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(54) **Apparatus and method for playing a rebound ball game**

(57) The invention provides game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom. The apparatus comprises at least one multi-sided game ball (210, 310) having partially spherical surface regions and a plurality of deflector formations or facets (14, 16) directed outwardly, for causing the game ball to rebound erratically from a target surface in use. The facets (14,

16) are contiguous with the partially spherical surface regions. The ball surface is marked with indicia (12), for example numbers. These may be used in mathematical games. A method of playing such a game is disclosed. This involves reading a numerical value off the top of a ball (10, 210, 310) after bouncing and catching it, and then performing a mathematical operation upon said numerical value to yield a running total.

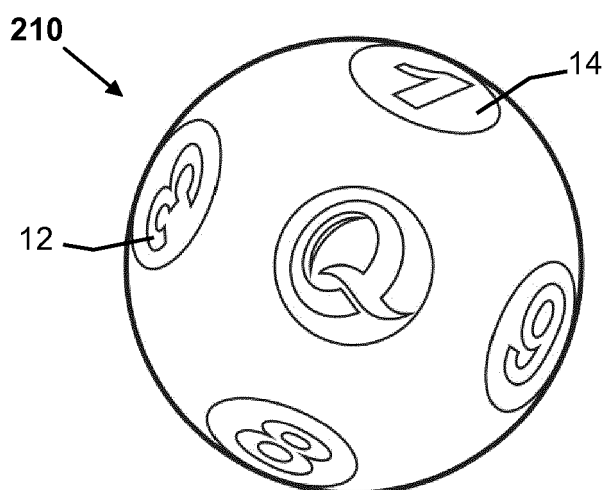


Fig. 2

Description

{Technical Field}

[0001] This invention relates generally to the field of ball games. It relates in particular to an apparatus and method for playing a rebound ball game.

{Background Art}

[0002] Balls are commonly used for purposes of sport and entertainment. One type of ball game involves a player bouncing and catching a ball. Some balls are designed to provide a predictable bounce while others have an erratic or unpredictable bounce.

[0003] An example of a ball-like play object having an unpredictable bounce is disclosed in WO1995001818, which teaches a play object suitable for sharpening one's catching skills in the game of cricket. This play object is made up of a polyhedron with a number of faces.

[0004] Another example is disclosed in US6443863, which describes a sports training ball designed to develop reaction skills. The ball defines seven semi-spherical knobs which deliver an erratic bounce. US Design Patent USD317805 discloses a similar object having six hemi-spherical knobs distributed over a part-spherical body portion.

[0005] EP2433687 discloses a playing object having a bounce with "limited unpredictability", said to increase the fun of games involving bouncing and catching of the object. The object has protrusions of different configurations, some of which may be detachable. According to the disclosure, a hard throw of this object has a less erratic bounce than a soft throw.

[0006] WO2004035148 discloses a non-circular, asymmetrical ball which can be hit or thrown against an angled wall such that unpredictable rebound behaviour occurs. According to the specification, "a ball or game is thus achieved which requires good reactions and is thus interesting for player and spectator."

[0007] US2011256967 discloses a "random direction bouncer" which can be made from a sphere, cube, tetrahedron, octahedron, etc. In one embodiment the bouncer comprises a solid sphere having a core removed therefrom to define a concentric hollow within the solid sphere, and cut-outs removed from the solid sphere to define openings which communicate with the concentric hollow. The bouncer is preferably manufactured from Indian rubber.

[0008] US6432008 discloses an octahedron body made of a resilient material and dimensioned to be kicked, rolled, or thrown. The octahedron body has eight equally sized, generally triangular shaped faces which are substantially flat-surfaced and which are evenly spaced about the exterior of the octahedron body. The faces each have indicia displayed thereon, which indicia are intended to be used in determining an event during a game of particular rules which bear on the random oc-

currence of each of the varying indicia. The octahedron body disclosed in this teaching is approximately the size of a football and there is no suggestion that it is intended to be bounced on the ground and caught repeatedly. The body is said to behave in a "flip flopping manner."

{Summary of Invention}

[0009] In order to increase their appeal to children and adults alike, there is a need for bouncing ball games which are more complex and challenging than those presently available in the art. Further, a need exists for a ball game which can provide a means to pursue the traditional benefits of recreation, entertainment, exercise, competition and sport while at the same time furthering the development of eye-hand coordination, speeding up cognitive reaction times, and addressing (at least in part) the deleterious effects of ageing.

[0010] According to a first aspect of the invention there is provided game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom; said apparatus comprising:

- at least one multi-sided game ball having a centre of gravity and rebound characteristics;
- said game ball defining a ball surface;
- said game ball comprising a plurality of partially spherical surface regions;
- said game ball comprising a plurality of deflectors directed outwardly from said centre of gravity, for causing the game ball to rebound erratically from a target surface in use, that is, to rebound in a manner providing variations in the game ball's rebound characteristics which are dependent upon the location on the ball's surface at which, in use, the game ball impacts said target surface;
- each deflector being delineated by a bounding perimeter; and
- at least one of said deflectors being contiguous, along the full length of its bounding perimeter, with at least one of said partially spherical surface regions;
- characterized in that said ball surface is marked with a plurality of indicia.

[0011] As used herein, the term "ball" is intended to be interpreted broadly and includes all resiliently deformable, ball-like playing objects of any configuration and/or structure, which are adapted to bounce. The term covers balls that have both regular and irregular topographies. While the balls described in this specification have generally spherical configurations, the term "ball" as used herein is not limited to balls having this type of configuration.

[0012] As used herein, the term "deflector" means a deflector formation.

[0013] The deflectors may be dimensioned so that the

surface area of each deflector as a percentage of the total surface area of the game ball (hereinafter the "percentage surface area") falls in a range from 1% to 12% inclusive.

[0014] Typically the indicia are selected from the group consisting of numbers, letters, symbols and pips. The indicia are preferably adapted to denote integers selected from the range consisting of the numbers 1 to 10 inclusive, with a non-numeric symbol representing one of said integers. In other words, the indicia may include a special non-numeric symbol (for example the letter "Q") whose purpose is to denote a numerical value, e.g. "10". The indicia may be marked exclusively on the deflectors. The indicia may be embossed on the deflectors, or indented into the deflectors.

[0015] The deflectors preferably have configurations selected from the group consisting of facets and protrusions. The deflectors may each define a geometric shape. The deflectors may each define a circular shape. The deflectors may each define a planar surface or face.

[0016] The number of deflectors may range from five to 26, but is preferably ten since this number is the minimum which allows the full range of integers 0 to 9 (or 1 to 10) of the decimal system to be represented. This allows a wide array of arithmetic or mathematical games to be played using the game ball.

[0017] The game ball may have properties adapted to provide a vertical height of rebound of the ball, when it is dropped onto a level, hard, target surface, which falls in a range from 50% to 80% inclusive, said height being expressed as a percentage of the height from which said ball is dropped. (For purposes of this specification, a hard surface is one which presents high resistance to localized deformation, of the order of that presented by concrete and ceramics.)

[0018] The game apparatus may comprise a set of at least two of said game balls. The game balls may each have deflectors and bounce characteristics which differ from one ball to the next, so that, in use, a first type of said game balls (hereinafter referred to as an "advanced ball") bounces more erratically than a second type of said game balls (hereinafter referred to as an "intermediate ball").

[0019] Distortions from the spherical may be present on the ball surfaces of the intermediate and advanced game balls, and the distortions of the advanced ball may be greater in magnitude than the distortions of the intermediate ball.

[0020] The game apparatus may further include at least one regular ball having a generally spherical configuration. Preferably this ball is resiliently deformable and marked with indicia of the type described above.

[0021] The, or each, ball may be constructed from at least one material selected from the group consisting of: synthetic polymers; elastomers such as natural and synthetic rubbers; resins; foams; and plastics materials. An example of a suitable synthetic polymer is polybutadiene.

[0022] The, or each, ball may have a multi-layered or

multi-piece construction.

[0023] The, or each, ball may have a predominant colour. Additionally, the indicia on each ball may have a predominant colour pre-selected so that it contrasts with the predominant colour of the ball concerned.

[0024] In those embodiments where the apparatus comprises a plurality of balls, the predominant colours of the balls may differ from one ball to the next.

[0025] The target surface against on which the balls are bounced may be delineated from areas which surround it (on the ground, wall, etc.). Preferably the target surface has a maximum linear dimension falling in a range from 0.2 to 0.8 metres inclusive, preferably approximately 0.5 metres.

[0026] According to a further aspect of the invention there is provided a game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom; said apparatus comprising:

at least one multi-sided game ball having a centre of gravity and rebound characteristics;

said game ball defining a ball surface;

said ball surface comprising a partially spherical surface region;

said ball surface comprising a plurality of deflectors directed inwardly from the partially spherical surface region, and spaced about the partially spherical surface region, for causing the game ball to rebound erratically from a target surface in use, that is, to rebound in a manner providing variations in the game ball's rebound characteristics which are dependent upon the location on the ball's surface at which, in use, the game ball impacts said target surface.

[0027] The deflectors preferably have a surface parallel to a tangent of the partially spherical surface region.

[0028] The deflectors are preferably equally spaced about the partially spherical surface region.

[0029] Each deflector is preferably marked with indicia.

[0030] According to a further aspect of the invention there is provided a game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom; said apparatus comprising:

at least one game ball having a centre of gravity and rebound characteristics; said game ball comprising a spherical surface region characterized in that said ball surface is marked with a plurality of indicia equally spaced about the periphery.

[0031] According to a further aspect of the invention there is provided a method of exercising reactions with a rebound ball, in which a player causes a ball to impact

a target surface and to rebound therefrom; said method comprising:

- (a) providing a resiliently deformable ball marked at discrete locations thereon with indicia denoting different numerical values;
- (b) providing a target surface (for example a floor or wall);
- (c) bouncing said ball on said target surface such that it rebounds therefrom;
- (d) manually catching said ball;
- (e) reading a numerical value corresponding to whichever of said indicia is most prominently visible on said ball nearest an operatively upwardly directed portion thereof; and
- (f) performing an arithmetic or mathematical operation upon said numerical value to yield a running total.

[0032] The method may comprise a step of defining a predetermined numerical value to serve as a starting value for the running total.

[0033] The method may comprise a step of defining a predetermined numerical value to serve as a target value for the running total, and repeating steps (c) to (f) until the running total reaches the target value, starting from the starting value. The method may comprise measuring the time elapsed to reach the target value, starting from the starting value. (For purposes of this specification the term "reach" in the context of a target value, includes reference to an act of passing said value.)

[0034] The arithmetic or mathematical operation performed in step (f) may comprise adding the numerical value that has been read in step (e) to a previously established value of the running total.

[0035] The arithmetic or mathematical operation performed in step (f) may comprise subtracting the numerical value that has been read in step (e) from a previously established value of the running total.

[0036] The arithmetic or mathematical operation performed in step (f) may comprise multiplying the numerical value that has been read in step (e) by a previously established value of the running total.

[0037] The arithmetic or mathematical operation performed in step (f) may comprise dividing a previously established value of the running total by the numerical value that has been read in step (e).

[0038] The method may comprise additional steps of:

- providing a plurality of competing players, each of whom performs steps (c) to (f) repeatedly, while being timed, until the running total reaches the target value; and
- declaring as the winner of said ball game that player whose time to reach the target value is the shortest.

[0039] Instead, the method may comprise additional steps of:

providing a plurality of competing players, each of whom performs steps (c) to (f) repeatedly for a predetermined period of time (e.g. 60 seconds); and declaring as the winner of said ball game that player whose running total most closely approaches the target value at expiry of the predetermined period of time.

[0040] The method may comprise a preliminary step of providing the player or players with game apparatus as described above.

[0041] The inventor believes that the game apparatus described herein has certain advantages. The balls of the apparatus can be used for recreation and sport or as an effective training tool to increase eye-hand coordination and to speed up cognitive reaction times. For young people they are a source of activity and entertainment. In the elderly they may help to stimulate the mind and address the adverse effects of ageing, allowing people to remain independent for longer.

{Brief Description of Drawings}

[0042]

Fig. 1 shows, schematically, a front elevation of a generally spherical, regular ball forming part of an embodiment of the game apparatus according to the invention, for use in rebound ball games. The regular ball is marked with indicia at discrete locations on its surface.

Fig. 2 shows, schematically, a front elevation of an intermediate ball forming part of an embodiment of the game apparatus according to the invention. This ball has facets defining circular planar faces, and said facets are marked with indicia.

Fig. 3 shows, schematically, a front elevation of an advanced ball forming part of an embodiment of the apparatus according to the invention. This ball also has facets defining circular planar faces; however, the facets are larger in area than the facets of the intermediate ball shown in Figure 2. The facets are marked with indicia.

{Description of Embodiments}

[0043] The invention will now be described by way of non-limiting example with reference to the accompanying diagrammatic drawings.

[0044] Referring to Figure 1, reference numeral **10** indicates generally a ball found in some embodiments of the apparatus according to the invention. This ball is generally spherical and is resiliently deformable so that it is adapted for bouncing. The ball **10** may, for example, be a round rubber ball with no deviations in its surface. This type of ball is referred to herein as a regular ball.

[0045] The surface of the regular ball **10** bears ten indicia in the form of the numbers 1 to 9 as well as a letter "Q". One of the indicia is indicated by reference numeral **12** in Figure 1. Since only one side of the ball **10** can be seen in Figure 1, only four of the numbers and the letter "Q" are visible, the other indicia being obscured by the body of the ball **10**. The number of indicia being ten is significant as it allows for an array of arithmetic or mathematical games to be played with the ball.

[0046] During use of the ball **10**, the "Q" marking may serve the function of representing either a "0" or a "10".

[0047] The indicia may be embossed on the ball **10** or they may be indented into it, for example to a depth of 0.5mm. Indentation serves to protect the paint of the indicia from damage and wear during use of the ball **10**.

[0048] In a preferred embodiment, the ball **10** is predominantly green in colour. The indicia **12** have at least one contrasting colour, for example white.

[0049] In Figure 2, reference numeral **210** indicates a second type of ball, called an intermediate ball in this specification. The surface of the ball **210** also bears indicia in the form of the numbers 1 to 9 and the letter "Q". One of the indicia is indicated by reference numeral **12**.

[0050] The ball **210** defines ten planar surfaces or facets distributed over its external surface. Reference numeral **14** indicates one of these facets. The indicia are located on the facets, either by embossing or by indentation.

[0051] In preferred embodiments of the invention each facet is circular, although other geometric shapes are permissible and fall within the scope of the invention.

[0052] The facets can be created during moulding of the ball **210** during manufacture, or may be produced by cutting spherical caps away from a regular spherical blank. In the latter case the facets may also be referred to as "cut outs".

[0053] The facets **14** are surrounded by partially spherical regions of the ball **210**. The otherwise regular spherical surface of the ball **210** is thus distorted. This influences the bounce properties of the ball **210**, causing the ball **210** to bounce in a manner which is erratic or unpredictable.

[0054] The reason for calling the ball **210** an intermediate ball, is that the erratic quality of its bounce properties provides more of a challenge to a player than the bounce properties of the regular, spherical ball **10**.

[0055] In a preferred embodiment of the invention, the ball **210** is predominantly blue in colour. The indicia **12** have at least one contrasting colour, for example white.

[0056] Figure 3 shows a third type of ball, which is called an advanced ball in this specification. The advanced ball **310** has ten circular facets like the ball **210**. However, in this case each facet has a larger surface area than the surface area of each facet **14** of the intermediate ball **210**. Reference numeral **16** indicates one of the facets of the advanced ball **310**. The larger facets **16** imply larger distortions in the surface of the ball **310**, which in turn provide a more erratic bounce than that of

the intermediate ball **210**. This explains why the advanced ball **310** is so called.

[0057] Indicia are present on the facets **16** in the form of the numbers 1 to 9 and the letter "Q". One of these indicia is indicated by the reference numeral **12**. As in the case of the other balls **10**, **210**, the indicia can be embossed on the ball **310** or indented into it.

[0058] In a preferred embodiment of the invention the ball **310** is predominantly black in colour. The indicia **12** have at least one contrasting colour, for example white.

[0059] As mentioned elsewhere in this specification, the deflectors of the balls **210**, **310** are preferably dimensioned such that the surface area of each deflector, as a percentage of the total surface area of the ball, falls in a range from 1% to 12% inclusive.

[0060] For facets which are circular in shape, the percentage surface area of each deflector may be approximated by using the following formulae:

Percentage Surface Area = (Deflector Area / Ball Surface Area) • 100, where:

- *Deflector Area* = $\pi \cdot r^2 = \frac{1}{4} \cdot \pi \cdot d^2$, where *r* is the radius and *d* the diameter of the circular deflector; and
- *Ball Surface Area* (approximating to a regular sphere) = $4 \cdot \pi \cdot R^2 = \pi \cdot D^2$, where *R* is the radius and *D* the diameter of the ball.

[0061] In the exemplary embodiments shown in the drawings the regular, spherical ball **10** has a diameter of 60mm. The intermediate ball **210** also has a diameter of 60mm and each facet has a diameter of 21 mm, giving a percentage surface area of approximately 3.1% for each facet, or 31 % for the total percentage surface area of all ten facets. The advanced ball **310** has a diameter of 60mm and each facet has a diameter of 26mm, giving a percentage surface area of approximately 4.7% for each facet, or 47% for the total percentage surface area of all ten facets.

[0062] In other embodiments of the balls, not shown in the drawings, the deflectors do not take the form of facets, but have other configurations. For example, the deflectors may comprise protrusions or dimples instead of the planar facets.

[0063] Materials suitable for manufacture of the balls are preferably resiliently deformable and flexible so that the balls will bounce well. Examples of suitable materials are given elsewhere in this document.

[0064] Advantageously the balls are shaped, dimensioned and configured such that they can be held in the hand. Those skilled in the art will appreciate that numerous variations in size, configuration and materials of manufacture fall within the scope of the invention.

[0065] The indicia (apart from the "Q") typically take the form of numbers but they may, instead, comprise other markings representative of numerical values, for example words or pips of the type found on dice.

[0066] We turn now to the various games, skills and other activities for which the game apparatus according to the invention can be used. In what follows, the balls **10, 210, 310** are referred to as "**Q Balls**" for convenience.

[0067] The spherical, green ball **10** is the most predictable in its bounce and the easiest ball to use to master the skills and activities outlined below. The green ball **10** is suitable for beginners and those trying to master a new skill. Once a skill has been mastered with the green ball **10**, a player can proceed to the intermediate, blue ball **210** and try the same skill. As explained previously, the blue ball **210** is different in that its shape has been modified to make it bounce erratically. The same skills done with the green ball **10** can be performed with the blue ball **210** although it will be more difficult and require greater concentration and skill. Once the blue ball **210** has been mastered a player can try the advanced, black ball **310**. The black ball **310** has an even greater distortion in its shape causing the black ball **310** to bounce more erratically than the blue ball **210**. Mastering the black ball **310** requires the most concentration and eye-hand coordination, and arguably brings the greatest reward to a player.

[0068] With any of the Q Balls, the element of time and speed can be added to make the skills and activities more difficult. This allows a player to compete with himself and others. The aim is to take any of the skills or activities described below and to try to do it faster. For example, a player may count the number of bounces completed in one minute. The faster the bounces are performed, the more difficult the skill or activity becomes.

[0069] *Recreational Q Ball Activities*

[0070] Recreational use of Q Balls includes the daily use of them for games or mental and physical training. Many different kinds of people may benefit from the use of Q Balls. By simply bouncing one of the Q Balls off a hard surface and catching it with either hand, a player will be developing eye-hand coordination, enhancing reaction time and exercising both body and mind. Below are some exercises to experiment with using the Q Balls:

- Bounce a ball off the ground to waist height using one hand and catch the ball with the other hand. Then bounce the ball back to the starting hand. Do this over and over and try to increase speed and accuracy.
- Bounce the ball off a wall and catch it.
- Do the above using only one hand.
- Do the above closing one eye, or standing on one leg, or moving your head, or keeping your head still and only moving your eyes.
- Do the skills above and time yourself to see how many bounces you can do in one minute.
- Bounce the ball and with each bounce add the numbers that appear on the uppermost part of the ball. For instance, if you bounce the ball and the number 2 appears at the top on the first bounce and then the number 5 appears on the second bounce, add them together and say 7 out loud. Keep bouncing and add-

ing the numbers until you reach 100. Time yourself. How long did it take to reach 100?

- Bounce the ball as in the above example but this time start at 100 and subtract the number that is the uppermost number on the ball with each bounce. Time yourself and see how long it takes you to go from 100 to 0.

Competitive Q Ball Activities

[0071] The rules of Competitive Q Ball are outlined below. It is to be done in a competitive format against other players. Judges may be assigned to monitor performances, but in the event judges are not used, players must monitor themselves in an honest and respectful way with a view to maintaining the integrity of the competition.

[0072] There are two distinct competitive games that can be played. These are called "Reaction Q Ball" and "Count Q Ball" respectively, and are described in greater detail below. Both Reaction Q Ball and Count Q Ball can be played in either Match Play or Best Score formats:

- Match Play is an elimination format where a player must play one other player with the winner of the two advancing to the next round against another player and the game is played again until there is only one winner. A tie is resolved by a sudden death match play round.
- Best Score is the comparison of a player's best score against the scores of other players. In the Best Score format each player plays the game up to three times with their best score counting and compares their score against those of the remaining players to determine a winner. A tie is resolved by a sudden death match play round.

Reaction Q Ball

[0073] This is a game of reaction speed within a one minute interval. It is played within a 0.5 meter diameter circle on a hard concrete surface of contrasting colour. A player must bounce one of the Q Balls from a minimum height of 0.75 meters as many times as possible for one minute, alternating hands on each bounce. Each bounce is counted and the player with the most bounces wins.

[0074] Additional rules apply to Reaction Q Ball, as follows:

1. The ball must be bounced within the delineated 0.5 meter circle. If the ball touches anything outside the circle (other than the player), or touches the line delineating the circle, the game is disqualified and the player is given a "0" for that attempt.
2. The bottom of the ball must rise to at least 0.75 meters above the ground on each and every bounce or the bounce is not counted. If during a game a bounce does not reach the 0.75 meter height, then

that particular bounce is not counted. The player may continue playing and count all subsequent bounces towards their score.

3. A bounce is counted once the ball touches the ground, but it must be caught and/or controlled after the ball touches the ground or the bounce does not count.

Count Q Ball

[0075] This game adds a layer of complexity to the previously described game. Count Q Ball is a reaction game combined with mathematical addition, where a player bounces one of the Q Balls and counts the number on top adding it to the previous total until 100 is reached. The goal is to reach 100 in the least amount of time.

[0076] Count Q Ball is played within a 0.5 meter circle on a hard concrete surface of contrasting colour. A player must bounce a ball from a minimum height of 0.75 meters. The player must alternate hands with each bounce. With each bounce the player must catch the ball in such a way that the number closest to the top may be seen clearly. The number on top is added to the sum of the previous numbers and the total is said out loud for observers to hear clearly. The object of the game is to reach 100 or greater in the least amount of time, or alternatively, get the highest total in one minute. If two numbers both appear to be closest to the top of the ball, the player may add the number they determine to be the top number. The player reaching 100 in the least amount of time wins.

[0077] Additional rules apply to Count Q Ball, as follows:

1. The ball must be bounced within the delineated 0.5 meter circle. If the ball bounces outside the circle, or touches the line delineating the circle, the game is disqualified and the player is given a "0" for that attempt.

2. The bottom of the ball must rise to at least 0.75 meters above the ground on each and every bounce or the bounce is not counted. If during a game a bounce does not reach the 0.75 meter height, then that particular bounce is not counted and the number must not be added. The player may continue playing and count all subsequent bounces towards their score.

3. Counting errors may be corrected by the player, but must be done so upon realization of the error such that a player may stop in the middle of a game to correct an error before continuing to finish.

4. If a player finishes a game and has been shown to have miscounted, the game is disqualified.

5. A bounce is counted once the ball touches the ground, but it must be caught and/or controlled after the ball touches the ground or the bounce does not count.

[0078] A further type of game is provided, in which two

of the Q Balls are bounced and caught at the same time.

[0079] The invention described herein provides industrial applicability insofar as the apparatus and balls disclosed can be manufactured industrially and marketed for purposes of entertainment, sport and exercise.

{Reference Signs List}

[0080]

- 10** Regular, spherical ball
- 12** Indicia on surface of ball 10
- 14** Facet of ball 210
- 16** Facet of ball 310
- 210** Intermediate Ball
- 310** Advanced Ball

{Citation List}

[0081] Patent Literature

- WO1995001818
- US6443863
- USD317805
- EP 2433687
- WO2004035148
- US2011256967
- US6432008

[0082] Non Patent Literature

Not Applicable.

Claims

1. Game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom; said apparatus comprising:

at least one multi-sided game ball having a centre of gravity and rebound characteristics;
said game ball defining a ball surface;
said game ball comprising a plurality of partially spherical surface regions;
said game ball comprising a plurality of deflectors directed outwardly from said centre of gravity, for causing the game ball to rebound erratically from a target surface in use, that is, to rebound in a manner providing variations in the game ball's rebound characteristics which are dependent upon the location on the ball's sur-

- face at which, in use, the game ball impacts said target surface;
 each deflector being delineated by a bounding perimeter; and
 at least one of said deflectors being contiguous,
 along the full length of its bounding perimeter,
 with at least one of said partially spherical surface regions;
characterized in that said ball surface is marked with a plurality of indicia.
2. Game apparatus as claimed in Claim 1, in which the deflectors are dimensioned so that the surface area of each deflector as a percentage of the total surface area of the game ball (the "percentage surface area") falls in a range from 1% to 12% inclusive.
 3. Game apparatus as claimed in Claim 1, in which the indicia are marked exclusively on the deflectors of the game ball, and are adapted to denote integers selected from the range consisting of the numbers 1 to 10 inclusive, with a non-numeric symbol representing one of said integers.
 4. Game apparatus as claimed in any one of Claims 1 to 3 inclusive, in which the deflectors have a configuration selected from the group consisting of facets and protrusions.
 5. Game apparatus as claimed in Claim 4, in which the deflectors each have a facet configuration and define a circular, planar face.
 6. Game apparatus as claimed in Claim 4, in which the deflectors are each configured as a protrusion defining a planar face.
 7. Game apparatus as claimed in Claim 4, in which the number of deflectors present on the game ball falls in a range from 5 to 26 inclusive.
 8. Game apparatus as claimed in Claim 1 or Claim 2, in which the game ball has properties adapted to provide a vertical height of rebound of the ball, when it is dropped onto a level, hard, target surface, which falls in a range from 50% to 80% inclusive, said height being expressed as a percentage of the height from which said ball is dropped.
 9. Game apparatus as claimed in Claim 1 or Claim 2, which comprises a set of first and second types of said game balls, the deflectors and bounce characteristics of each type differing so that, in use, the first type of said game balls bounces more erratically than the second type of said game balls.
 10. Game apparatus as claimed in Claim 1 or Claim 2, which includes at least one resiliently deformable, regular ball having a generally spherical configuration, said ball being marked with indicia.
 11. Game apparatus as claimed in Claim 1, in which the game ball has a predominant colour and the indicia have a predominant colour pre-selected to contrast with the predominant colour of the game ball.
 12. Game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom;
 said apparatus comprising:
 at least one multi-sided game ball having a centre of gravity and rebound characteristics;
 said game ball defining a ball surface;
 said ball surface comprising a partially spherical surface region;
 said ball surface comprising a plurality of deflectors directed inwardly from the partially spherical surface region, and spaced about the partially spherical surface region, for causing the game ball to rebound erratically from a target surface in use, that is, to rebound in a manner providing variations in the game ball's rebound characteristics which are dependent upon the location on the ball's surface at which, in use, the game ball impacts said target surface.
 13. Game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface and to rebound therefrom;
 said apparatus comprising:
 at least one game ball having a centre of gravity and rebound characteristics; said game ball comprising a spherical surface region **characterized in that** said ball surface is marked with a plurality of indicia equally spaced about the periphery.
 14. Game apparatus according to any preceding claim, wherein deflectors have a surface parallel to a tangent of the partially spherical surface region.
 15. A method of exercising reactions with a rebound ball, in which a player causes a ball to impact a target surface and to rebound therefrom; said method comprising:
 (a) providing a resiliently deformable ball marked at discrete locations thereon with indicia denoting different numerical values;
 (b) providing a target surface;
 (c) bouncing said ball on said target surface such that it rebounds therefrom;
 (d) manually catching said ball;
 (e) reading a numerical value corresponding to

whichever of said indicia is most prominently visible on said ball nearest an operatively upwardly directed portion thereof; and
(f) performing a mathematical operation upon said numerical value to yield a running total.

Amended claims in accordance with Rule 137(2) EPC.

1. Bouncing and catching game apparatus for use in a rebound ball game in which a player causes a ball to impact a target surface, to rebound therefrom, so the ball can be caught by the player;
said apparatus comprising:

at least one multi-sided game ball having a centre of gravity which coincides with the centre of the ball; and rebound characteristics, in which the game ball has properties adapted to provide a vertical height of rebound of the ball, when it is dropped onto a level, hard, target surface, which falls in a range from 50% to 80% inclusive, said height being expressed as a percentage of the height from which said ball is dropped;
said game ball defining a ball surface;
said ball surface comprising a partially spherical surface region;
said ball surface comprising a plurality of deflectors directed inwardly from the partially spherical surface region, and spaced about the partially spherical surface region, for causing the game ball to rebound erratically from a target surface in use, that is, to rebound in a manner providing variations in the game ball's rebound characteristics which are dependent upon the location on the ball's surface at which, in use, the game ball impacts said target surface.

2. Game apparatus according to Claim 1, in which the deflectors are dimensioned so that the surface area of each deflector as a percentage of the total surface area of the game ball (the "percentage surface area") falls in a range from 1% to 12% inclusive.

3. Game apparatus as claimed in Claim 1 or 2, in which the number of deflectors present on the game ball falls in a range from 5 to 26 inclusive.

4. Game apparatus as claimed in Claim 1, 2 or 3, in which the deflectors each have a facet configuration and define a circular, planar face.

5. Game apparatus as claimed in Claim 15, wherein deflectors have a surface parallel to a tangent of the partially spherical surface region.

6. Game apparatus as claimed in any preceding claim,

characterized in that said ball surface is marked with a plurality of indicia.

7. Game apparatus as claimed in claim 6, in which the indicia are marked exclusively on the deflectors of the game ball.

8. Game apparatus as claimed in claim 6 or 7, in which the indicia are adapted to denote integers selected from the range consisting of the numbers 1 to 10 inclusive, with a non-numeric symbol representing one of said integers.

9. Game apparatus according to any of claims 6, 7 or 8, in which the game ball has a predominant colour and the indicia have a predominant colour pre-selected to contrast with the predominant colour of the game ball.

10. Game apparatus as claimed in any preceding claim, which comprises a set of first and second types of said game balls, the deflectors and bounce characteristics of each type differing so that, in use, the first type of said game balls bounces more erratically than the second type of said game balls.

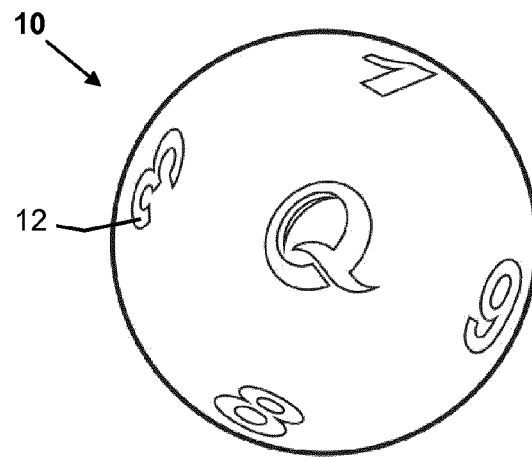


Fig. 1

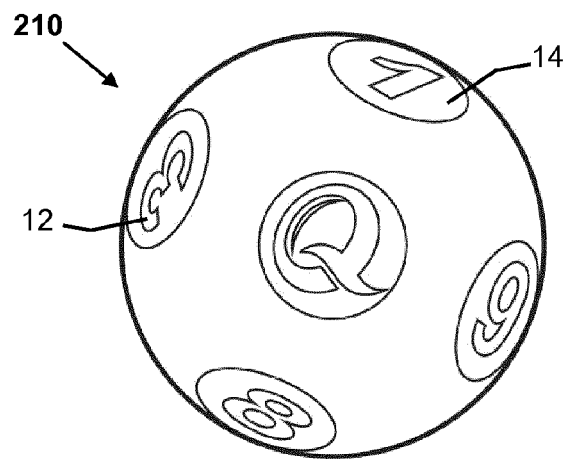


Fig. 2

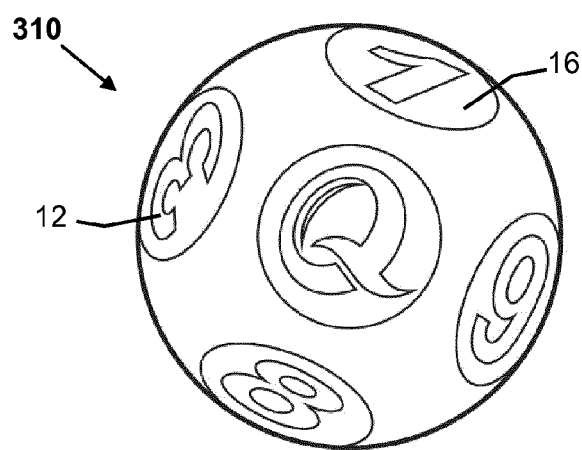


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 13 17 3364

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Place of search Munich		Date of completion of the search 18 November 2013	Examiner Jekabsons, Armands
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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18-11-2013

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