



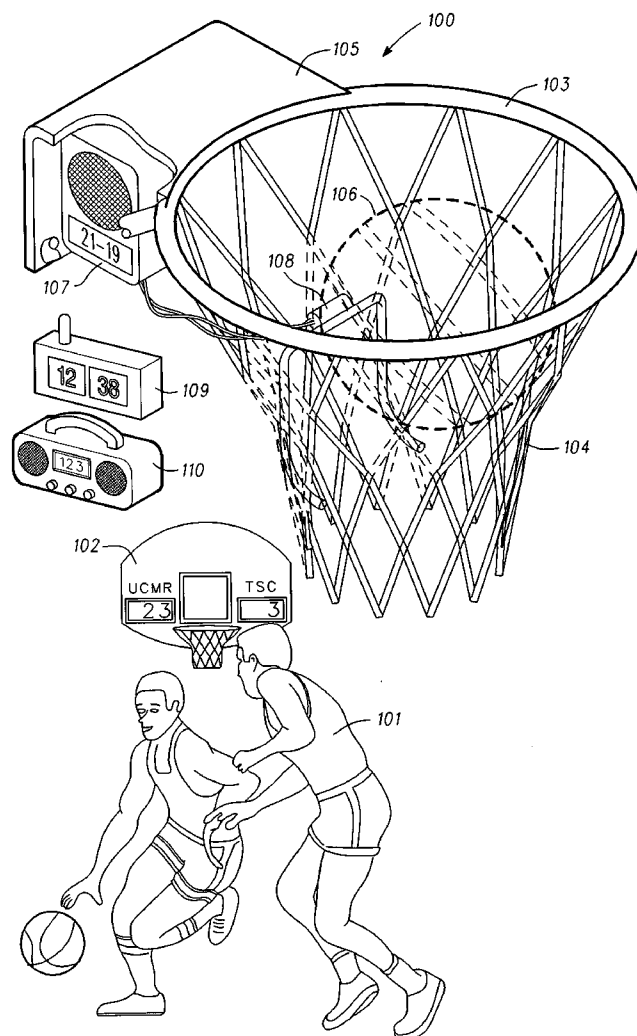
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(19) **United States**(12) **Patent Application Publication**
Young et al.(10) **Pub. No.: US 2008/0254866 A1**(43) **Pub. Date: Oct. 16, 2008**(54) **AUTOMATIC SCORING AND
PERFORMANCE MEASUREMENT METHOD
AND APPARATUS****Related U.S. Application Data**

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Matilda, PA (US); **Rita Ann Young**,
Port Matilda, PA (US)(51) **Int. Cl.**
A63F 9/24 (2006.01)
(52) **U.S. Cl.** **463/25**
(57) **ABSTRACT**Correspondence Address:
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Method and corresponding apparatus for automated scoring, performance measurement/reporting and interactive entertainment and more particularly automated scoring for games, such as multiple basketball games and baseball, soccer, football, as well as other games with projectiles or other objects-of-interest. Generally players are automatically scored, their performance is measured and presented to them, entertainment devices are controlled and they are interactively entertained. One too many players can be entertained individually and/or as teams. Additionally, multiple games, of the same sport or different sports, can be played with this single method and apparatus. The method or apparatus may be utilized in conjunction with communication devices.

(21) Appl. No.: **12/080,997**(22) Filed: **Apr. 8, 2008**

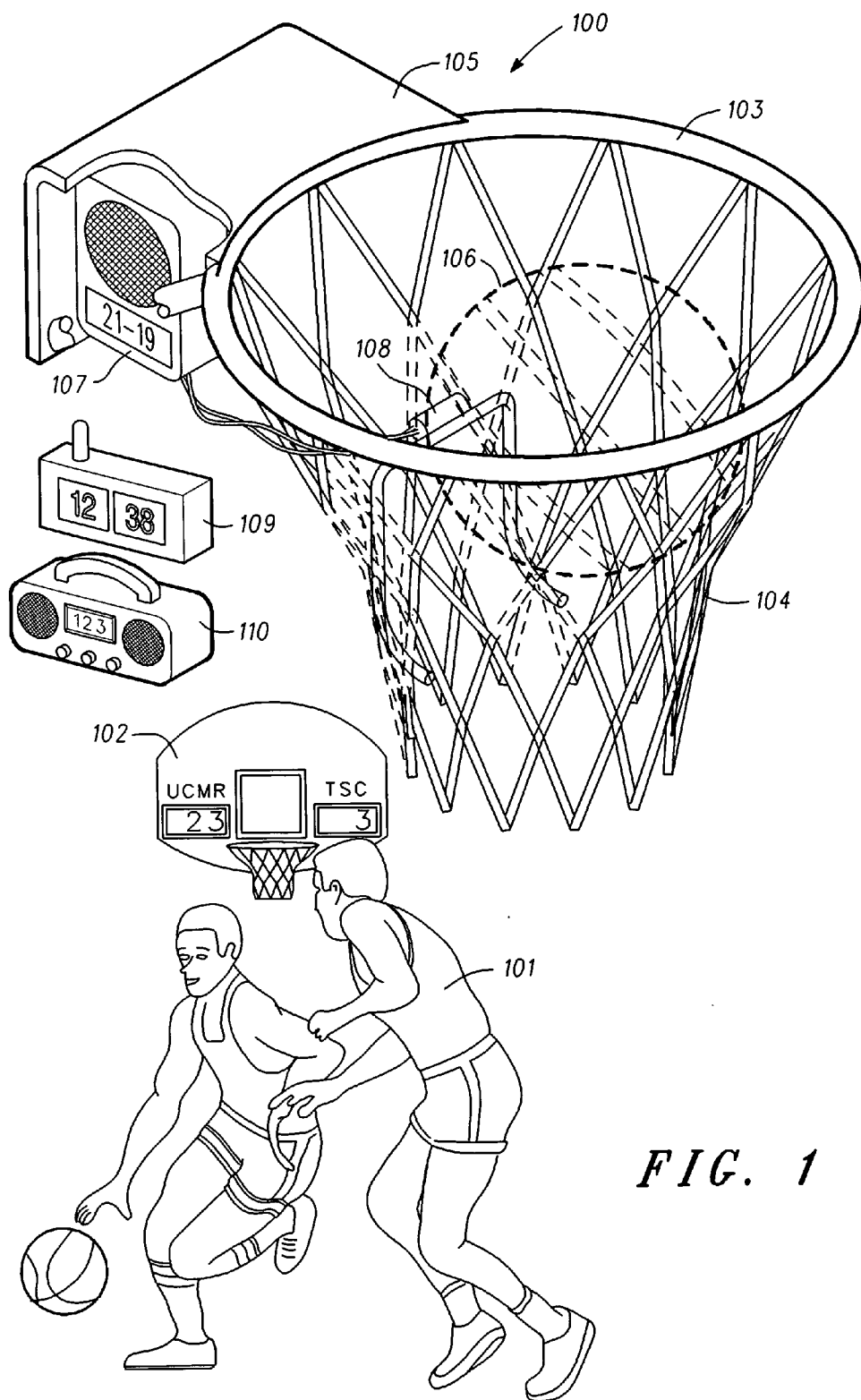


FIG. 1

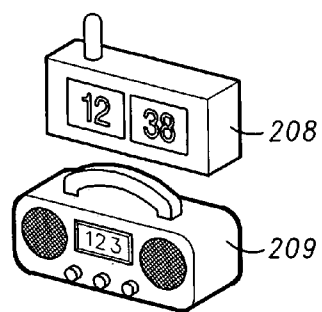
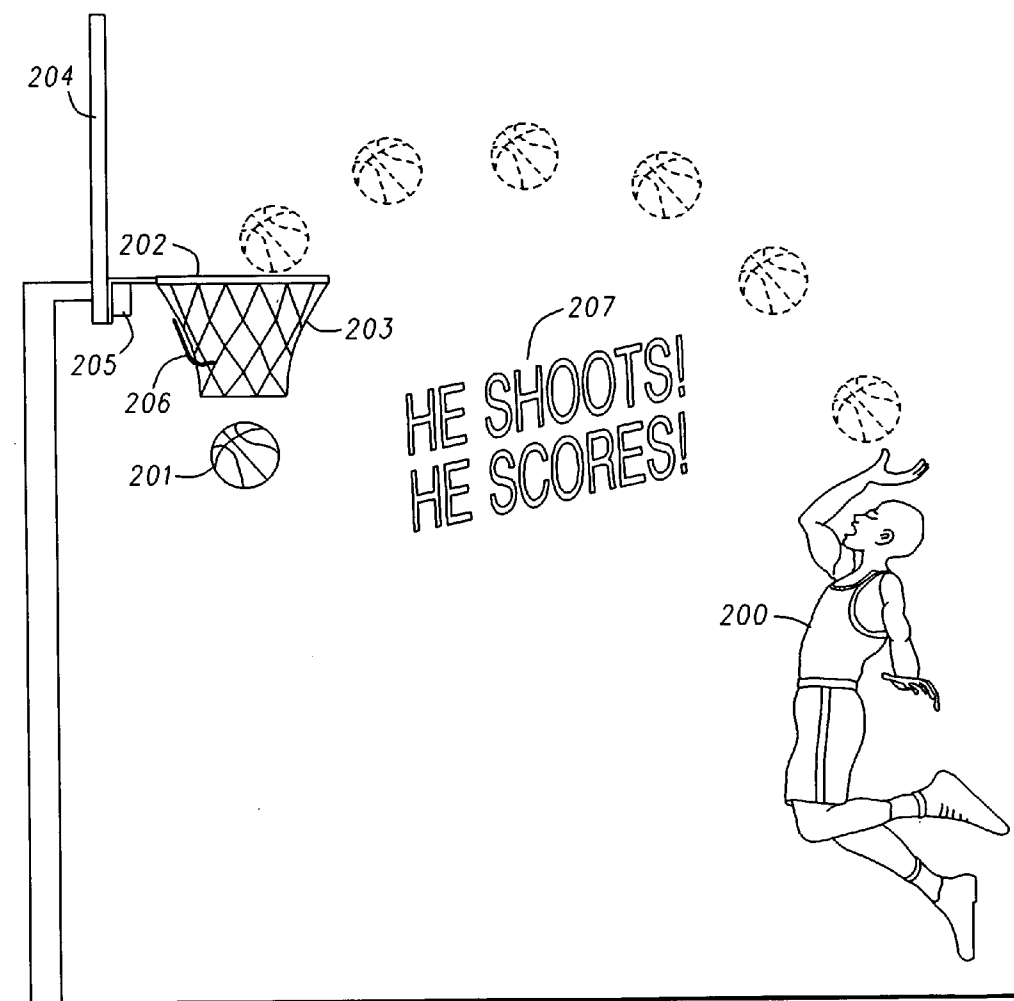


FIG. 2

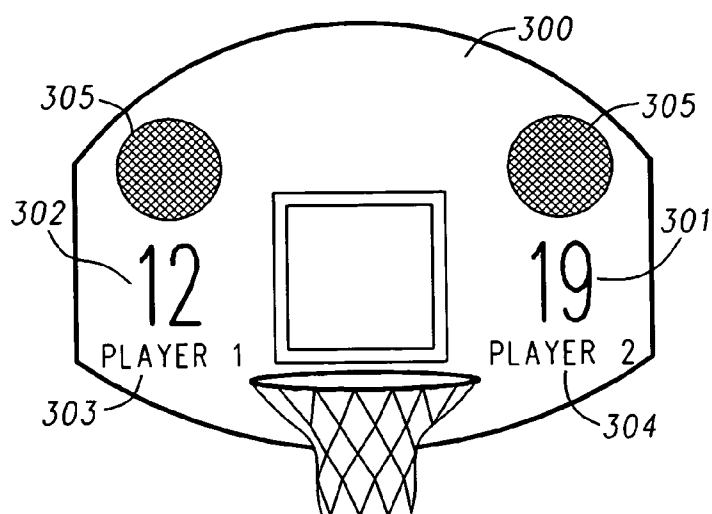
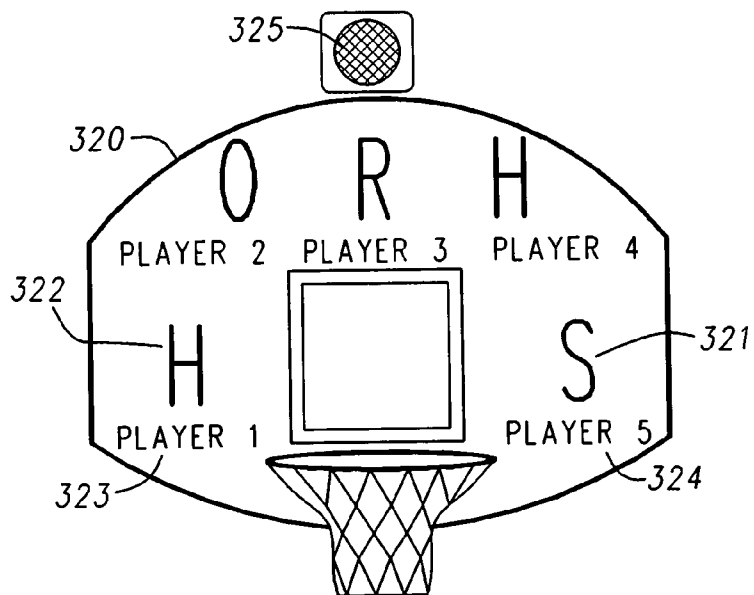
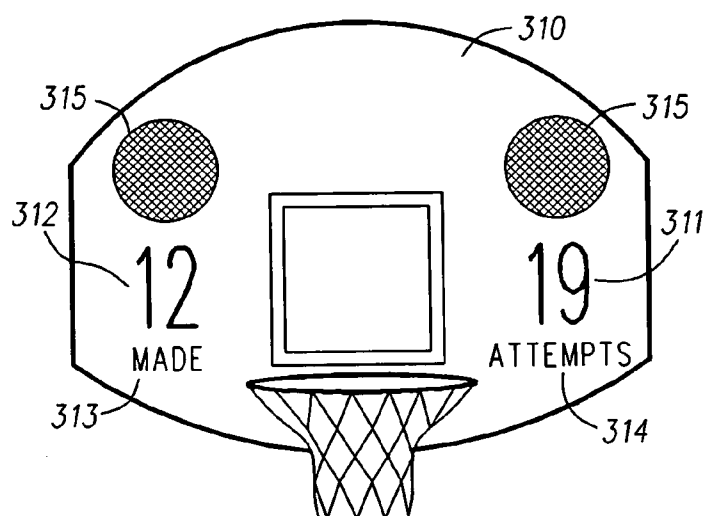


FIG. 3



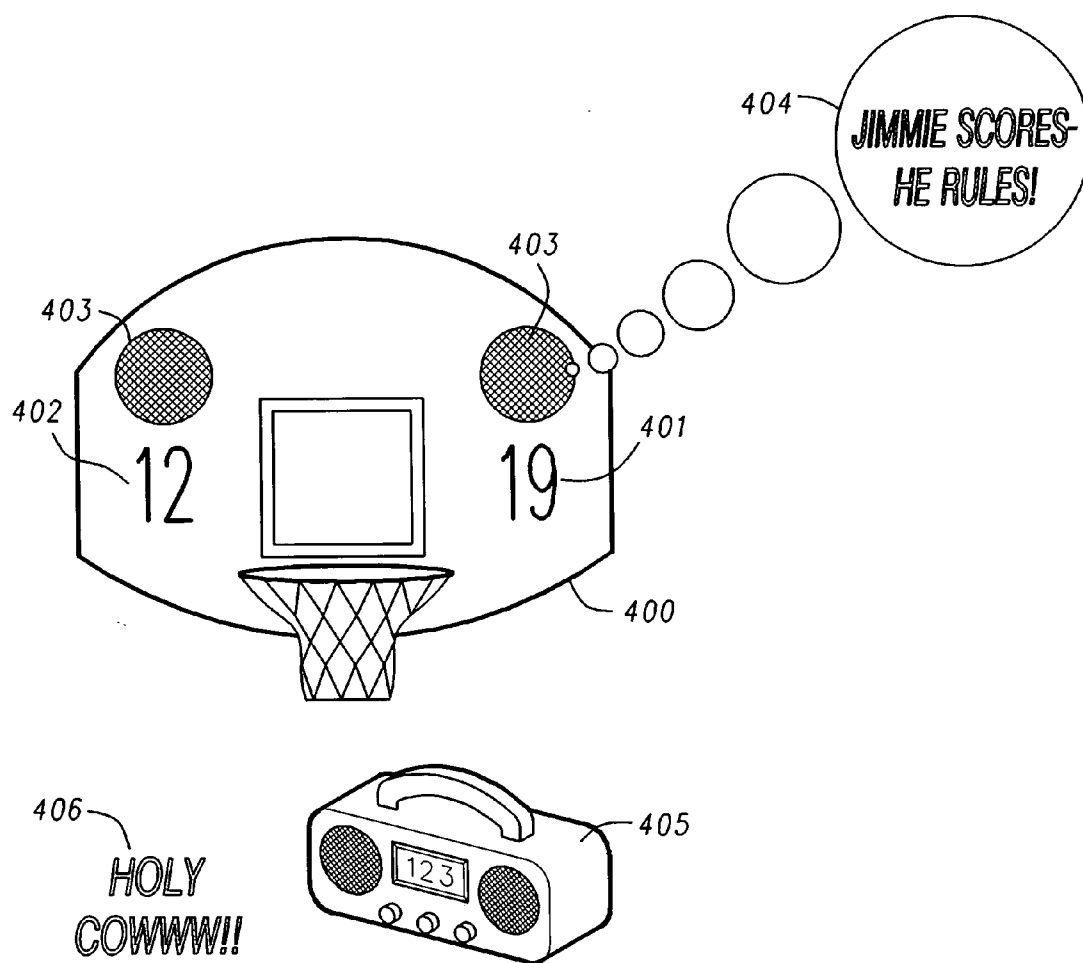


FIG. 4

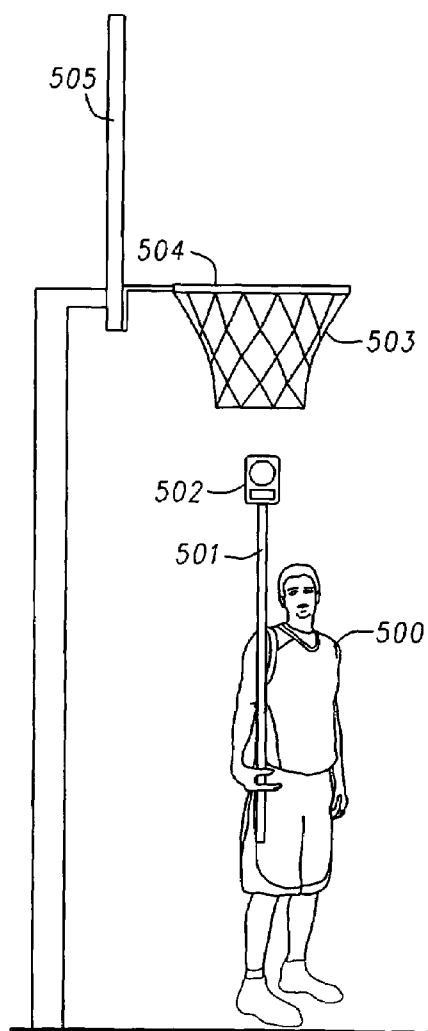


FIG. 5

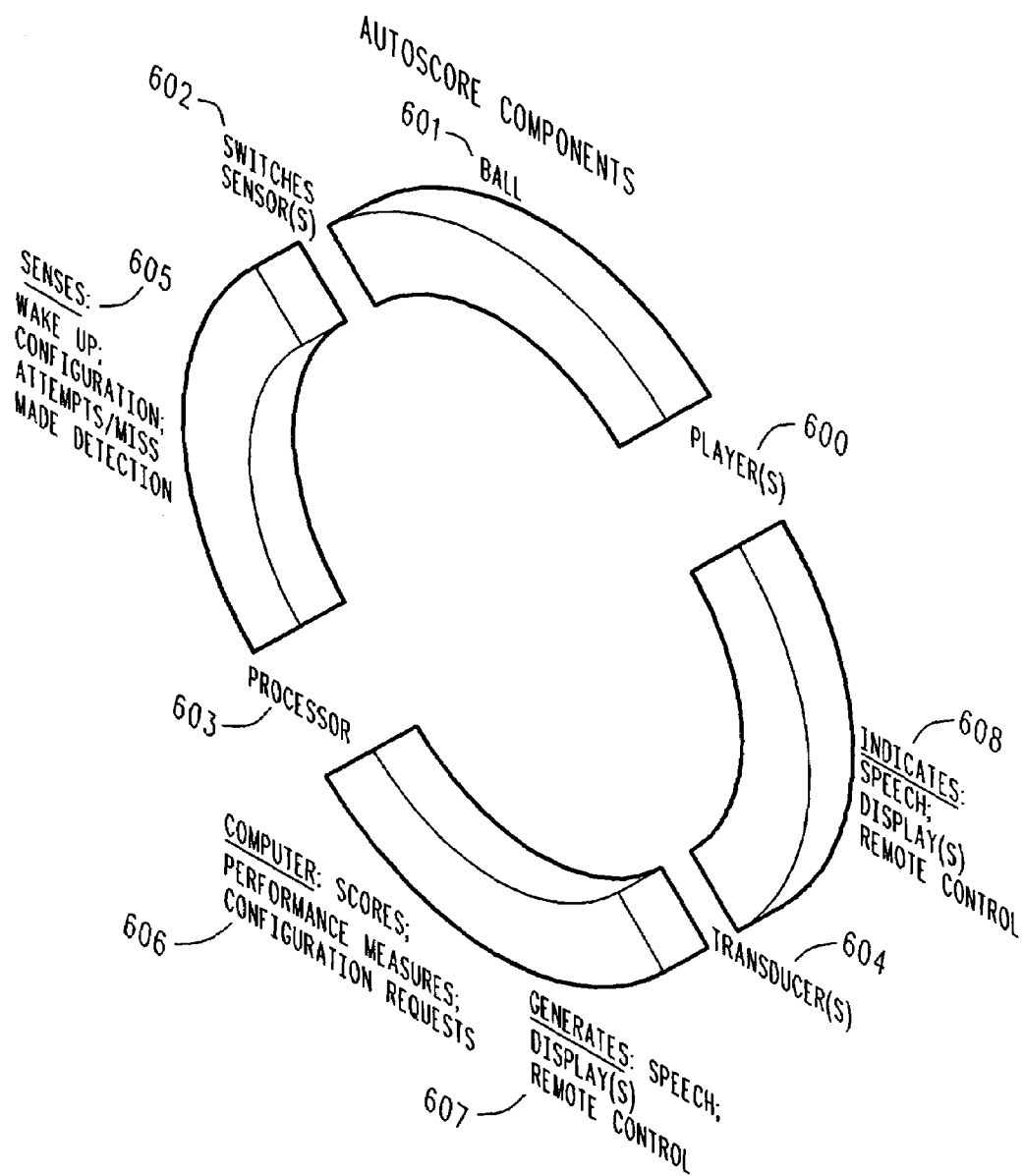
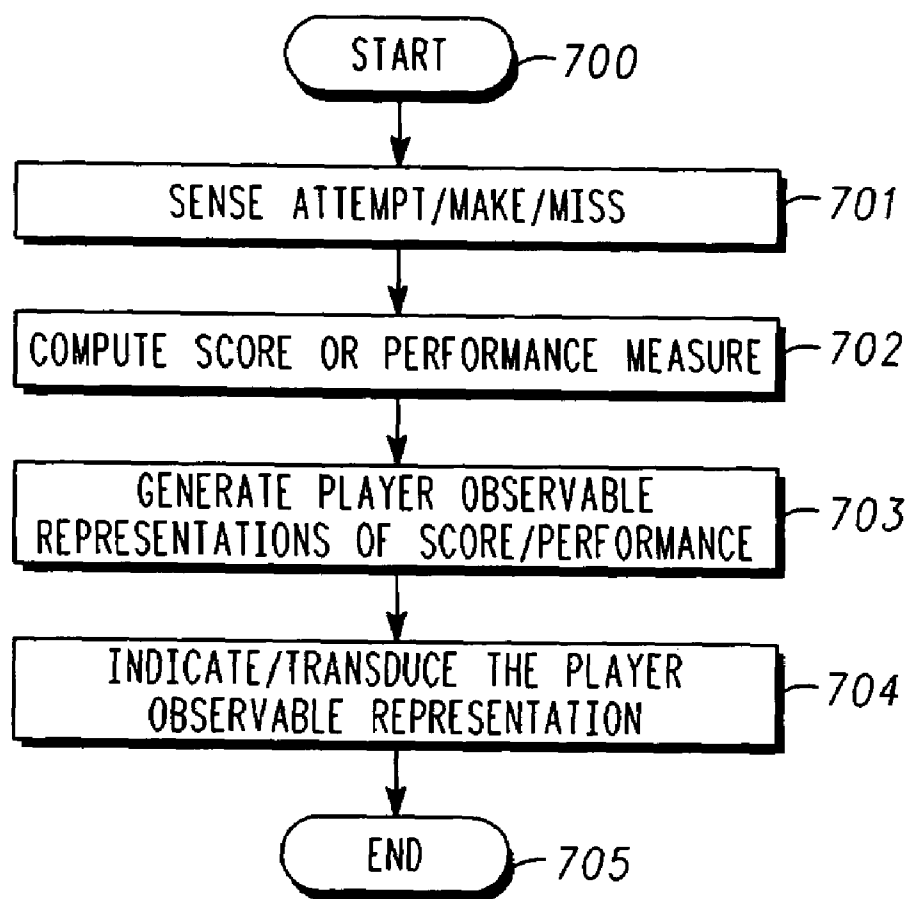


FIG. 6

*FIG. 7*

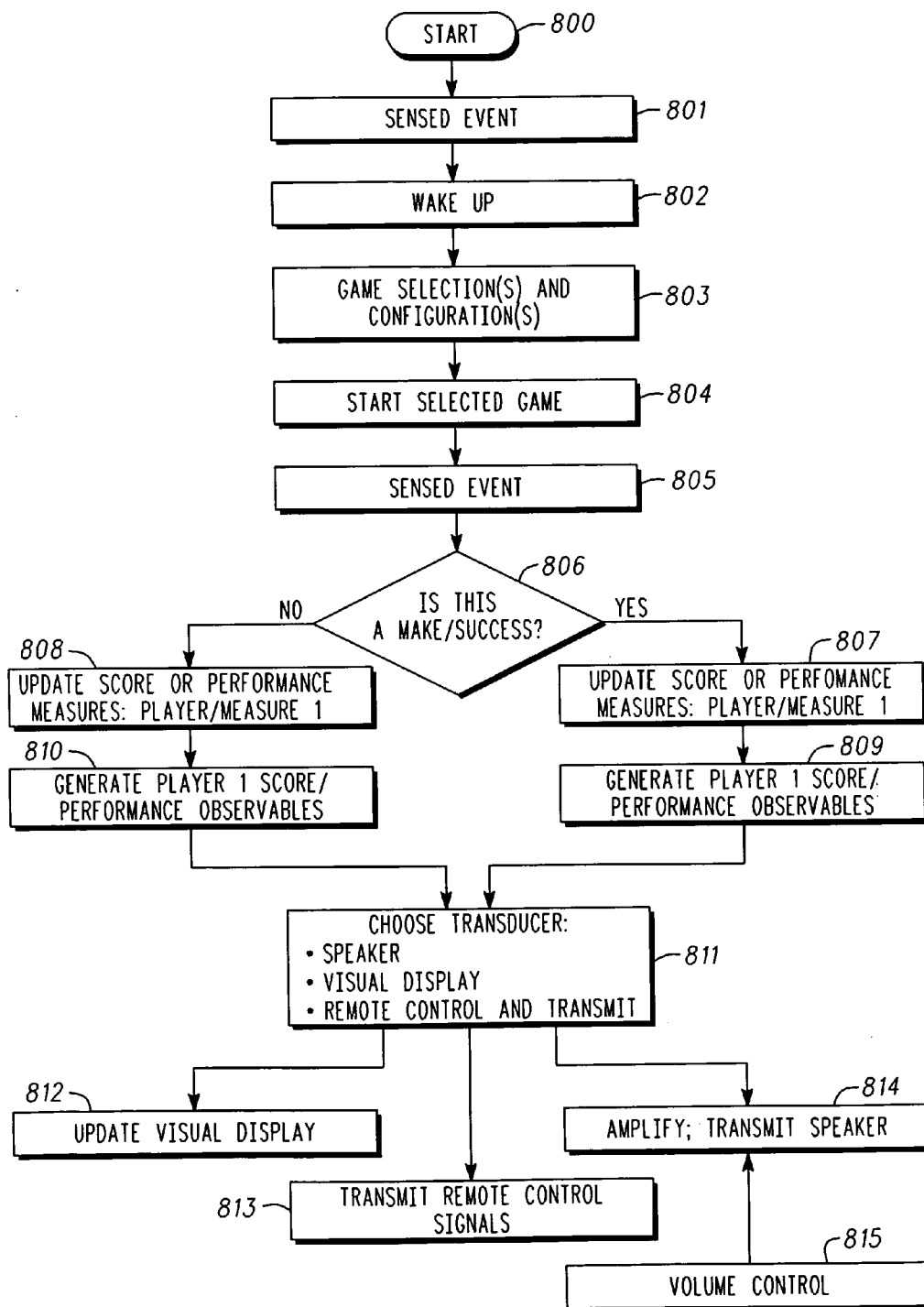


FIG. 8

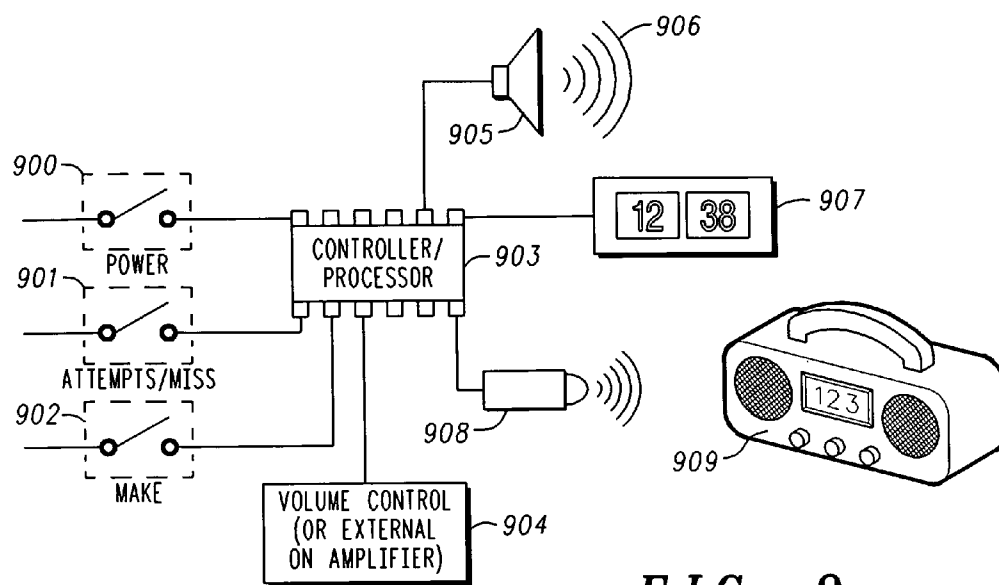


FIG. 9

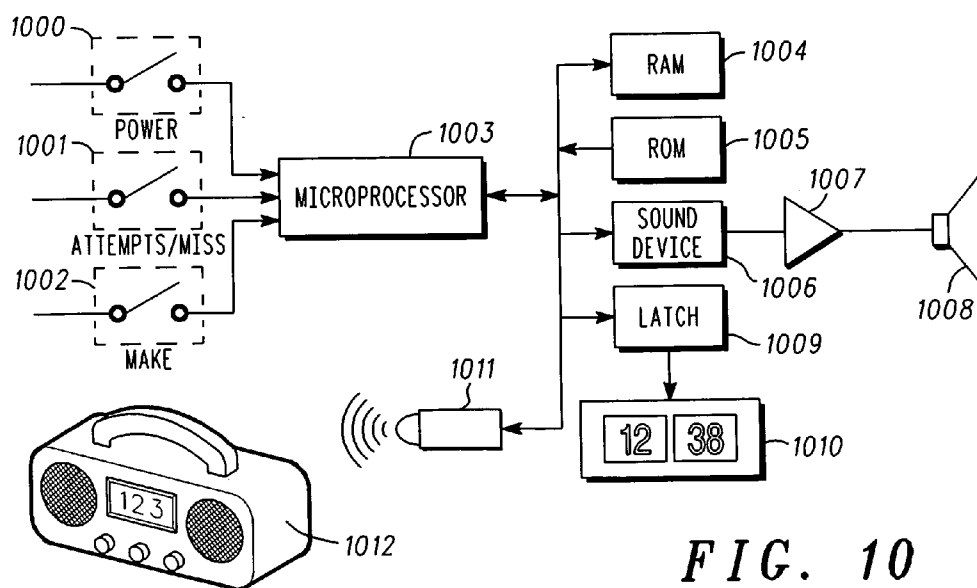
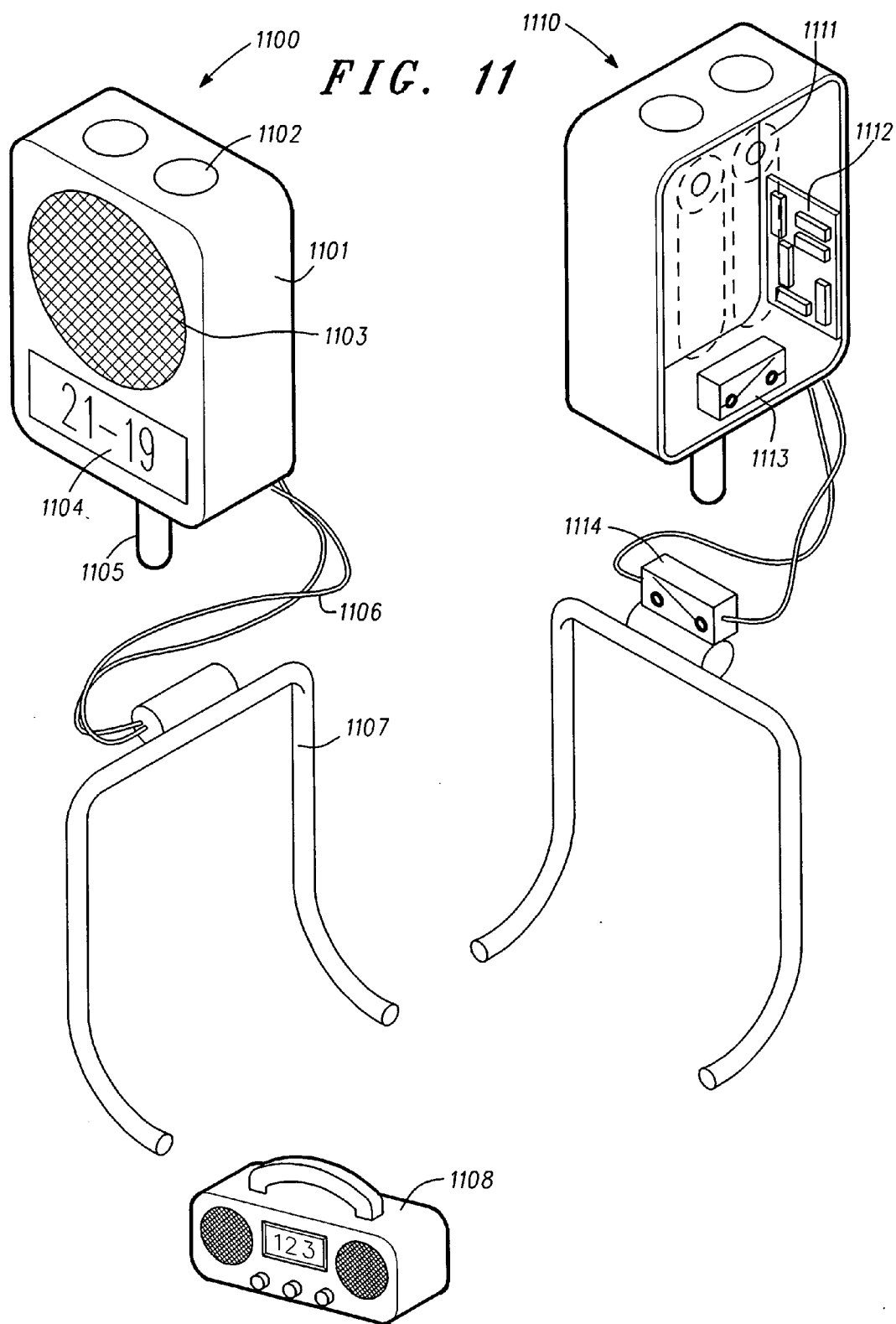


FIG. 10



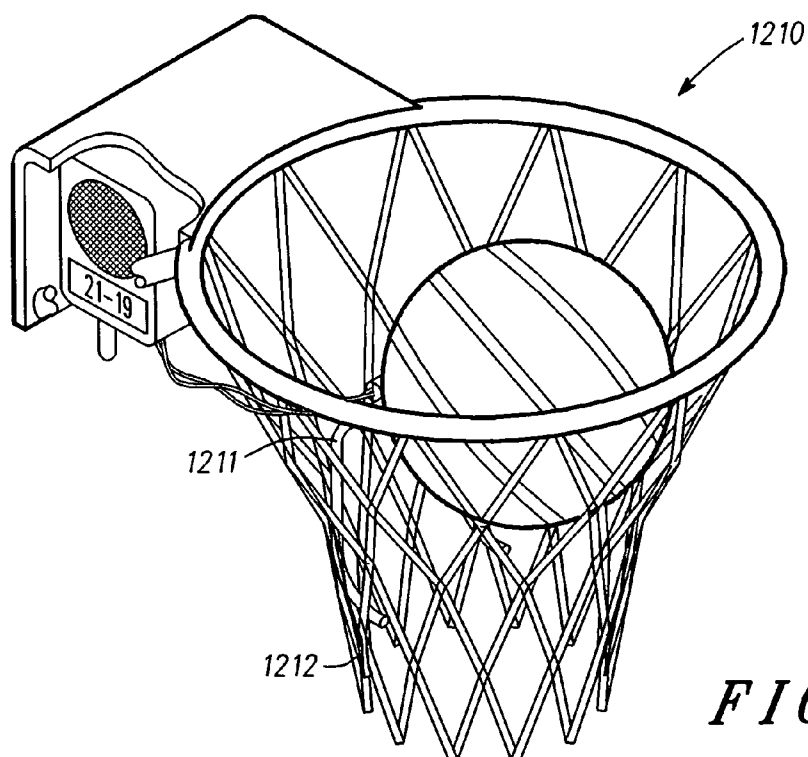
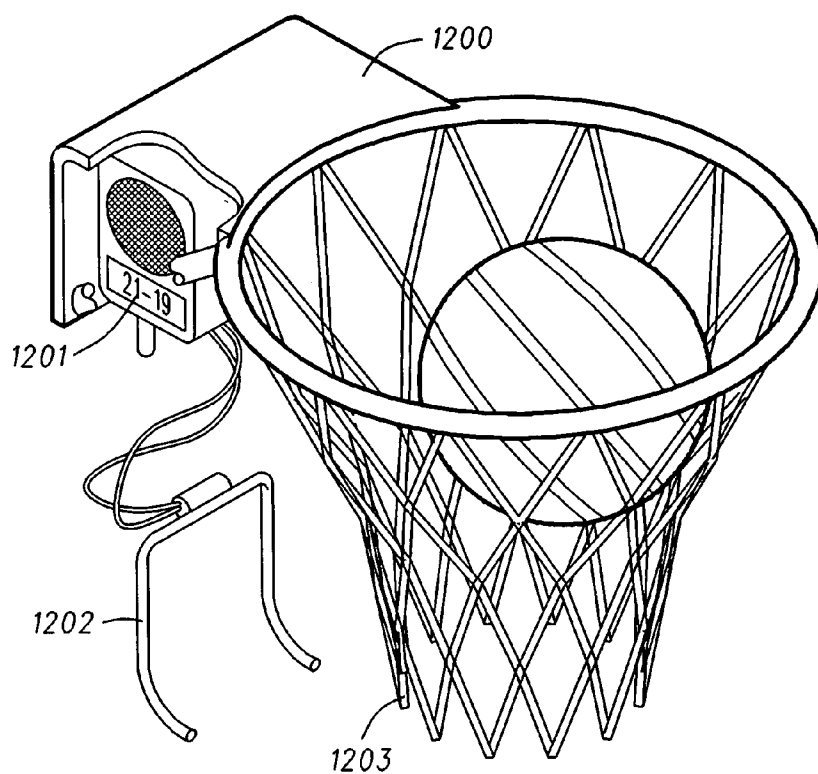


FIG. 12

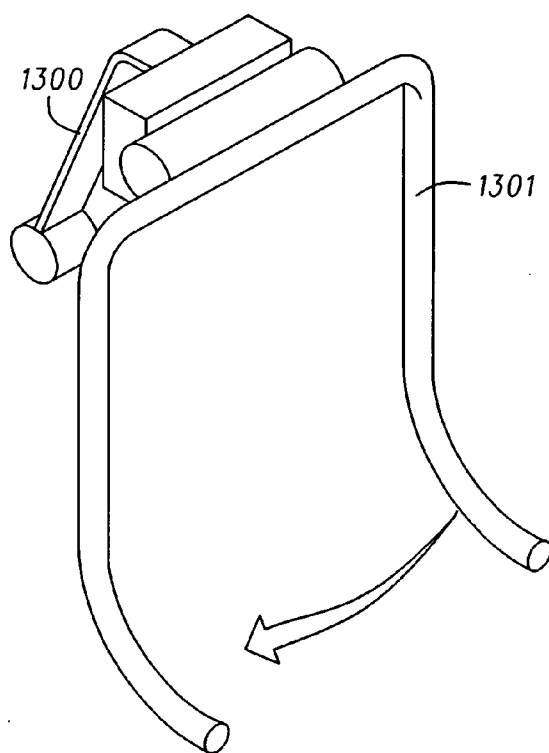
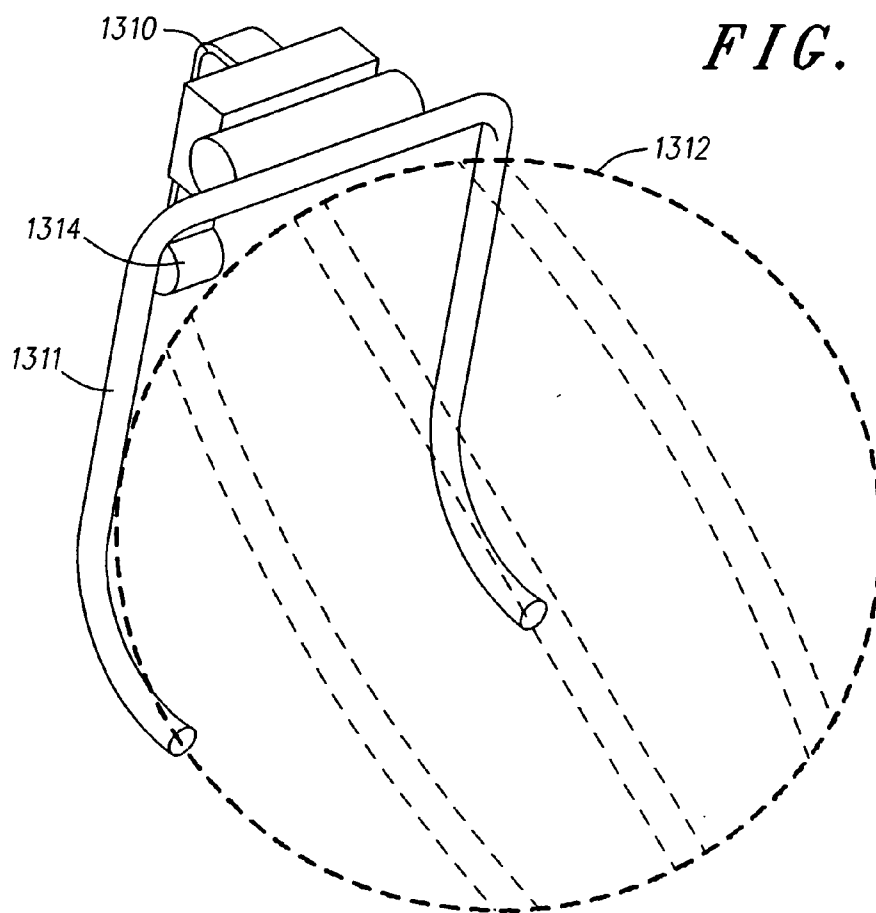


FIG. 13



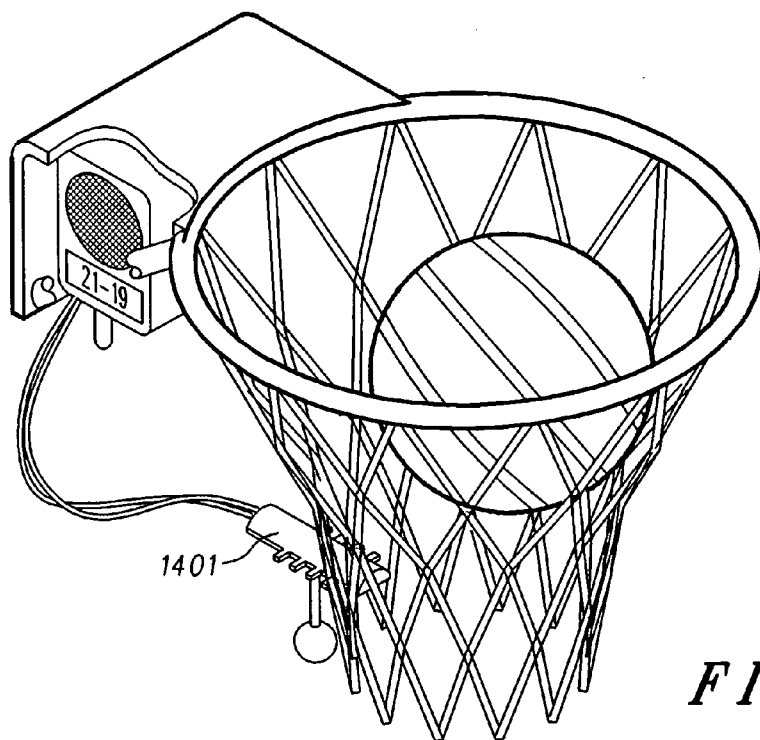
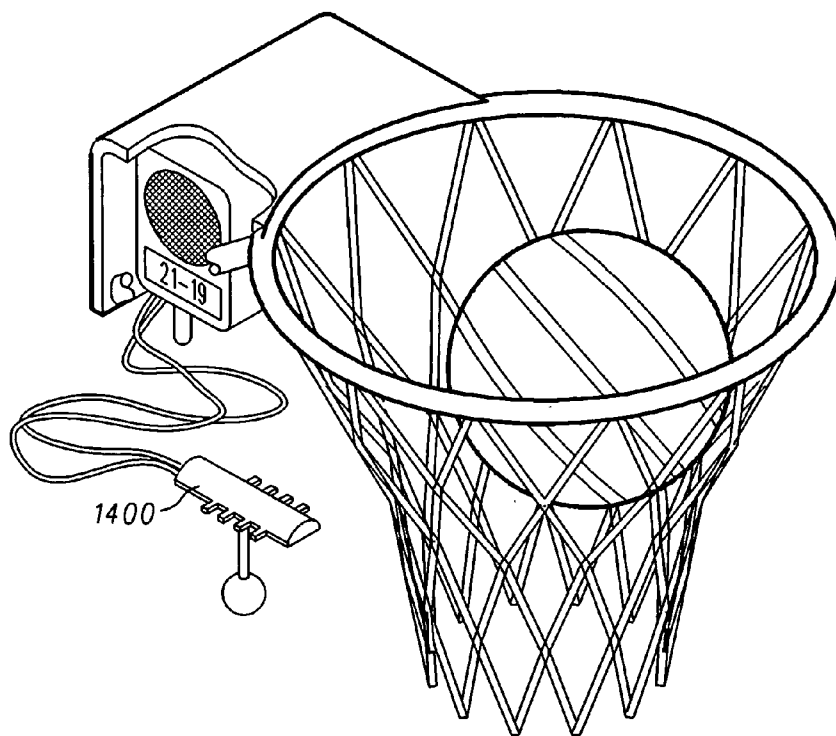


FIG. 14

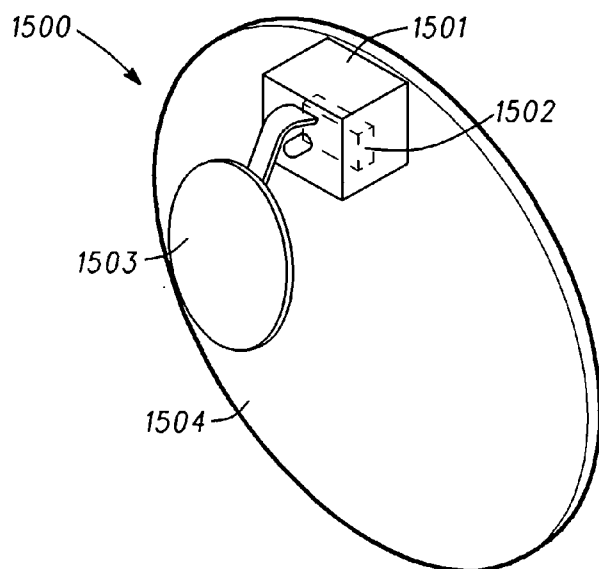


FIG. 15

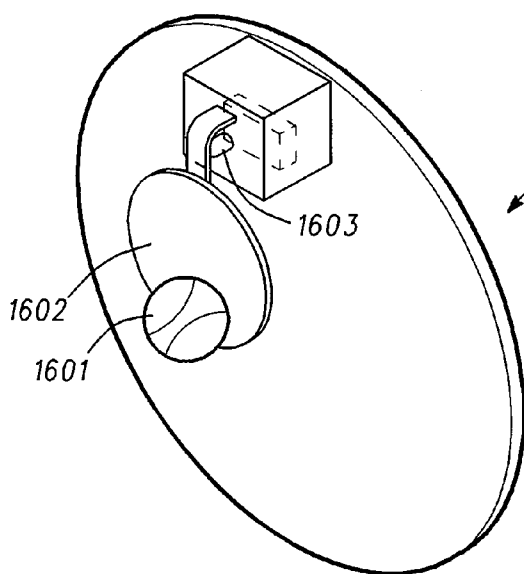


FIG. 16

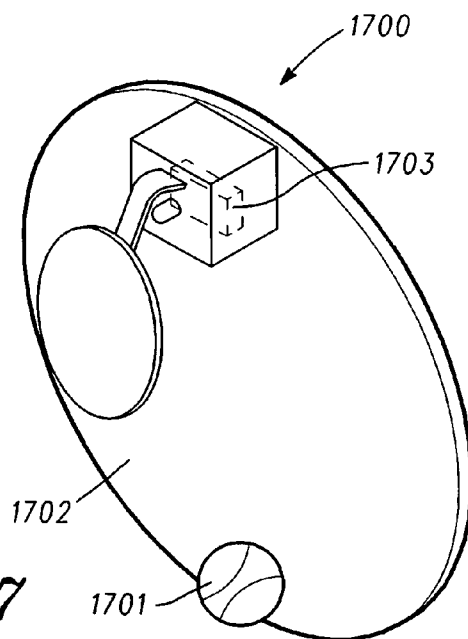


FIG. 17

ALGORITHM FOR MAKE/ATTEMPTS/MISSES AND PERCENTAGES

```
WAKE-UP "MAKE" THEN
    ADD ONE TO NUMBER_MADE
    INDICATE MADE-AUDIO/VISUAL
ELSE
    WAIT 2 SECONDS-CHECK FOR "MAKE"
    NO "MAKE"-ADD ONE TO NUMBER_MISSED
    INDICATE MISS-AUDIO/VISUAL
ENDIF
COMPUTE SHOOTING PERCENTAGES OR OTHER MEASURES
INDICATE SHOOTING PERCENTAGES OR OTHER MEASURES\
SLEEP/WAIT
```

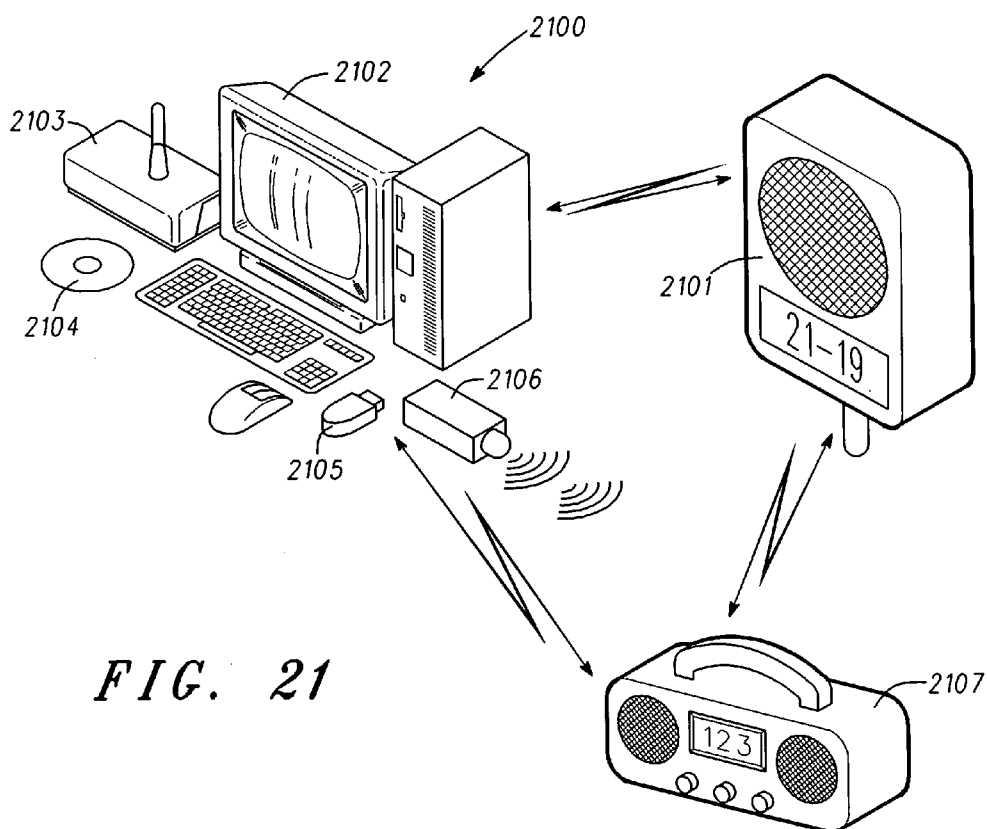
*FIG. 18*ALGORITHM FOR BASKETBALL HORSE GAME

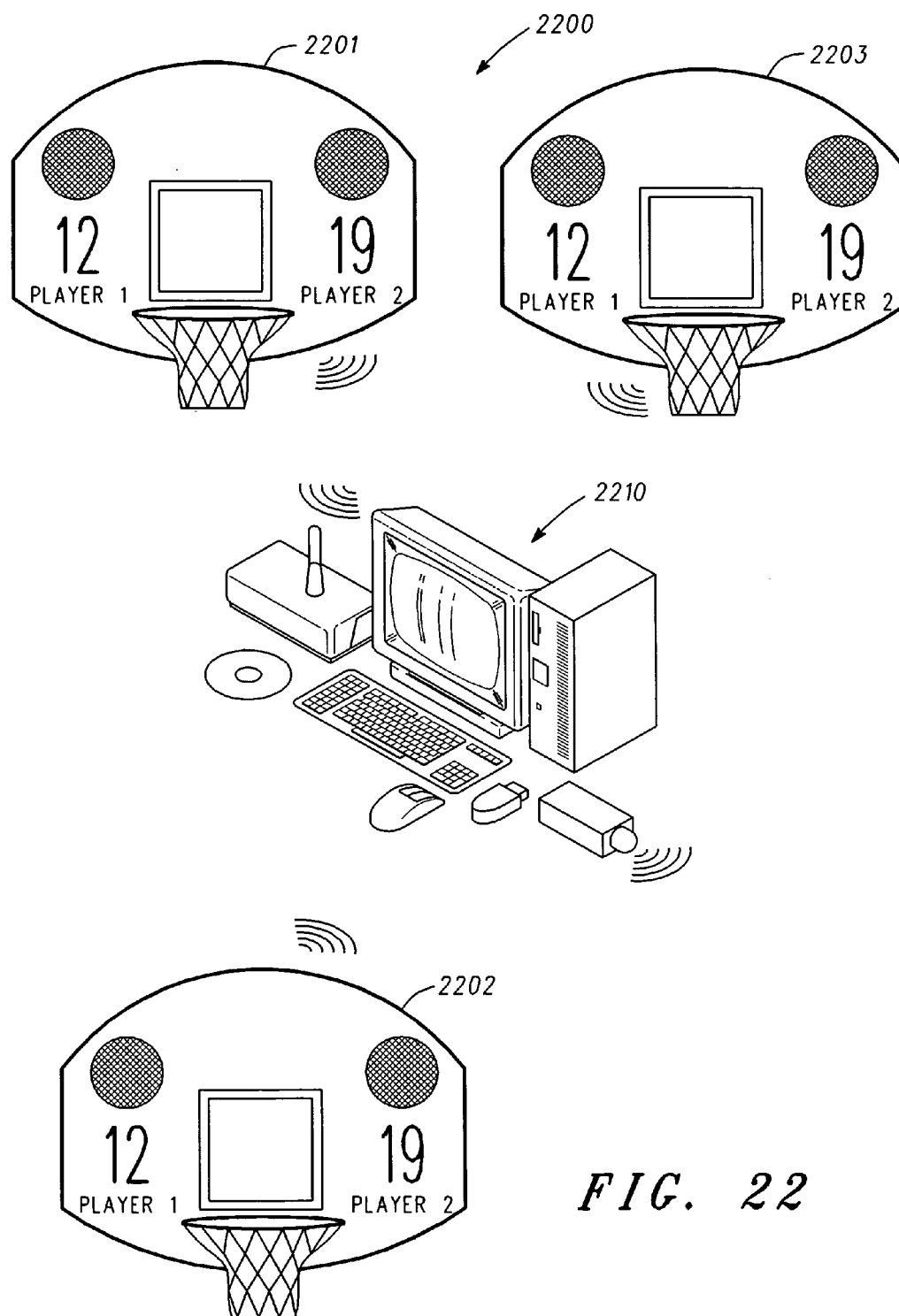
```
SELECT NUMBER_PLAYERS
RESET ALL PLAYER'S HORSE_10_BIT_REGISTERS TO 5 "0"s THEN 5 "1"s
SET MADE_REGISTER TO 0
FOR PLAYER=1: NUMBER_PLAYERS
    CALL INDICATE_PLAYER_NUMBER AND LETTERS_ROUTINE
    SLEEP/WAIT
    WAKE-UP:IF "MAKE" THEN
        SET MADE_REGISTER TO 1
        CALL INDICATE_NEXT_PLAYER_MUST_MAKE_ROUTINE
    ELSE
        WAIT 2 SECONDS-CHECK FOR "MAKE"
        SET MADE_REGISTER TO 0
        CIRCULARLY ROTATE THE PLAYER'S HORSE_10_BIT_REGISTER
        CALL INDICATE_PLAYER_MISSED_NEW_LETTER_ROUTINE
        IF FIRST FIVE BITS OF HORSE_10_BIT_REGISTER ARE 1
            ELIMINATE THAT PLAYER_NUMBER
        ENDIF
    ENDIF
NEXT
CALL INDICATE_WINNER_ROUTINE
```

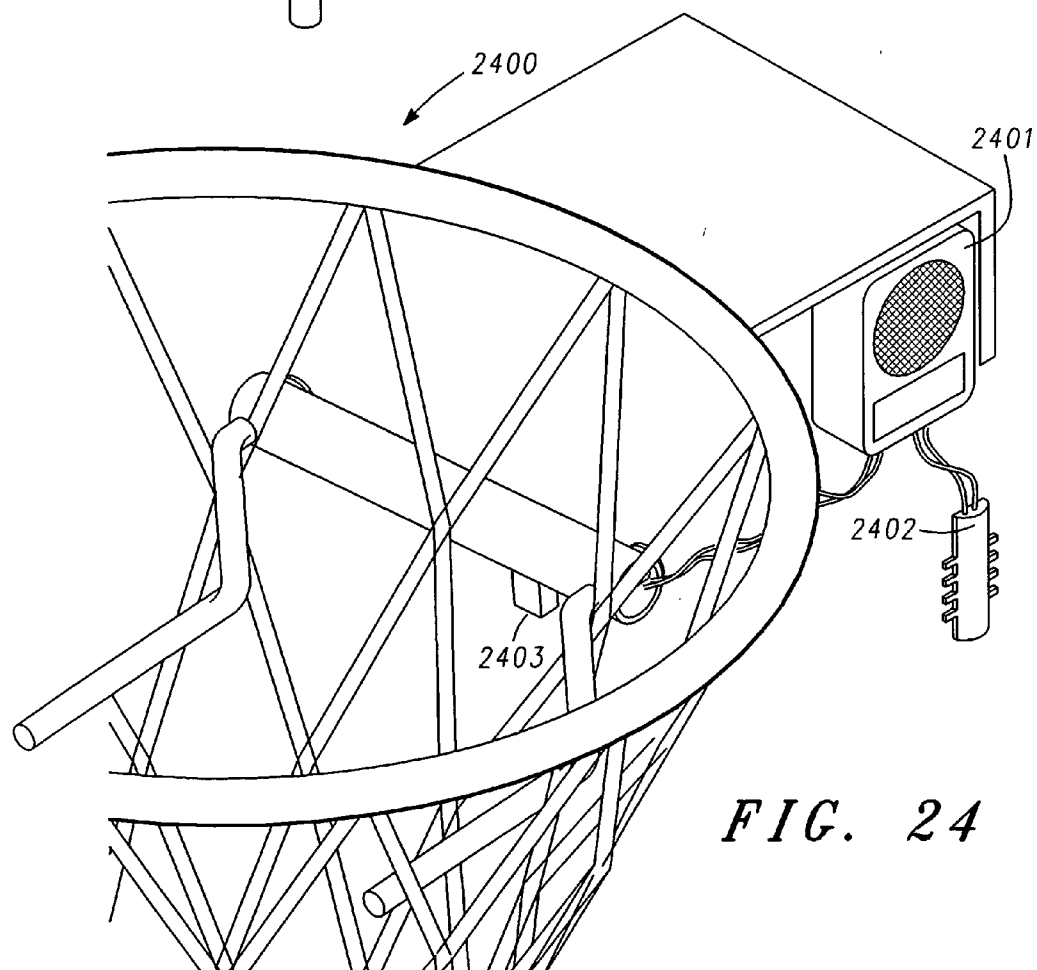
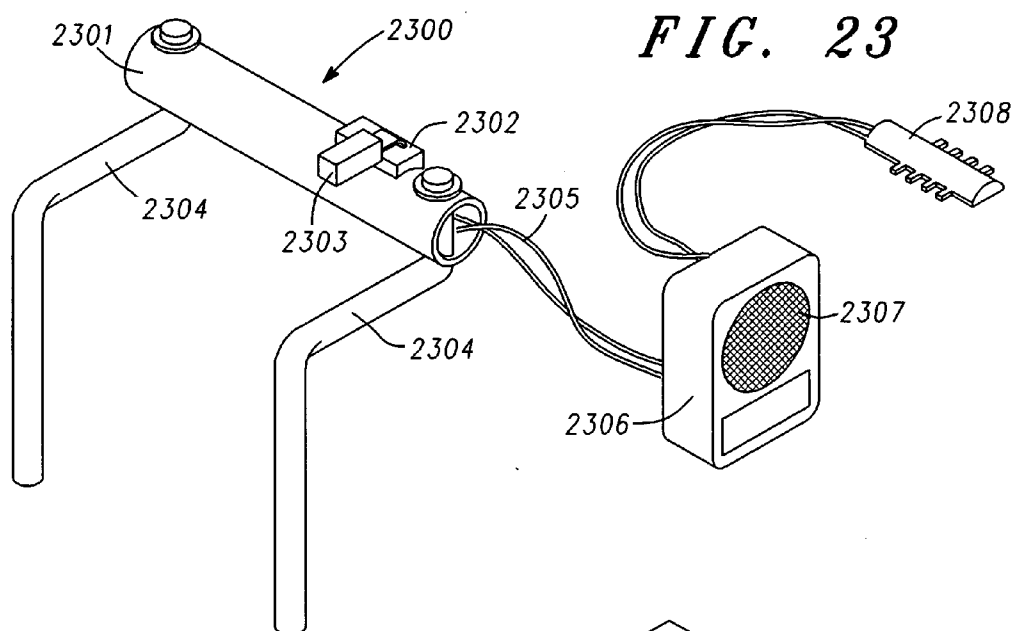
FIG. 19

ALGORITHM FOR BASKETBALL TIMED HEAD-TO-HEAD GAME

```
SELECT NUMBER_PLAYERS
RESET ALL PLAYER'S SCORES TO 0
FOR PLAYER=1: NUMBER_PLAYERS
    CALL INDICATE_PLAYER_SCORE AND INDICATE START ROUTINE
    SET SCORE_TIME=20
    TIMER: SCORE_TIME=20; COUNT DOWN: IF SCORE_TIME=0. GOTO START
    IF "MAKE" THEN
        SCORE(PLAYER)=SCORE(PLAYER)+SCORE_TIME
        IF SCORE(PLAYER)>WINNING_SCORE
            CALL INDICATE_PLAYER_WON ROUTINE
        ENDIF
    ENDIF
ENDIF
START: NEXT
```

FIG. 20





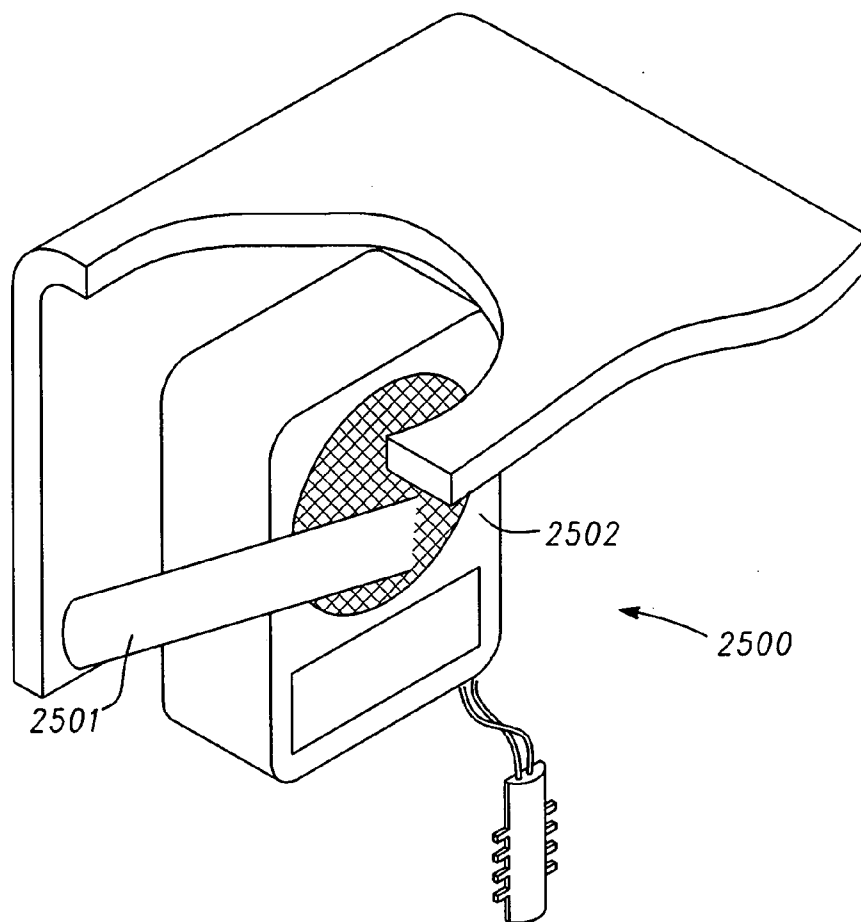


FIG. 25

AUTOMATIC SCORING AND PERFORMANCE MEASUREMENT METHOD AND APPARATUS

RELATED APPLICATIONS

[0001] This application is related to and claims priority from U.S. provisional application bearing Ser. No. 60/922, 644, filed on Apr. 10, 2007, and titled AUTOMATIC SCORING AND PERFORMANCE MEASUREMENT METHOD AND APPARATUS; which provisional application is hereby incorporated herein in its entirety by reference.

FIELD OF THE INVENTION

[0002] This invention relates in general to player interactive and automated: sports scoring, performance measurement, and player entertainment apparatus and methods.

BACKGROUND OF THE INVENTION

[0003] Sports and game playing and training are popular pastimes for many people. Most sports and games playing and training focus on scoring and/or performance measurement/enhancement. For many games and practice sessions the players must manually keep the score or measure their performance (or the performance of others). Keeping score and/or quantifying their performance helps motivate players and enhance their skill development.

[0004] This score keeping and performance quantification is usually realized manually, possibly on paper, but usually “in their heads.” Manually keeping score and/or measuring performance while playing/training/coaching can lead to: inaccurate score and measurements; reductions in concentration on their play/training due to players concentrating on score/measures rather than play/training; player discomfort with their score or performance; discomfort with the person/device that is scoring and/or measuring performance; interference with their thoughts/actions; a lack of concentration in their play/performance; arguing with other players; as well as many other degradations in play/performance. Automated scoring and performance measurement is needed and desired to enhance the player(s) play/training/performance/entertainment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The accompanying figures where like reference numerals refer to identical or functionally similar elements throughout the separate views and which together with the detailed description below are incorporated in and form part of the specification, serve to further illustrate various embodiments and to explain various principles and advantages in accordance with various embodiments.

[0006] FIG. 1 depicts, in a simplified and representative form, a diagram depicting basketball players playing a game and a scoreboard accessory that is keeping track and announcing the score as well as entertaining the players in accordance with one or more embodiments;

[0007] FIG. 2 depicts a player receiving interactive visual and/or audio feedback regarding their basketball performance from their backboard accessory and/or from remote multimedia device in the vicinity of their play;

[0008] FIG. 3 depicts, in a simplified and representative form, a diagram showing three backboards indicating three different games: a team-on-team or 1-on-1 game, a shooting percentage or number-made-and-missed game, and a

“HORSE” shooting game, with all games having both visual and audio interaction with the player(s);

[0009] FIG. 4 depicts, in a simplified and representative form, a diagram similar to FIG. 3 showing a backboard with scoring and visual/audio interaction, but the audio is now highly personalized for the player(s) and tailored just for them, and includes local and remote multi-media players;

[0010] FIG. 5 depicts, in a simplified and representative form, a diagram of a player safely and easily deploying/recovering the scoring/performance device and attaching it to the backboard, rim, and/or net by raising/lowering it with a pole without a requirement for a chair or other things to climb for added height;

[0011] FIG. 6 illustrates in a simplified and representative form, the primary components of this method or apparatus and their interconnections;

[0012] FIG. 7 illustrates an exemplary and simplified flow chart for a method embodiment that automatically scores, measures and/or tracks player performance for multiple games according to various embodiments;

[0013] FIG. 8 illustrates an exemplary flow chart for a method embodiment that automatically scores, measures and/or tracks player performance for multiple games according to various embodiments;

[0014] FIG. 9 illustrates in a simplified and representative form, a block diagram of an apparatus that automatically scores, measures and/or tracks player performance for multiple games according to various embodiments;

[0015] FIG. 10 illustrates in a representative form, a block diagram of an apparatus that automatically scores, measures and/or tracks player performance for multiple games according to various embodiments;

[0016] FIG. 11 depicts a simplified physical embodiment suitable for practicing one or methods of automated scoring and performance measurement attaching to a basketball rim in accordance with various exemplary embodiments;

[0017] FIG. 12 depicts a simplified physical embodiment suitable for practicing one or methods of automated scoring and performance measurement attaching to a basketball rim and attaching the sensing component to the basketball net in accordance with various exemplary embodiments;

[0018] FIG. 13. illustrates an exemplary embodiment of a successful “made” shot sensing unit while stationary and while being activated with a successful “made” shot;

[0019] FIG. 14 depicts a simplified physical embodiment suitable for practicing one or methods of automated scoring and performance measurement attaching to a basketball rim with an alternative net attachment in accordance with various exemplary embodiments;

[0020] FIG. 15 illustrates an exemplary embodiment scoring/measurement/communicating/indicating unit with alternative sensor components and mountings more appropriate for thrown or kicked balls;

[0021] FIG. 16 illustrates the embodiment of FIG. 15 being activated with a successful “made” strike of the “make” sensor;

[0022] FIG. 17 illustrates the embodiment of FIG. 15 being activated with an unsuccessful “attempt/miss” strike of the “attempt/miss” sensor;

[0023] FIG. 18 depicts the algorithm and a listing of pseudo-code that may be utilized for measuring performance and entertaining the player(s) for tracking and indicating the performance of successful and unsuccessful attempts;

[0024] FIG. 19 depicts the algorithm and a listing of pseudo-code that may be utilized for configuring and automatically scoring a basketball shooting game, commonly known as HORSE, for a selectable number of players, and for entertaining those players;

[0025] FIG. 20 depicts the algorithm and a listing of pseudo-code that may be utilized for configuring and automatically scoring a competitive basketball game between two (or more) players, commonly known as one-on-one, (or team-on-team) but played with a timer such that a player/team is awarded points based upon their scoring, and, alternatively, how rapidly they score, termed timed-head-to-head game;

[0026] FIG. 21 illustrates exemplary embodiments and components for tailoring the multimedia response(s) to players utilizing the scoring/measurement/communicating/indicating unit, including configuration of content for play in that unit as well as play on a remote multimedia device(s);

[0027] FIG. 22 illustrates exemplary embodiments and components for tracking the multiple dimensions of time playing, scoring, and/or performance quantification of the player(s) across time, at one or more playing station(s), and/or within a game, practice and/or tournament, consolidating the scoring and/or performance measurement across these dimensions;

[0028] FIG. 23 demonstrates one embodiment of the scoring/measurement/communicating/indicating unit, appropriate for basketball play, that can be safely and easily mounted to a basketball rim and net;

[0029] FIG. 24 demonstrates one embodiment of the scoring/measurement/communicating/indicating unit, appropriate for basketball play, and according to FIG. 24 that is safely and easily attached to a basketball rim and net; and

[0030] FIG. 25 demonstrates a zoom-in of the details of one embodiment of the scoring/measurement/communicating/indicating unit, appropriate for basketball play, and safely and easily attached to a basketball rim and net.

DETAILED DESCRIPTION

[0031] This invention relates in general to player interactive and automated: sports scoring, performance measurement, and player entertainment apparatus and methods, and more specifically to automated basketball scoring, performance measurement, multiple game play and audio entertainment both directly and via remote control.

[0032] Sports and game playing and training are popular pastimes for many people. Most sports and games playing and training focus on scoring and/or performance measurement/enhancement. For many games and practice sessions the players must manually keep the score or measure their performance (or the performance of others). Keeping score and/or quantifying their performance helps motivate players and enhance their skill development. This score keeping and performance quantification is usually realized manually, possibly on paper, but usually “in their heads.” Manually keeping score and/or measuring performance while playing/training/coaching can lead to: inaccurate score and measurements; reductions in concentration on their play/training due to players concentrating on score/measures rather than play/training; player discomfort with their score or performance; discomfort with the person/device that is scoring and/or measuring performance; interference with their thoughts/actions; a lack of concentration in their play/performance; arguing with other players; as well as many other degradations in play/performance. Automated scoring and performance mea-

surement is needed and desired to enhance the player(s) play/training/performance/entertainment.

[0033] Scoring aids, counters, electronic scoreboards, wireless displays, manual “click” counters, timed and wireless pitching machines, and many other automated scoring and performance measurement devices exist to assist players in keeping score and measuring performance. The limitations of some of these devices is that they do not sufficiently solve the automated scoring and/or performance measurement problem. Some devices only sense the score of one particular game and do not work for a range of games or a range of performance measurement. For both experienced players and new players, games and/or training can get boring or unproductive unless a diversity of games and/or training are practiced. Therefore, multiple play/training modes are highly desirable as well for purposes of diversity. Players desire scoring/measurement devices that offer multiple play/training alternatives/options.

[0034] Another problem with existing devices is that they either focus on scoring for a game between two teams or on the individual performance of a single player. It is desirable for a single device to provide automated scoring, performance measurement/reporting, and interaction with local and/or remote multimedia devices for both individuals as well as multiple individual players, as well as teams that range in size from 1 up to 5. It is desirable to provide interaction and entertainment to individuals as well as teams so that the same device can be used regardless of the number of players that are currently available to play; the device will always support play/practice regardless of the number of players available.

[0035] Many players/trainers desire to be entertained while they play or practice. The primary form of desired entertainment is music; some other audio is listened to by players. Unfortunately, the music is not related to the play or performance of the player(s) or the score of a game. Interactive entertainment is a desirable feature of an automated scoring and/or performance measuring device.

[0036] Other scoring and/or training aids are bulky, difficult to install/utilize, interfere with the game/practice, require inconvenient maintenance, require constant transport, are not robust to play/training, and/or are expensive to the player to purchase and/or maintain. Other score/performance measuring devices require players to wear or have devices attached to them. Most players do not want to wear devices or have devices attached to them, regardless of size. Other devices have the potential for danger and could lead directly or indirectly to injury and are not considered safe under all conditions. Potentially unsafe scoring/measurement devices are undesirable. Players desire easy-to-use, easy-to-configure/emplace, easy-to-maintain, non-interfering, as-small-as-possible, low cost, safe scoring/training devices.

[0037] Other performance devices do not add significant play, performance and/or training value. Players desire scoring and/or performance measurement/enhancement devices that entertain with interactions that extend beyond the game/training, but are interactive with the game/training. Playing music while training is a common practice with players. It is desirable to have the music and other audio interact with the player's performance or scoring while they are playing. Other remote entertainment or recording devices can interact with the player's performance via remote control of the scoring/measuring device. Remote control of remote entertainment, recording or other external devices is desirable.

[0038] Another problem with existing scoring devices is that they cannot be scaled from individual play to automatically tracking the performance across an entire gym, set of gyms, or a playground. Coaches and tournament operators desire automated scoring and performance measurement that can be automatically logged across many players and multiple, simultaneous play areas (courts in basketball). Local logging and/or wired or wireless communications can enable local automated scoring devices to be utilized throughout multiple play areas and across many players and/or teams.

[0039] Clearly existing approaches for providing automated scoring, performance measurement/reporting and/or player interaction and entertainment do not provide satisfactory solutions to the above noted, among many other, problems and/or player desires.

[0040] In overview, the present disclosure concerns automated scoring, performance and entertainment apparatus and methods and more particularly automated scoring for multiple games, such as multiple basketball games and baseball, soccer, football, as well as other games with projectiles or other objects-of-interest. Generally players are automatically scored, their performance is measured and presented to them, and they are interactively entertained. Additionally, multiple games, of the same sport or different sports, can be played with this single method and apparatus. These automated scoring, performance measurement/presentation, and entertainment concepts and principles are disclosed, subsequently discussed, and are currently practiced.

[0041] For example, when the player(s) play(s) a particular sport, such as basketball, they may desire to play a variety of games in that sport. They may further desire to track their score, shooting performance, passing proficiency and/or timing. Players may wish to play alone, in a side-by-side competition with one or more other players, in one-on-one direct competition, in a "round robin" or one-on-many, or in team play (either competitively or to practice or enhance performance). The single scoring, performance measurement/tracking method and apparatus should be flexible and adaptable so as to support a diversity of games as well as diversity in number of players.

[0042] Referring to FIG. 1, a simplified and representative diagram depicting automated scoring, performance measurement and entertainment for two players playing basketball with a backboard in the background. FIG. 1 shows one situation, e.g., a basketball where players desire automated scoring as well as external and/or interactive entertainment. Players **101** are competing in a game of basketball. In the background the basketball backboard **102** has the current scores of the two players (or their respective teams) posted on it. The problem is to create the functionality that automatically detects and tracks the scoring, and presents it to the players or other observers (friends, coaches, parents, etc.) in a safe, easy-to-use, acceptable cost, highly robust, highly reliable, and highly entertaining set of methods and apparatus.

[0043] Referring to FIG. 1, a simplified and representative diagram depicting a method and apparatus **100** for automatically scoring and/or quantifying performance of play and then indicating that score and/or performance to the players **101**, as well as entertaining them with performance-responsive, interactive multimedia **107, 109, 110**. Players desire to be aware of the score and/or the quantification of their performance. The method and apparatus **100** for automatically scoring and/or quantifying performance of play can be

attached to any component of the basketball system: the rim **103**, the net **104**, or the rim bracket **105** are options. The method and apparatus **100** for automatically scoring and/or quantifying performance of play requires access to the net **104** when the ball **106** passes through the net **104**, and FIG. 1 depicts a ball passing-through-net sensor **108** that is a dual lever.

[0044] Referring to FIG. 2, a simplified and representative diagram depicting automated scoring, performance measurement and entertainment for the player(s) playing basketball. The player **200** shoots the ball **201** attempting to successfully make a basket/score by causing the ball **201** to pass down through the rim **202** and the net **203**. The rim **202** and the net **203** are attached to a support and backboard **204** which support the rim and net. In FIG. 2 the automated scoring, performance measurement and entertainment device **205-206** is attached to any combination of the pole/backboard/rim/net. A performance feature of this device **205-206** is indicated by the audio **207** announcing the player(s) score/performance/entertainment. The interactive multimedia can be provided from a combination of the device itself **205** or auxiliary/remote devices as represented by the stereo **209** and the score/performance display **208**. These remote multimedia devices can include many other devices as well and can interact with other automated scoring, performance measurement and entertainment devices to consolidate performance/scores and/or score a game that spans a large area such as a basketball court or gym.

[0045] Referring to FIG. 3, a simplified and representative diagram depicting the variety of games and game modes that can be incorporated within an automated scoring, performance measurement and entertainment apparatus. FIG. 3 shows examples providing multiple games and game modes, with the first example, backboard **300** featuring player-on-player scoring. The player-on-player scoring game automatically tracks a score **302** for Player **1 303** and a score **301** for Player **2 304**. This player-on-player automated scoring game example also features audio from speakers **305** that represent audio sources or other forms of audio-visual entertainment that can interact with the players' scoring and/or performance. FIG. 3 shows another example of an automated shooting percentage game on backboard **310**. The automated shooting percentage game tracks successful or "made" shots **312-313** as well as shot attempts **311** and **314**. The combination of shot attempts and shots "made" also provides that the number of missed shots can be calculated and presented to the user as an option. This shooting percentage automated scoring game example also displays speakers **315** to represent audio sources or other forms of audio-visual entertainment that can interact with the players' scoring and/or performance. FIG. 3 further shows an example of a third game on backboard **320**, a competitive shooting game commonly and popularly termed "HORSE". In the game of HORSE a player shoots; if they make their shot, then the next player must attempt that same shot from the same location. If that player misses, then they are given a letter in the word HORSE. If they make the shot, then the next player must also make that shot. There exist many variations to this popular game with varying rules, but the "follow-my-successful shot" concept is the essence of the game. The automated HORSE scoring game automatically tracks the scores **321-322** for up to five players in this example, including Player **1 323** and Player **2 324**. This HORSE automated scoring game example also displays a

speaker 325 to represent audio sources or other forms of audio-visual entertainment that can interact with the players' scoring and/or performance.

[0046] Referring to FIG. 4, another simplified and representative diagram showing another example of an automated scoring game on backboard 400 with two scores 401-402. Again speakers 403 represent the audio-visual interactions. FIG. 4 further represents the incorporation of remote control of remote devices 405 that interact and/or respond to the automatically generated score and/or performance to provide audio-visual entertainment 406 to the player(s) or remote scoring or performance logging.

[0047] Referring to FIG. 5, a simplified and representative diagram depicting an option for a player 500 to deploy and recover the automated scoring, performance measurement and entertainment device 502. This method of device deployment/recovery eliminates the requirements for a ladder or other methods to vertically emplace the device. FIG. 5 shows one situation, e.g., a basketball player 500 without a ladder desiring automated scoring/measurement/entertainment as well as external and/or interactive entertainment. Player 500 holds a shaft/pole/support 501 that has the device 502 attached to the other end. The player then lifts the device to attach its components to any combination of the net 503, rim 504, and/or backboard 505. For recovery of the device 502 the player 500 raises their pole 501 to attach to the components of the device and safely lower them for recovery.

[0048] Referring to FIG. 6, a circular flow chart of a method of automatically scoring, measuring performance and/or entertaining during play will be discussed and described. The method of FIG. 6 and similar methods can be practiced using the apparatus of FIG. 1 as well as other apparatus similarly configured and arranged. The method begins at the player(s) 600 who receives indications 608 related to their play performance and direct their primary object-of-play, a ball 601, in this example. The ball 601 is sensed by the sensors and/or switches 602 to provide inputs 605 that can be used in computations and operations 606 by the processor 603. The processor 603 further generates indicator signals 607 and sends them to transducers 604 for transduction into a form of energy that indicates 608 score/performance/entertainment to the player(s) 600 or remote devices 608.

[0049] Referring to FIG. 7, a linear flow chart of a method of automatically scoring, measuring performance and/or entertaining during play will be discussed and described. The method of FIG. 7 and similar methods can be practiced using the apparatus of FIG. 1 as well as other apparatus similarly configured and arranged. The method begins at START 700 which representatively corresponds to the beginning of a game. The first component of the flow is to SENSE 701 a player action of either attempting to score or actually scoring; or a success in another way, such as jumping up and sufficiently slapping the apparatus. Next, the sensed output is processed by a COMPUTE component 702 that transforms the sensed inputs into the score, performance measurement and/or remote control signals controls. Then the computed outputs are transformed by a GENERATE component 703 into signals and/or controls that can be transduced with the intent of direct and/or indirect interaction with the player. These signals/controls are transduced by the INDICATE component 704 into observable phenomenon that either directly or indirectly lead to player interaction. Finally, this method ENDS 705.

[0050] Referring to FIG. 8, a branching or decision flow chart of a method of automatically scoring, measuring performance and/or entertaining during play will be discussed and described. The method of FIG. 8 and similar methods can be practiced using the apparatus of FIG. 1 as well as other apparatus similarly configured and arranged. The method starts 800 and is waiting to be initiated by a Sensed Event 801 which causes the method to Wake up 802 and initiate the Game Selection and Configuration 803 component. The player selects and configures the desired game that they want automatically scored/measured/entertained. The Start Selected Game component 804 allocates, configures, resets and initiates memory and points the processor at the correct game algorithm to execute. When the game is started then the method might provide indications to the user for directions, timing and/or player selection, as well as indications of the players' score, performance and/or interactive entertainment. Then this automated scoring/measuring/entertaining method waits for a Sensed Event 805. The sensed event is received by the processor and utilized by the Is this a Make/Success? component 806. This decision process results in a Yes or No and either an Update for Make 807 or an Update for Miss/Attempt 808 is executed. The Update components are respectively followed by Generate Observables 809-810 components that create the signals and/or controls that are transduced by the Choose Transducer component 811 that selects the appropriate interactive devices to deliver a indication to the player through the various representative indicator mechanisms featured in FIG. 8 as: Update Visual Display 812, Transmit Remote Control Signals 813, Amplify; Transmit Speaker 814, that is additionally controlled by the Volume Control component 815.

[0051] Referring to FIG. 9, a simplified and representative component block diagram of an apparatus for automatically scoring/measuring/entertaining players in a game according to various embodiments will be discussed and described. The FIG. 9 depicts one embodiment of an apparatus that provides or enables automatic game scoring/measuring/entertainment. The apparatus of FIG. 9 is arranged and constructed for automatically scoring/measuring/entertaining player(s) in a game. Generally, the apparatus includes an input section 900-902 that is configured to sense the important status of a game-object-of-interest, such as a basketball going through the net or hitting the rim and missing; a computing and generating section realized as a controller/processor 903-904 configured to score/measure/specify entertainment and generate appropriate signals for indication/transduction for player observation; and an indicating section 905-909 that transduce the generated player observable signals/controls for player or remote system consumption. Any or all of the indicating components may be selected or utilized by the controller/processor for various player interactions.

[0052] In the FIG. 10 embodiment of the apparatus for automatically delivering player scoring/measurement/entertainment, the sense section 1000-1002 consists of switches which provide the status and control of the game's object-of-interest. The Power switch 1000 can be used to reset the apparatus or the game; the Attempt/Miss switch 1001 senses the presence of the object-of-interest, e.g., the basketball, while the Make switch 1002 senses any successful attempts or makes. A processor or computing unit 1003 receives the sensed signals 1000-1002 and calculates updated score(s)/performance measure(s) and controls interactive/remote entertainment. The processor can utilize memory in the form

of ROM and RAM **1005** for both processing functions as well as storage of information/statuses. The updated information and controls are utilized to generate indicators for consumption by the player(s). The generated indications are transduced by a variety of transduction devices **1006-1011** to inform and entertain the player(s) as well as users associated with the players, e.g., parents and/or coaches. The control signals can be further generated to operate and control remote devices such as the stereo **1012**.

[0053] Referring to FIG. **11**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments will be described. FIG. **11** displays a particularly detailed embodiment. The sensing, computing, generating and indicating components are efficiently realized in this embodiment that is particularly suited for the game of basketball. Some of these components are not visible externally, but FIG. **11** also depicts an internal view of this particular embodiment **1110**. The sensor components **1113-1114**; the computation and generation component **1112**; and the indicator components **1103-1105** and **1108** are all represented. These components are intercoupled as shown and may be either wholly and/or individually integrated with, for example a communications device or stand alone apparatus or component. They are collectively arranged to provide an automated scoring/performance measuring/entertainment capability or the like.

[0054] Referring to FIG. **11**, one embodiment of the scoring/performance measuring/entertaining apparatus is depicted. The externals of this embodiment **1100** comprise the assembly case **1101** with magnets or hook/loop material **1102** attached to the top of this case; the speaker **1103** for transducing sounds; the visual display **1104** for presenting information visually; a wireless or wired communications link **1105** for remote control functions; a connection to the “Make” sensor/switch **1106** and the “Make” sensor/switch assembly **1107**. The remote audio-visual device **1108** provides further entertainment and is remotely controlled by the scoring/performance measuring/entertaining apparatus.

[0055] Referring further to FIG. **11**, the internal components of one embodiment of the scoring/performance measuring/entertaining apparatus is depicted. The internal components of this embodiment **1110** comprise the power source **1111**; the processor unit and associated electronics **1112**; the “Attempt” sensor/switch **1113**; and the “Make” switch **1114** within the “Make” sensors/switch assembly. The remote audio-visual device **1108** provides further entertainment and is remotely controlled by the automated scoring/performance measuring/entertaining apparatus.

[0056] Referring to FIG. **12**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments will be described. FIG. **12** displays a particularly detailed embodiment for the game of basketball. A basketball rim and bracket **1200**, the automated scoring/performance measuring/entertaining apparatus **1201**, a net-supported “Make” sensor/switch **1202** that will be placed within the basketball net **1203** are intercoupled as shown and may be either wholly and/or individually integrated with, for example communications devices, audio-visual devices, or stand alone apparatus or component. They are collectively arranged to provide a basketball automated scoring/performance measuring/entertaining apparatus to thereby facilitate player utility or entertain-

ment or the like. As depicted in **1210** the “Make” sensor/switch **1211** is placed within the basketball net **1212** and supported.

[0057] Referring to FIG. **13**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments for sensing successful attempts will be described. FIG. **13** displays a particular embodiment for sensing an object-of-interest, e.g., a basketball, as it passes by the goal. This particular embodiment has the additional feature that it should not activate despite vertical motion of the entire assembly.

[0058] The “Make” sensor/switch assembly comprises a lever switch **1300** and torque transfer arms **1301**. This assembly is intended to be hung or supported at a point close to the lever switch **1300**. If no object-of-interest is passing through the goal, then the switch does not activate. Additionally, if the entire assembly is accelerated vertically, the switch should not activate. However, when the object-of-interest, e.g., a basketball, **1312** passes through the goal, the torque transfer arms **1311** are accelerated downward. Assuming that the assembly is supported near the lever switch **1310**, then the lever switch will be rotationally accelerated in a clockwise direction. If the arm of the lever switch is weighted **1314**, then the rotational acceleration of the switch **1310** and the inertia of the weight **1314** will cause the switch to activate, indicating a success, goal, score and/or “Make.”

[0059] Referring to FIG. **14**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments will be described. FIG. **14** displays an alternative embodiment for the “Make” sensor/switch **1400-1401**. The “Make” sensor/switch **1400** is displayed hanging from the housing assembly while the “Make” sensor/switch **1401** is displayed hanging from the net. This is a clip attachment to the net as an alternative to the hang attachment described in FIG. **12**. This embodiment may be preferred for ease of emplacement or for enhanced safety.

[0060] Referring to FIG. **15**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments for sensing successful and unsuccessful attempts will be described. FIG. **15** displays a particular embodiment for sensing an object-of-interest, e.g., a baseball, as it impacts a location on the goal. The sensor/switch assembly **1500** comprises a lever switch **1501**, an accelerometer-like switch **1502**, a paddle impact target **1503**, and an “Attempt” sensor/switch assembly **1504**. This apparatus can further be utilized in basketball for jumping practice where the player must slap the paddle for a success or as a target for passing/scoring in football, basketball, soccer or similar object-of-interest centered games.

[0061] Referring to FIG. **16**, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments for sensing successful and unsuccessful attempts will be described. FIG. **16** displays a particular embodiment for sensing an object-of-interest, e.g., a baseball, **1601** as it impacts a location on the goal. The sensor/switch assembly **1600** comprises a lever switch **1603** and a paddle impact target **1602**. This apparatus senses/activates/switches when the ball **1601** impacts the paddle target **1602** and activates the lever switch **1603**. Note that the accelerometer-like switch may or may not have activated during this successful event.

[0062] Referring to FIG. **17**, a simplified physical embodiment suitable for practicing one or more methods in accor-

dance with various exemplary embodiments for sensing “Attempts” will be described. FIG. 17 displays a particular embodiment for sensing an object-of-interest, e.g., a baseball, 1701 misses the paddle target goal and impacts the unsuccessful portion of the goal assembly 1702. Due to the vibration of the unsuccessful portion of the goal, the accelerometer-like sensor/switch 1703 activates to indicate an “Attempt.”

[0063] Referring to FIG. 18, a listing of Pseudo-code that may be utilized by the FIG. 12 embodiment to implement the method of FIG. 7 is shown. The Pseudo-code listing is self explanatory to those of ordinary skill. This particular Pseudo-code implements the game of sensing and indicating the number of attempts, successes, misses, and/or percentage success or miss. This code can be utilized automated scoring/performance measurement/entertainment for a wide variety of games.

[0064] Referring to FIG. 19, a listing of Pseudo-code that may be utilized by the FIG. 12 embodiment to implement the method of FIG. 7 is shown. The Pseudo-code listing is self explanatory to those of ordinary skill. This particular Pseudo-code implements the game of basketball HORSE; however, it is generally just a “follow-the-successful-attempt-or-get-a-letter game” and can be utilized by players of many sports. This code can be utilized automated scoring/performance measurement/entertainment for a wide variety of games.

[0065] Referring to FIG. 20, a listing of Pseudo-code that may be utilized by the FIG. 12 embodiment to implement the method of FIG. 7 is shown. The Pseudo-code listing is self explanatory to those of ordinary skill. This particular Pseudo-code implements the game of basketball Timed-Head-to-Head Scoring; however, it is generally just a “each player gets a chance to score/succeed, but more points are awarded for faster scores/successes game” and can be utilized by players of many sports. This code can be utilized automated scoring/performance measurement/entertainment for a wide variety of games.

[0066] Referring to FIG. 21, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments for remote monitoring 2100 of the automated scoring/performance measurement/entertainment device(s) 2101. Parents, coaches or other observers may utilize remote resources 2102-2107 to collect, monitor, document and consolidate the performance or entertainment/motivation level of players. The automated scoring/performance measurement/entertainment device(s) 2101 can transmit the scoring/performance information or the device's me can be accessed manually or remotely with other devices such as a mobile memory unit 2105. This collected and/or consolidated information can be utilized for enhancing performance, motivation, coaching and other sports-related enhancements.

[0067] Referring to FIG. 22, a simplified physical embodiment suitable for practicing one or more methods in accordance with various exemplary embodiments for remote monitoring 2200 of the multiple automated scoring/performance measurement/entertainment devices 2201-2203. Scorers, announcers, parents, coaches or other observers may utilize remote resources 2210 to collect, monitor, document and consolidate the performance or entertainment/motivation level of multiple teams and/or players. The automated scoring/performance measurement/entertainment devices represented by 2201-2203 can transmit the scoring/performance information or the device's me can be accessed manually or

remotely with other devices 2210. This collected and/or consolidated information can be utilized for enhancing scoring, announcing, performance, motivation, coaching and other sports-reporting or sports-related enhancements.

[0068] FIG. 23 illustrates an exemplary embodiment of an automated scoring/performance measurement/entertainment unit 2300. The “Make” sensor/switch assembly 2301 comprises a lever switch 2302 with a weight 2303 on the end of the lever and two torque transfer arms 2304 which are struck by the object-of-interest when a successful attempt is achieved. A wire 2305 connects the “Make” sensor/switch to the computational unit or processor circuitry 2306. The computational unit or processor further generates audio-visual and/or remote control indicators for the player(s). The first indicator in this embodiment is a speaker 2307 that plays audio that is generated by the processor. The second indicator in this embodiment is the remote controller 2308 that transmits infrared remote control codes that are generated by the processor. These remote control signals can operate and/or activate remote audio-visual or other entertainment/interaction devices. Additionally, the remote signals can be collected, logged, cataloged, consolidated and utilized by a parent, coach, the player(s) or others to monitor and enhance their play.

[0069] FIG. 24 illustrates an exemplary embodiment of a deployed automated scoring/performance measurement/entertainment unit 2400. This unit of FIG. 24 is deployed for basketball play. The unit 2400 easily and safely mounts on a combination of the basketball rim and net. The computational unit or processor component 2401 and the remote control transmitter component 2402 are attached to the rim via magnet(s) and/or hook/loop materials. The “Make” sensor/switch assembly 2403 is securely and safely attached to the net with the torque transfer arms extending into the middle of net so that the ball passing through the net must contact at least one of them. Due to an interrupt driven processor, this unit can be emplaced and remain operational for extended periods of time.

[0070] FIG. 25 illustrates an exemplary embodiment and detailed view of a deployed automated scoring/performance measurement/entertainment unit 2500. This unit of FIG. 25 is deployed for basketball play. The unit 2500 easily and safely mounts on a combination of the basketball rim and net. This unit can be very small and lightweight, with the majority of its weight derived from its energy source, e.g., batteries. Even if the processor/speaker/remote control component 2502 disengages from the rim 2501, this assembly will be supported by the “Make” sensor/switch assembly that is securely attached to the net and connected together with a sufficiently strong wire. This design assures safety along with functionality and performance.

[0071] From above, various methods and apparatus for automatically assessing or measuring and indicating scoring and performance have been shown. These include a method of automatically measuring and indicating scoring or performance to a player or set of players, where the method includes sensing a success, attempt or failure; computing the score or performance; generating indication(s) of score or performance for the player(s) or remote observer(s); and indicating the score or performance to the player(s) or other observers. The automatically measuring and indicating scoring or performance can comprise players corresponding to sport or game participation. The player may interactively control remote entertainment devices producing any form of media

entertainment for the player, including audio, video, displays, and other media that the player may find entertaining.

[0072] Sensing a success, attempt or failure corresponding to sport or game participation can further comprise sensing the path or impact of a ball, puck, projectile, hand or other object-of-play. Sensing the path or impact of the object-of-play can further comprise determining whether ball, puck or other object-of-play succeeded, or that an attempt was made to succeed, in its scoring or performance action corresponding to a sport or game. Various examples of sports or game participation can comprise the sport or game participation in basketball, football, baseball, golf, hockey, cricket, volleyball, running or other moving-object-focused activity and the like. Variations of the sport or game participation can comprises, e.g., multiple basketball game types, such as shooting percentage, 1-on-1, 2-on-2, team-on-team, and/or HORSE-shooting games.

[0073] The computing the score or performance can comprise processing the sensing of success, attempt or failure measures to produce a score or performance for presentation to the player(s). The score or performance for presentation to the player(s) can be produced by apparatus or methods comprising or using a processor, memory and information transfer components. In varying embodiments the score or performance for presentation to the player(s) that is produced indicates a single player's success quantification or indicates scores or performances of multiple players for competition.

[0074] The generating indication(s) of score or performance for the player(s) or remote observers can comprise transforming the computed score or performance into sounds, speech, visual displays, infrared or radio frequency remote control signals, radio signals, or sound waves for direct or indirect indication(s) of score or performance to the player(s). The transformed representation of the score or performance can generate indication(s) of score or performance, which further comprises generation by synthesizing speech or playing words or phrases representing the score or performance to the player(s) or remote observer(s). The transformed representation of the score or performance can generate the indication(s) of score or performance, which comprise generation of remote control signals or other transmissions to operate external generating methods for presentation to the player(s) or remote observer(s). The indicating the score or performance to the player(s) or remote observer(s) can further comprise transforming generated indicator(s) into player observable phenomenon such as audio or visual displays that the player(s)/observer(s) can sense to assess the computed score or performance or provide entertainment. The player or remote observer indicating phenomenon can include at least one or more of the energy propagation methods including sounds, speech, visual displays, infrared or radio frequency remote control signals, radio signals, or sound waves for direct or indirect indication(s) of score or performance or entertainment to the player(s) or remote observer(s).

[0075] The indicating the game/mode, score and/or performance to the remote observer(s) can further comprise transforming generated indicator(s) into a signal or representation suitable for remote observers to collect, compile, process and/or report. The transforming of generated indicator(s) can include one or more of the following signals or representations suitable for remote observer utilization; storing the game/mode, score and/or performance to a memory for

remote observer utilization and/or communicating the game/mode, score and/or performance with wired or wireless communications methods.

[0076] Other embodiments include a method of automatically measuring and indicating basketball scoring or performance to basketball player(s), where the method comprises: sensing a successful, "made," shot and any shot "attempt;" computing the player/team score(s) or shooting performance; generating indication(s) of player/team score(s) or shooting performance for the player(s) or remote observer(s); and indicating the score(s) or performance to the player(s) or other observers. The indicating the score(s) or performance can further comprise remote control of external devices such as multimedia devices for visual and/or audio display and/or entertainment.

[0077] Further embodiments include an apparatus that is arranged and constructed for automatically measuring and indicating scoring or performance to a player or set of players. The apparatus can comprise: a sensing section configured to provide sensor signals corresponding scoring, performance or apparatus configuration and option selection; a computing section configured to transform the sensor signals into score, performance, and/or apparatus configuration representations; a generating section configured to transform the score, performance, and/or configuration representations into a player or remote observable representation that corresponds to the computed score, performance or apparatus configuration; and a player indicating section configured to transduce the player observable representation into an energy form that can propagate to the player(s) and/or the remote observer(s). The sensing section can be comprised of motion sensitive switches creating the sensor signals.

[0078] The apparatus can further comprise a computing section including a signal processor configured to process the sensed signals to facilitate: configuring the apparatus state and mode of operation by enabling the player to select a game or performance measuring mode of operation; calculating score or performance measures; and mapping the updated apparatus state/mode, score, performance, and/or apparatus configuration into the proper representations for the generating section.

[0079] The generating section can comprise a processor configured to process the updated apparatus state/mode of operation, score, performance, and/or apparatus configuration representation to facilitate: generating the appropriate player observable representation depending upon the state of the apparatus and the player selected game or performance mode; mapping score or performance measures to appropriate game or performance measure dependent responses; mapping the player observable representation of the updated state/mode of operation, score, performance, and/or apparatus configuration into the proper representation for the indicating section; and generating the player or remote observable representation signals that will be transduced into propagating energy by the indicating section of the apparatus.

[0080] The apparatus can include an indicating section, which may further comprise a set of transducers configured to facilitate transducing the player observable representation signals into energy that will eventually lead to energy propagating to the player(s) or remote observer that conveys the updated apparatus state/mode of operation, score, performance, and/or apparatus configuration to the player. The indicating section can further comprise transducers to facilitate: transducing the player observable representation directly for

the player(s) to observe; and transducing the player observable representation for indirect player observation via remote control of remote transducers. The indicating section with remote control functionality can comprise transducers to facilitate control of one or more remote transducers, e.g., portable audio player apparatus; visual displays; mechanical actuations and/or the like.

[0081] In one or more additional embodiments an apparatus is arranged and constructed for automatically measuring and indicating scoring or performance of basketball game(s) and/or performance measurement mode(s) to the player(s) and/or remote observer(s). The apparatus can comprise: a sensing section configured to provide sensor signals corresponding to attempted basketball shots, successful/made basketball shots, and/or failed/missed basketball shots apparatus configuration and option selection; a computing section configured to transform the attempt/made/missed sensor signals into basketball score, performance, and/or apparatus configuration representations into appropriate update calculations for each basketball game/mode selection update, game update or performance measure update; a generating section transforms the updated game/mode selection, basketball score, performance, and/or apparatus configuration representations into a player or remote observable representation that corresponds to the game/mode selection, computed score, performance or apparatus configuration suitable for indication to the player(s) and/or the remote observer(s); and a player or remote observer indicating section configured to transduce the player observable representation into an energy form that can propagate directly and/or indirectly to the player(s) and/or the remote observer(s).

[0082] The apparatus can further comprise basketball game(s) and/or performance measurement mode(s) comprising the alternative basketball game and/or performance measuring mode selections corresponding to: shooting percentage game and/or the numbers of attempted, made and missed shots; HORSE game, where multiple players score by making shots that the other player(s) cannot repeat; timed one-on-one (or one-on-multiple; or multiple-on-multiple) where each player attempts to score while being defended by the other player(s), and the scoring player receives more points for a faster score; timed shooting percentages from constrained locations on the court; and jumping training, where the player must trigger the make and/or miss indicators by jumping up and hitting/slapping them while being timed. The sensing section can comprise motion sensitive switches that sense the basketball striking or passing by the backboard, rim and/or net corresponding to the indications of an attempted, made or missed shot. The computing section can comprise a processor or controller that maps the indications of attempted, made or missed shots into corresponding basketball game selection update(s), basketball game score update(s) or basketball performance measure update(s) corresponding to currently selected mode of operation of the apparatus.

[0083] The generating section can comprise one or more processors or controllers that transforms the basketball game selection update(s), basketball game score update(s) or basketball performance measure update(s) into signals suitable for transduction corresponding to the indicating apparatus that are propagating energy directly or indirectly to the player(s) or remote observer(s). The processors or controllers can be generating signals suitable for transduction to facilitate: audio transduction from a speaker; visual transduction from a visual display; wired and/or wireless communications from

acoustic, optical or radio frequency transmitting transduction device(s); and/or remote control communications from acoustic, optical or radio frequency transmitting transduction device(s).

[0084] The indicating section can comprise one or more transduction devices indicating the game/mode selection, game, and/or performance measure updates either directly or indirectly to the player(s) and/or the remote observer(s) including: e.g., audio transducers or speakers; visual transducers, including lasers, projector and/or display(s); wired and/or wireless communications transducers for acoustic, optical or radio frequency transmitter transduction; and/or remote control communications transducers for acoustic, optical or radio frequency transmitter transduction.

[0085] Additional embodiments include an apparatus arranged and constructed for automatically measuring and indicating scoring or performance of baseball game(s) and/or performance measurement mode(s) to the player(s) and/or remote observer(s). The apparatus can comprise: a sensing section configured to provide sensor signals corresponding to pitched ball locations (strikes and balls) and/or bat hitting ball locations (region of bat impacting the ball) and game/mode selection/configuration; a computing section configured to transform the strike/ball or bat impact sensor signals into baseball score, performance, and/or apparatus configuration representations into appropriate update calculations for each baseball game/mode selection update, game update or performance measure update; a generating section transforms the updated game/mode selection, baseball score, performance, and/or apparatus configuration representations into a player or remote observable representation that corresponds to the game/mode selection, computed score, performance or apparatus configuration suitable for indication to the player(s) and/or the remote observer(s); and a player or remote observer indicating section configured to transduce the player observable representation into an energy form that can propagate directly and/or indirectly to the player(s) and/or the remote observer(s).

[0086] Other embodiments include an audio or visual or audio-visual device arranged and constructed for generating a player observable sound/sight that interacts with their play scoring and/or performance measurement and/or entertainment that comprises: a user interface configured to provide an interface between the player's scoring and/or performance and the audio/visual device(s); a controller coupled the user interface and configured to facilitate the interface with the user and general control of the audio/visual device; an audio/visual device, coupled to and/or controlled by the controller, the communication interface configured to send a signal corresponding to the player's scoring and/or performance; and an interactive audio/visual response corresponding to the player's score/performance.

What is claimed is:

1. A method of automatically measuring and indicating scoring or performance to a player or set of players, the method comprising:

- sensing a success, attempt or failure;
- computing the score or performance;
- generating indication(s) of score or performance for the player(s) or remote observer(s); and
- indicating the score or performance to the player(s) or other observers.

2. The method of claim 1 wherein the automatically measuring and indicating scoring or performance further comprises players corresponding to sport or game participation.

3. The method of claim 1 wherein the player interactively controls remote entertainment devices producing any form of media entertainment for the player, including audio, video, displays, and other media that the player may find entertaining.

4. The method of claim 2 wherein the sensing a success, attempt or failure corresponding to sport or game participation further comprises sensing the path or impact of a ball, puck, projectile, hand or other object-of-play.

5. The method of claim 4 wherein the sensing the path or impact of the object-of-play further comprises determining whether ball, puck or other object-of-play succeeded, or that an attempt was made to succeed, in its scoring or performance action corresponding to a sport or game.

6. The method of claim 4 wherein the sport or game participation further comprises the sport or game participation in basketball, football, baseball, golf, hockey, cricket, volleyball, running or other moving-object-focused activity.

7. The method of claim 4 wherein the sport or game participation further comprises multiple basketball game types, such as shooting percentage, 1-on-1, 2-on-2, team-on-team, and/or HORSE-shooting games.

8. The method of claim 1 wherein the computing the score or performance further comprises processing the sensing a success, attempt or failure measures to produce a score or performance for presentation to the player(s).

9. The method of claim 8 wherein the score or performance for presentation to the player(s) that is produced further comprises a processor, memory and information transfer components.

10. The method of claim 8 wherein the score or performance for presentation to the player(s) that is produced indicates a single player's success quantification or indicates scores or performances of multiple players for competition.

11. The method of claim 1 wherein the generating indication(s) of score or performance for the player(s) or remote observers further comprises transforming the computed score or performance into sounds, speech, visual displays, infrared or radio frequency remote control signals, radio signals, or sound waves for direct or indirect indication(s) of score or performance to the player(s).

12. The method of claim 11 wherein the transformed representation of the score or performance generate the indication(s) of score or performance further comprises generation of remote control signals or other transmissions to operate external generating methods for presentation to the player(s) or remote observer(s).

13. The method of claim 1 wherein the indicating the game/mode, score and/or performance to the remote observer(s) further comprises transforming generated indicator(s) into a signal or representation suitable for remote observers to collect, compile, process and/or report.

14. The method of claim 13 wherein the transforming of generated indicator(s) further comprises one or more of the following signals or representations suitable for remote observer utilization:

- storing the game/mode, score and/or performance to a memory for remote observer utilization; and/or
- communicating the game/mode, score and/or performance with wired or wireless communications methods.

15. An apparatus arranged and constructed for automatically measuring and indicating scoring or performance to a player or set of players, the apparatus comprising:

- a sensing section configured to provide sensor signals corresponding scoring, performance or apparatus configuration and option selection;
- a computing section configured to transform the sensor signals into score, performance, and/or apparatus configuration representations;
- a generating section configured to transform the score, performance, and/or configuration representations into a player or remote observable representation that corresponds to the computed score, performance or apparatus configuration; and
- a player indicating section configured to transduce the player observable representation into an energy form that can propagate to the player(s) and/or the remote observer(s).

16. The apparatus of claim 0 further comprising a computing section comprising a signal processor configured to process the sensed signals to facilitate:

- configuring the apparatus state and mode of operation by enabling the player to select a game or performance measuring mode of operation;
- calculating score or performance measures; and
- mapping the updated apparatus state/mode, score, performance, and/or apparatus configuration into the proper representations for the generating section.

17. The apparatus of claim 0 further comprising a generating section comprising a processor configured to process the updated apparatus state/mode of operation, score, performance, and/or apparatus configuration representation to facilitate:

- generating the appropriate player observable representation depending upon the state of the apparatus and the player selected game or performance mode;
- mapping score or performance measures to appropriate game or performance measure dependent responses;
- mapping the player observable representation of the updated state/mode of operation, score, performance, and/or apparatus configuration into the proper representation for the indicating section; and
- generating the player or remote observable representation signals that will be transduced into propagating energy by the indicating section of the apparatus.

18. The apparatus of claim 0 further comprising an indicating section further comprising a set of transducers configured to facilitate transducing the player observable representation signals into energy that will eventually lead to energy propagating to the player(s) or remote observer that conveys the updated apparatus state/mode of operation, score, performance, and/or apparatus configuration to the player.

19. An apparatus arranged and constructed for automatically measuring and indicating scoring or performance of basketball game(s) and/or performance measurement mode(s) to the player(s) and/or remote observer(s), the apparatus comprising:

- a sensing section configured to provide sensor signals corresponding to attempted basketball shots, successful/made basketball shots, and/or failed/missed basketball shots apparatus configuration and option selection;
- a computing section configured to transform the attempt/made/missed sensor signals into basketball score, performance, and/or apparatus configuration representa-

tions into appropriate update calculations for each basketball game/mode selection update, game update or performance measure update;

a generating section transforms the updated game/mode selection, basketball score, performance, and/or apparatus configuration representations into a player or remote observable representation that corresponds to the game/mode selection, computed score, performance or apparatus configuration suitable for indication to the player(s) and/or the remote observer(s); and

a player or remote observer indicating section configured to transduce the player observable representation into an energy form that can propagate directly and/or indirectly to the player(s) and/or the remote observer(s).

20. The apparatus of claim **19** further comprising basketball game(s) and/or performance measurement mode(s) com-

prising the alternative basketball game and/or performance measuring mode selections corresponding to:

shooting percentage game and/or the numbers of attempted, made and missed shots;

HORSE game, where multiple players score by making shots that the other player(s) cannot repeat;

timed one-on-one (or one-on-multiple; or multiple-on-multiple) where each player attempts to score while being defended by the other player(s), and the scoring player receives more points for a faster score;

timed shooting percentages from constrained locations on the court; and

jumping training, where the player must trigger the make and/or miss indicators by jumping up and hitting/slapping them while being timed.

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