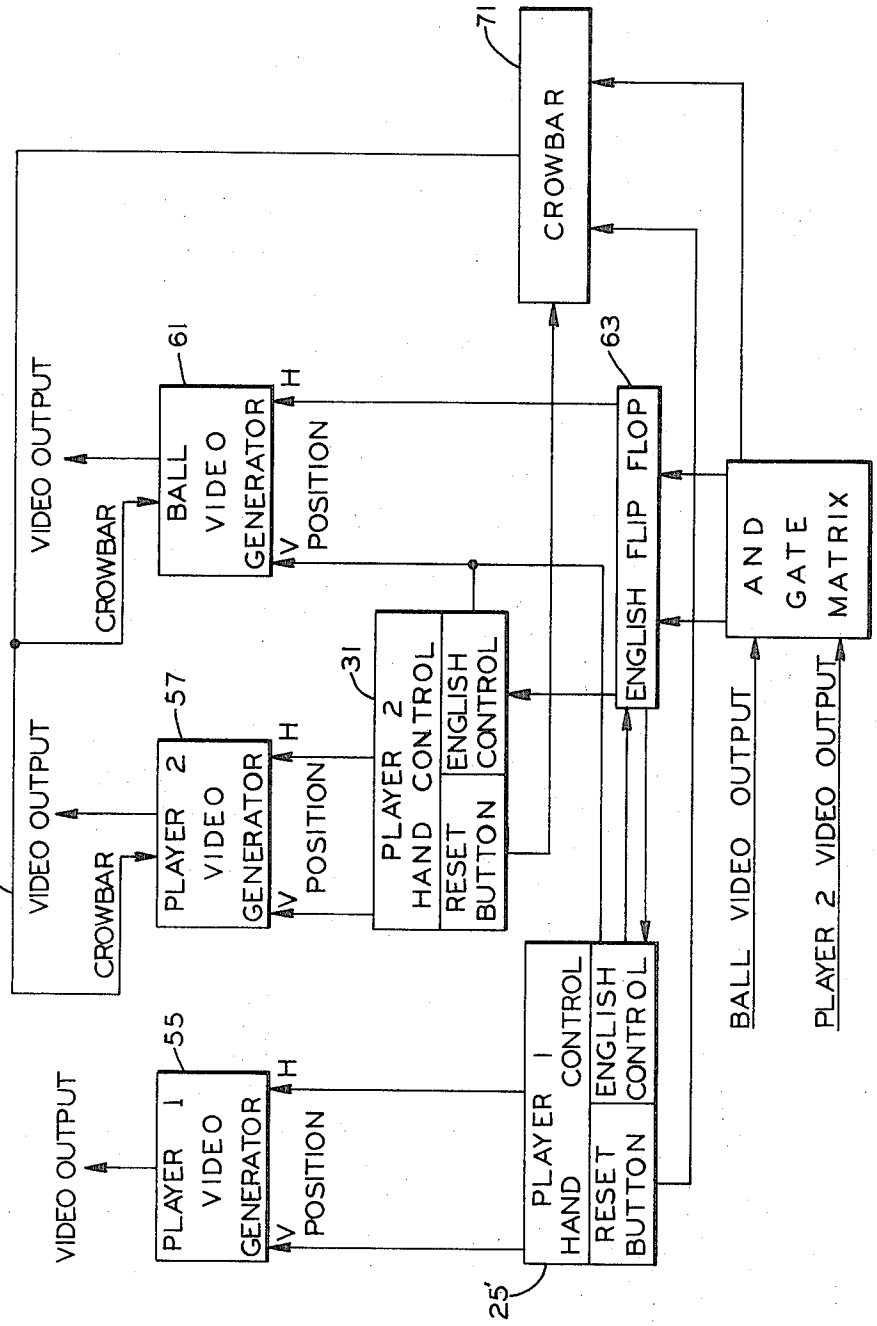

71
CROWBAR
61
BALL VIDEO GENERATOR
H
V
POSITION
63
ENGLISH FLIP FLOP
AND GATE MATRIX
VIDEO OUTPUT
CROWBAR
59
57
PLAYER 2 VIDEO GENERATOR
31
PLAYER 2 HAND CONTROL
RESET BUTTON
ENGLISH CONTROL
55
PLAYER 1 VIDEO GENERATOR
25'
PLAYER 1 HAND CONTROL
BALL VIDEO OUTPUT
PLAYER 2 VIDEO OUTPUT

FIG 3

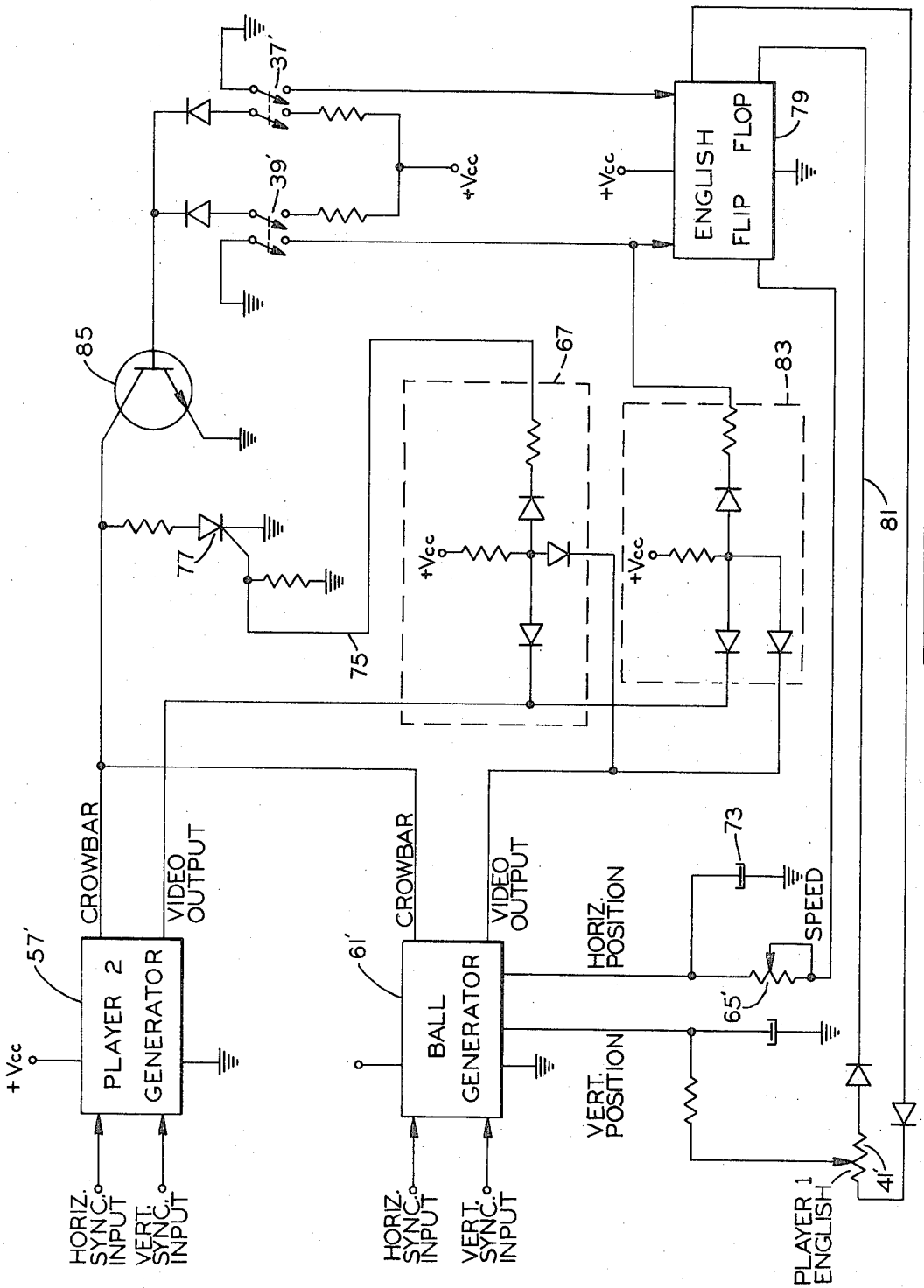

+Vcc
PLAYER 2 GENERATOR
57'
CROWBAR
VIDEO OUTPUT
HORIZ. SYNC. INPUT
VERT. SYNC. INPUT
BALL GENERATOR
61'
HORIZ. POSITION
VERT. POSITION
73
SPEED
65'
41'
PLAYER 1 ENGLISH
ENGLISH FLIP FLOP
79
37'
39'
85
77
75
67
83
81

FIG. 4

TELEVISION COMBAT GAME

BACKGROUND OF THE INVENTION

The present invention relates to electronic game devices and more particularly to an electronic combat game which may be played by displaying projectile and target markers on the screen of a television receiver. Electronic game devices which generate signals to be displayed on such a television receiver screen are known in the prior art and well illustrated by U.S. Pat. Nos. 3,659,284 and 3,659,285. The electronic game device represented by these patents is a multiple game attachment for a television receiver having electrical circuitry for generating signals which, when supplied to the receiver, will cause the receiver to display movable game playing indicia. The device of the aforementioned patents may be used to play several different games wherein certain of the indicia rebound from other of the indicia when coincident therewith. Typical games employing this feature would be Ping-pong, baseball, tennis, handball, basketball, billiards and the like. In this first category of "rebound" games a ball dot and two player dots are generated on the screen with the two player dots being individually controllable in their horizontal and vertical location by the game participants and the ball dot executing a horizontal sweep across the screen of the receiver unless it is intercepted by a player dot in which case the ball reverses and sweeps toward the direction from which it was coming. If the ball is not intercepted it will move to an off screen position until reset by one of the players. The player control units may also include a so-called "english" control which allows the player to control the vertical position of the ball during its pass across the screen if the ball is going away from that player's dot location. In other words, one player controls the english (vertical component) of the ball when the ball is moving from left to right, and the other player may control its english when the ball is moving from right to left.

The electronic game device represented by the aforementioned patents is also capable of a second category of games wherein again two player dots are generated and controllable as in the first category of rebound games, however, the ball dot is extinguished when coincident with one of the player dots. Typical games falling into this "disappearing ball" category would be golf, shooting gallery and the like. The "disappearing ball" type games may employ the additional feature that the ball when coincident with one of the player dots will move away from that dot in the direction in which that dot had been moving and with a velocity proportional to the velocity of that dot at the time of coincidence. With this arrangement a golf game is simulated by allowing one of the player dots to represent a golf club and the other to represent the golf hole. The single participant in this game strikes the ball with his "putter" dot, and it moves toward the hole in accordance with the manner in which it was struck, and when the ball becomes coincident with the hole it disappears. This "disappearing ball" feature may also be employed in a shooting gallery type situation where the ball executes recurrent horizontal sweeps across the screen, and a light sensing gun is employed to "shoot" the ball. If the light sensing gun is enabled at the appropriate time, the ball will be extinguished. As a variation

on this last target shooting idea, two light sensing guns may be employed and the ball made to reverse its direction of motion on each hit. This leads to a gun Ping-pong type of game as disclosed in the aforementioned patents.

The aoremention patents also indicate the possibility of devising games employing obstacle dots which, for exmple, might represent bowling pins and impelling the ball symbol toward that obstacle, and if the two symbols become coincident, extinguishing the obstacle dot. The aforementioned applications also suggest the feasibility of devising chase type games wherein one player controls the chasing spot, and the other player controls the chased spot, and both dots are extinguished in the event that they become coincident. In this last instance the two dots are player controlled in both their horizontal and vertical positions and are the dots corresponding to, for example, the Ping-pong paddles in the first mentioned game.

It should be clear from the foregoing discussion that game devices in accordance with the aforementioned patents may hit a ball dot causing it to reverse direction, to move in a direction dictated by the motion of the hitting symbol, or causing the ball to disappear and that the ball may be caused to either rebound or disappear when it is coincident with a player symbol or other generated symbol such as a handball wall symbol. The aforementioned patents further suggest the possibility of generating obstacle spots at relatively fixed locations, and when coincidence between a ball symbol and one of the obstacle spots occurs, both will be extinguished and yet further suggest the possibility of chase type games where both symbols are controlled in both their horizontal and vertical location, and if the chasing symbol is successful in becoming coincident with the chased symbol both will be extinguished, however, in no instance do the aforementioned patents suggest that the chasing or chased symbol may be other than one which is completely player controllable.

It is accordingly one object of the present invention to provide circuitry for a chase type game wherein the chasing mark has a portion of its motion predetermined by the circuitry and a portion of its motion player controllable.

It should further be clear from the foregoing discussion that all two player games suggested by the prior art place the same limitations on each player and fail to provide a score keeping capability.

Accordingly another object of the present invention is to provide a projectile-target type of chase game.

A further object of the present invention is to provide a two player chase type game wherein the players are subjected to different constraints.

A still further object of the present invention is to provide a projectile-target type game wherein one player has the game constraints imposed upon him by the electrical circuitry involved, and the other player has constraints imposed upon him by the rules of the game.

A general object of the present invention is to expand the scope of games playable on a television receiver screen.

SUMMARY OF THE INVENTION

The foregoing as well as numerous other objects and advantages of the present invention are achieved by providing an overlay attachment to be positioned in

front of the screen of a television receiver having indicia thereon defining permissible target locations and optionally having further indicia thereon indicating a projectile source, a target, and number of "hits". Circuit means is provided for generating signals to be supplied to the television receiver to cause that receiver to display a target mark player positionable in its horizontal and vertical positions, a projectile mark having a preset horizontal trajectory and player controllable in its vertical position, and a score keeping mark player positionable behind the score keeping indicia on the overlay. In accordance with the rules of the game the target player is restricted in the possible positions of his target mark by the overlay indicia which may, for example, form a closed circuitous path or may comprise a representation of the target such as an airplane or ship. Circuitry is also provided for extinguishing both the projectile and the target when their separation becomes less than a predetermined minimum indicating a "hit".

It is yet another object of the present invention to provide a projectile-target type game attachment for a television receiver wherein a television screen overlay defines permissible target locations and wherein permissible projectile locations are partially predetermined by electronic circuitry and partially player controllable.

Still another object of the present invention is to provide a projectile symbol on a television screen having a preset horizontal trajectory upon which vertical player positioning may be superimposed.

A further object of the present invention is to provide a realistic combat type game.

A still further object of the present invention is to provide a projectile-target type game wherein both the projectile symbol and the target symbol are extinguished when their separation becomes less than a predetermined minimum.

BRIEF DESCRIPTION OF THE DRAWING:

The aforementioned and other objects, features, and advantages of the present invention will become more apparent from the following detailed description thereof when considered in conjunction with the drawings wherein:

FIG. 1 is a perspective view of a television receiver having a game playing attachment coupled thereto and set up for playing a projectile-target type game;

FIG. 2 is a plan view of a television screen overlay employable in the present invention as an alternate to the overlay depicted in FIG. 1;

FIG. 3 is a functional block diagram for the electronic circuitry used in playing a projectile-target type game; and

FIG. 4 is a partially schematic partially block diagrammatic depiction of circuitry for implementing the projectile-target type game attachment for a television receiver.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

Considering first FIG. 1, the game playing device of the present invention is seen to generally comprise in conjunction with a standard home television receiver **11**, electronic circuitry **13** for generating radio frequency signals which are supplied to the antenna terminals of television receiver **11** by way of a cable **15** and adaptor **17** to cause the receiver to display on its screen player controllable markers such as **19, 21** and **23.** At the outset a distinction should be made between different types of marks displayed on the screen of the television receiver. The dot or marker **23** is a rectangular bright spot on the screen which is controlled by player number **1** by properly actuating his player control unit **25.** This player control unit **25** has a vertical position control knob **27** and a horizontal position control knob **29,** the rotation of which will change the corresponding vertical and horizontal components of the location of the marker **23.** This marker **23** maintains a fixed position so long as the potentiometers (and therefore a control voltage) associated with these two control knobs are not changed. Similarly, the marker **21** is controlled by a second player control unit **31** which similarly has a vertical control knob **33** and a horizontal control knob **35** which function to change the vertical and horizontal positioning of the dot **21.** The marker or dot **19** is not, however, fixed in it location absent player intervention, but rather executes a horizontal sweep across the screen of the receiver from, for example, an off screen left to an off screen right position. When in the exemplary off screen right position the marker **19** remains off screen until "reset" by player number **2** by actuating his reset button **37.** Upon actuation of the reset button **37** the marker **19** now moves from the off screen right position to an off screen left position to there remain until layer **1** actuates his reset button **39.** While the horizontal trajectory of this marker **19** is predetermined by the circuitry in the game playing device **13,** it s vertical position during this predetermined horizontal trajectory may be varied by the players by adjusting an english control **41** or **43.** Player number **1** has vertical position control over the marker **19** after actuating that marker **19** by his reset button **39,** and similarly player number **2** upon actuating his reset button **37** may exercise english control on the marker **19.**

The rules for the game illustrated in FIG. **1** are simply that player number **2** may move his dot **21** in an evasive action manner by controlling the horizontal and vertical position thereof so long as he maintains his dot **21** superimposed with certain indicia **45** on the television scren overlay which defines permissible positions for his marker. As illustrated in FIG. **1,** this permissible marker location indicia is an aircraft. Player number **1,** on the other hand, uses his dot **23** only for scoring purposes by changing his horizontal control knob **29** to move the marker **23** behind the particular one of the scoring indicia **47** which reflects the current game score. An actual attack by player number **1** is effected by depressing his reset button **39** which causes the marker **19** (sometimes called the "ball") to begin from its off screen left position in a horizontally preset manner across the screen, and player number **1** solely by means of his english control **41** attempts to intercept the target marker **21** while, as noted earlier, player number **2** takes evasive action with his target marker **21** within the confines of the permissible target location indicia **45.** If player number **1** is successful in bringing his projectile **19** sufficiently close to the target **21** both the target and projectile markers will be extinguished by the circuitry within the game playing device electronic circuitry **13** as to be explained in conjunction with FIGS. **3** and **4.**

As a modification to the game depicted in FIG. **1,** a different overlay as shown in FIG. **2** may be placed in

front of the television screen. In FIG. 2 elements analogous to those shown in FIG. 1 bear corresponding primed reference numerals. FIG. 2 represents a submarine type game overlay which may be substituted for the aerial combat game overlay illustrated in FIG. 1. The submarine type game is played under precisely the same rules as the aforementioned aerial combat game, however, where in FIG. 1 the indicia which suggested a target was the same indicia which defined permissible locations for the target marker, in FIG. 2 the indicia which suggests an actual target, namely a ship 49, does not define the permissible locations for player number 2, but rather a circuitous path 51 is set forth for player number 2 to traverse. A submarine 53 depicts the projectile source, but, of course, the projectile marker 19' is electrically generated and controlled precisely as before. Thus while player 2 moves his target around the path 51 player number 1 actuates his reset button 39 and then controls the english (vertical position) of the projectile in an attempt to intercept the target on its path. If player number 1 is successful in getting sufficiently close to target 21', both markers will be extinguished indicating a hit whereupon player number 1 will move his score keeping marker 23' to a position behind the indicium number 1 indicating that one hit has been made. At this time player number 2 may restore the extinguished markers and return the projectile to player number 1 by actuating his reset button 37 whereupon the players are ready to attempt a second torpedo run.

Considering now the functional block diagram of FIG. 3, the player number 1 video generator 55 functions to cause the marker 23 or 23' to be displayed on the receiver screen either by generating horizontal and vertical synchronizing signals, delaying those signals, and conjunctively gating those signals together so as to provide a rectangular marker or by generating sawtooth waveforms at the horizontal and vertical synchronizing rates, taking predetermined slices of those waveforms and coincidence gating the result to provide a circular marker or markers of other configurations all in accordance with the aforementioned patents. The player number 1 control unit 25 of FIG. 1 is functionally set forth in the correspondingly primed functional block 25' and which in its actual implementation may be potentiometers coupled to the aforementioned synchronizing pulse delay units to vary the amount of delay therein and thereby vary the horizontal and vertical position of the displayed marker. The player number 2 video generator 57 which, like generator 55 is located within the game circuitry of the device 13, is similarly controlled by the player control unit 31, however, the player 2 video generator 57 has input on line 59 which, when appropriately energized, may function to kill the video signal output from the generator 57, for example, by grounding that output. The ball video generator 61 may function in either of the aforementioned manners to generate a rectangular or, for example, circular marker 19 on the television screen, and, for example, the amount of delay in the vertical synchronizing pulses employed may be controlled by the english control potentiometers 41 and 43 depending upon the direction of projectile motion. That direction is determined by the state of the english flip-flop 63 which provides a horizontal control signal to the video generator 61. While the voltage determining the vertical position of the marker 19 is determined by the potentiometer setting for the english control involved, the horizontal position of that marker is controlled by a time variable signal generated within the device 13 which may, for example, be a resistance capacitance circuit wherein the resistance is variable, and its setting determines the time constant for the R-C circuit. Changing this potentiometer setting, of course, changes the speed with which the projectile traverses the screen, and this potentiometer may be player controllable by a speed control knob 65 in FIG. 1. The video outputs from the projectile generator 61 and the target generator 57 are supplied to a circuit 67 which functions to determine when the distance between the two markers is less than a predetermined minimum, and when these two markers are sufficiently close an output signal is provided on line 69 to a crowbar circuit 71. The proximity detecting circuit 67 may be a simple coincidence gate which detects the time coincidence of portions of the two video output signals or equivalently this circuit may function to determine when those two signals differ by less than some prescribed value. When coincidence is detected a signal on line 69 causes the crowbar circuit 71 to extinguish both the projectile and the target markers. Those two markers will remain extinguished until one of the players actuates his reset button 39 or 37 to cause both markers to reappear, and in the case that the player 2 reset button 37 is actuated to cause the projectile to be returned to its left off screen position.

Turning now to FIG. 4 which illustrates portions of the circuit of FIG. 3 in greater detail, the player number 2 generator 57 and ball generator 61 function, for example, as previously noted, to appropriately delay horizontal and vertical sync input signals and coincidence gate those signals to provide rectangular target and projectile marker generating RF video output signals. The vertical position determining voltage for the projectile generator 61 is player variable by player number 1's english control which is the potentiometer 41'. A fixed voltage as determined by the position of the potentiometer 41' defines the vertical position of the projectile. As noted earlier, the projectile moves across the screen in a predetermined trajectory, and its speed of motion is determined by the setting of a speed control 65 which is merely another potentiometer 65' which determines the charging rate of the capacitor 73. The gate 67 of FIG. 3 is closed within dotted lines in FIG. 4 and comprises a simple diode "and" gate for determining if player 1 has succeeded in getting the projectile 19 sufficiently close to the target 21. A hit indication from this "and" gate on line 75 switches a silicon controlled rectifier 77 to its conducting state thus grounding the outputs from both the player 2 generator 57' and the projectile generator 61'. It should be noted that although the output of the generator 61' is grounded, this in no way impedes the charging of capacitor 73, and hence the projectile, extinguished though it may be, continues its horizontal trajectory to its off screen position. Depending on the specific implementation of the english flip-flop 79, the extinguished ball may continue its motion or may reverse to return to its starting point upon this coincidence occurrence.

The english flip-flop 79 is a two state device which functions to give control of the vertical position of the projectile to either the player 1 english control or the player 2 english control and simultaneously functions

to either charge or discharge the capacitor **73.** The choice of which player has control during charging of the capacitor and which direction the projectile moves in response to this charging is, of course, arbitrary, and the speed of motion of the projectile is, of course, determined, as noted previously, by the R-C time constant **65'–73.**

Assume for the sake of an example, that the projectile marker is in an off screen left position as viewed and that player **1,** which is the attacking player, moves from left to right. Assume further that under these conditions the capacitor **73** is charged. To initiate movement of the projectile, player **1** depresses his reset button **39** which grounds one of the input terminals to the english flip-flop **79** causing it to change its state and lower the voltage on line **81** to begin the discharging of capacitor **73.** The horizontal position of the projectile is directly proportional to the voltage on this capacitor **73,** and thus the projectile moves from the left to the right across the screen. If player **1** is successful in effecting coincidence between his projectile and the target "and" gate **67** so indicates supplying a positive potential to the gate of silicon controlled rectifier **77** causing that device to conduct and effectively short out both video outputs removing both markers from the screen. Coincidence between the two markers also causes "and" gate **83** to provide a similar positive coincidence indication to one of the inputs of english flip-flop **79** causing it to change its state and to charge the capacitor **73** thus forcing the now extinguished projectile spot back to its launch location off screen left. Had player **1** been unsuccessful the projectile dot or marker would have proceeded across the screen and disappeared off screen right without the target marker being extinguished since no coincidence signal was supplied to the silicon controlled rectifier **77.** Under this latter situation player number **2** would depress his reset button **37** grounding the other of the english flip-flop inputs causing it to change its state and charge capacitor **73** whereupon the projectile would visibly move from off screen right to off screen left location. The projectile would be visible provided the english control was not at either extreme of rotation and a reset button was not depressed. In the first situation where player **1** was successful, player number **2** or player number **1** can restore both the target and projectile markers by depressing either of their reset buttons to supply the positive voltage by way of a diode to the base of transistor **85.** With its base positive, transistor **85** conducts sufficiently to bypass the self-sustaining current flowing in the silicon controlled rectifier and return that SCR to its off condition.

Thus while the present invention has been described with respect to a specific embodiment, numerous modifications will suggest themselves to those of ordinary skill in the art. For example, throughout the discussion the generator **61** or **61'** has been referred to as a projectile generator since that is its function in this particular game, however, it should be noted that the drawings refer to this generator as a ball generator since, when playing games such as Ping-pong in the aforementioned patents, this generator **61** may function to provide the ball or hit symbol to the screen of the receiver. Numerous further modifications both to provide known prior art games and to provide new games in accordance with the teachings of the present invention should now suggest themselves to those of ordinary skill in the art, and accordingly the scope of the present invention is to be measured only by that of the appended claims.

What is claimed is:

1. Apparatus for playing a game on the screen of a television receiver comprising:

television receiver means having a screen for displaying thereon images comprising a target marker and a projectile marker;

means for generating on said screen a target marker which is player-controllable in its horizontal and vertical positions;

means for generating on said screen a projectile marker which is player-controllable only in its vertical position;

means operatively connected to said projectile marker-generating means and operable by a player for selectively controlling the vertical position of said projectile marker;

means operatively connected to said target marker-generating means and operable by a player for selectively controlling the vertical and horizontal positions of said target marker;

means operatively connected to said projectile marker-generating means for limiting the horizontal velocity component of said projectile marker to a preset value;

means for extinguishing the target marker when the separation between the target marker and the projectile marker is less than a predetermined minimum.

2. The apparatus of claim **1** wherein said means for extinguishing is adapted to contemporaneously extinguish both the projectile marker and the target marker.

3. The apparatus of claim **2** further comprising player actuable means for restoring both said target marker and said projectile marker after extinguishment.

4. The apparatus of claim **3** further comprising means for generating a player actuable score keeping marker.

5. The apparatus of claim **1** further comprising an overlay adapted to be placed in front of the screen and having indicia thereon defining permissible target marker locations to thereby limit the allowable positions of the target marker.

6. The apparatus of claim **5** wherein said overlay further comprises scoring indicia, saaid apparatus further comprising means for generating a scoring marker player positionable to indicate that a specific scoring indicium reflects the current game score.

* * * * *