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(54) **A system for detecting and tracking statistics of a game**

(57) The present invention relates to a system for detecting and tracking statistics of a game, and more particularly, to a system for detecting and tracking game statistics for a specific player or team of players while playing the game. The system may include a sports goal and sports ball for use in the game. The system may also include a sensor attached to a player to detect the sports ball when the sensor comes within a predetermined distance of the sports ball. A detector may be provided and coupled to the sports goal to detect the sports ball when the sports ball passes through the sports goal. A control unit may be provided to determine a game statistic corresponding to the player based on a signal received from the sensor attached to the player and a signal received from the detector when the sports ball passes through the sports goal.

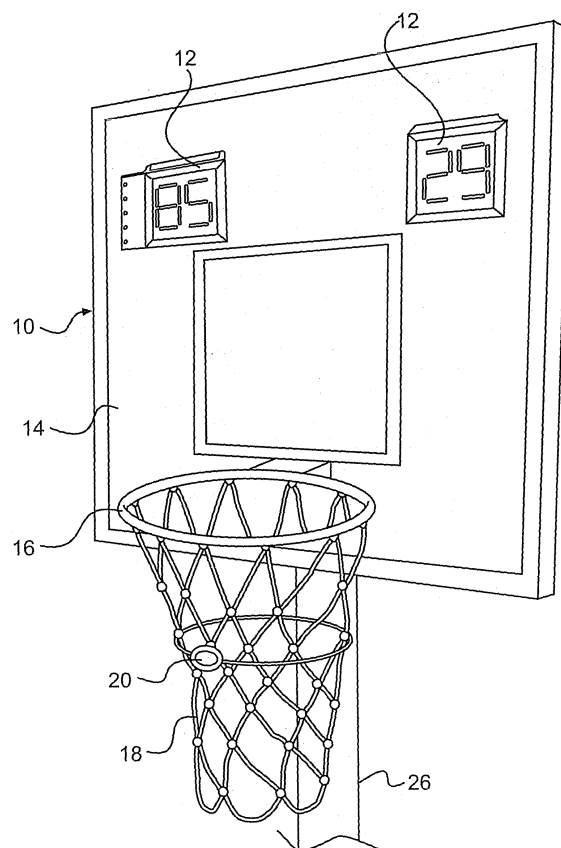


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention relates in general to a system for detecting and tracking statistics of a game, and more particularly, to a system for detecting and tracking game statistics for a specific player or team of players while playing the game.

BACKGROUND OF THE INVENTION

[0002] There are many types of games in which players may desire to keep track of their individual or team statistics while participating in the game. For example, a single player playing basketball, a game of "one-on-one" basketball, or a team of players playing, may desire to keep track of the score of their game to monitor performance or determine who wins the game. Game statistics are most commonly kept track of during a formal or organized game. Even then, however, these game statistics are kept manually and human error may affect the accuracy of the statistics.

[0003] During an informal or "pick-up" game, players generally do not have the option of having someone manually keep statistics of a game. Moreover, statistics such as shots/goals made or missed are more difficult to keep track of in an informal game. As such, there is a need for automatically keeping track of game statistics in both formal and informal games.

[0004] Prior devices have been developed to keep track of shooting statistics for a player. These devices may provide a detector on a basketball goal to detect a location of a ball. The detector may be placed such that the detector may detect the location of the ball as the ball passes through a horizontal detection plane of a rim of the basketball goal. As the ball passes through horizontal detection plane, the detector may detect whether a shot is made and keep track of shooting statistics for the player.

[0005] These prior devices, however, have many drawbacks. For example, the prior devices cannot determine if a specific player shot the basketball. As such, they are limited to detecting shooting statistics if only a single player is playing the basketball game and thus, have no way of keeping track of the shooting statistics for the specific player if more players in addition to the specific player is playing in the same basketball game. For example, if two or more players are playing in the basketball game and alternately shooting the ball, the prior devices may not detect which player shot the ball. Moreover, the prior devices cannot determine which player made or missed the shot.

[0006] The prior devices are further limited such that when the ball passes the horizontal detection plane, the prior devices may only register a shot made or a shot missed. These devices do not take into account that the ball may pass the horizontal plane even when the player

simply passes the ball to another player and does not attempt a shot. In this case, the prior devices may erroneously register a pass as a shot missed or a shot attempted. As such, the prior devices may not provide accurate statistics for the player.

[0007] The above-mentioned deficiencies and drawbacks with the prior devices may be overcome by providing a system for detecting and tracking game statistics for a specific player or a team of players while playing the game.

SUMMARY OF THE INVENTION

[0008] The present invention relates in general to a system for detecting and tracking statistics of a game, and more particularly, to a system for detecting and tracking game statistics for a specific player or team of players while playing the game.

[0009] One embodiment of the present invention may include a system for detecting and tracking statistics of a game. The system may include at least one sports goal for use in the game, a sports ball having means for being detected, and at least one sensor attached to at least one player. The at least one sensor may be configured to detect the sports ball and emit a first signal when the at least one sensor comes within a predetermined distance of the sports ball. The system may also include at least one detector coupled to the at least one sports goal. The at least one detector may be configured to detect the sports ball when the sports ball passes through the at least one sports goal and emit a second signal when the sports ball passes through the at least one sports goal. The system may include at least one control unit configured to receive the first and second signals and determine that a game statistic corresponds to the at least one player based on the first and second signals. The system may include at least one display unit connected to the at least one control unit to display the game statistic.

[0010] These and other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed the same will be better understood from the following description taken in conjunction with the accompanying drawings, which illustrate, in a nonlimiting fashion, the best mode presently contemplated for carrying out the present invention, and in which like reference numerals designate like parts throughout the Figures, wherein:

[0012] FIG. 1 is a view of a sports goal, according to one embodiment of the present invention;

[0013] FIG. 2 is a view of a scoring receiver, according to one embodiment of the present invention;

[0014] FIG. 3 is a view of a goal detector, according to

one embodiment of the present invention;

[0015] FIG. 4 is a view of a detector, according to one embodiment of the present invention;

[0016] FIG. 5 is a view of a player utilizing one embodiment of the present invention;

[0017] FIGS. 6 and 7 are sectional views of a ball, according to various embodiments of the present invention;

[0018] FIG. 8 is a view of a sports goal, according to another embodiment of the present invention; and

[0019] FIG. 9 is a view of a game utilizing one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] The present disclosure will now be described more fully with reference to the Figures in which various embodiments of the present invention are shown. The subject matter of this disclosure may, however, be embodied in many different forms and should not be construed as being limited to the embodiments set forth herein.

[0021] The present invention provides a system for detecting and tracking statistics of a game. The system may include a sports goal, a sports ball having means for being detected, a sensor, a goal detector coupled to the sports goal, a control unit, and a display. In the case of a basketball game, for example, the sensor may be attached to a player and configured to detect the sports ball when a player attempts to control the sports ball. The sensor may emit an RF (Radio Frequency) signal when the sensor comes within a predetermined distance of the sports ball. When the player desires to shoot the sports ball at the sports goal, the goal detector may be coupled to the sports goal and configured to detect the sports ball when the sports ball passes through the sports goal. When the sports ball passes through the sports goal, the goal detector may emit an RF signal.

[0022] The control unit may be configured to receive the RF signal emitted by the sensor when the sensor comes within the predetermined distance of the sports ball. The control unit may also be configured to receive the RF signal emitted by the goal detector when the sports ball passes through the sports goal. The control unit may analyze the RF signals and determine a game statistic for the player. In the event that more than one player is playing the basketball game, the control unit may be configured to analyze the RF signals and determine the game statistic for the player in addition to which player the game statistic corresponds to. The system may further be provided with the display unit connected to the control unit to display the game statistic for the player.

[0023] While the present invention describes a system used in the game of basketball, the present invention is not limited to the game of basketball and may be used in other games such as, for example, soccer, hockey, or lacrosse.

[0024] FIG. 1 is a view of a sports goal, according to

one embodiment of the present invention. As shown in FIG. 1, the sports goal 10 may include scoring receivers 12, a backboard 14, a rim 16, a net 18, and a goal detector 20. The scoring receivers 12 may be positioned on the backboard 14. The present invention, however, is not limited to the scoring receivers 12 being positioned on the backboard 14 as shown in FIG. 1. The scoring receivers may be positioned elsewhere on the backboard 14. It is contemplated that the scoring receivers 12 may also be positioned on a table, wall, garage, hang from the rafters of a gymnasium, or hang from the ceiling of some other indoor space. Further, an example of two scoring receivers 12 are shown in FIG. 1. The present invention, however, may include only one scoring receiver 12 in the event that only one player keeps track of his game statistics.

[0025] A control unit (not shown) may be provided in the system. The control unit may be connected to the scoring receiver 12. The control unit may be positioned on the sports goal 10. The present invention, however, is not limited to the control unit being positioned on the sports goal 10 but may also be positioned on a table, a wall, or in an alternate storage location. Further, the present invention is not limited to a single control unit but may also include multiple control units.

[0026] The sports goal 10 is shown in FIG. 1 as being positioned on a support pole 26. The present invention, however, is not limited to the sports goal 10 being positioned on the support pole 26. Alternatively, it is contemplated that the sports goal 10 may be positioned on a house, a garage, a movable base assembly, a wall, a building, hang from the rafters of a gymnasium, hang from a ceiling, or be positioned in some other indoor/outdoor space.

[0027] The support pole 26 may be positioned on the backboard 14 to support the backboard 14. The support pole 26 may be mounted in the ground, a concrete surface, a wooden floor surface, asphalt, or a movable base assembly.

[0028] FIG. 2 is a view of a scoring receiver, according to one embodiment of the present invention. As shown in FIG. 2, the scoring receiver 12 may display a score on a display 15 to indicate the score of a game. The scoring receiver 12 may further include indicators 13a-13e, and an indicator 11. The display 15 may be, for example, an LCD, LED, or PDP display. The indicators 13a-13e may be provided on the scoring receiver 12 to show a selected mode of game statistics. The selected mode may be a selection among a score 13a, a number of goals made 13b, a number of goals missed 13c, a total number of the made and missed goals 13d, and a percentage of goals made 13e. The indicators 13a-13e may be, for example, a light bulb or an LED. As shown in FIG. 2, the indicators 13a-13e may be positioned on the side of the scoring receiver 12 separately from the display 15. Alternatively, it is contemplated that the indicators 13a-13e may be positioned at any side of the scoring receiver 12 or on the display 15.

[0029] The indicator 11 may be provided on the scoring receiver 12 to differentiate game statistics when two or more players play a game. The indicator 11 may be, for example, a light bulb or an LED. As shown in FIG. 2, the indicator 11 is positioned on a top side of the scoring receiver 12. Alternatively, it is contemplated that the indicator 11 may be positioned at any side of the scoring receiver 12 or on the display 15. The indicator 11 may be configured to correspond to a specific player or team of players to determine that the specific player or team of players scored. The indicator 11 may also be configured to a specific player or team of players to determine which player or team of players game statistics are being displayed on the display 15.

[0030] FIG. 3 is a view of a goal detector, according to one embodiment of the present invention. As shown in FIG. 3, the goal detector 20 may be positioned on the net 18 to detect a ball when the ball passes through rim 16. The goal detector 20 may include a detector 22 and a ring 24 having a plurality of straps 24a, 24b, and 24c mounted around the ring 24.

[0031] The goal detector 20 may be provided below the rim 16 such that the ball passes through the goal detector 20 after the ball passes through the rim 16. Alternatively, it is contemplated that the present invention is not limited to the goal detector 20 but may include additional goal detectors below the rim 16 such that the ball passes through a plurality of goal detectors after the ball passes through the rim 16.

[0032] As shown in FIG. 3, the goal detector 20 may be configured to make a loop around a circumference of the net 18. The present invention, however, is not limited to the goal detector 20 being configured to loop around the circumference of the net 18. Alternatively, the goal detector 20 may be configured such that the goal detector 20 includes the detector 22 without the ring 24 and the ring straps 24a, 24b, and 24c. In the event the goal detector 20 may be configured to include only the detector 22, the detector 22 may attach to the net 18 by a strap or other easily connectable or fastening device known in the art such that the detector 22 is secured to the net 18 to detect the ball when the ball passes through the rim 16.

[0033] The detector 22 may include a transmitter and detector circuitry for detecting and emitting a coded signal. The detector 22 may emit the coded signal when the ball passes through the goal detector 20. For example, when the ball passes through the goal detector 20, the detector 22 may detect a signal and then emit a coded signal to the control unit. The control unit may then receive the emitted coded signal from the detector 22 and determine a game statistic for the player or team of players.

[0034] As shown in FIG. 3, the ring 24 includes the straps 24a, 24b, and 24c positioned around the ring 24 to allow the goal detector 20 to attach to the net 18. The straps 24a, 24b, and 24c may be made of a easily connectable material used to affix the goal detector 20 to the net 18. The present invention, however, is not limited to

the ring 24 including the straps 24a, 24b, and 24c to affix the goal detector 20 to the net 18. Alternatively, the ring 24 may be configured such that other easily connectable devices known in the art are positioned on the ring 24 to affix the goal detector 20 to the net 18 and minimize interference as the sports ball passes through the sports goal 10.

[0035] FIG. 4 is a view of a detector, according to one embodiment of the present invention. As shown in FIG. 4, the detector 40 may be provided on the player to detect the ball when the player touches the ball. The detector 40 may include a conductive wire 42 or an RF sensor (not shown) having a transmitter and detector circuitry to detect the ball and emit a coded signal to the control unit when the player comes within a predetermined distance of the ball. The detector 40 may be configured to detect the ball and emit the coded signal to the control unit when the detector 40 is within six to ten inches of the ball. The control unit may receive the emitted coded signal from the detector 40 and determine which player or team of players has the ball. As shown in FIG. 4, the detector 40 is positioned on the hand of the player. The present invention, however, is not limited to the detector 40 being configured to be positioned on the hand of the player. Alternatively, it is contemplated that the detector may be positioned on the ankle, forearm, bicep, wrist, waist, other parts of the body, or some clothing apparel on the player.

[0036] The detector 40 may further include control buttons 45, 46, and 48. The button 46 may be a mode button provided so that the player may select any one of the modes indicated by the indicators 13a-13e provided on the scoring receiver 12 (see FIG. 2). When the player pushes the button 46, a signal may be sent to the control unit to select the desired mode of the player. The desired mode may then be indicated on the scoring receiver 12. The button 48 may be a reset button provided to reset the mode selected. When the player pushes the button 48, a signal may be sent to the control unit to reset the selected mode desired. The button 45 may be a power on/off button to turn the hand detector 40 on or off. The hand detector 40 may also include a power source 44.

[0037] FIG. 5 is a view of a player utilizing one embodiment of the present invention. As shown in FIG. 5, the player 50 may have a ball 52 in his hand. The player 50 may also have the detector 40 mounted to his hand to detect the ball 52.

[0038] FIGS. 6 and 7 are sectional views of a ball, according to various embodiments of the present invention. As shown in FIG. 6, the ball 52 may be provided with a conductive wire 54. The conductive wire 54 may be hidden beneath the exterior surface of the ball 52. Alternatively, it is contemplated that a conductive wire may be on the exterior of the ball 52. The conductive wire 54 may be a conductive 28-30 gauge wire or other similar conductive wire known in the art that emits a signal to the hand detector 40 so that the hand detector 40 detects the ball 52. In the case that the ball 52 may include the conductive wire 54, the detector 40 may be configured

with a conductive wire having a transmitter and detector circuitry to detect the ball 52 having the conductive wire 54 and emit a coded signal to the control unit when the player comes within a predetermined distance of the ball 52.

[0039] As shown in FIG. 7, the ball 52 may be provided with an RF tag 72. The RF tag 72 may be hidden beneath the exterior surface of the ball 52. The RF tag 72 may include an RFID microchip. The RF tag 72 may be configured to emit a signal to the hand detector 40 so that the hand detector 40 detects the ball 52. In this case that the ball 52 may include the RF tag 72, the detector 40 may be configured with an RFID detector and transmitter circuitry to detect the ball 52 having the RF tag 72 and emit a coded signal to the control unit when the player comes within a predetermined distance of the ball 52.

[0040] FIG. 8 is a view of a sports goal, according to another embodiment of the present invention. As shown in FIG. 8, the sports goal 10 includes the scoring receivers 12, the backboard 14, the rim 16, and the net 18. The sports goal 10 as shown in FIG. 8 may further include RF sensors 80 and 82 to read the RF tag 72 provided in the ball 52. The RF sensors 80 and 82 may be positioned on the net 18. As shown in FIG. 8, the RF sensor 80 may be positioned on the net 18 at a predetermined distance below the cylinder of the rim 16. The RF sensor 82 may be positioned at a predetermined distance on the net 18 below a horizontal axis of the RF sensor 80. As shown in FIG. 8, the sports goal 10 may include the RF sensors 80 and 82. Alternatively, the sports goal may be provided with a single RF sensor or a plurality of RF sensors positioned at various locations on the net 18 to read the RF tag 72 provided in the ball 52.

[0041] The RF sensors 80 and 82 may be provided with the RFID detector and transmitter circuitry. The RFID detector and transmitter circuitry may be configured to detect the ball 52 and emit a coded signal to the control unit. When the ball 52 having the RF tag 72 passes through the rim 16, the RF sensor 80 positioned at the predetermined distance below the rim 16 may detect the ball 52 after the ball 52 enters the rim 16. The RF sensor 82 positioned below a horizontal axis of the RF sensor 80 may detect that the ball 52 passes through the net 18 after the ball 52 is detected by the RF sensor 80. The RF sensors 80 and 82 may detect the ball 52 by reading the RF tag 72. When the RF tag 72 is read by the RF sensors 80 and 82, the RF sensors 80 and 82 may emit the coded signal to the control unit.

[0042] FIG. 9 is a view of a sporting event utilizing one embodiment of the present invention. As shown in FIG. 9, sports goals 92 and 94 may be provided at opposite ends of a basketball court 90. The game may include a team of players 102a-102e, a team of players 104a-104e, a plurality of scoring receivers 100a and 100b, the ball 52, and the sports goals 92 and 94. A detector 103a-103b may be provided on each player on the team of players 102a-102e, and likewise, a detector 105a-105e may be provided on each player on the team of players

104a-104e to detect the ball 52. The scoring receiver 100a may correspond to the team of players 102a-102e and indicate a goal when a player on the team 102a-102e scores. The scoring receiver 100b may correspond to the team of players 104a-104e and indicate a goal when a player on the team 104a-104e scores.

[0043] As shown in FIG. 9, the player 102a on the team of players 102a-102e may control the ball 52. A signal may be emitted by the ball 52 so that the detector 103a positioned on the player 102a detects that player 102a has the ball 52. Accordingly, the detector 103a may emit a signal to the control unit 100 so that the control unit 100 may detect that the player 102a has the ball. If the player 102a desires to pass the ball 52 to another player 102b, for example, a signal may be emitted by the ball 52 so that the detector 103b positioned on the player 102b detects that the player 102b has the ball 52. If the player 102a desires to shoot the ball 52 and makes a goal in the sports goal 92, the detector 103a may emit a signal to the control unit 100. The control unit 100 may detect the signal emitted by the hand detector 103a and determine that the player 102a had the ball 52 last. As the ball 52 passes through the goal detector on the sports goal 92 when the player 102a makes the goal, a signal may be emitted by the goal detector on the sports goal 92 to the control unit 100. After the signal is emitted to the control unit 100, the control unit 100 determines a game statistic for the team of player 102a-102e and displays the game statistic on the scoring receiver 100a.

[0044] As shown in FIG. 9, the present invention may include the plurality of sports goal 92 and 94, a team of players 102a-102e, a team of players 104a-104e, and scoring receivers 100a and 100b. Alternatively, it is contemplated that the present invention may include a single sports goal, a single player, two or more players, or a single scoring receiver. For example, the present invention may include a first player and a second player. When the first player gains control of the ball 52, the detector 40 positioned on the first player may detect the ball 52 and emit a coded signal to the control unit. The control unit may be configured to detect that the emitted coded signal is from the detector 40 being worn by the first player. When the first player shoots the ball 52 towards the sports goal 10, the detector 20 positioned on the sports goal 10 may detect the ball 52 as the ball 52 passes through the detector 20. When the ball 52 passes through the detector 20, the detector 20 may emit a coded signal to the control unit. The control unit may then determine that a goal is made when the control unit receives the emitted signal from the detector 20. The control unit may then be configured to determine that the first player shot and made the goal based on the emitted coded signal detected from the detector 40 worn by the first player and the received emitted signal from the detector 20. The display 15 on the scoring receiver 12 connected to the control unit may be configured to display the game statistic indicative of the made goal for the first player.

[0045] As described above, the present invention pro-

vides a system for detecting and tracking statistics of a game. Moreover, the present invention provides a system for detecting and tracking game statistics for a specific player or team of players while playing the game.

[0046] The foregoing descriptions of specific embodiments of the present invention are presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obviously, many modifications and variations are possible in view of the above teachings. While the embodiments were chosen and described in order to best explain the principles of the invention and its practical applications, thereby enabling others skilled in the art to best utilize the invention, various embodiments with various modifications as are suited to the particular use are also possible. The scope of the invention is to be defined only by the claims appended hereto, and by their equivalents.

Claims

1. A system for detecting and tracking statistics of a game, comprising:

at least one sports goal for use in the game;
 a sports ball having means for being detected;
 at least one sensor attached to at least one player, said at least one sensor being configured to detect the sports ball and emit a first signal when said at least one sensor comes within a predetermined distance of the sports ball;
 at least one detector coupled to the at least one sports goal, said at least one detector being configured to detect said sports ball when said sports ball passes through said at least one sports goal and emit a second signal when said sports ball passes through said at least one sports goal;
 at least one control unit configured to receive the first and second signals and determine that a game statistic corresponds to the at least one player based on the first and second signals; and
 at least one display unit connected to the at least one control unit to display the game statistic.

2. The system according to claim 1, wherein the at least one player includes a first player and a second player, the first player having a sensor mounted thereon and configured to detect the sports ball and emit the first signal when the sensor mounted on the first player comes within a predetermined distance of the sports ball, and the second player having a sensor mounted thereon and configured to detect the sports ball and emit the first signal when the sensor mounted on the second player comes within a predetermined distance of the

sports ball.

3. The system according to claim 1, wherein the at least one player includes a first team of players and a second team of players, each of the first team of players having a sensor mounted thereon and configured to detect the sports ball and emit the first signal when the sensor mounted on the player comes within a predetermined distance of the sports ball, and each of the second team of players having a sensor mounted thereon and configured to detect the sports ball and emit the first signal when the sensor mounted on the player comes within a predetermined distance of the sports ball.
4. The system according to claim 1, wherein the at least one control unit includes a first control unit and a second control unit, each of the first and second control units being configured to receive the first and second signals and determine a game statistic based on the first and second signals.
5. The system according to claim 4, wherein the first control unit receives the first signal from the sensor attached to the first player and the second signal when said sports ball passes through said at least one sports goal to determine that a game statistic corresponds to the first player.
6. The system according to claim 4, wherein the second control unit receives the first signal from the sensor attached to the second player and the second signal when said sports ball passes through said at least one sports goal to determine that a game statistic corresponds to the second player.
7. The system according to claim 4, wherein the first control unit receives the first signal from the sensor attached to at least one player of the first team of players and the second signal when said sports ball passes through said at least one sports goal to determine that a game statistic corresponds to the first team of players.
8. The system according to claim 4, wherein the second control unit receives the first signal from the sensor attached to at least one player of the second team of players and the second signal when said sports ball passes through said at least one sports goal to determine that a game statistic corresponds to the second team of players.
9. The system according to claim 1, wherein the means for being detected includes an RFID tag to be detected by the at least one sensor, the at least one sensor emitting the first signal to be received by the at least one control unit when the at least one sensor

detects the RFID tag.

10. The system according to claim 1, wherein the means for being detected includes conductive wiring to be detected by the at least one sensor, the at least one sensor emitting the first signal to be received by the at least one control unit when the at least one sensor detects the conductive wiring. 5
11. The system according to claim 1, wherein the at least one control unit is located in proximity of the at least one sports goal. 10
12. The system according to claim 1, wherein the game statistic is a score, a number of attempted goals made, a number of attempted goals missed, a total of the number of attempted goals made and the number of attempted goals missed, or a percentage of the goals made based on the total of the number of attempted goals made and the number of attempted goals missed. 15 20

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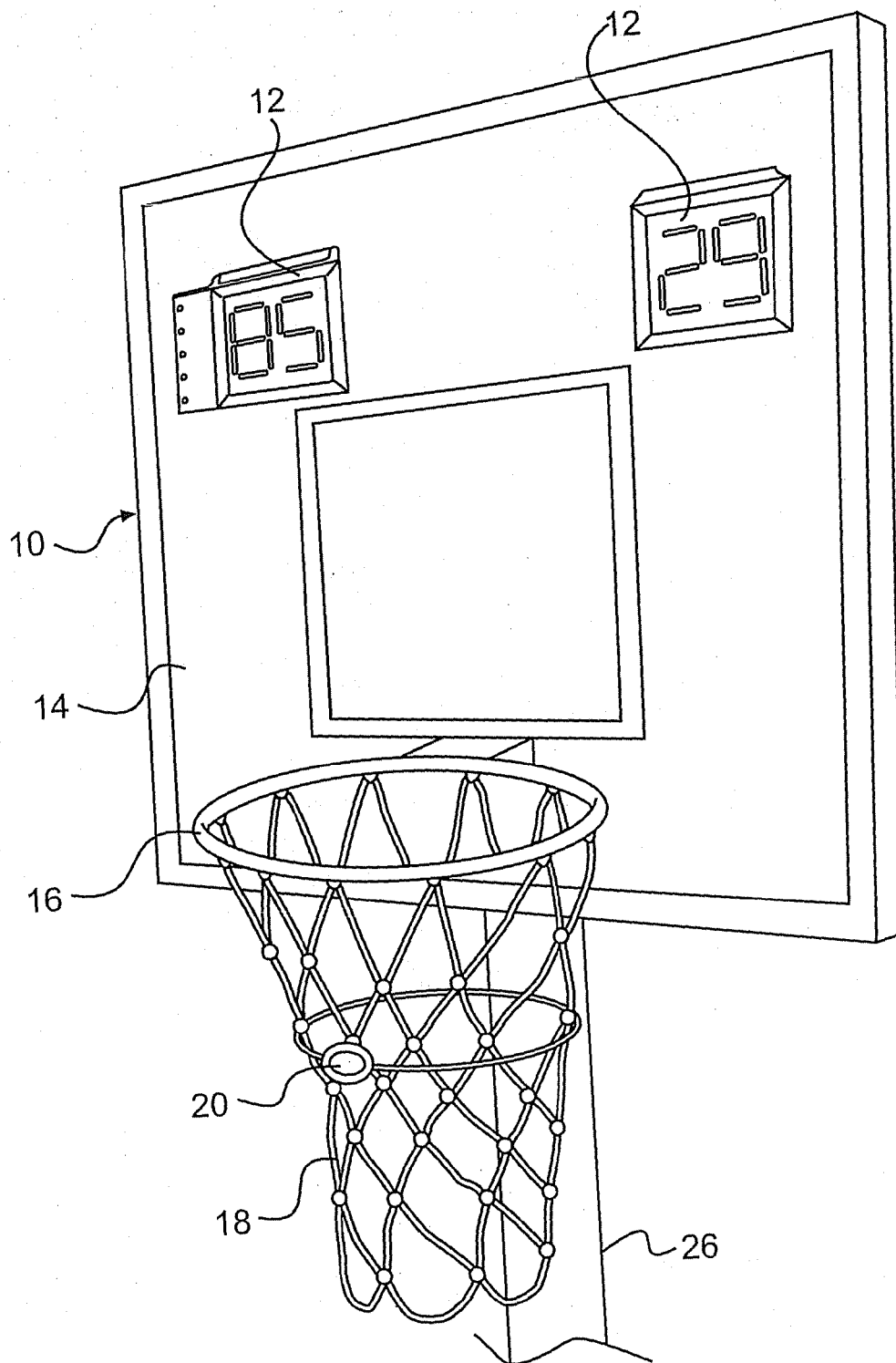


FIG. 1

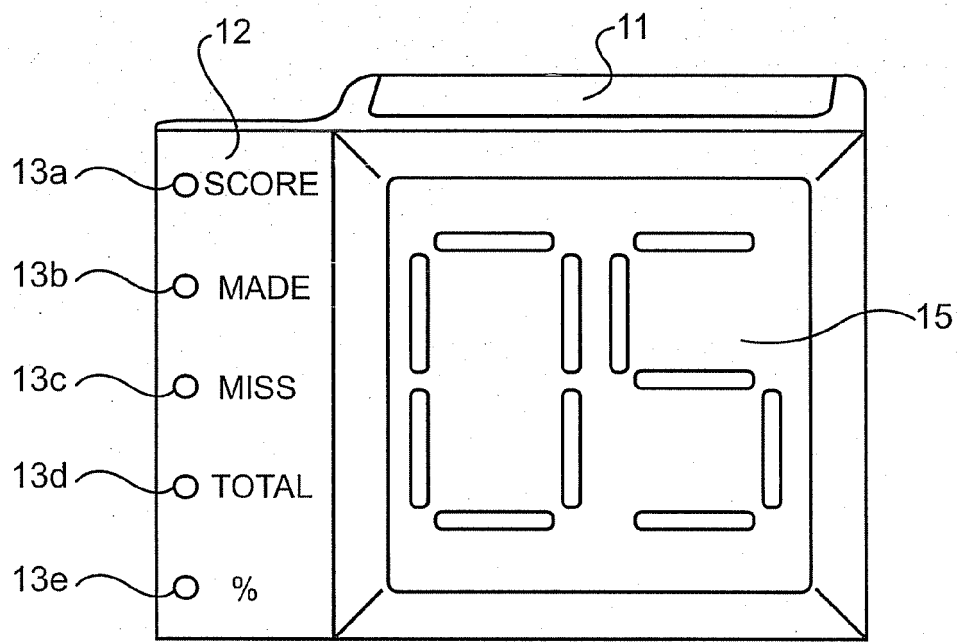


FIG. 2

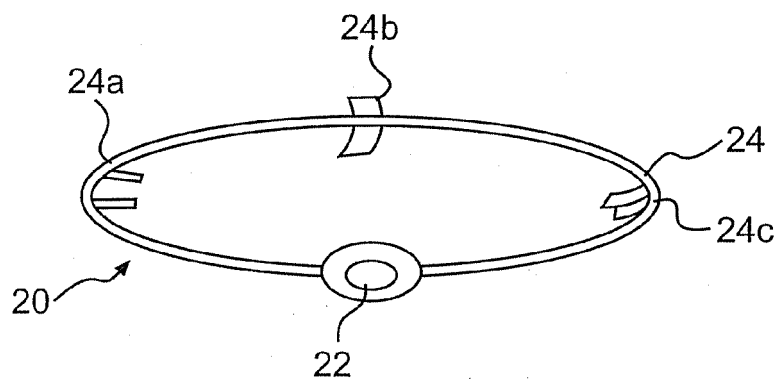


FIG. 3

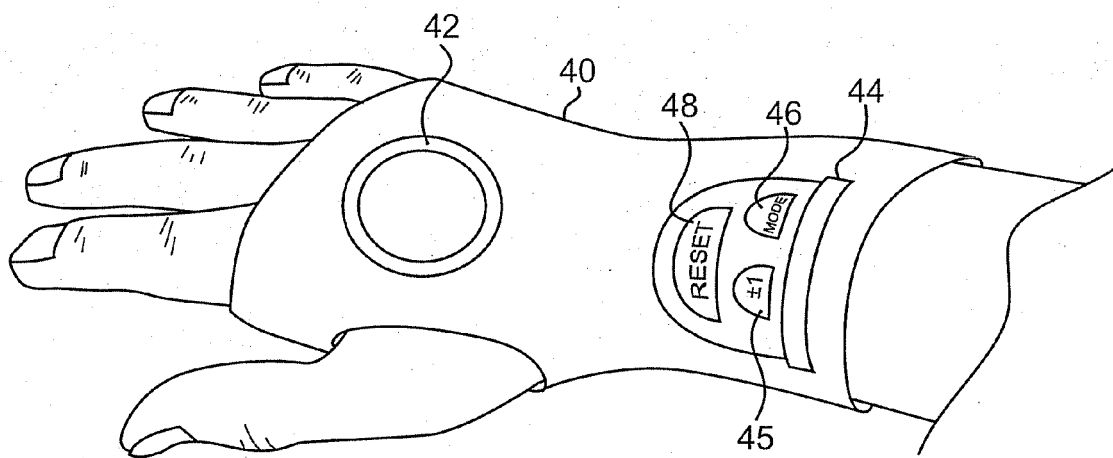


FIG. 4

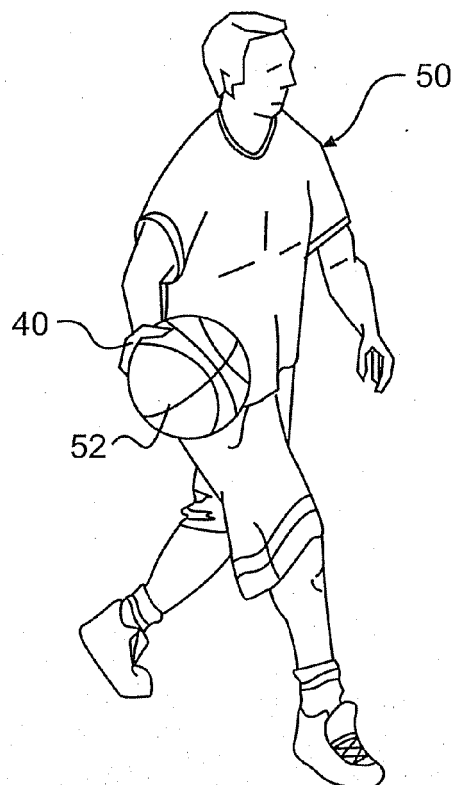


FIG. 5

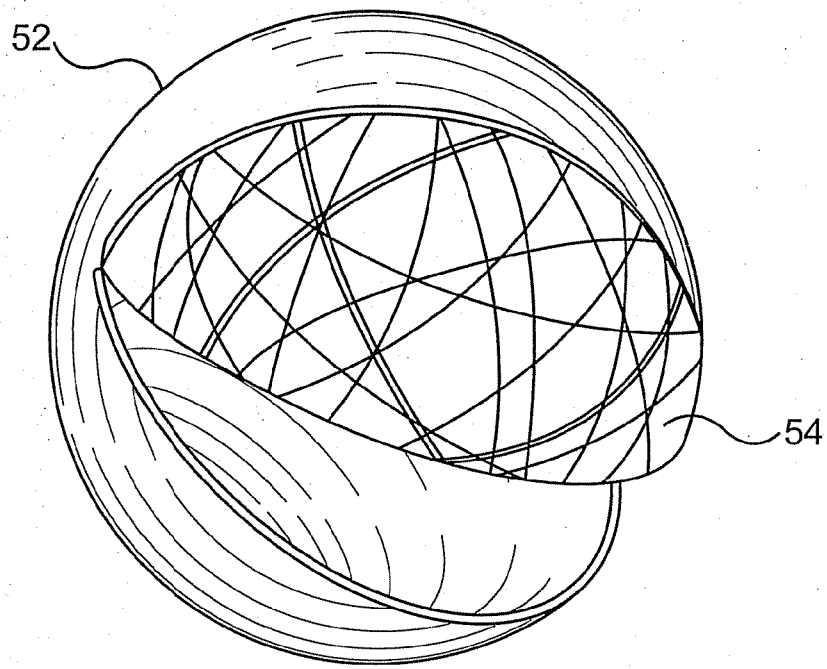


FIG. 6

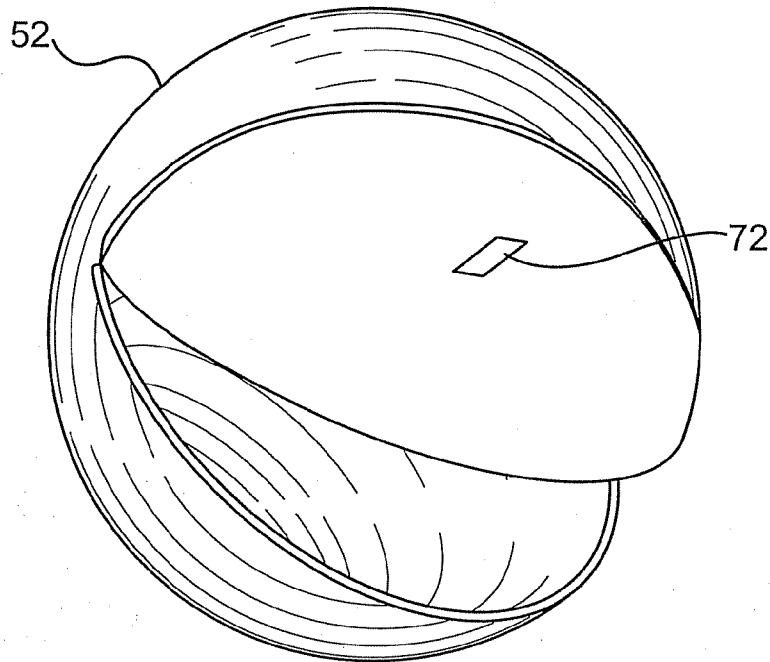


FIG. 7

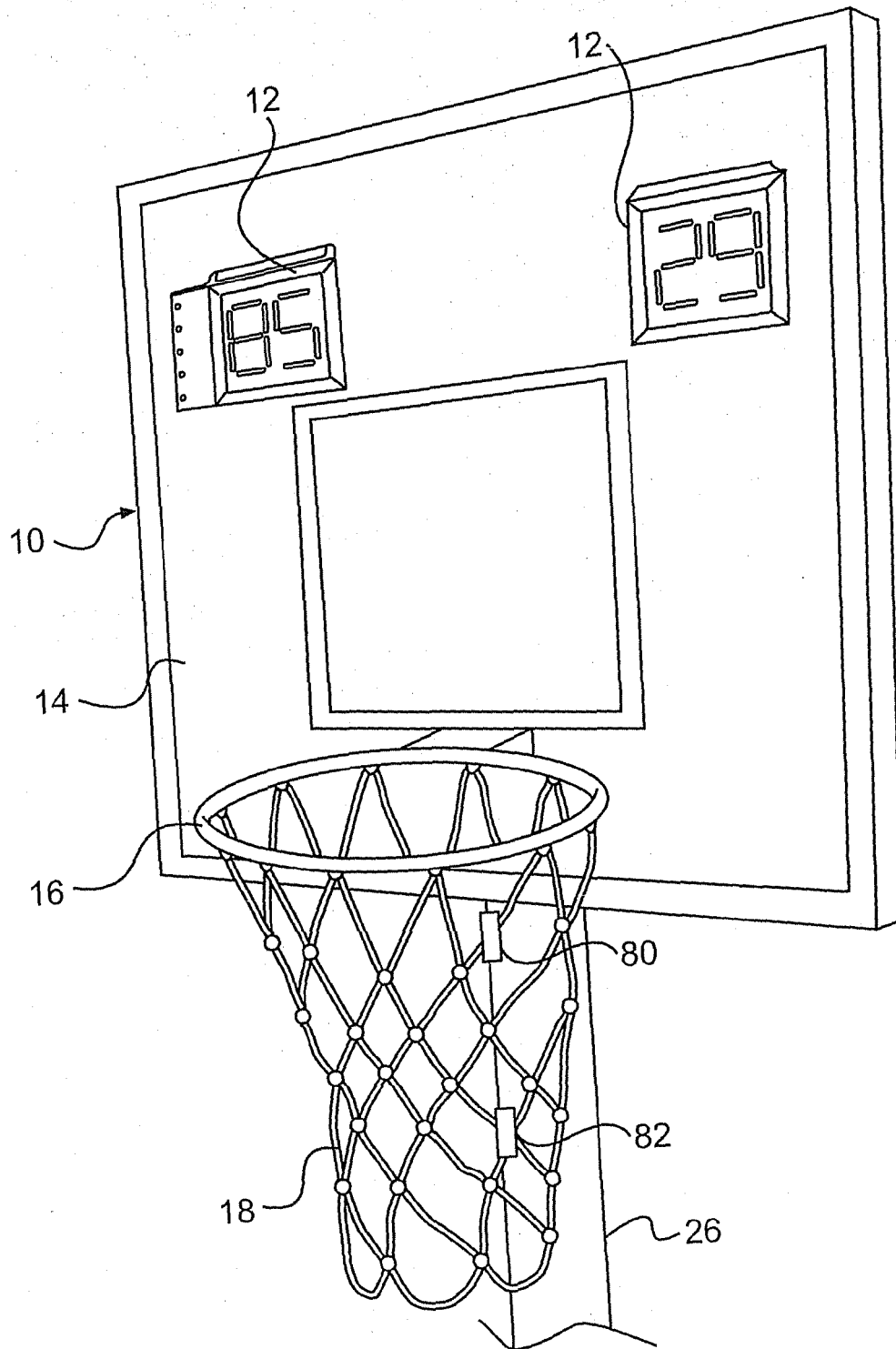


FIG. 8

