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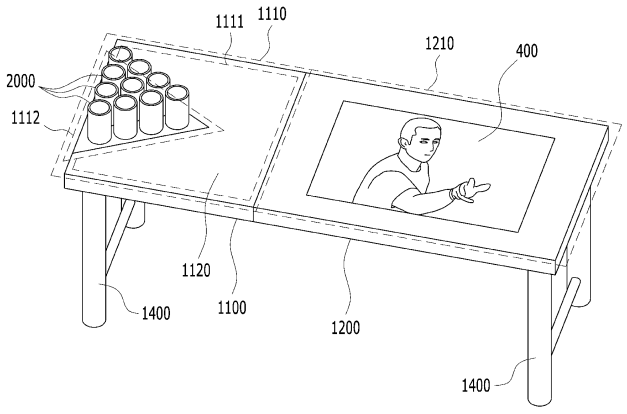
(54) **GAMING DEVICE**

(57) Disclosed is a game device according to some embodiments of the present disclosure. The device may include: a game table including a first section in which at least one first game cup is disposed and a second section in which the ball is bounded; and a bound sensing unit provided in the second section, and sensing whether the ball is bounded on the second section.

【Figure 2】



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Description

[Technical Field]

[0001] The present disclosure relates to a game device, and more particularly, to a game device that plays a game by using a game ball.

[Background Art]

[0002] A game played using a game ball is loved by users in a variety of schemes.

[0003] An example of a game played using the game ball is a table tennis, for example. The table tennis is a popular indoor game regardless of all ages, and is a game that can be enjoyed in relatively narrow places with only tables, rackets, and table tennis balls.

[0004] As another example, there is a game called beer pong which began in the US in the 1950s in a similar form table tennis. The beer pong game is also an indoor game that can be enjoyed regardless all ages, and is a game through which an exercise can be enjoyed in relatively narrow places with only tables, cups, balls (e.g., table tennis balls).

[0005] The beer pong game is a game that throws a ball into cups on both sides of the table. Here, the cup can be filled with drinks or water, and 6 or 10 cups can be placed in a triangle at the corner of the table. In general, in the beer pong game, two teams constituted by two to four persons for each team compete with each other. Further, winning a victory when putting the balls in all cups placed in the other side is a general rule.

[0006] In recent years, the beer pong game has been popular not only in the United States, but also in Korea.

[0007] Meanwhile, most tables in the game played by using the game ball and the table do not electronic equipment. It may be an aspect that it is difficult to add an entertainment element to the table. Further, a general table may have an inconvenience that a player should personally calculate a score of the game.

[0008] Therefore, the entertainment element can be added, and there a need for a game device (or a game table) which can be conveniently used (e.g., a game score can be calculated) in the art.

[Disclosure]

[Technical Problem]

[0009] The present disclosure has been made in an effort to provide a game device that recognizes a game ball thrown to a game table.

[0010] However, technical objects of the present disclosure are not restricted to the technical object mentioned above. Other unmentioned technical objects will be apparently appreciated by those skilled in the art by referencing to the following description.

[Technical Solution]

[0011] An embodiment of the present disclosure provides a game device. The device may include: a game table including a first section in which at least one first game cup is disposed and a second section in which the ball is bounded; and a bound sensing unit provided in the second section, and sensing whether the ball is bounded on the second section.

[0012] Further, the bound sensing unit may sense a vibration generated in the second section, and recognize that the ball is bounded on the second section when the vibration exceeds a predetermined size.

[0013] Further, wherein the bound sensing unit may sense a weight change of the second section, and recognize that the ball is bounded on the second section when the weight change of the second section is present.

[0014] Further, the bound sensing unit may include a camera unit acquiring image data, and recognize that the ball is bounded on the second section by using the image data acquired by the camera unit.

[0015] Further, the bound sensing unit may acquire an image for the second section in a horizontal direction through the camera unit while a round of a game is conducted, and recognize that the ball is bounded on the second section when a predetermined shape or a predetermined color is recognized in the image.

[0016] Further, the bound sensing unit may include an oscillation unit forming a magnetic field by generating a high frequency, and a magnetic field detection unit sensing a change of the magnetic field, and the ball may include a metallic material having a predetermined magnitude of permeability.

[0017] Further, the bound sensing unit may form the magnetic field on the second section at a first time in which the round of the game starts by using the oscillation unit, and recognize that the ball is bounded on the second section when recognizing the change of the magnetic field at a second time after the first time by using the magnetic field detection unit.

[0018] Further, the bound sensing unit may include a transistor unit sensing the magnetic field, and the ball may include a magnetic unit generating the magnetic field.

[0019] Further, the bound sensing unit may recognize that the ball is bounded on the second section when sensing the magnetic field generated by the magnetic unit included in the ball on the second section at the second time after the first time in which the round of the game starts by using the transistor unit.

[0020] Further, the bound sensing unit may include a reader unit outputs an electromagnetic field and reads an electronic tag included in the ball.

[0021] Further, the bound sensing unit may output the electromagnetic field on the second section at the first time in which the round of the game starts by using the reader unit, and recognize that the ball is bounded on the second section when the electronic tag is read on the

second section at the second time after the first time by using the reader unit.

[0022] Further, the bound sensing unit may recognize a player corresponding to the electronic tag as reading the electronic tag by using the reader unit.

[0023] Further, the game device may further include a control unit calculates a game score by using sensing data sensed by a sensing unit provided in the game table.

[0024] Further, the control unit may add a weight when calculating the game score when the sensing data that the ball is bounded on the second section is acquired through the bound sensing unit.

[0025] Further, the game device may further include a ball sensing unit provided in the first section, and sensing whether the ball is positioned in any one cup of at least one first game cup.

[0026] Further, the game table further includes a pad provided in one area of the first section, and preventing the bound of the ball.

[0027] Further, the game table may have a structure in which the first section and the second section are separable.

[0028] Further, the game table may further include a third section which is positioned in a direction opposite to a direction at which the first section is positioned in the second section and in which at least one second game cup is placed.

[0029] Further, the game device may further include a throw line irradiation unit provided on a bottom or a side of the game table, and irradiating light of the throw line externally.

[0030] Further, the game device may further include: a control unit recognizing whether a predetermined event occurs based on sensing data sensed by a sensing unit; and a memory storing an image or sound effect corresponding to the predetermined event.

[0031] Further, the game device may further include: a display unit provided in one area of the game table, and outputs the image corresponding to the predetermined event when the control unit recognizes that the predetermined event occurs; and an audio unit outputting the sound effect corresponding to the predetermined event when the control unit recognizes that the predetermined event occurs.

[0032] Technical solving means which can be obtained in the present disclosure are not limited to the aforementioned solving means and other unmentioned solving means will be clearly understood by those skilled in the art from the following description.

[Advantageous Effects]

[0033] The present disclosure provides a game device recognizing the bound of a ball thrown a game table and may improve convenience for the game players.

[Description of Drawings]

[0034] Various aspects are now described with reference to the drawings and like reference numerals are generally used to designate like elements. In the following embodiments, for the purpose of description, multiple specific detailed matters are presented to provide general understanding of one or more aspects. However, it will be apparent that the aspect(s) can be executed without the detailed matters.

FIG. 1 is a block diagram of a game device according to some embodiments of the present disclosure.

FIG. 2 is a perspective view of the game device according to some embodiments of the present disclosure.

FIG. 3 is an exploded perspective view of the game device according to some embodiments of the present disclosure.

FIG. 4 is a diagram for describing an example of a method for recognizing a ball according to some embodiments of the present disclosure.

FIG. 5 is a diagram for describing another example of the method for recognizing a ball according to some embodiments of the present disclosure.

FIG. 6 is a diagram for describing an example of a ball according to some embodiments of the present disclosure.

FIGS. 7 and 8 are diagrams for describing an example a guard unit and a through hole which may be provided in the game device according to some embodiments of the present disclosure.

FIG. 9 is a diagram for describing an example of table modules according to some embodiments of the present disclosure.

FIG. 10 is a diagram for describing an example of a coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 11 is a diagram for describing another example of the coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 12 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 13 is a diagram for describing still yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 14 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 15 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

FIG. 16 is a diagram for describing an example of a

throw line according to some embodiments of the present disclosure.

FIG. 17 is a diagram for describing a location of the throw line and a throw line irradiation unit according to some embodiments of the present disclosure.

FIG. 18 is a diagram for describing an example of the throw line irradiation unit according to some embodiments of the present disclosure.

FIG. 19 is a flowchart for describing an example of a method for calculating a game score by a control unit of a game device according to some embodiments of the present disclosure.

FIG. 20 is a diagram for describing an example of an application screen related to a game performed by the game device according to some embodiments of the present disclosure.

[Mode for Invention]

[0035] Various embodiments and/or aspects will be now disclosed with reference to drawings. In the following description, for the purpose of a description, multiple detailed matters will be disclosed in order to help comprehensive appreciation of one or more aspects. However, those skilled in the art of the present disclosure will recognize that the aspect(s) can be executed without the detailed matters. In the following disclosure and the accompanying drawings, specific exemplary aspects of one or more aspects will be described in detail. However, the aspects are exemplary and some of various methods in principles of various aspects may be used and the descriptions are intended to include all of the aspects and equivalents thereof. Specifically, in "embodiment", "example", "aspect", "illustration", and the like used in the specification, it may not be construed that a predetermined aspect or design which is described is more excellent or advantageous than other aspects or designs.

[0036] Hereinafter, like reference numerals refer to like or similar elements regardless of reference numerals and a duplicated description thereof will be omitted. Further, in describing an embodiment disclosed in the present disclosure, a detailed description of related known technologies will be omitted if it is determined that the detailed description makes the gist of the embodiment of the present disclosure unclear. Further, the accompanying drawings are only for easily understanding the embodiment disclosed in this specification and the technical spirit disclosed by this specification is not limited by the accompanying drawings.

[0037] The terminology used in this specification is for the purpose of describing embodiments only and is not intended to limit the present disclosure. In the present specification, the singular form also includes the plural form, unless the context indicates otherwise. It is to be understood that the terms "comprise" and/or "comprising" used in the present disclosure does not exclude the presence or addition of one or more other components other than stated components.

[0038] Although the terms "first", "second", and the like are used for describing various elements or components, these elements or components are not confined by these terms, of course. These terms are merely used for distinguishing one element or component from another element or component. Therefore, a first element or component to be mentioned below may be a second element or component in a technical spirit of the present disclosure.

[0039] Unless otherwise defined, all terms (including technical and scientific terms) used in the present specification may be used as the meaning which may be commonly understood by the person with ordinary skill in the art, to which the present disclosure pertains. Terms defined in commonly used dictionaries should not be interpreted in an idealized or excessive sense unless expressly and specifically defined.

[0040] Moreover, the term "or" is intended to mean not exclusive "or" but inclusive "or". That is, when not separately specified or not clear in terms of a context, a sentence "X uses A or B" is intended to mean one of the natural inclusive substitutions. That is, the sentence "X uses A or B" may be applied to any of the case where X uses A, the case where X uses B, or the case where X uses both A and B. Further, it should be understood that the term "and/or" used in this specification designates and includes all available combinations of one or more items among enumerated related items.

[0041] Further, the terms "information" and "data" used in the specification may also be often used to be exchanged with each other.

[0042] It should be understood that, when it is described that a component is "connected to" or "accesses" another component, the component may be directly connected to or access the other component or a third component may be present therebetween. In contrast, it should be understood that, when it is described that a component is "directly connected to" or "directly access" another component, no component is present between the component and another component.

[0043] Suffixes "module" and "unit" for components used in the following description are given or mixed in consideration of easy preparation of the specification only and do not have their own distinguished meanings or roles.

[0044] Terms being referred to as elements or elements positioned on different layers, or elements positioned "on" or "on" the layer include terms being referred to as immediately above the other element or layer and another layer or element being interposed therebetween. On the contrary, the element being referred to as "directly on" or immediately on" represents another element or layer not being interposed therebetween.

[0045] "Below", "beneath", "lower", "above", "upper", etc., which are spatially relative terms may be used for easily describing a correlation between one element and other elements as illustrated in the drawings. The spatially relative terms should be appreciated as terms in-

cluding different directions of the elements in using or operating in addition to the directions illustrated in the drawings.

[0046] For example, when the element illustrated in the drawing is overturned, a component described as being "below" or "beneath" another component may be laid "above" another element. Accordingly, "below" or "beneath" which is an exemplary term may include both below and above directions. The element may be oriented even in the other direction, and as a result, the spatially relative terms may be interpreted according to the orientation.

[0047] The objects and effects of the present disclosure, and technical constitutions of accomplishing these will become obvious with reference to embodiments to be described below in detail along with the accompanying drawings. In describing the present disclosure, a detailed description of known function or constitutions will be omitted if it is determined that it unnecessarily makes the gist of the present disclosure unclear. In addition, terms to be described below as terms which are defined in consideration of functions in the present disclosure may vary depending on the intention of a user or an operator or usual practice.

[0048] However, the present disclosure is not limited to embodiments disclosed below but may be implemented in various different forms. However, the embodiments are provided to make the present disclosure be complete and completely announce the scope of the present disclosure to those skilled in the art to which the present disclosure belongs and the present disclosure is just defined by the scope of the claims. Accordingly, the terms need to be defined based on contents throughout this specification.

[0049] The scope of the claims for the method in the claims of the present disclosure arises from the functions and features described in each step and is not affected by the order in which each step in the claims disclosed if a sequence relationship of the disclosure order in respective steps constituting the method is not specified. For example, in the claims set forth in the method including steps A and B, the scope of rights is not limited to the fact that step A precedes step B, even if step A is described before step B.

[0050] FIG. 1 is a block diagram of a game device according to some embodiments of the present disclosure.

[0051] Referring to FIG. 1, a game device 1000 may include a control unit 100, a sensing unit 200, a memory 300, a display unit 400, an audio unit 500, a throw line irradiation unit 600, and an input unit 700. However, elements described above are not required in implementing the game device 1000, so the game device 1000 may have elements more or less than elements listed above.

[0052] According to some embodiments of the present disclosure, the game device 100 may be a device related to a game table for performing a game using a ball. The game device 1000 may have, for example, a predetermined form of appearance for providing a game (e.g., beer pong game) according to embodiments of the present disclosure. The game device 1000 may include for example, a predetermined type of computer system or computer device such as a microprocessor, a main frame computer, a digital processor, a portable device, and a device controller. In addition, the game device 1000 may provide an entertainment element and convenience related to the game using the ball.

[0053] According to some embodiments of the present disclosure, the game device 1000 may include a game table including a first section in which at least one first game cup is disposed and a second section in which the ball is bounded.

[0054] Hereinafter, the game table will be described below with reference to FIG. 2.

[0055] According to some embodiments of the present disclosure, the ball may be thrown toward the game cup by a player. Here, the ball may have for example, an internal space like a table tennis ball. Further, the ball may include a specific material or a specific device in the internal space.

[0056] Hereinafter, the ball will be described below with reference to FIG. 6.

[0057] Meanwhile, the sensing unit 200 of the game device 1000 may include a ball sensing unit 210, a bound sensing unit 220 and a guard sensing unit 230. However, the present disclosure is not limited thereto, and the sensing unit 200 may be more or less than the sensing units enumerated according to sensing data required in the game using the ball.

[0058] First, the ball sensing unit 210 may be provided in the first section of the game table in which at least one first game cup is placed. A location at which the ball sensing unit 210 is provided will be described below with reference to FIGS. 2 and 3.

[0059] The ball sensing unit 210 may recognize whether the ball is positioned in the game cup in the game using the ball. For example, the ball sensing unit 210 may recognize whether the ball enters the game cup of the other side in the beer pong game.

[0060] According to some embodiments of the present disclosure, the ball sensing unit 210 senses a weight change of the game cup to recognize whether the ball is positioned in the game cup.

[0061] Specifically, the ball sensing unit 210 may sense the weight change of each of at least one first game cup. In addition, the ball sensing unit 210 may recognize whether the ball is positioned in any one cup of at least one first game cup based on the weight change of each of at least one first game cup.

[0062] More specifically, the ball sensing unit 210 may recognize a weight of each of at least one first game cup at a first time. The ball sensing unit 210 may recognize the first cup in which the weight change is present among at least one first game cup at a second time after the first time. In addition, when the changed weight of the first cup is maintained for a predetermined time (e.g., 3 seconds), the ball sensing unit 210 may recognize that the

ball is positioned in the first cup. Meanwhile, when the changed weight of the first cup is not maintained for a predetermined time, the ball sensing unit 210 may recognize that the ball is not positioned in the first cup.

[0063] As an example, before the ball is thrown, the first cup may be recognized as a first weight. When the thrown ball enters the first cup, the weight of the first cup may be changed to a second weight by the thrown ball. When the change from the first weight to the second weight is maintained for a predetermined time, the ball sensing unit 210 may recognize that the ball enters the first cup.

[0064] Here, the first time may mean a time when a round of the game starts or a time of throwing the ball or a time immediately before the ball is thrown. However, the present disclosure is not limited thereto.

[0065] Therefore, the ball sensing unit 210 may identify a case where the ball hits the cup and changes the weight of the cup, and then the ball is bounced off toward the outside of the cup. That is, the ball sensing unit 210 may accurately recognize whether the ball is positioned in the cup.

[0066] According to some other embodiments of the present disclosure, the ball sensing unit 210 may sense whether the ball is positioned in the game cup by using image data.

[0067] Specifically, the ball sensing unit 210 may include a camera unit that acquires the image data. In this case, the ball sensing nit 210 may recognize whether the ball is positioned in any one cup among at least one first cup by using the image data acquired by the camera unit. For example, a change of the image data may be sensed through a difference operation for two or more image data acquired at different time. The difference operation may include performing a subtraction operation for two input operations, and then generating result image data by using an absolute value for a result value.

[0068] As another example, by the scheme of calculating an absolute value for a difference of a grayscale value between the image data based on the grayscale value in the range of 0 to 255, the change for the image data may be sensed.

[0069] As yet another example, the comparison of the image data and/or the change sensing of the image data according to an embodiment of the present disclosure may also be achieved by a scheme of extracting image keypoints, and then matching or comparing the extracted image keypoints. Predetermined schemes of extracting and comparing the image keypoints may be used.

[0070] As still yet another example, the comparison of the image data and/or the change sensing of the image data according to an embodiment of the present disclosure may also be achieved by a predetermined form of deep learning based image data comparing scheme. In the present disclosure, deep learning may be defined as a set of machine learning algorithms that attempt a high level abstraction (a job of summarizing features, core contents, or functions in a large amount of data or complex data) through a combination of various non-linear conversion techniques and is one field of machine learning that teaches a person's thinking scheme to computers.

[0071] More specifically, the ball sensing unit 210 may acquire an internal image of each of at least one first game cup at the first time by the camera unit. The ball sensing unit 210 may recognize the first cup in which the internal image is changed in at least one first game cup at the second time after the first time. In addition, when the changed image of the first cup is maintained for a predetermined time (e.g., 3 seconds), the ball sensing unit 210 may recognize that the ball is positioned in the first cup. Meanwhile, when the changed image of the first cup is not maintained for a predetermined time, the ball sensing unit 210 may recognize that the ball is not positioned in the first cup.

[0072] Therefore, the ball sensing unit 210 may accurately recognize whether the ball is positioned in the cup.

[0073] According to some yet another embodiments of the present disclosure, the ball sensing unit 210 senses whether the ball comes close to the game cup to recognize whether the ball is positioned in the game cup.

[0074] Specifically, the ball sensing unit 210 may include an oscillation unit that forms a magnetic field by generating a high frequency and a magnetic field detection unit sensing a change of the magnetic field. In this case, the ball may include a metallic material having a predetermined size of permeability. Here, the permeability represents a ratio between a magnetic field B and an induced magnetic field H. That is, the ball including the metallic material may generate the change of the magnetic field formed by the oscillation unit of the ball sensing unit 210.

[0075] More specifically, the ball sensing unit 210 may form the magnetic field in each of at least one first game cup at the first time by using the oscillation unit. In addition, the ball sensing unit 210 may recognize the first cup in which the change of the magnetic field is present among at least one first game cup at the second time after the first time by using the magnetic field detection unit. When the changed magnetic field of the first cup is maintained for a predetermined time (e.g., 3 seconds), the ball sensing unit 210 may recognize that the ball is positioned in the first cup. Meanwhile, when the changed magnetic field of the first cup is not maintained for a predetermined time, the ball sensing unit 210 may recognize that the ball is not positioned in the first cup.

[0076] Therefore, the ball sensing unit 210 may accurately distinguish a case where the ball passes around the cup which changes the magnetic field and a case where the ball is positioned inside the cup, which changes the magnetic field. That is, the ball sensing unit 210 may accurately recognize whether the ball is positioned in the cup.

[0077] According to some still yet another embodiments of the present disclosure, the ball sensing unit 210 senses the magnetic field generated from the ball to rec-

ognize whether the ball is positioned in the game cup.

[0078] Specifically, the ball sensing unit 210 may include a transistor unit sensing the magnetic field. In this case, the ball may include a magnetic unit generating the magnetic field. Here, the magnetic unit may be a permanent magnet. However, the present disclosure is not limited thereto.

[0079] More specifically, the ball sensing unit 210 may recognize the magnetic field generated by the magnetic unit included in the first cup among at least one first game cup at the first time by using the transistor unit. In addition, the ball sensing unit 210 may recognize the magnetic field in the first cup at the second time after the first time. When the magnetic field is recognized in the first cup for a predetermined time (e.g., 3 seconds), the ball sensing unit 210 may recognize that the ball is positioned in the first cup. Meanwhile, when the magnetic field is not recognized in the first cup for a predetermined time, the ball sensing unit 210 may recognize that the ball is not positioned in the first cup.

[0080] Therefore, the ball sensing unit 210 may accurately distinguish a case where the ball passes around the cup which generates the magnetic field and a case where the ball is positioned inside the cup, which generates the magnetic field. That is, the ball sensing unit 210 may accurately recognize whether the ball is positioned in the cup.

[0081] According to some still yet another embodiments of the present disclosure, the ball sensing unit 210 reads an electronic tag included in the ball to recognize whether the ball is positioned in the game cup.

[0082] Specifically, the ball sensing unit 210 may include a reader unit reading the electronic tag included in the ball by outputting an electromagnetic field. In this case, the ball may include the electronic tag.

[0083] More specifically, the ball sensing unit 210 may output the electromagnetic field to each of at least one first game cup at the first time by using the reader unit. In addition, the ball sensing unit 210 may recognize the first cup in which the electronic tag is read among at least one first game cup at the second time after the first time by using the reader unit. When the reading of the electronic tag is maintained for a predetermined time, the ball sensing unit 210 may recognize that the ball is positioned in the first cup. Meanwhile, when the electronic tag is not read in the first cup for a predetermined time, the ball sensing unit 210 may recognize that the ball is not positioned in the first cup.

[0084] Therefore, the ball sensing unit 210 may accurately recognize whether the ball is positioned in the cup.

[0085] According to some additional embodiments of the present disclosure, the ball sensing unit 210 reads the electronic tag by using the reader unit to recognize a player corresponding to the electronic tag. Here, the electronic tag may store identification information of the player.

[0086] Therefore, the control unit 100 of the game device 1000 may calculate a game score of each of a plurality of players by using identification information of the electronic tag corresponding to each of the plurality of players.

[0087] As described above, the ball sensing unit 210 according to some embodiments of the present disclosure may sense whether the ball is positioned in any one cup of at least one first game cup by using any one method of a method using the weight change, a method using the image data, a method using the change of the magnetic field, a method using the magnetic field, and a method using the electronic tag.

[0088] According to some additional embodiments of the present disclosure, the ball sensing unit 210 may recognize whether the ball is positioned in the game cup by using two or more methods among the methods for recognizing whether the ball is positioned in the game cup.

[0089] As an example, the ball sensing unit 210 may determine that the recognized result value is true only when all result values recognized through two or more methods are the same.

[0090] For example, the ball sensing unit 210 may recognize whether the ball is positioned in the game cup by using a first method (e.g., the method using the weight change) and a second method (e.g., the method using the change of the magnetic field) among the methods for recognizing whether the ball is positioned in the game cup.

[0091] In this case, only when the ball sensing unit 210 recognizes that the ball is positioned in the first cup among at least one first game cup by using the first method and recognizes that the ball is positioned in the first cup by using the second method, the ball sensing unit 210 may decide that the ball is positioned in the first cup.

[0092] Meanwhile, only when the ball sensing unit 210 recognizes that the ball is positioned in the first cup among at least one first game cup by using the first method and recognizes that the ball is not positioned in the first cup by using the second method, the ball sensing unit 210 may decide that the ball is not positioned in the first cup.

[0093] Therefore, the ball sensing unit 210 may more accurately sense whether the ball is positioned in any one cup among at least one first game cup. Here, the first method and the second method are just terms used for distinguishing different methods in which the ball sensing unit 210 recognizes whether the ball is positioned in the game cup, and are not limited to a specific method.

[0094] As another example, the ball sensing unit 210 may determine that the result value is true only when a ratio between the result values recognized through two or more methods exceeds a predetermined ratio (e.g., 50%).

[0095] Therefore, the ball sensing unit 210 may more accurately sense whether the ball is positioned in any one cup among at least one first game cup.

[0096] According to some embodiments of the present disclosure, the ball sensing unit 210 may adjust a zero

point of the ball sensing unit 210 when a round is terminated or the sensing data is acquired (i.e., it is recognized that the ball is positioned in any one cup among at least one first game cup).

[0097] When the round is terminated or the ball sensing unit 210 acquires the sensing data, a specific value may fluctuate in each of at least one first game cup. For example, beverage is added to or the ball is positioned in any one cup among at least one first game cup, so the weight may fluctuate. In this case, an error of the sensing data may occur due to the fluctuation which occurs in each of at least one first game cup.

[0098] That is, in order to prevent the error of the sensing data, when the round is terminated or it is sensed that the ball is thrown or a throwing action of the ball is terminated or the sensing data is acquired (i.e., it is recognized that the ball is positioned in any one cup among at least one first game cup), the ball sensing unit 210 may adjust or reset the zero point of the ball sensing unit 210.

[0099] Therefore, the ball sensing unit 210 may more accurately sense whether the ball is positioned in any one cup among at least one first game cup.

[0100] The bound sensing unit 220 may be provided in the second section of the game table in which the ball is bounded. A location at which the bound sensing unit 220 is provided will be described below with reference to FIGS. 2 and 3.

[0101] The bound sensing unit 220 may sense whether the ball is bounded on the game table in the game using the ball. For example, the bound sensing unit 220 may recognize whether the ball is bonded on the game table (specifically, the second section), and then the ball enters the cup in the beer pong game.

[0102] According to some embodiments of the present disclosure, the bound sensing unit 220 senses a vibration generated in the second section to recognize whether the ball is bounded on the game table (specifically, the second section).

[0103] Specifically, the bound sensing unit 220 may sense the vibration generated in the second section. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section when the sensed vibration exceeds a predetermined size.

[0104] According to some another embodiments of the present disclosure, the bound sensing unit 220 senses a weight change generated in the second section to recognize whether the ball is bounded on the game table (specifically, the second section).

[0105] Specifically, the bound sensing unit 220 may sense the weight change in the second section. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section when the weight change is present in the second section. Meanwhile, the bound sensing unit 220 may acquire a change amount of the weight generated in the second section. In this case, the bound sensing unit 220 may recognize that the ball is bounded on the second section when the weight change amount generated in the second section exceeds a predetermined value.

[0106] According to some yet another embodiments of the present disclosure, the bound sensing unit 220 may recognize whether the ball is bounded on the game table (specifically, the second section) by using the image data.

[0107] Specifically, the bound sensing unit 220 may include the camera unit that acquires the image data. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section by using the image data acquired by the camera unit.

[0108] More specifically, the bounding sensing unit 220 may acquire an image for the second section in a horizontal direction through the camera unit while the ground of the game is in progress. In addition, when a predetermined shape (i.e., a shape of the ball) or a predetermined color (i.e., a color of the ball) is recognized in the image, the bound sensing unit 220 may recognize that the ball is bounded on the second section.

[0109] Here, the image for the second section acquired in the horizontal direction may be an image photographed on a side surface of the game table. Further, the image may be an image acquired by photographing a space which exists above the second section at a location spaced apart from the top of the second section by a predetermined height.

[0110] According to some still yet another embodiments of the present disclosure, the bound sensing unit 220 senses whether the ball comes close to the second section of the game table to recognize whether the ball is bounded on the second section.

[0111] Specifically, the bound sensing unit 220 may include the oscillation unit that forms the magnetic field by generating the high frequency and the magnetic field detection unit sensing the change of the magnetic field. In this case, the ball may include a metallic material having a predetermined size of permeability. Here, the permeability represents a ratio between a magnetic field B and an induced magnetic field H. That is, the ball including the metallic material may generate the change of the magnetic field formed by the oscillation unit of the ball sensing unit 210.

[0112] More specifically, the bound sensing unit 220 may form the magnetic field on the second section at the first time in which the round of the game starts by using the oscillation unit. Further, the bound sensing unit 220 may recognize the change of the magnetic field at the second time after the first time by using the magnetic field detection unit. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section when recognizing the change of the magnetic field at the second time.

[0113] According to some still yet another embodiments of the present disclosure, the bound sensing unit 220 senses the magnetic field generated from the ball to recognize whether the ball is bounded on the second section.

[0114] Specifically, the bound sensing unit 220 may

include the transistor unit sensing the magnetic field. In this case, the ball may include the magnetic unit generating the magnetic field. Here, the magnetic unit may be the permanent magnet. However, the present disclosure is not limited thereto.

[0115] More specifically, the bound sensing unit 220 may recognize that the ball is bounded on the second section when sensing the magnetic field generated by the magnetic unit included in the ball on the second section at the second time after the first time in which the round of the game starts by using the transistor unit.

[0116] According to some still yet another embodiments of the present disclosure, the bound sensing unit 220 senses an optical signal to recognize that the ball is bounded on the second section.

[0117] Specifically, the bound sensing unit 220 may include a light emitting unit and a light receiving unit. In this case, the ball sensing unit 210 may irradiate light to the second section by using the light emitting unit. Meanwhile, the ball sensing unit 210 may recognize the optical signal (e.g., optical interference generated as the ball is bounded) received when the ball is bounded on the second section by using the light receiving unit. Here, light irradiated to the second section by using the light emitting unit may be at least one of infrared light, ultraviolet light, and visible light.

[0118] More specifically, the bound sensing unit 220 may irradiate the light to the second section at the first time in which the round of the game starts by using the light emitting unit. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section when acquiring the optical signal through the light receiving unit at the second time after the first time.

[0119] That is, the bound sensing unit 220 may be, for example, an optical sensor, or an infrared sensor. However, the present disclosure is not limited thereto.

[0120] According to some still yet another embodiments of the present disclosure, the bound sensing unit 220 senses an sound signal to recognize that the ball is bounded on the second section.

[0121] Specifically, the bound sensing unit 220 may include a sound collection unit. In this case, the ball sensing unit 210 may acquire a sound generated in the second section by using the sound collection unit. In addition, the ball sensing unit 210 may recognize that the ball is bounded on the second section when a predetermined sound (i.e., a sound generated by a contact between the ball and the table) which may be generated when the ball is bounded on the second section is acquired through the sound collection unit.

[0122] More specifically, the bound sensing unit 220 may activate the sound collection unit after the first time in which the round of the game starts. In addition, the bound sensing unit 220 may recognize whether the ball is bounded on the second section by analyzing the sound collected after the first time as the sound collection unit is activated after the first time.

[0123] According to some still yet another embodiments of the present disclosure, the ball sensing unit 210 reads the electronic tag included in the ball to recognize whether the ball is bounded on the second section.

[0124] Specifically, the bound sensing unit 220 may include the reader unit reading the electronic tag included in the ball by outputting the electromagnetic field. In this case, the ball may include the electronic tag.

[0125] More specifically, the bound sensing unit 220 may output the electromagnetic field onto the second section at the first time in which the round of the game starts by using the reader unit. In addition, the bound sensing unit 220 may recognize that the ball is bounded on the second section when the electronic target is read on the second section at the second time after the first time by using the reader unit.

[0126] According to some additional embodiments of the present disclosure, the bound sensing unit 220 reads the electronic tag by using the reader unit to recognize the player corresponding to the electronic tag. Here, the electronic tag may store identification information of the player.

[0127] Meanwhile, the control unit 100 of the game device 1000 may calculate the game score of the player by using the sensing data sensed by the sensing unit 200 provided in the game table. Specifically, the control unit 100 may calculate the game score of each of the plurality of players by using the identification information of the electronic tag corresponding to each of the plurality of players.

[0128] Additionally, the control unit 100 of the game device 1000 may add a weighted value (e.g., applying a double of the game score) at the time of calculating the game score when the sensing data indicating that the ball is bounded on the second section is acquired through the bound sensing unit 220.

[0129] As described above, the bound sensing unit 220 according to some embodiments of the present disclosure may sense whether the ball is bounded on the second section of the game table by using any one method of the method using the vibration, the method using the weight change, the method using the image data, the method using the change of the magnetic field, the method using the magnetic field, the method using the optical signal, the method using the sound signal, and the method using the electronic tag.

[0130] According to some additional embodiments of the present disclosure, the bound sensing unit 220 may recognize whether the ball is bounded on the first section by using two or more methods among the methods for recognizing whether the ball is bounded on the second section.

[0131] As an example, the bound sensing unit 220 may determine that the recognized result value is true only when all result values recognized through two or more methods are the same.

[0132] For example, the bound sensing unit 220 may recognize whether the ball is bounded on the second section by using a first method (e.g., the method using

the vibration) and a second method (e.g., the method using the weight change) among the methods for recognizing whether the ball is bounded on the second section.

[0133] In this case, only when the bound sensing unit 220 recognizes that the ball is bounded on the second section by using the first method and recognizes that the ball is bounded on the second section by using the second method, the bound sensing unit 220 may decide that the ball is bounded on the second section.

[0134] Meanwhile, only when the bound sensing unit 220 recognizes that the ball is bounded on the second section by using the first method and recognizes that the ball is not bounded on the second section by using the second method, the bound sensing unit 220 may decide that the ball is not bounded on the second section.

[0135] Therefore, the bound sensing unit 220 may more accurately sense whether the ball is bounded on the second section of the game table. Here, the first method and the second method are just terms used for distinguishing different methods in which the ball sensing unit 210 recognizes whether the ball is positioned in the game cup, and are not limited to a specific method.

[0136] As another example, the bound sensing unit 220 may determine that the result value is true only when a ratio between the result values recognized through two or more methods exceeds a predetermined ratio (e.g., 50%).

[0137] Therefore, the bound sensing unit 220 may more accurately sense whether the ball is bounded on the second section of the game table.

[0138] The guard sensing unit 230 may recognize whether the ball hits a guard portion in the game using the ball. Here, the guard portion may mean a partition erected in order to prevent the ball from being bounded off. Specifically, the guard portion may have a predetermined height to prevent the ball from going out of the game table. Further, the guard portion has a structure of being able to be coupled to the game table, and when the guard portion is coupled to the game table, the guard portion may have a shape to cover the first section of the game table.

[0139] For example, the guard portion may prevent the ball from hitting the game table or the game cup, and bounded off in the beer pong game. The guard portion will be described below with reference to FIGS. 7 and 8.

[0140] According to some embodiments of the present disclosure, the control unit 100 of the game device 1000 may process the game score to be invalid when first sensing data indicating that the ball is positioned in the first cup among at least one first game cup and second sensing data indicating that the ball hits the guard portion are acquired through the ball sensing unit 210 and the guard sensing unit 230.

[0141] Specifically, the ball hitting the guard portion may be a ball (e.g., a miss ball) which goes out of the game table if there is no guard portion. Therefore, the control unit 100 may recognize that the ball hits the guard portion when the second sensing data is acquired by the guard sensing unit 230. In addition, the control unit 100 recognizes the ball as the miss ball to process the game score to be invalid.

[0142] Hereinafter, the method in which the control unit 100 of the game device 1000 calculates the game score will be described below with reference to FIG. 19.

[0143] The memory 300 may store a program for an operation of the control unit 100 and temporarily or persistently store input/output data. The memory 300 may include at least one type of storage medium of a flash memory type, a hard disk type, a multimedia card micro type, a card type memory (for example, an SD or XD memory, or the like), a random access memory (RAM), a static random access memory (SRAM), a read-only memory (ROM), an electrically erasable programmable read-only memory (EEPROM), a programmable read-only memory (PROM), a magnetic memory, a magnetic disk, and an optical disk. The memory 300 may be operated by the control by the control unit 100.

[0144] According to some embodiments of the present disclosure, the memory 300 may store various information related to the game using the ball performed in the game device 1000.

[0145] For example, the memory 300 may store information on a scheme of calculating the score of the game performed in the game device 1000, information on an event related to the game performed in the game device 1000, an image related to the event, a sound effect related to the event, and an illumination effect related to the event. However, the present disclosure is not limited thereto.

[0146] Meanwhile, the control unit 100 may calculate the game score of the player by using the information on the scheme of calculating the score of the game stored in the memory 300. Further, the control unit 100 may recognize whether the event occurs by using the information on the event related to the game stored in the memory 300. In addition, when the control unit 100 recognized that the event occurs, the control unit 100 may provide, to the player, the image related to the event, the sound effect related to the event, and the illumination effect related to the event stored in the memory 300. However, the present disclosure is not limited thereto.

[0147] The display unit 400 displays (outputs) information processed in the game device 1000. For example, the display unit 400 may display execution screen information of an application program driven by the game device 1000, information related to the event, information related to a result of the game, or user interface (UI) information and graphic user interface (GUI) information depending on the execution screen information.

[0148] The display unit 400 may have a mutual layer structure with a touch sensor or may be integrally formed to implement a touch screen. Such a touch screen may serve as a user input unit 700 for providing an input interface between the game device 1000 and the player and the user and provide an output interface between the game device 1000 and the player.

[0149] The display unit 400 according to some embodiments of the present disclosure may be provided in one area of the game table. The display unit 400 may output various images.

[0150] For example, the display unit 400 may output an event image. Meanwhile, the control unit 100 may control the event image displayed in the display unit at least partially based on the location of the ball thrown to the game table.

[0151] Specifically, the control unit 100 may recognize location information of the ball based on the sensing data sensed by the sensing unit 200 provided in the game table, and determine at least one of a location at which the event image is displayed in the display unit 400 and a duration of the event image at least partially based on the location information of the ball.

[0152] Here, the event image may be an image corresponding to a predetermined event prestored in the memory 300. As another example, the display unit 400 may output an advertisement image prestored in the memory 300. Yet another example, the display unit 400 may output a guide image (i.e., an image for guiding a game method) stored in the memory 300. However, the present disclosure is not limited thereto.

[0153] Meanwhile, the memory 300 may store the event image corresponding to the predetermined event. In this case, the control unit 100 may calculate the game score based on the sensing data sensed by the sensing unit 200 provided in the game table. In addition, the control unit 100 may control the display unit 400 to output the event image based on the game score. However, the present disclosure is not limited thereto.

[0154] On the other hand, the memory 300 may store an event sound corresponding to the predetermined event. In this case, the control unit 100 may calculate the game score based on the sensing data sensed by the sensing unit 200 provided in the game table. In addition, the control unit 100 may control the audio unit 500 to output the event sound based on the game score. However, the present disclosure is not limited thereto.

[0155] The audio unit 500 may output audio data stored in the memory 300. Further, the audio unit 500 may output a sound signal related to a function (e.g., a game (round) start sound, a round end sound, etc.) performed by the game device 1000. The audio unit 500 may include, for example, a receiver, a speaker, a buzzer, and the like.

[0156] As described below, the game device 1000 may include the camera unit. In this case, the display unit 400 may utilize the image acquired by the camera unit as the event image. That is, the control unit 100 may control the camera unit to photograph the player. In addition, the control unit 100 may control the display unit 400 to output the event image by using the image acquired by photographing the player.

[0157] For example, the control unit 100 may control the display unit 400 to display an image for the throwing action of the player or an image in which the player cheers photographed by the camera unit when an event in which the ball enters any one cup of at least one game cup occurs.

[0158] As another example, the control unit 100 may control the display unit 400 to display an image for an action of a counterpart player which drinks beverage (e.g., beer) of the cup entered by the ball when the event in which the ball enters any one cup of at least one game cup occurs.

[0159] As yet another example, the control unit 100 may control the display unit 400 to display an image of the counterpart player (e.g., an image containing a view in which the counterpart player cheers) and/or an image of a player throwing the ball (e.g., an image containing a view in which the player throwing the ball misses) when the ball does not enter any one cup of at least one game cup.

[0160] The throw line irradiation unit 600 may irradiate line light to a location of a throw-line which is a location where the player throws the ball or irradiate an image including information on the location of the throw-line to the throw-line. Here, the location of the throw-line may be a location on a bottom surface corresponding to a location spaced apart form an extension line connecting the first section and the second section of the game table by a predetermined distance. The location of the throw-line will be described below with reference to FIG. 17.

[0161] The throw line irradiation unit 600 may irradiate an image including at least one of a predetermined guide image, a predetermined event image, and a predetermined advertisement image jointly with the information on the location of the throw-line.

[0162] The throw line irradiation unit 600 may be provided on the bottom or the side of the game table. Further, when the throw line irradiation unit 600 is provided in the game table, the throw line irradiation unit 600 may be provided to be slidable, rotatable, and tiltable.

[0163] According to some additional embodiments of the present disclosure, the throw line irradiation unit 600 may irradiate the light of a plurality of throw lines (specifically, the line light or the image including the information for the location of the throw line).

[0164] Meanwhile, the game device 1000 may further include a distance measurement sensor for sensing the location of the throw line at which the player throws the ball. That is, a distance between the player and the game table sensed by the distance measurement sensor may be transmitted to the control unit 100, and a scoring value corresponding to the distance may be granted to the player.

[0165] The distance measurement sensor may include at least one of an ultrasonic, infrared, and laser sensors capable of sensing the distance between the player and the game table, for example. However, the present disclosure is not limited thereto.

[0166] Meanwhile, the control unit 100 may calculate the game score based on the location of the throw line at which the player throws the ball. Specifically, the control unit 100 may grant the weight to the game score or

grant a penalty to the game score based on the location of the throw line at which the player throws the ball.

[0167] For example, the control unit 100 may differently grant game scores to the first player and the second player even though the first player and the second player puts the ball in the same cup (i.e., cups to which the same score is granted, e.g., 10 points). That is, the control unit 100 may determine a second score (e.g., 20 points) of the second player who throws the ball at a second throw line location relatively far from the game table to be higher than a first score (e.g., 10 points) of the first player who throws the ball at a first throw line location relatively close to the game table. However, the present disclosure is not limited thereto.

[0168] Therefore, the game device 1000 according to some additional embodiments of the present disclosure grants the game score of the player by various schemes to increase the entertainment element for the game performed in the game device 1000.

[0169] Hereinafter, the throw line irradiation unit 600 will be described below with reference to FIGS. 16 to 18.

[0170] The input unit 700 is used for receiving information from the user, and when the information is input through the input unit 700, the control unit 100 may control an operation of the game device 1000 to correspond to the input information. The input unit 700 may include a mechanical input means (or a mechanical key, for example, a button and a switch positioned on a front surface, a rear surface, or a side surface of the game device 1000) and a touch type input means. As an example, the touch type input means may be constituted by a virtual key, a soft key, or a visual key displayed in a touch screen through software processing or constituted by a touch key disposed in a portion other than the touch screen, while the virtual key or the visual key may be displayed on the touch screen while showing various forms, and for example, may be configured by graphic, text, icon, video, or a combination thereof. As an example of the input unit 700 manipulated to receive an instruction for controlling the operation of the game device 1000, the means may be collectively called a manipulating portion.

[0171] According to some embodiments of the present disclosure, the input unit 700 may be a touch unit. Here, the touch unit may sense that the player is ready for throwing the ball. For example, the touch unit may be configured to have a foot plate shape. Specifically, the touch unit may be provided at the throw line location. That is, as the player is ready for throwing the ball, the player steps on the touch unit provided at the throw line location to provide a touch input to the game device 1000. However, the present disclosure is not limited thereto.

[0172] Meanwhile, the control unit 100 may control to activate the game performed in the game device 1000 from a time when the touch unit senses that the player is read for throwing the ball. Specifically, the control unit 100 may recognize that the round of the game starts when receiving the touch input through the touch unit. In addition, as the control unit 100 recognizes that the round of the game starts, the control unit 100 may activate the sensing unit 200 provided in the game table. However, the present disclosure is not limited thereto.

[0173] Additionally, the touch unit may be extended in a direction of being far from the game table from the throw line. Further, only when the player throws the ball in a state of touching the touch unit (e.g., in a state of stepping on the touch unit), it may be authenticated that the game is fairly conducted.

[0174] Therefore, when a remote multi-game mode is conducted in the game device 1000, it may be possible to authenticate that the game is fairly conducted by a scheme in which the player throws the ball at a fair location even though players at remote places do not identify mutual plays with eyes thereof.

[0175] According to some embodiments of the present disclosure, the game device 1000 may further include an illumination unit. The illumination unit may provide the illumination effect to the player in order to increase the entertainment elements of the game played in the game device 1000.

[0176] For example, the illumination unit may be provided at an outermost side of the top, the bottom, and the side of the game table of the game device 1000. Further, the illumination unit may output the illumination effect related to the event stored in the memory 300 when the control unit 100 recognizes that the event (e.g., the ball is positioned in any one cup of at least one cup or the ball is bounded on the game table) occurs. That is, the illumination unit may be turned on or turned off by the control unit 100.

[0177] According to some embodiments of the present disclosure, the game device 1000 may further include the camera unit. The camera unit may process an image frame such as a still image or a moving picture obtained by an image sensor when the player performs the game by using the game device 1000. Here, the image frame processed by the camera unit may be displayed in the display unit 400 or stored in the memory 300. Further, the image frame processed by the camera unit may be used when the control unit 100 generates the event image. Further, the image frame processed by the camera unit may be used when the control unit 100 recognizes whether the player oversteps the throw line at the time of throwing the ball.

[0178] Meanwhile, the camera unit provided in the game device 1000 may be placed to have a matrix structure, and a plurality of image information having various angles or focuses may be input into the game device 1000 through the camera unit having the matrix structure. Further, the camera unit may be placed in a stereo structure to obtain a left image and a right image for implementing a stereoscopic image.

[0179] According to some embodiments of the present disclosure, the game device 1000 may further include a communication unit. The communication unit may include one or more modules which enable communication between the game device 1000 and a communication

system or between the game device 1000 and a user terminal (here, a terminal of the player or a terminal of a game device manager). Further, the communication unit may include one or more modules that connect the game device 1000 to one or more networks.

[0180] According to some embodiments of the present disclosure, the communication unit of the game device 1000 may transmit information related to the game performed in the game device 1000 to the user terminal.

[0181] Specifically, the communication unit may transmit a play history of the game performed in the game device 1000 to the user terminal. Here, the play history may include, for example, the number of game plays, a competition record, and the number of misses of the player. However, the present disclosure is not limited thereto.

[0182] Meanwhile, an application related to the game performed in the game device 1000 may be installed in the user terminal. Further, the application may provide the information related to the game received from the communication unit of the game device 1000 to the user. The application related to the game performed in the game device 1000 will be described below with reference to FIG. 20.

[0183] However, the present disclosure is not limited thereto, and the user terminal may also provide the information related to the game received from the communication unit of the game device 1000 to the user (e.g., display a text) regardless of whether a separate application being installed.

[0184] Therefore, the user who uses the game device 1000 according to some embodiments of the present disclosure may conveniently identify a history of the game played by thereby.

[0185] Additionally, the communication unit of the game device 1000 may receive the information related to the game performed in the game device 1000 from the user terminal.

[0186] For example, the communication unit of the game device 1000 may receive a customized game rule from the user terminal. Here, the customized game rule may include, for example, a score assigned to each of at least one first game cup, an event occurrence condition, etc. However, the present disclosure is not limited thereto.

[0187] As another example, the communication unit of the game device 1000 may receive a customized game screen from the user terminal. In this case, the customized game screen received from the user terminal may be output to the display unit 400. However, the present disclosure is not limited thereto.

[0188] Therefore, the game device 1000 according to some embodiments of the present disclosure provides the customized game rule or the customized game screen provided from the user to the user to increase the entertainment element.

[0189] The network according to some embodiments of the present disclosure may use various wired communication systems such as public switched telephone network (PSTN), x digital subscriber line (xDSL), rate adaptive DSL (RADSL), multi rate DSL (MDSL), very high speed DSL (VDSL), universal asymmetric DSL (UADSL), high bit rate DSL (HDSL), and local area network (LAN).

[0190] Further, the network presented here may use various wireless communication systems such as code division multi access (CDMA), time division multi access (TDMA), frequency division multi access (FDMA), orthogonal frequency division multi access (OFDMA), single carrier-FDMA (SC-FDMA), and other systems.

[0191] The network according to the embodiments of the present disclosure may be configured regardless of communication modes such as wired and wireless modes and constituted by various communication networks including a personal area network (PAN), a wide area network (WAN), and the like. Further, the network may be known World Wide Web (WWW) and may adopt a wireless transmission technology used for shortdistance communication, such as infrared data association (IrDA) or Bluetooth.

[0192] The techniques described in this specification may also be used in other networks in addition to the aforementioned networks.

[0193] The control unit 100 of the game device 1000 may generally control an overall operation of the game device 1000. The control unit 100 processes a signal, data, information, and the like input or output through the components or drives the application program stored in the memory 300 to provide or process information or a function appropriate for the user.

[0194] The control unit 100 may control at least some of the components described jointly with FIG. 1 in order to drive the application program stored in the memory 300. Furthermore, the control unit 100 may combine and operate at least two of the components included in the game device 1000 in order to drive the application program. Various embodiments described herein may be implemented in a recording medium and a storage medium readable by a computer or a device similar to the computer by using, for example, software, hardware, or a combination thereof.

[0195] According to hardware implementation, the embodiment described herein may be implemented by using at least one of the application specific integrated circuits (ASICs), the digital signal processors (DSPs), the digital signal processing devices (DSPDs), the programmable logic devices (PLDs), the field programmable gate arrays (FPGAs), the processors, the controllers, the micro-controllers, the microprocessors, and the electric units for performing other functions. In some cases, the embodiments described in the specification may be implemented by the control unit 100 itself.

[0196] According to software implementation, embodiments such as a procedure and a function described in the present disclosure may be implemented by separate software modules. Each of the software modules may perform one or more functions and operations described in the specification. A software code may be implemented

by a software application written by an appropriate program language. The software code may be stored in the memory 300 and executed by the control unit 100.

[0197] FIG. 2 is a perspective view of the game device according to some embodiments of the present disclosure.

[0198] Referring to FIG. 2, the game device 1000 may include a first table module 1100 constituting a first section 1110 placed in at least one first game cup 2000 in the game table, and a second table module 1200 constituting a second section 1210 in which the ball is bounded, and having a separable structure from the first table module 1100.

[0199] Hereinafter, a separation structure of the first table module 1100 and the second table module 1200 will be described below with reference to FIGS. 10 to 15.

[0200] The game device 1000 may include a pad 1120 provided in a first area 1111 of the first section 1110, and preventing the bound of the ball. Meanwhile, on the first section 1110, at least one first game cup may be placed in a second area 1112 other than the first area 1111.

[0201] According to some embodiments of the present disclosure, when the ball hits the pad 1120, the pad 1120 may be made of a material absorbing an impact of the ball so as to prevent the ball from being bounded.

[0202] For example, the pad 1120 may be made of low density polyethylene (LDPE), high density polyethylene (HDPE), or a material formed by mixing low density polyethylene (LDPE) and linear low density polyethylene (LLDPE).

[0203] As another example, the pad 1120 may be made of a material formed by rubber.

[0204] Therefore, the material absorbing the impact of the ball forming the pad 1120 according to some embodiments of the present disclosure may prevent a game progress from being delayed due to a situation in which the ball is bounced off while playing the game. That is, the pad 1120 according to some embodiments of the present disclosure may improve convenience for the game players.

[0205] According to some other embodiments of the present disclosure, when the ball hits the pad 1120, the pad 1120 may generate a magnetic attraction with the ball so as to prevent the ball from being bounded. Here, the magnetic attraction may have only a magnitude enough for the ball to be bounded when the ball hits the pad 1120. Therefore, the magnetic attraction may prevent the ball moving in the air from being pulled toward the pad 1120. That is, even though there is the magnetic attraction, the magnetic attraction is generated as large as a predetermined height from the pad 120, and as a result, a trajectory of the ball thrown by the player may be maintained.

[0206] For example, the pad may be made of the permanent magnet. In this case, the ball may include a metallic material generating the magnetic attraction with the pad 1120.

[0207] As another example, the pad 1120 may be made of an electromagnet. In this case, the pad 1120 may be controlled so that current flows on a coil included in the electromagnet when the game round starts. That is, the pad 1120 may be controlled to be magnetized when the game round starts. In this case, the ball may include a metallic material generating the magnetic attraction with the pad 1120. Here, the magnetic attraction may have only a magnitude enough for the ball to be bounded when the ball hits the pad 1120.

[0208] Therefore, the ball is not bounded off, but attached to the pad 1120 according to some embodiments of the present disclosure, which may prevent the game progress from being delayed due to a situation in which the ball is bounded off while playing the game. That is, the pad 1120 according to some embodiments of the present disclosure may improve convenience for the game players.

[0209] According to some embodiments of the present disclosure, the game device 1000 may have at least one through hole which has a second diameter exceeding a first diameter of the ball, and is present in the pad 1120 and the first area 1111 of the first section 1110. Further, the game device 1000 may include a ball collection unit that collects the ball which passes through at least one through hole.

[0210] Therefore, the ball is not bounded off to the outside, but passes through the through hole according to some embodiments of the present disclosure, which may prevent the game progress from being delayed due to a situation in which the ball is bounded off to the outside while playing the game. That is, the through hole according to some embodiments of the present disclosure may improve the convenience for the game players.

[0211] Hereinafter, the through hole and the ball collection unit will be described below with reference to FIGS. 7 and 8.

[0212] The game device 1000 may include a leg unit 1400 which allows the game table to be installed at a predetermined height.

[0213] The leg unit 1400 according to some embodiments of the present disclosure may have a structure capable of adjusting a height. Further, the leg unit 1400 may have a structure of being folded toward the bottom of the game table.

[0214] Additionally, the leg unit 1400 may also have wheels on the bottom in order to facilitate movement of the game table. In this case, the game device 1000 may generate an effect that the user may easily move the game device 1000 without applying great force when moving the game device 1000.

[0215] Additionally, the leg unit 1400 may move by a sliding scheme in a direction parallel to the game table in order to support the game table and adjust the center of gravity of the game table. As a result, when a specific obstacle is present at an installation location of the game table, the obstacle and the leg unit 1400 do not contact by sliding movement of the leg unit 1400, and as a result, installation convenience of the game table may be en-

hanced.

[0216] As described above in the description of FIG. 1, the game device 1000 may include the display unit 400. For example, as illustrated in FIG. 2, the display unit 400 may be provided on a second table module 1200 (the second section 1210 of the game table). However, the location where the display unit 400 is provided in the game device 1000 is not limited thereto.

[0217] FIG. 3 is an exploded perspective view of the game device according to some embodiments of the present disclosure.

[0218] According to some embodiments of the present disclosure, the game device 1000 may include the ball sensing unit 210 for sensing whether the ball is positioned in any one cup of at least one first game cup 2000.

[0219] Specifically, the ball sensing unit 210 may be provided at a lower portion of each of at least one first game cup 2000 in order to sense whether the ball is positioned in any one cup of at least one first game cup 2000 as illustrated in FIG. 3.

[0220] That is, the ball sensing unit 210 may be provided between the top of the first table module 1100 and the bottom of each of at least one first game cup 2000.

[0221] Therefore, the ball sensing unit 210 may sense whether the ball is positioned in any one cup among at least one first game cup.

[0222] The method for sensing whether the ball is positioned in any one cup of at least one first game cup by the ball sensing unit 210 is described in detail in FIG. 1, so a detailed description of the method is omitted.

[0223] According to some embodiments of the present disclosure, the game device 1000 may include the bound sensing unit 220 for sensing whether the ball is bounded on the game table.

[0224] Specifically, as illustrated in FIG. 3, the bound sensing unit 220 may be provided under a top plate put on the second section in order to sense whether the ball is bounded on the second section of the game table.

[0225] Therefore, the bound sensing unit 220 may sense whether the ball is bounded on the second section of the game table.

[0226] The method for sensing whether the ball is bounded on the second section of the game table by the bound sensing unit 220 is described in detail in FIG. 1, so a detailed description of the method is omitted.

[0227] The display unit 400 of the game device 1000 may be provided above the top plate put on the second section.

[0228] Therefore, the display unit 400 provides the event image to the player, for example to increase the entertainment element for the game conducted in the game device 1000.

[0229] FIG. 4 is a diagram for describing an example of a method for recognizing a ball according to some embodiments of the present disclosure. FIG. 5 is a diagram for describing another example of the method for recognizing a ball according to some embodiments of the present disclosure.

[0230] According to some embodiments of the present disclosure, the game played in the game device 1000 may be a game in which the player throws the ball so that the ball is bounded on the game table, and then positioned in at least one first game cup or the ball is not bounded on the game table, and positioned in at least one first game cup. For example, the game played in the game device 1000 may be the beer pong game.

[0231] First, as illustrated in FIG. 4, a ball 3000 used in the game may be bounded on the second table module 1200 (the second section of the game table) of the game device 1000. Here, the ball 3000 may be thrown by the player.

[0232] The bound sensing unit 220 of the game device 1000 may be provided under the top plate of the second table module 1200 as described above in the description of FIG. 3. In this case, the bound sensing unit 220 may sense the vibration generated in the second table module 1200. Therefore, the bound sensing unit 220 of the game device 1000 may recognize whether the ball 3000 is bounded on the top plate (the second section of the game table) of the second table module 1200 by using the vibration. However, the present disclosure is not limited thereto, and the bound sensing unit 220 may recognize whether the ball 3000 is bounded on the top plate (the second section of the game table) of the second table module 1200 by using various methods described above in FIG. 1.

[0233] The method for sensing whether the ball is bounded on the second table module (the second section of the game table) by the bound sensing unit 220 is described in detail in FIG. 1, so a detailed description of the method is omitted.

[0234] Meanwhile, referring to FIG. 5, the ball 3000 may be positioned in a first cup 2100 of at least one first game cup 2000.

[0235] As described above in the description of FIG. 3, the ball sensing unit 210 of the game device 1000 may be provided at the lower portion of each of at least one first game cup 2000 in order to sense whether the ball is positioned in any one cup of at least one first game cup 2000. In this case, the ball sensing unit 210 may sense the weight change generated in the first cup 2100. Therefore, the ball sensing unit 210 of the game device 1000 may recognize whether the ball 3000 is positioned in the first cup 2100 of at least one first game cup 2000 by using the weight change. However, the present disclosure is not limited thereto, and the ball sensing unit 210 may recognize whether the ball 3000 is positioned in any one cup of at least one first game cup 2000 by using various methods described above in FIG. 1.

[0236] The method for sensing whether the ball is positioned in any one cup of at least one first game cup by the ball sensing unit 210 is described in detail in the description of FIG. 1, so a detailed description of the method is omitted.

[0237] FIG. 6 is a diagram for describing an example of a ball according to some embodiments of the present

disclosure.

[0238] First, FIG. 6A illustrates the ball 3000 according to some embodiments of the present disclosure.

[0239] According to some embodiments of the present disclosure, the ball 3000 may be thrown toward the game cup by the player.

[0240] The ball 3000 according to some embodiments of the present disclosure may have the internal space like the table tennis ball, for example. Further, the ball 3000 may include a specific material or a specific device in the internal space.

[0241] The ball 3000 according to some other embodiments of the present disclosure may be made of the specific material. For example, the ball 3000 may be made of a metallic material having permeability of a predetermined magnitude. As another example, the ball 3000 may be made of a material having magnetism. That is, the ball 3000 itself may be made of metal having permeability of a predetermined magnitude or the material having the magnetism. In this case, the ball 3000 may not include a specific material or a specific device in the internal space. However, the present disclosure is not limited thereto.

[0242] Referring to FIG. 6B, a A-A' cross-sectional view of the ball illustrated in FIG. 6A is illustrated.

[0243] According to some embodiments of the present disclosure, the ball 3000 may include, in the internal space, a specific material or a specific device 3100 used for sensing whether the ball 3000 is bounded on the game table (specifically, the second table module 1200) of the game device 1000 or used for sensing whether the ball 3000 is positioned in any one cup of at least one game cup 2000.

[0244] As an example, when the sensing unit 200 of the game device 1000 acquires the sensing data by using the magnetic field, the ball 3000 may include a magnetic unit that generates the magnetic field. Here, the magnetic unit may be the permanent magnet. However, the present disclosure is not limited thereto.

[0245] That is, the sensing unit 200 of the game device 1000 recognizes the magnetic field generated by the magnetic unit included in the ball 3000 to acquire the sensing data.

[0246] As another example, when the sensing unit 200 of the game device 1000 acquires the sensing data by using the electronic tag, the ball 3000 may include the electronic tag.

[0247] That is, the sensing unit 200 of the game device 1000 reads the electronic tag included in the ball 3000 to acquire the sensing data. Additionally, the sensing unit 200 reads the electronic tag included in the ball 3000 to acquire information (e.g., the identification information of the player) coded in the electronic tag.

[0248] As yet another example, when the sensing unit 200 of the game device 1000 acquires the sensing data by using the change of the magnetic field, the ball 3000 may include the metallic material having the permeability of the predetermined magnitude, which causes the change of the magnetic field.

[0249] FIGS. 7 and 8 are diagrams for describing an example a guard unit and a through hole which may be provided in the game device according to some embodiments of the present disclosure.

[0250] According to some embodiments of the present disclosure, the game device 1000 may include a guard unit 1500 having a predetermined height so as to prevent the ball from going out of the game table.

[0251] As illustrated in FIG. 7, the guard unit 1500 may have a shape of covering the first table module 1100 (i.e., the first section) of the game table.

[0252] Therefore, the guard unit 1500 may prevent the ball from hitting the game table or the game cup, and being bounded off in the beer pong game, for example. That is, the guard unit 1500 according to some embodiments of the present disclosure may improve the convenience for the game players.

[0253] Additionally, the guard unit 1500 may have a net structure. In this case, when the guard unit 1500 hits the ball, the guard unit 1500 absorbs the impact to reduce a repulsive power. That is, the guard unit 1500 may prevent the ball from hitting the guard unit 1500 and being bounded off to the outside.

[0254] Additionally, the guard unit 1500 may have a structure of being capable of being coupled to the game table. Therefore, the player may couple or remove the guard unit 1500 as necessary in conducting the game by using the game device 1000.

[0255] Additionally, the guard unit 1500 may be inserted into the game table. In this case, the guard unit 1500 may be withdrawn from a location at which the guard unit 1500 is inserted into the game table through a physical manipulation action of the user or a driving unit (not illustrated) of the game device 1000 (i.e., automatically).

[0256] That is, the guard unit 1500 is withdrawn to cover the first table module 1100 due to the physical manipulation action of the user or power delivery of the driving unit to perform a function (i.e., a function to prevent the ball from hitting the game table or the game cup and being bounded off) of the guard unit 1500. Here, the driving unit may operate according to an external signal. For example, the user may manipulate the driving unit by transmitting a specific instruction signal to the game device 1000 by using the user terminal. However, the present disclosure is not limited thereto.

[0257] Additionally, the guard unit 1500 may pivot-move based on a contact portion of the guard unit 1500 contacting the game table automatically or according to the physical manipulation action.

[0258] Specifically, the guard unit 1500 may have a form of pivot-moving based on the contact portion of the game table and the guard unit 1500 and surrounding an upper direction of the first table module 1100. In this case, the function (i.e., the function to prevent the ball from hitting the game table or the game cup, and being bounded off) of the guard unit 1500 may be performed. Meanwhile, the guard unit 1500 may have a form of pivot-mov-

ing based on the contact portion of the game table and the guard unit 1500 and surrounding a lower direction of the second table module 1200. In this case, the guard unit 1500 may serve as a side portion of the game table.

[0259] In other words, the guard unit 1500 may pivot-move between a guard location (the form of surrounding the upper direction of the first table module 1100) and a nonguard location (the form of surrounding the lower direction of the first table module 1100).

[0260] According to some embodiments of the present disclosure, the game device 1000 may include at least one through hole 1130 having a second diameter exceeding a first diameter of the ball so as to prevent the ball from going out of the game table.

[0261] As illustrated in FIG. 7, the through hole 1130 may be provided in the first area 1111 of the first section. Further, the through hole 1130 may penetrate the top plate of the first table module and the pad 1120.

[0262] Therefore, the through hole 1130 may make the ball thrown onto the game table pass through the lower portion of the game table. Specifically, the through hole 1130 may make, for example, a ball not entering the game cup pass through the lower portion of the game table in the beer pong game.

[0263] Meanwhile, the game device 1000 may include the ball collection unit 1140.

[0264] Specifically, as illustrated in FIG. 8, the game device 1000 may include the ball collection unit 1140 that collects the ball passing through the through hole 1130. That is, the ball passing through the through hole 1130 may be stored in the ball collection unit 1140.

[0265] Specifically, the ball collection unit 1140 may be provided under the game table in order to collect the ball passing through the through hole 1130. More specifically, the ball collection unit 1140 may be provided in one area under the game table corresponding to the first area 1111 (i.e., the area with the through hole).

[0266] Therefore, the ball collection unit 1140 enables the ball used for the game to be conveniently collected to improve the convenience for the game players.

[0267] Additionally, the ball collection unit 1140 may have a structure of being capable of being coupled to the game table. Therefore, the player may couple or remove the ball collection unit 1140 as necessary in conducting the game by using the game device 1000.

[0268] FIG. 9 is a diagram for describing an example of table modules according to some embodiments of the present disclosure.

[0269] According to some embodiments of the present disclosure, the game device 1000 may include a first table module 1100, a second table module 1200, a third table module 1300, and a leg unit 1400 supporting the game table.

[0270] As illustrated in FIG. 9, the first table module 1100 may constitute a first section 1110 in which at least one first game cup is placed in the game table. Further, the second table module 1200 may constitute a second section 1210 in which the ball is bounded in the game table. Further, the third table module 1300 may constitute a third section 1310 which is positioned in a direction opposite to a direction in which the first section 1110 is positioned in the second section 1210, and in which at least one second game cup is placed.

[0271] For example, according to some embodiments of the present disclosure, the game device 1000 may be a beer pong game device.

[0272] In this case, a beer cup (i.e., at least one first game cup) of a first team (a group of players) may be placed in the first table module 1100. Further, a beer cup (i.e., at least one second game cup) of a second team different from the first team may be placed in the third table module 1300.

[0273] Meanwhile, each of the first team and the second team may have a predetermined number of ball throwing opportunities (i.e., the number of ball throwing times, e.g., two times or three times) for each round. In addition, when the ball throwing opportunity is given to players which belong to each of the first team and the second team, the players may throw and put the ball in the cup of the counterpart.

[0274] That is, the players which belong to the first team may throw the ball toward the beer cup of the second team, and the players which belong to the second team may throw the ball toward the beer cup of the first team. Specifically, the players which belong to the first team may throw the ball toward the third table module 1300 in which the beer cup of the second team is placed in the vicinity of the first table module 1100 in which the beer cup of the first team is placed. Meanwhile, the players which belong to the second team may throw the ball toward the first table module 1100 in which the beer cup of the first team is placed in the vicinity of the third table module 1300 in which the beer cup of the second team is placed.

[0275] Additionally, when each player throws the ball toward the beer cup of the counterpart, each player may throw the ball toward the second table module 1200 (the second section of the game table) so that the ball is bounded on the second table module 1200.

[0276] In addition, when each player throws the ball and puts the ball into the beer cup of the counterpart team, each player may acquire the game score. Additionally, when each player bounds the ball on the second table module 1200 (the second section of the game table), and then puts the ball into the beer cup of the counterpart team, each player may be granted with the weight for the game score (e.g., a double score).

[0277] The beer pong game which may be performed in the game device 1000 is just an example for assisting understanding the present disclosure, and is not limited thereto.

[0278] The third table module 1300 of the game device 1000 illustrated in FIG. 9 may not be present according to a place or an environment in which the game device 1000 is installed. That is, the third table module 1300 may be separated or removed from the game device

1000.

[0279] Meanwhile, when the third table module 1300 is not present in the game device 1000, the game device 1000 may output the throw line to the bottom surface. In addition, respective players which belong to different teams may throw the ball toward the first game cup placed in the first table module 1100 at the same location (i.e., the throw line). The throw line output from the game device 1000 will be described below with reference to FIGS. 16 to 18.

[0280] According to some additional embodiments of the present disclosure, the second table module 1200 may have a separable structure from the first table module 1100. The detailed description thereof will be described below with reference to FIGS. 10 and 15.

[0281] Hereinafter, a separation structure of the first table module 1100 and the second table module 1200 will be described with reference to FIGS. 10 to 15. However, the present disclosure is not limited thereto, and when the third table module 1300 is included (provided) in the game device 1000, the second table module 1200 and the third table module 1300 may have a separable structure between the first table module 1100 and the second table module 1200.

[0282] According to some additional embodiments of the present disclosure, the second table module 1200 may have a separable structure from the first table module 1100. The separation structure of the first table module 1100 and the second table module 1200 will be described below with reference to FIGS. 10 to 15.

[0283] FIG. 10 is a diagram for describing an example of a coupling structure of the table module according to some embodiments of the present disclosure.

[0284] According to some embodiments of the present disclosure, in the game table of the game device 1000, a connection unit that couples the first table module 1100 and the second table module 1200 may be provided in each of the first table module 1100 and the second table module 1200.

[0285] According to some embodiments of the present disclosure, the connection unit may include magnetic units 30-1 and 30-2 so as to couple the first table module 1100 and the second table module 1200 by using the magnetic force.

[0286] Specifically, the connection unit may include a first magnetic unit provided at a first side of any one of the first table module 1100 and the second table module 1200 and a second magnetic unit provided at a second side of the other one of the first table module 1100 and the second table module 1200. Here, the second side may be in contact with the first side. In addition, the first magnetic unit may have a first pole, and the second magnetic unit may have a second pole that generates the magnetic attraction with the first magnetic unit.

[0287] Each of the first magnetic unit and the second magnetic unit may be the permanent magnet. However, the present disclosure is not limited thereto.

[0288] As illustrated in FIG. 10, the magnetic unit provided in the first table 1100 may be the first magnetic unit 30-1 having the first pole. In addition, the magnetic unit provided in the second table 1200 may be the second magnetic unit 30-2.

[0289] In addition, the first magnetic unit 30-1 and the second magnetic unit 30-2 may be provided at contact locations when the first table module 1100 and the second table module 1200 are coupled. Specifically, the first magnetic unit 30-1 may be provided in the first area of the first side surface of the first table module 1100. In addition, the second magnetic unit 30-2 may be provided in the second area of the second side surface of the second table module 1200, which contacts the first area. In addition, the first magnetic unit 30-1 and the second magnetic unit 30-2 may generate the magnetic attraction with each other.

[0290] The game table of the game device 1000 according to some embodiments of the present disclosure may be easily separated or coupled. Further, the game device 1000 is manufactured in a simple structure to shorten a production process of the game device 1000. As a result, the productivity for the game device 1000 may be enhanced.

[0291] Further, since the game table of the game device 1000 according to some embodiments of the present disclosure has the separable structure, the user may conveniently transport the game device 1000. Further, since the game table of the game device 1000 has the separable structure, the game device 1000 may be easily kept.

[0292] FIG. 11 is a diagram for describing another example of the coupling structure of the table module according to some embodiments of the present disclosure. FIG. 12 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

[0293] According to some embodiments of the present disclosure, in the game table of the game device 1000, a connection unit that couples the first table module 1100 and the second table module 1200 may be provided in each of the first table module 1100 and the second table module 1200.

[0294] According to some embodiments of the present disclosure, the connection unit may include a protrusion unit and an accommodation unit into which the protrusion unit is inserted, and fitted and coupled. Therefore, the first table module 1100 and the second table module 1200 may be easily coupled.

[0295] Referring to FIG. 11, as illustrated, the protrusion unit 40-1 may be provided at the first side of the first table module 1100. In addition, an accommodation unit 40-2 for accommodating the protrusion unit 40-1 may be provided at the second side of the second table module 1200. However, the present disclosure is not limited thereto, and the protrusion unit 40-1 may also be provided at the second side of the second table module 1200. In this case, the accommodation unit 40-2 may be provided at the first side of the first table module 1100.

[0296] In addition, each of the protrusion unit 40-1 and

the accommodation unit 40-2 may be provided at a contact location when the first table module 1100 and the second table module 1200 are coupled. Specifically, the protrusion unit 40-1 may be provided in the first area of the first side surface of the first table module 1100. In addition, the accommodation unit 40-2 may be provided in the second area of the second side surface of the second table module 1200, which contacts the first area.

[0297] The first table module 1100 and the second table module 1200 of the game device 1000 according to some embodiments of the present disclosure may be easily separated or coupled by the user as the protrusion unit is inserted, and fitted and coupled into the accommodation unit. Further, the game device 1000 is manufactured in a simple structure to shorten a production process of the game device 1000. As a result, the productivity for the game device 1000 may be enhanced.

[0298] According to some additional embodiments of the present disclosure, the connection unit may include a protrusion unit and an accommodation unit into which the protrusion unit is inserted, and fitted and coupled. In addition, the connection unit may further include a fixation pin and a through hole for fixing the protrusion unit and the accommodation unit which are fitted and coupled.

[0299] Specifically, the fixation pin may prevent the protrusion unit from leaving from the accommodation unit when the protrusion unit is inserted into the accommodation unit. In addition, the through hole may be formed in the protrusion unit and one area of the second table module 1200 so that the fixation pin may be inserted while the protrusion unit is inserted into the accommodation unit.

[0300] Referring to FIG. 12A, as illustrated, the connection unit may include the protrusion unit 40-1 and the through hole 40-3 formed in one area of the second table module 1200.

[0301] Specifically, the through hole 40-3 is formed in one area of the second table module 1200 to be in communication with the accommodation unit 40-2. Here, one area of the second table module 1200 may be present on a surface different from a dented surface in order to form the accommodation unit 40-2.

[0302] As an example, the through hole 40-3 may connect the first side surface of the second table module 1200 and the second side surface facing the first side surface (i.e., both side surfaces) to penetrate both side surfaces.

[0303] As another example, the through hole 40-3 may be a hole formed inward from the first side surface of the second table module 1200 by a predetermined length. That is, the through hole 40-3 may not penetrate the second side surface facing the first side surface from the first side surface.

[0304] In addition, the through hole 40-3 may also be formed in the protrusion unit 40-1. Therefore, when the user inserts the fixation pin 40-4 into the through hole 40-3 formed in each of the second table module 1200 and the protrusion unit 40-1, the fixation pin 40-4 may prevent the protrusion unit 40-1 from leaving from the accommodation unit 40-2.

[0305] The method for coupling the first table module 1100 and the second table module 1200 will be described in more detail below. First, the user may couple the first table module 1100 and the second table module 1200 so that the protrusion unit 40-1 is inserted into the accommodation unit 40-2. In addition, when the user inserts the protrusion unit 40-1 into the accommodation unit 40-2, the user may insert the fixation pin 40-4 into the through hole 40-3.

[0306] Referring to FIG. 12B, a form of the connection unit in which the protrusion unit 40-1 and the accommodation unit 40-2 are coupled and the fixation pin 40-4 is inserted is illustrated.

[0307] That is, as illustrated in FIG. 12B, the fixation pin 40-4 is inserted into the through hole 40-3 formed in one area of the protrusion unit 40-1 and the second table module 1200 to fix the protrusion unit 40-1 to the accommodation unit 40-2.

[0308] The game device 1000 according to some additional embodiments of the present disclosure may increase the robustness of the coupling of the through hole 40-3 and the fixation pin 40-4.

[0309] Further, since the game table of the game device 1000 according to some embodiments of the present disclosure has the separable structure, the user may conveniently transport the game device 1000. Further, since the game table of the game device 1000 has the separable structure, the user may easily keep the game device 1000.

[0310] FIG. 13 is a diagram for describing still yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

[0311] According to some embodiments of the present disclosure, the game device 1000 may have a structure in which the game table is slidable in order to easily keep or move the game device 1000.

[0312] Referring to FIG. 13, the game device 1000 may include a table housing 50-1 that forms a space capable of accommodating the second table module 1200 on the bottom of the first table module 1100, and has a sliding frame 50-2 formed on an inner surface of the space.

[0313] In this case, the second table module 1200 may move forward and backward along the sliding frame 50-2, and may be inserted into or withdrawn from the table housing 50-1.

[0314] Specifically, a support unit 50-3 may be provided in the lower portion of the second table module 1200. The support unit 50-3 may be extended toward the bottom from the side portion of the second table module 1200, and supported on the sliding frame 50-2. In addition, the support unit 50-3 may be sliding-coupled to the sliding frame 50-2.

[0315] According to some additional embodiments of the present disclosure, a roller may be provided on the bottom of the support unit 50-3 sliding-coupled to the

sliding frame 50-2.

[0316] Specifically, when the sliding frame 50-2 and the support unit 50-3 slide, the roller provided in the support unit 50-3 may rotate along the top of the sliding frame 50-2 in order to attenuate frictional force depending on sliding.

[0317] Therefore, according to some additional embodiments of the present disclosure, the user may withdraw the second table module 1200 accommodated in the internal space of the table housing 50-1 without applying great force. Further, the user may also insert the second table module 1200 into the internal space of the table housing 50-1 without applying the great force.

[0318] Here, since the second table module 1200 moves by a sliding scheme, and is inserted into or withdrawn from the table housing 50-1, the user may rapidly install the game table.

[0319] Meanwhile, the user may insert the second game table 1200 into the first game table 1100 when keeping the game device 1000. In this case, a volume of the game device 1000 may be reduced. Therefore, the user may also easily keep the game device 1000.

[0320] FIG. 14 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

[0321] According to some embodiments of the present disclosure, the game device 1000 may have a structure in which the game table is slidable in order to easily keep or move the game device 1000.

[0322] Referring to FIG. 14, the game device 1000 may include a guide rail 60-1 which enables the second table module 1200 to be slidable at an upper portion of the first table module 1100. Here, the guide rail 60-1 may be provided in one area of the side portion at the upper portion of the first table module 1100.

[0323] That is, the second table module 1200 may move forward and backward along the guide rail 60-1, and have a form of covering the upper portion of the first table module 1100.

[0324] Specifically, the second table module 1200 may include a support unit 60-2 which is provided at the lower portion of the second table module 1200, is extended toward the bottom from the side portion of the second table module 1200, and sliding coupled to the guide rail 60-1.

[0325] According to some additional embodiments of the present disclosure, the roller may be provided on the bottom of the support unit 60-2 sliding-coupled to the guide rail 60-1.

[0326] Specifically, when the guide rail 60-1 and the support unit 60-2 are sliding-coupled, the roller provided in the support unit 60-2 may rotate along the top of the guide rail 60-1. In this case, the frictional force between the guide rail 60-1 and the support unit 60-2 depending on the sliding may be attenuated.

[0327] Therefore, according to some additional embodiments of the present disclosure, the user may withdraw the second table module 1200 accommodated in the internal space of the table housing 50-1 without applying great force. Further, the user may also locate the second table module 1200 at the upper portion of the first table module 1100 without applying the great force.

[0328] Here, since the second table module 1200 moves by a sliding scheme, and is stored in or withdrawn from the upper portion of the first table module 1100, the user may rapidly install the game table.

[0329] Meanwhile, the user may locate the second game table 1200 at the upper portion of the first game table 1100 when keeping the game device 1000. In this case, the volume of the game device 1000 may be reduced. Therefore, the user may also easily keep the game device 1000.

[0330] FIG. 15 is a diagram for describing yet another example of the coupling structure of the table module according to some embodiments of the present disclosure.

[0331] The game table of the game device 1000 according to some embodiments of the present disclosure may have a foldable structure. In this case, the game device 100 may be easily kept or transported.

[0332] Referring to FIG. 15, the game device 1000 may include hinges 70-1 and 70-2 coupled to the first table module 1100 and the second table module 1200, respectively, and a hinge pin 70-3 to which the hinges 70-1 and 70-2 are fastened so that the first table module 1100 and the second table module 1200 are pivotable.

[0333] Specifically, the first hinge 70-1 may be coupled to the bottom of the any one of the first table module 1100 and the second table module 1200 and the second hinge 70-2 may be coupled to the bottom of the other one of the first table module 1100 and the second table module 1200. In addition, the first hinge 70-1 and the second hinge 70-2 may be fastened by the hinge pin 70-3.

[0334] The first hinge 70-1 may be coupled to the first area of the bottom of the first table module 1100. Here, the first area may be an area positioned at one terminal on the bottom of the first table module 1100. In addition, the second hinge 70-2 may be coupled to the second area of the bottom of the second table module. Here, the second area may be an area positioned at one terminal on the bottom of the second table module 1200. In addition, when the first table module 1100 and the second table module 1200 are coupled, the first area and the second area may be placed at locations adjacent to each other.

[0335] Here, the first hinge 70-1 and the second hinge 70-2 may be coupled to the first table module 1100 and the second table module 1200, respectively through screws. However, the present disclosure is not limited thereto.

[0336] However, locations to which the first hinge 70-1 and the second hinge 70-2 are coupled are not limited to the above-described example, and the first hinge 70-1 and the second hinge 70-2 may also be coupled to the tops of the first table module 1100 and the second table

module 1200, respectively.

[0337] Meanwhile, the first hinge 70-1 and the second hinge 70-2 may be fastened by the hinge pin 70-3. In this case, the first table module 1100 and the second table module 1200 may be rotated and moved or folded or unfolded around the hinge pin 70-3.

[0338] Therefore, the game table of the game device 1000 may have a foldable structure. In this case, the user may conveniently transport the game device 1000.

[0339] Further, the user may fold the first table module 1100 and the second table module 1200 when keeping the game device 1000. In this case, the volume of the game device 1000 may be reduced. Therefore, the user may also easily keep the game device 1000.

[0340] FIG. 16 is a diagram for describing an example of a throw line according to some embodiments of the present disclosure. FIG. 17 is a diagram for describing a location of the throw line and a throw line irradiation unit according to some embodiments of the present disclosure.

[0341] According to some embodiments of the present disclosure, the game device 1000 may include a throw line irradiation unit 600 that irradiates line light to a location of a throw line which is a location where the player throws the ball or irradiates an image including information on the location of the throw line to the throw line.

[0342] In general, a game (e.g., the beer pong game) of a scheme in which the player throws the ball to obtain the score adopts a scheme in which the player throws the ball while maintaining a predetermined distance from a target (here, the game cup). That is, the throw line may mean a line provided to the player so as to maintain a predetermined distance between the player throwing the ball and the game cup.

[0343] Referring to FIG. 16, the throw line irradiation unit 600 of the game device 1000 may irradiate an image 20 including information on a location of the throw line onto a bottom surface at a predetermined location.

[0344] For example, the throw line irradiation unit 600 may irradiate an image including at least one of a predetermined guide image, a predetermined event image, and a predetermined advertisement image jointly with the information on the location of the throw-line.

[0345] Therefore, a user who operates the game device 1000 may, for example, provide the game to the players through an image including an advertisement, and be capable of creating a profit through the advertisement. Further, the user who uses the game device 1000 may more easily play the game through the guide image, for example.

[0346] The throw line irradiation unit 600 may irradiate an image 20 including information on the line light or the location of the throw line location on the bottom surface corresponding to a location spaced by a predetermined distance on the extension line connecting the first section 1110 and the second section 1210.

[0347] More specifically, as illustrated in FIG. 17, the image including the information on the line light or the location of the throw line may be irradiated onto the bottom surface spaced by a predetermined distance on the extension line 10 connecting the first section 1110 and the second section 1210, and vertical to the extension line.

[0348] In this case, the player may throw the ball while not crossing the throw line included in the image 20.

[0349] Meanwhile, the throw line irradiation unit 600 may be provided on the bottom or the side of the game table. Further, when the throw line irradiation unit 600 is provided in the game table, the throw line irradiation unit 600 may be provided to be slidable, rotatable, and tiltable in order to adjust the location to which the throw line is irradiated.

[0350] Specifically, the game device 1000 may include a rail 80-1 provided on the bottom or the side of the game table, a movement unit sliding-coupled to the rail to be slidable, and a rotation bracket 80-8 rotatably installed on the movement unit. In addition, the throw line irradiation unit 600 may be installed in a tilting bracket 80-9 to be tiltable on the rotation bracket 80-8.

[0351] Hereinafter, a structure in which the throw line irradiation unit 600 is provided to be slidable, rotatable, and tiltable will be described below with reference to FIG. 18.

[0352] According to some additional embodiments of the present disclosure, the game device 1000 may recognize whether the player oversteps the throw line when throwing the ball.

[0353] As an example, the game device 1000 may include a laser unit provided on the bottom or the side of the game table, and irradiating a laser beam to the bottom surface corresponding to the location of the throw line, and a laser sensing unit sensing a reflected wave of the laser beam, and recognizing whether the player oversteps the throw line when throwing the ball by using the reflected wave.

[0354] As another example, the game device 1000 may include a camera unit provided on the bottom or the side of the game table, and acquiring image data for the location of the throw line. In this case, the control unit 100 may recognize whether the player oversteps the throw line when throwing the ball by using the image data acquired by the camera unit.

[0355] Meanwhile, the control unit 100 may grant the penalty to the player when recognizing that the player oversteps the throw line (recognizes a foul) when throwing the ball by using the reflected wave of the laser beam or the image data.

[0356] For example, when the control unit 100 recognizes that the player oversteps the throw line when throwing the ball, the control unit 100 may process a score for a ball thrown at a relevant round to be invalid. However, the present disclosure is not limited thereto.

[0357] On the other hand, when recognizing that the player oversteps the throw line when throwing the ball by using the reflected wave of the laser beam or the image data, the control unit 100 may allow the player to recog-

nize the relevant fact by using the display unit 400, the audio unit 500, or the illumination unit.

[0358] For example, when the control unit 100 recognizes that the player oversteps the throw line when throwing the ball, the control unit 100 may control the display unit 400 to output an image related to the foul. As another example, when the control unit 100 recognizes that the player oversteps the throw line when throwing the ball, the control unit 100 may control the audio unit 500 to output a sound related to the foul. As yet another example, when the control unit 100 recognizes that the player oversteps the throw line when throwing the ball, the control unit 100 may control the illumination unit to output an illumination related to the foul. However, the present disclosure is not limited thereto.

[0359] FIG. 18 is a diagram for describing an example of the throw line irradiation unit according to some embodiments of the present disclosure.

[0360] According to some embodiments of the present disclosure, the throw line irradiation unit 600 may be provided on the bottom or the side of the game table. Further, when the throw line irradiation unit 600 is provided in the game table, the throw line irradiation unit 600 may be provided to be slidable, rotatable, and tiltable.

[0361] Specifically, referring to FIG. 18A, the game device 1000 may include a rail 80-1, a sliding slot 80-2, a fixation rod 80-3, a sliding support unit 80-4, a sliding wheel 80-5, a rail gear 80-6, a rotation bracket 80-8, and a tilting bracket 80-9.

[0362] A pair of rails 80-1 may be provided on the bottom or the side of the game table of the game device 1000. Here, the rail 80-1 may be provided to have a 'ㄴㄱ' shaped cross-section in which the sliding slot 80-2 is formed at the center. In addition, the rail gear 80-6 may be formed on a part of the top of the rail 80-1.

[0363] Meanwhile, the sliding support unit 80-4 may be seated on the rail 80-1. Here, at least four sliding wheels 80-5, two each, may be rotatably axially fixed to each of both side surfaces of the sliding support unit 80-4, respectively. Here, the sliding support unit 80-4 or the sliding wheel 80-5 may be coupled and fixed to the rail gear 80-6.

[0364] Additionally, a driving motor capable of driving the sliding wheel 80-5 may be embedded inside the sliding support unit 80-4. Here, the driving motor may be operated by the control unit 100 of the game device 1000.

[0365] At least one fixation rod 80-3 may penetrate the sliding slot 80-2. An upper end of the fixation rod 80-3 may be fixed to the bottom of the sliding support unit 80-4, and the movement unit 80-7 may be fixed to the bottom of the fixation rod 80-3.

[0366] According to some embodiments of the present disclosure, the throw line irradiation unit 600 may be moved in a forward and backward direction through the sliding support unit 80-4 which moves along the rail 80-1.

[0367] Referring to FIG. 18B, FIG. 18 is a diagram illustrating the structure illustrated in FIG. 18A viewed from the bottom.

[0368] As illustrated in FIG. 18B, the rotation bracket 80-8 may be rotatably installed on the movement unit 80-7 coupled to the sliding support unit 80-4 through the fixation rod 80-3. In addition, the tilting bracket 80-9 may be installed on the rotation bracket 80-8 which allows the throw line irradiation unit 600 to be tiltable. In addition, the throw line irradiation unit 600 may be installed in the tilting bracket 80-9.

[0369] That is, the throw line irradiation unit 600 may be tilted according to the operation of the tilting bracket 80-9. The throw line irradiation unit 600 may be rotated according to the operation of the rotation bracket 80-8. In addition, the throw line irradiation unit 600 may slide and move according to the operation of the movement unit 80-7 coupled to the sliding support unit 80-4.

[0370] Therefore, the user may adjust an irradiation location and an irradiation angle of the image including the information on the line light or the location of the throw line.

[0371] FIG. 19 is a flowchart for describing an example of a method for calculating a game score by a control unit of a game device according to some embodiments of the present disclosure.

[0372] According to some embodiments of the present disclosure, a control unit 100 of a game device 1000 may calculate a game score based on sensing data sensed by a sensing unit 200. Further, the control unit 100 may recognize whether a predetermined event occurs based on the sensing data sensed by the sensing unit 200.

[0373] Referring to FIG. 19, the control unit 100 may acquire first sensing data that a ball is positioned in a first cup among at least one first game cup through a ball sensing unit 210 (S110).

[0374] In this case, the control unit 100 may recognize whether that second sensing data that the ball hits a guard unit is acquired through a guard sensing unit 230 (S120).

[0375] When the control unit 100 recognizes that the second sensing data that the ball hits the guard unit is acquired through the guard sensing unit 230 (Yes in S120), the control unit 100 may process a game score to be invalid (S130).

[0376] That is, the control unit 100 may recognize whether the ball hits the guard unit installed to prevent the ball from going out of a game table according to whether to acquire the second sensing data. In addition, when the control unit 100 recognizes that the ball hits the guard unit and the ball is positioned in the first cup, the control unit 100 may process the score for the relevant ball to be invalid.

[0377] Specifically, the ball hitting the guard unit may be a ball (e.g., a miss ball) which leaves to the outside of the game table if there is no guard unit. Therefore, the control unit 100 may recognize that the ball hits the guard unit when the second sensing data is acquired by the guard sensing unit 230. In addition, the control unit 100 recognizes the ball as the miss ball to process the game score to be invalid.

[0378] Meanwhile, when the control unit 100 recognizes that the second sensing data that the ball hits the guard unit is not acquired through the guard sensing unit 230 (No in S120), the control unit 100 may recognize whether third sensing data that the ball is bounded on a second section is acquired through a bound sensing unit 220 (S140). When the control unit 100 recognizes that the third sensing data that the ball is bounded on the second section is acquired through the bound sensing unit 220 (Yes in S140), the control unit 100 may calculate the game score and grant a weight to the game score (S150).

[0379] Meanwhile, when the control unit 100 recognizes that the third sensing data that the ball is bounded on the second section is not acquired through the bound sensing unit 220 (No in S140), the control unit 100 may not grant a separate weight to the game score, and calculate the game score (S160).

[0380] That is, the control unit 100 may recognize whether the ball positioned in a first cup is bounded on the second section, and then enters the first cup, or whether the ball is not bounded on the second section and enters the first cup according to whether the third sensing data being acquired. In addition, when the control unit 100 recognizes that the ball is bounded on the second section, and then enters the first cup, the control unit 100 may grant the weight to the score for the relevant ball.

[0381] As an example, when the control unit 100 recognizes that the ball is not bounded on the second section, and enters the first cup, the control unit 100 may determine the score (e.g., 10 points) corresponding to the first cup as a score of the player who throws the ball. However, the present disclosure is not limited thereto.

[0382] As another example, when the control unit 100 recognizes that the ball is bounded on the second section, and enters the first cup, the control unit 100 may determine a double (e.g., 20 points) of the score (e.g., 10 points) corresponding to the first cup as a score of the player who throws the ball. However, the present disclosure is not limited thereto.

[0383] That is, according to some embodiments of the present disclosure, the control unit 100 of the game device 1000 may calculate the game score based on sensing data sensed by a sensing unit 200 provided in the game table.

[0384] According to some embodiments of the present disclosure, the control unit 100 may differently determine the game score according to the cup at which the ball is positioned.

[0385] For example, the control unit 100 may determine the game score as 10 points when the ball is positioned in the first cup of at least one first game cup, 20 points when the ball is positioned in the second cup of at least one first game cup, and 30 points when the ball is positioned in the third cup of at least one first game cup.

[0386] According to some other embodiments of the present disclosure, the control unit 100 may determine the game score equally for all cups at which the ball is positioned.

[0387] For example, the control unit 100 may determine the game score as 10 points when the ball is positioned in the first cup of at least one first game cup, 10 points when the ball is positioned in the second cup of at least one first game cup, and 10 points when the ball is positioned in the third cup of at least one first game cup.

[0388] According to some additional embodiments of the present disclosure, the control unit 100 of the game device 1000 may determine the game score based on the location of the throw line. Here, the throw line irradiation unit 600 of the game device 1000 may irradiate light to a plurality of throw lines. In addition, the game device 1000 may further include a distance measurement sensor for sensing the location of the throw line at which the player throws the ball.

[0389] Specifically, the control unit 100 may grant the weight to the game score or grant a penalty to the game score based on the location of the throw line at which the player throws the ball.

[0390] For example, the control unit 100 may differently grant scores to the first player and the second player even though the first player and the second player puts the ball in the same game cup (i.e., game cups to which the same score is granted, e.g., 10 points). That is, the control unit 100 may determine a second score (e.g., 20 points) of the second player who throws the ball at a second throw line location relatively far from the game table to be higher than a first score (e.g., 10 points) of the first player who throws the ball at a first throw line location relatively close to the game table. However, the present disclosure is not limited thereto.

[0391] Therefore, the game device 1000 according to some additional embodiments of the present disclosure grants the game score of the player by various schemes to increase the entertainment element for the game performed in the game device 1000.

[0392] Meanwhile, the control unit 100 of the game device 1000 may recognize whether a predetermined event occurs based on the game score. In addition, the control unit 100 may control the display unit 400 or the audio unit 500 to output an image or sound effect corresponding to the predetermined event. Here, the image or sound effect corresponding to the predetermined event may be prestored in the memory 300 of the game device 1000.

[0393] The predetermined event may include, for example, a first event in which the ball thrown by the player is positioned in a predetermined specific cup among at least one game cups, a second event in which scores acquired by a plurality of balls thrown by the player exceed a predetermined score, and a third event in which at least two balls of the plurality of balls thrown by the player are positioned in the same cup. However, the present disclosure is not limited thereto.

[0394] According to some additional embodiments of the present disclosure, the game device 1000 may acquire an image in which the player throws the ball through

the camera unit. In addition, the control unit 100 may control the display unit 400 to output the image acquired by the camera unit to the display unit when recognizing that the predetermined event occurs.

[0395] Therefore, a differentiated event image is provided for each player to increase the entertainment element of the game played by the game device 1000.

[0396] FIG. 20 is a diagram for describing an example of an application screen related to a game performed by the game device according to some embodiments of the present disclosure.

[0397] According to some embodiments of the present disclosure, the communication unit of the game device 1000 may transmit information related to the game performed in the game device 1000 to the user terminal.

[0398] Specifically, the communication unit may transmit a play history of the game performed in the game device 1000 to the user terminal. Here, the play history may include, for example, the number of game plays, a competition record, and the number of misses of the player. However, the present disclosure is not limited thereto.

[0399] According to some other embodiments of the present disclosure, the communication unit of the game device 1000 may transmit information related to a game to a game server that manages the information related to the game.

[0400] Although not illustrated in the figure, the game server may be provided integrally with the game device 1000. The operator of the game device 1000 may also install the game server inside the game device 1000. For example, any one is selected among one or more game devices 1000 to be set as a main game device 1000. The game device 1000 except for the main game device 1000 is constituted by a sub game device to install the game server inside the main game device 1000. However, this is exemplary, and the game server is also positioned outside the game device 1000 to communicate with other game devices. The main game device may also be connected to the game server installed therein by a network. Further, the main game device and one or more sub game devices may be connected to each other through the network.

[0401] Further, the game server according to some embodiments of the present disclosure may provide an application installable in the user terminal. In addition, the game server may receive play records of users corresponding to the user terminals, respectively from the game device 1000. In this case, the game server may analyze the play records of the users received from the game device 1000, and provide a result of analyzing the play records to the user terminal.

[0402] Further, the game server may also provide, to the user, a means for controlling logging in the game device 1000 by using the user terminal in which the application is installed, controlling the game device 1000, or controlling the game performed in the game device 1000.

[0403] Meanwhile, an application related to the game performed in the game device 1000 may be installed in the user terminal. Here, the application may provide, to the user, the information related to the game received from the communication unit of the game device 1000 or the result of analyzing the play record received from the game server.

[0404] For example, the application may include an application screen 90 illustrated in FIG. 20.

[0405] Specifically, the application screen 90 may include a game record display area 91 in which the game record of the user is displayed, a login information display area 91-1 in which information of a log-in user is displayed, an advertisement and event display area 92 related to the game device 1000, a hot key display area 94 predetermined by the user, and a menu display area 95 of the application. However, the elements described above are not required in implementing the application screen 90 and the application screen 90 may thus have elements more or less than elements listed above.

[0406] The user of the game device 1000 of the present disclosure may conveniently identify a game play record thereof, or a result of analyzing the game play record through the application illustrated in FIG. 20.

[0407] That is, the game device 1000 according to some embodiments of the present disclosure provides various information (e.g., the play record) to the user to induce the user to intuitively recognize a game skill thereof. Therefore, the game device 1000 may enhance a satisfaction of the user for the game or an immersion of the game.

[0408] The description of the presented embodiments is provided so that those skilled in the art of the present disclosure use or implement the present disclosure. Various modifications of the embodiments will be apparent to those skilled in the art and general principles defined herein can be applied to other embodiments without departing from the scope of the present disclosure. Therefore, the present disclosure is not limited to the embodiments presented herein, but should be interpreted within the widest range which is coherent with the principles and new features presented herein.

Claims

1. A game device comprising:

a game table including a first section in which at least one first game cup is disposed and a second section in which the ball is bounded; and
a bound sensing unit provided in the second section, and sensing whether the ball is bounded on the second section.

2. The game device of claim 1, wherein the bound sensing unit

senses a vibration generated in the second sec-

tion, and
recognizes that the ball is bounded on the second section when the vibration exceeds a predetermined size.

3. The game device of claim 1, wherein the bound sensing unit

senses a weight change of the second section, and
recognizes that the ball is bounded on the second section when the weight change of the second section is present.

4. The game device of claim 1, wherein the bound sensing unit includes a camera unit acquiring image data, and
recognizes that the ball is bounded on the second section by using the image data acquired by the camera unit.

5. The game device of claim 4, wherein the bound sensing unit

acquires an image for the second section in a horizontal direction through the camera unit while a round of a game is conducted, and
recognizes that the ball is bounded on the second section when a predetermined shape or a predetermined color is recognized in the image.

6. The game device of claim 1, wherein the bound sensing unit includes

an oscillation unit forming a magnetic field by generating a high frequency, and
a magnetic field detection unit sensing a change of the magnetic field, and
the ball includes a metallic material having a predetermined magnitude of permeability.

7. The game device of claim 6, wherein the bound sensing unit

forms the magnetic field on the second section at a first time in which the round of the game starts by using the oscillation unit, and
recognizes that the ball is bounded on the second section when recognizing the change of the magnetic field at a second time after the first time by using the magnetic field detection unit.

8. The game device of claim 1, wherein the bound sensing unit includes a transistor unit sensing the magnetic field, and
the ball includes a magnetic unit generating the magnetic field.

9. The game device of claim 8, wherein the bound sensing unit recognizes that the ball is bounded on the second section when sensing the magnetic field generated by the magnetic unit included in the ball on the second section at the second time after the first time in which the round of the game starts by using the transistor unit.

10. The game device of claim 1, wherein the bound sensing unit includes a reader unit outputs an electromagnetic field and reads an electronic tag included in the ball.

11. The game device of claim 10, wherein the bound sensing unit

outputs the electromagnetic field on the second section at the first time in which the round of the game starts by using the reader unit, and
recognizes that the ball is bounded on the second section when the electronic tag is read on the second section at the second time after the first time by using the reader unit.

12. The game device of claim 11, wherein the bound sensing unit recognizes a player corresponding to the electronic tag as reading the electronic tag by using the reader unit.

13. The game device of claim 1, further comprising:

a control unit calculates a game score by using sensing data sensed by a sensing unit provided in the game table,
wherein the control unit adds a weight when calculating the game score when the sensing data that the ball is bounded on the second section is acquired through the bound sensing unit.

14. The game device of claim 1, further comprising:
a ball sensing unit provided in the first section, and sensing whether the ball is positioned in any one cup of at least one first game cup.

15. The game device of claim 1, wherein the game table further includes a pad provided in one area of the first section, and preventing the bound of the ball.

16. The game device of claim 1, wherein the game table has a structure in which the first section and the second section are separable.

17. The game device of claim 1, wherein the game table further includes a third section which is positioned in a direction opposite to a direction at which the first section is positioned in the second section and in which at least one second game cup is placed.

18. The game device of claim 1, further comprising:
a throw line irradiation unit provided on a bottom or a side of the game table, and irradiating light of the throw line externally.

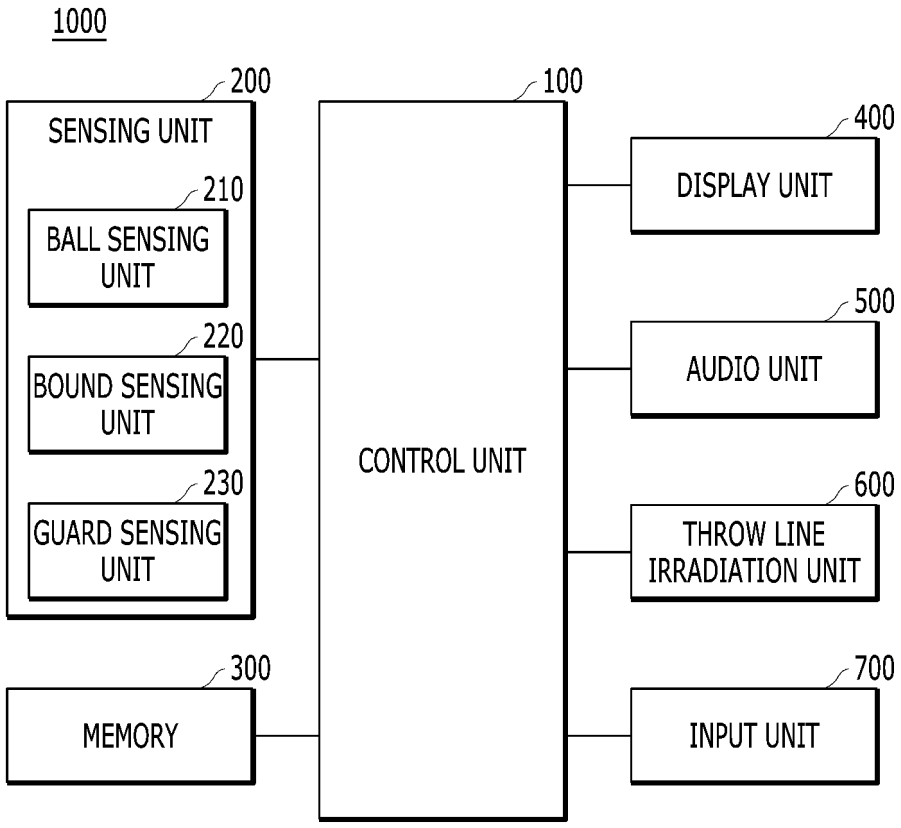
19. The game device of claim 1, further comprising:

a control unit recognizing whether a predetermined event occurs based on sensing data sensed by a sensing unit; and
a memory storing an image or sound effect corresponding to the predetermined event.

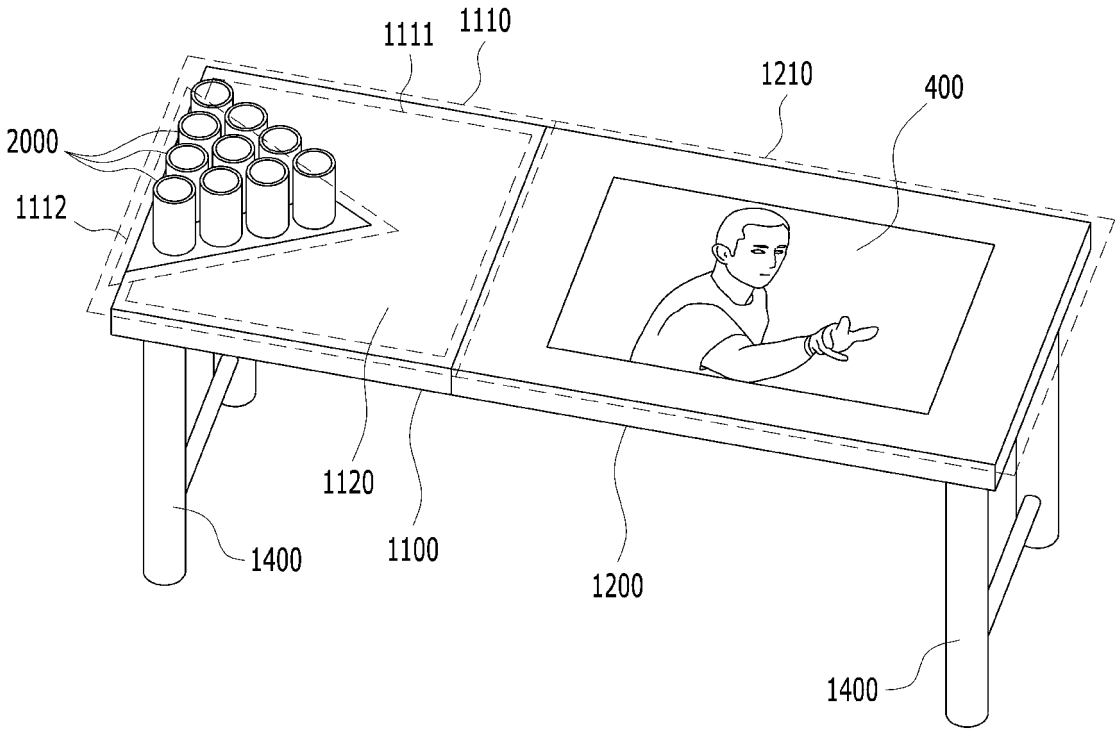
20. The game device of claim 19, further comprising:

a display unit provided in one area of the game table, and outputs the image corresponding to the predetermined event when the control unit recognizes that the predetermined event occurs; and
an audio unit outputting the sound effect corresponding to the predetermined event when the control unit recognizes that the predetermined event occurs.

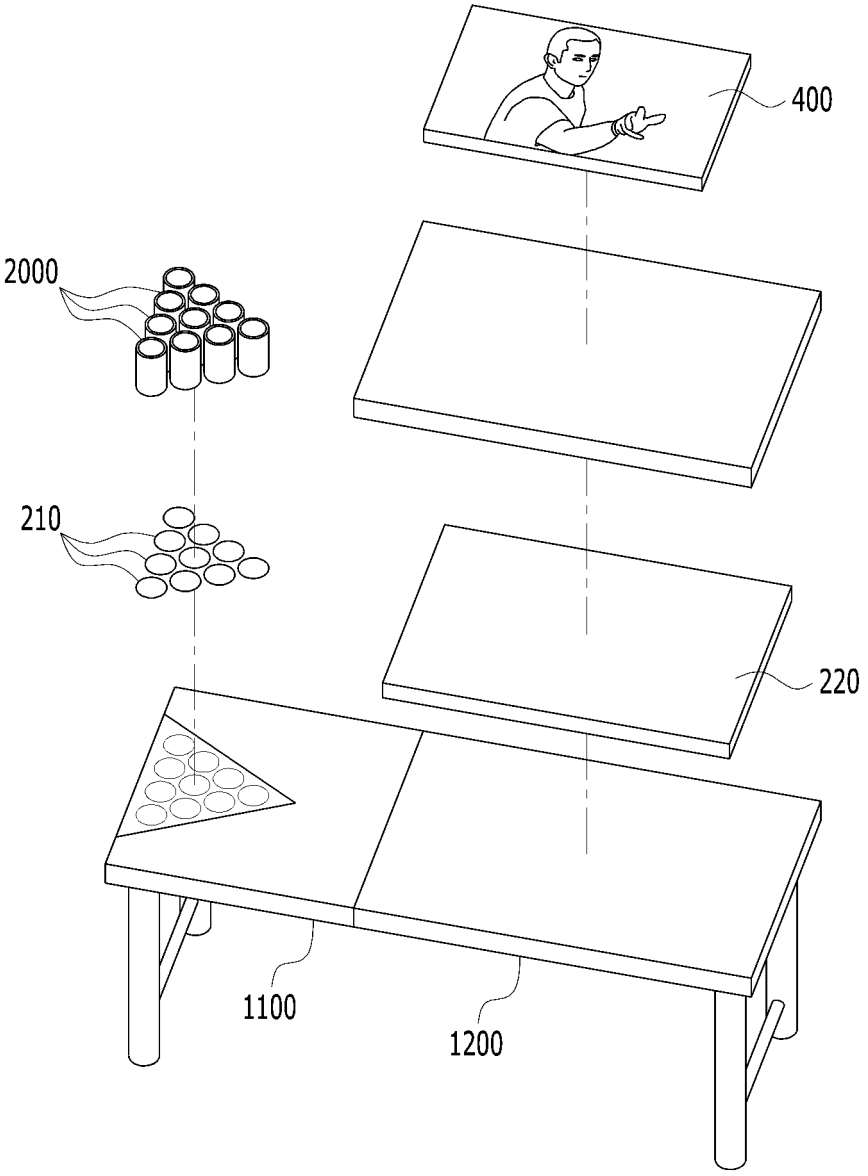
【Figure 1】


1000
200
SENSING UNIT
210
BALL SENSING UNIT
220
BOUND SENSING UNIT
230
GUARD SENSING UNIT
300
MEMORY
100
CONTROL UNIT
400
DISPLAY UNIT
500
AUDIO UNIT
600
THROW LINE IRRADIATION UNIT
700
INPUT UNIT

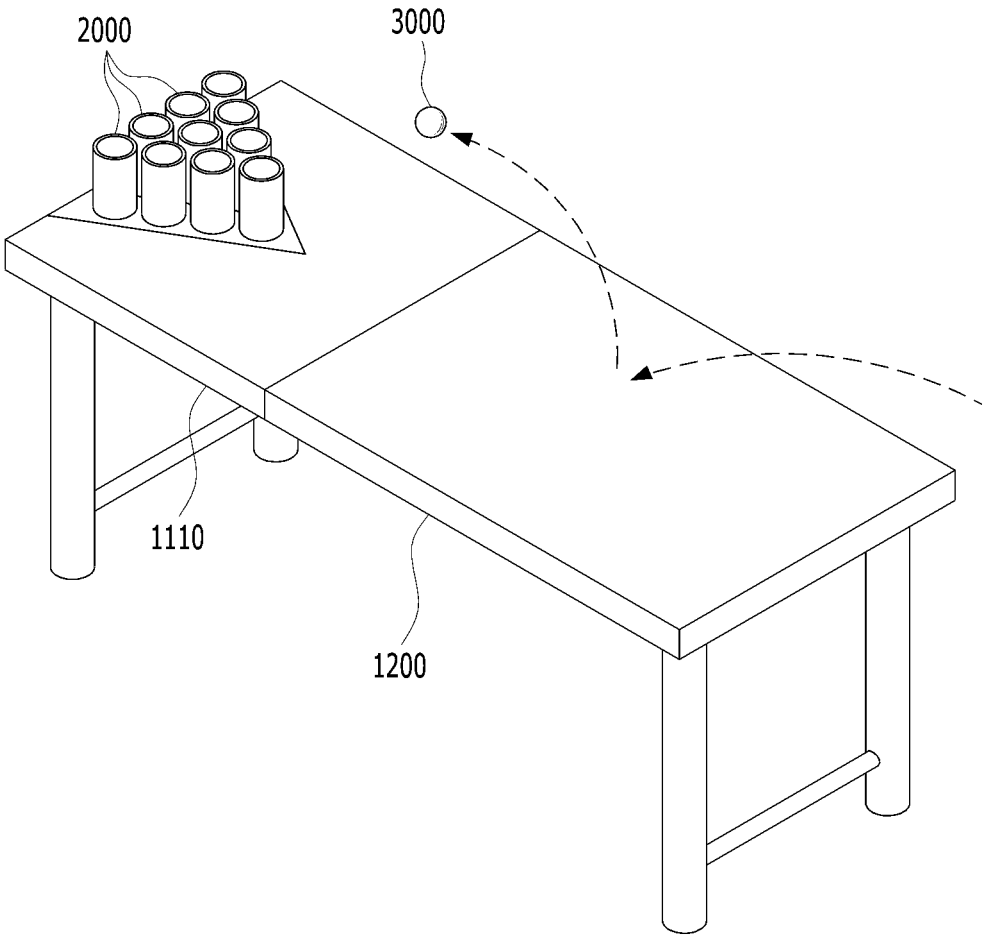
【Figure 2】



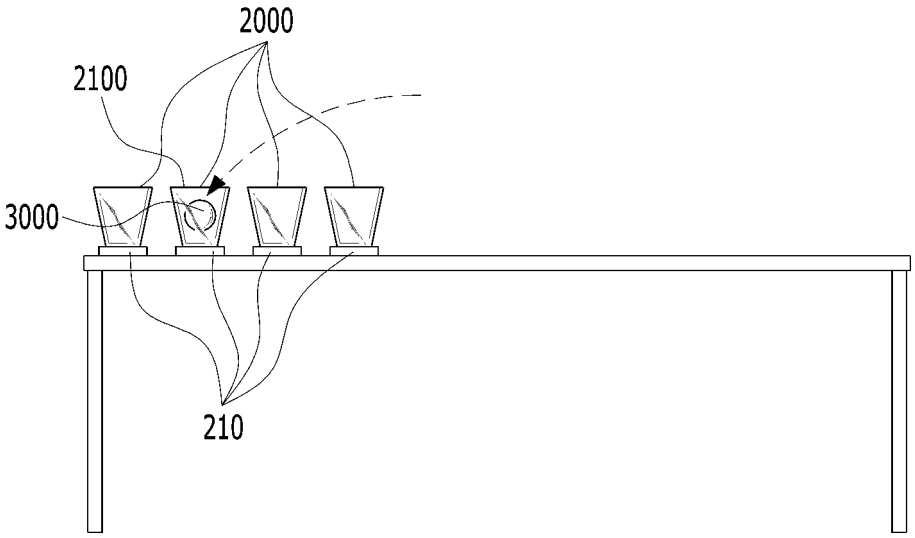
【Figure 3】



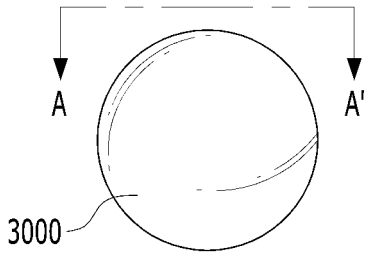
【Figure 4】



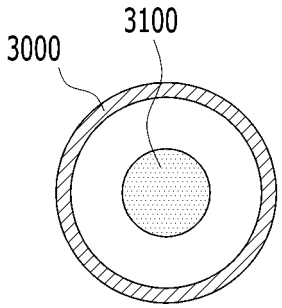
【Figure 5】



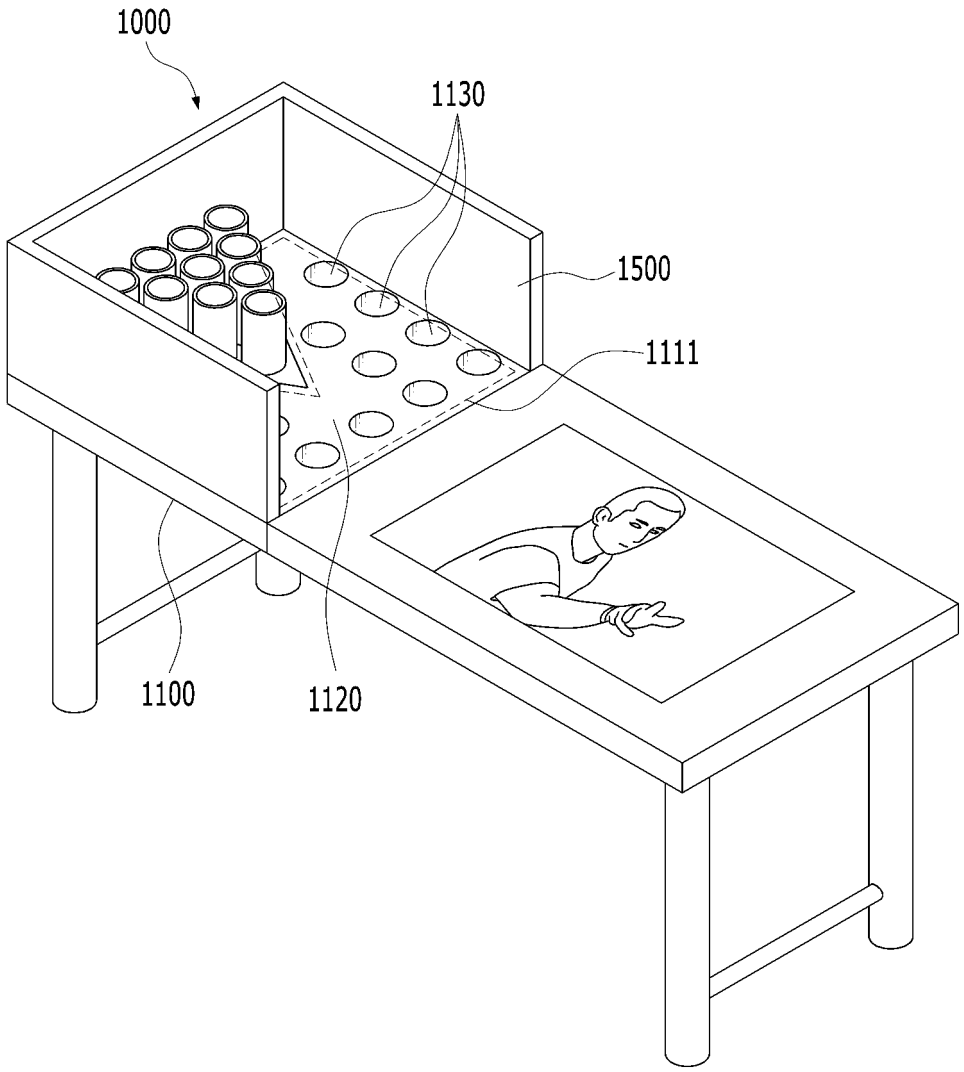
【Figure 6A】



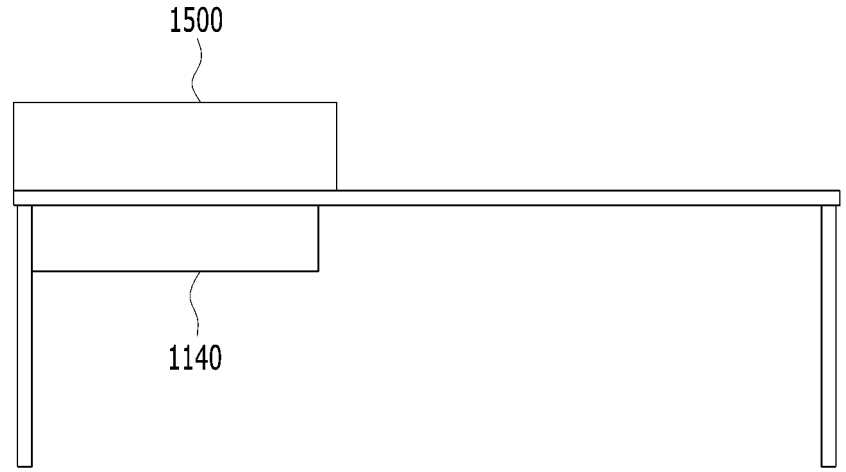
【Figure 6B】



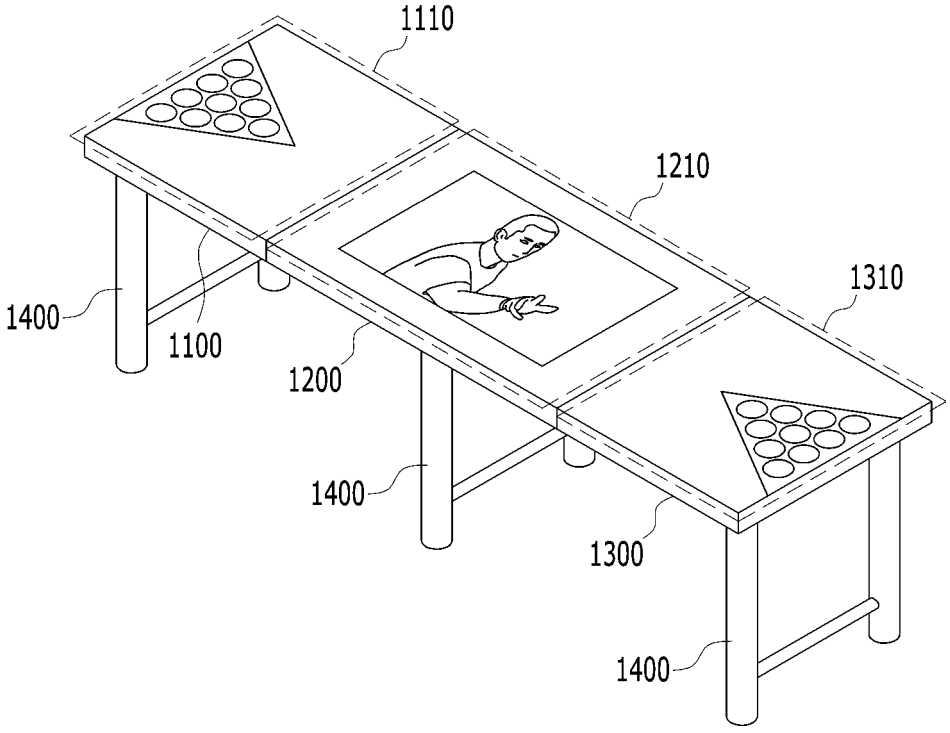
【Figure 7】



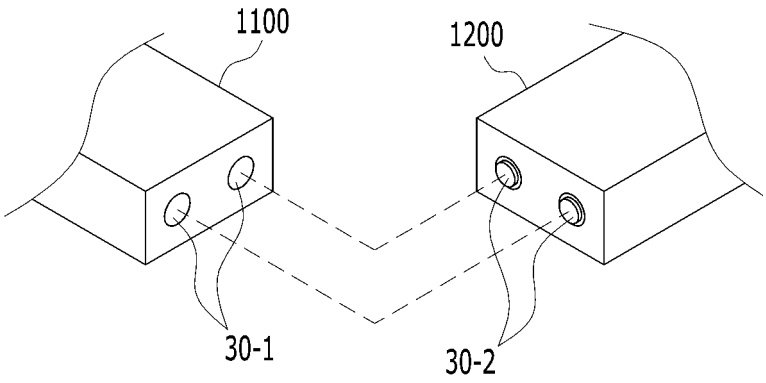
【Figure 8】



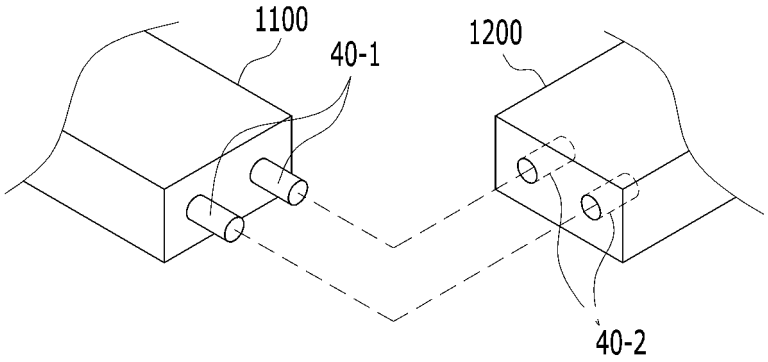
【Figure 9】



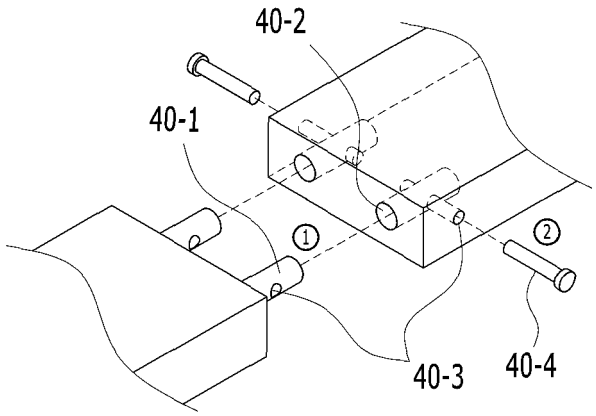
【Figure 10】



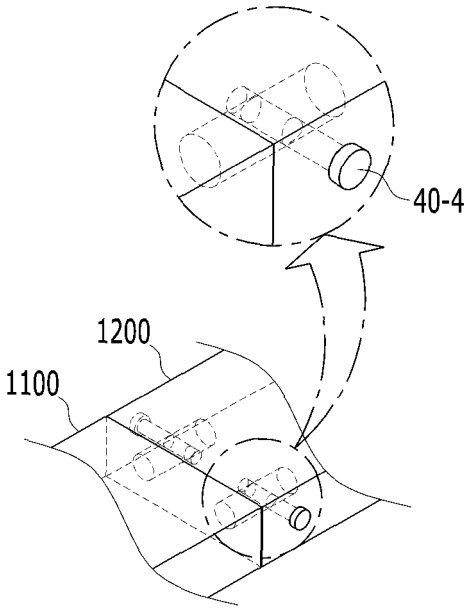
【Figure 11】



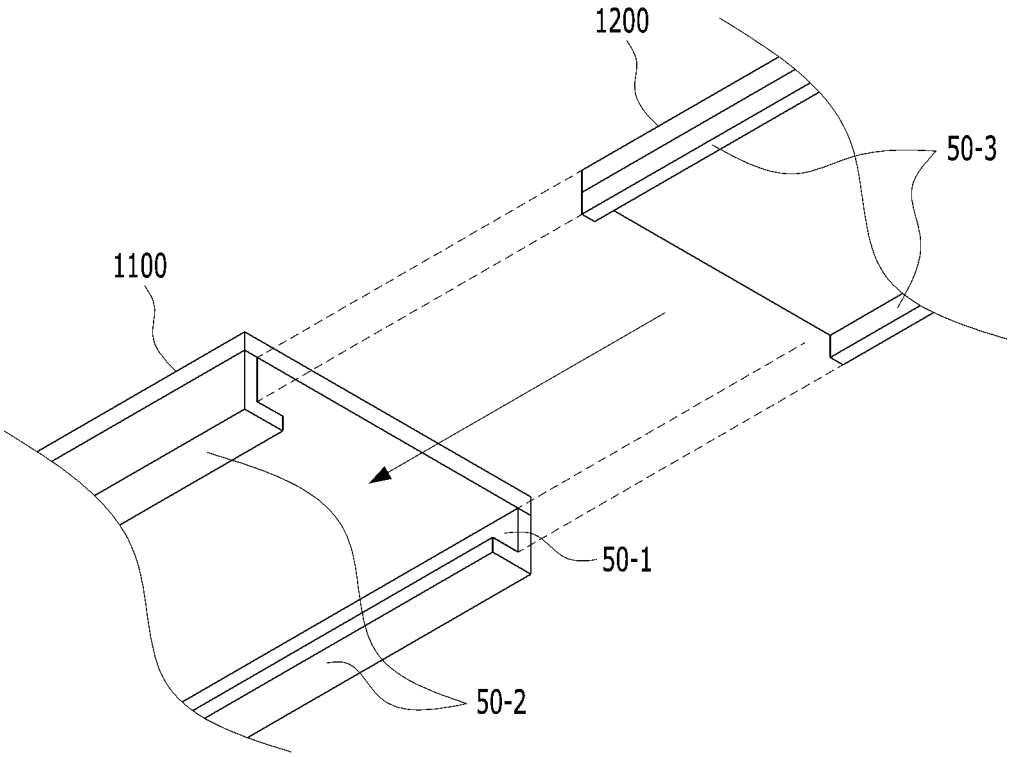
【Figure 12A】



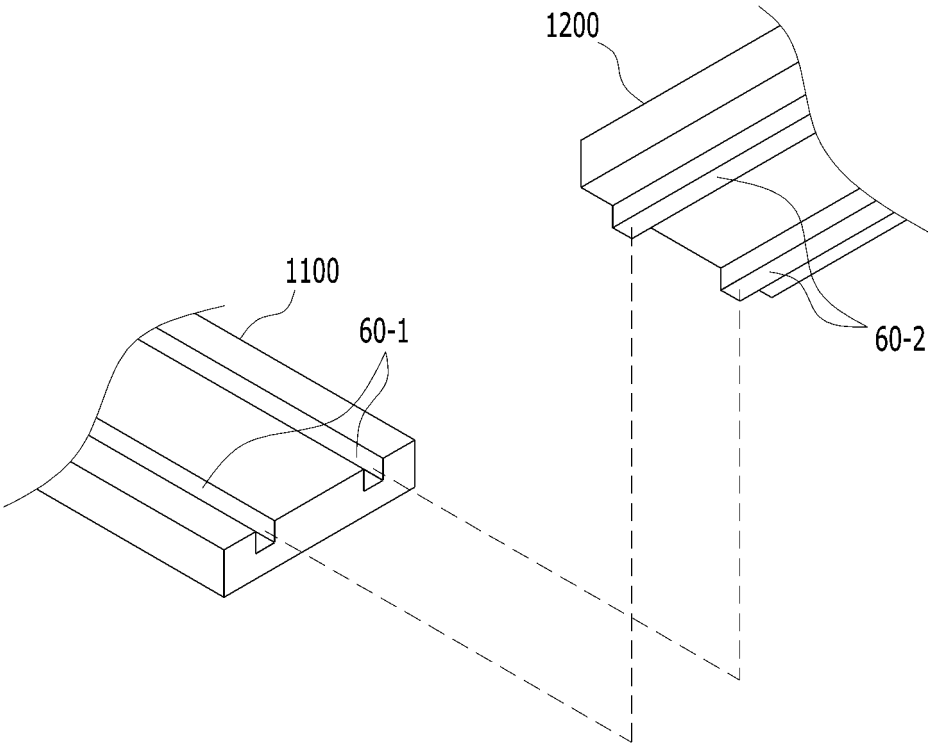
【Figure 12B】



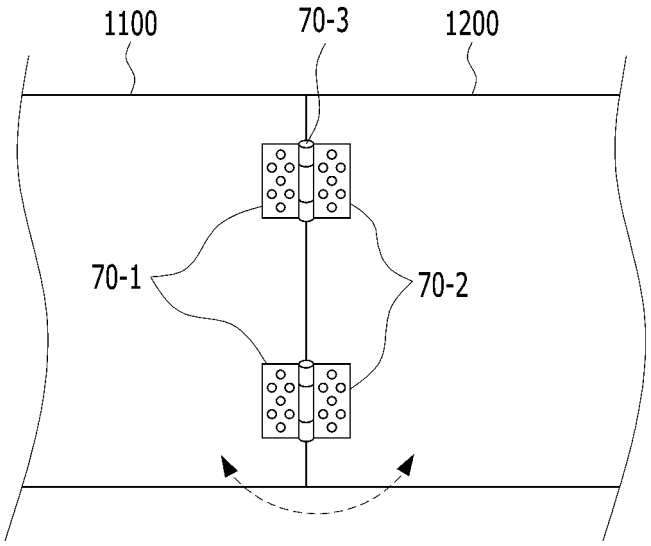
【Figure 13】



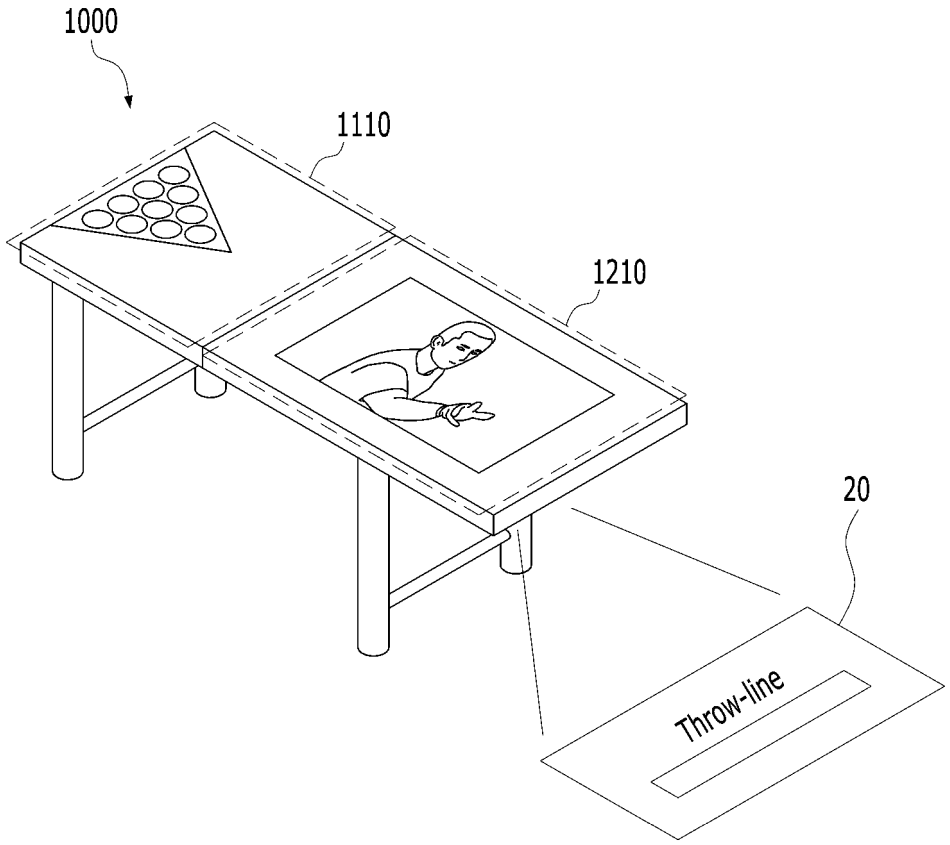
【Figure 14】



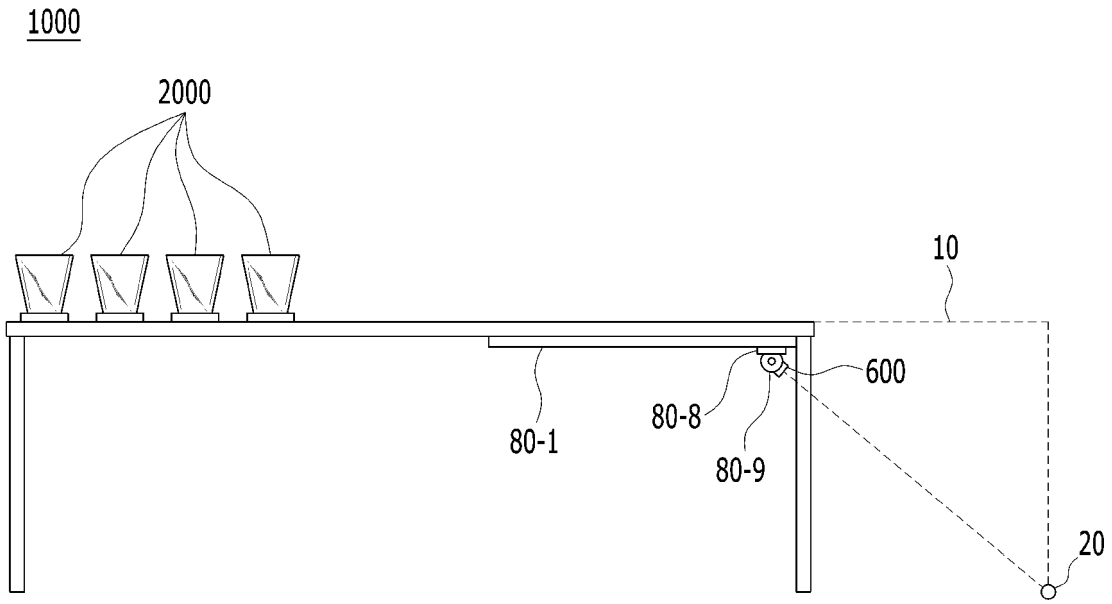
【Figure 15】



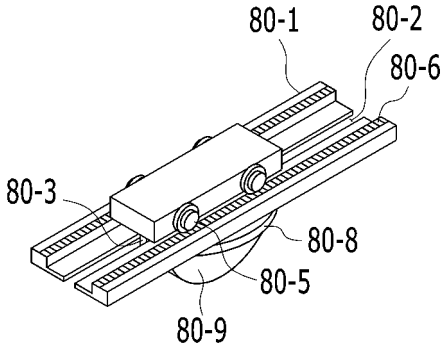
【Figure 16】



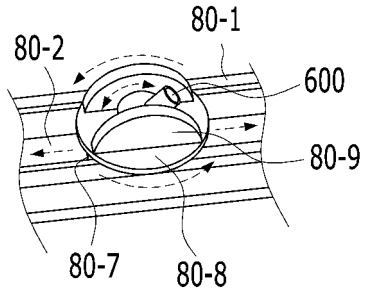
【Figure 17】



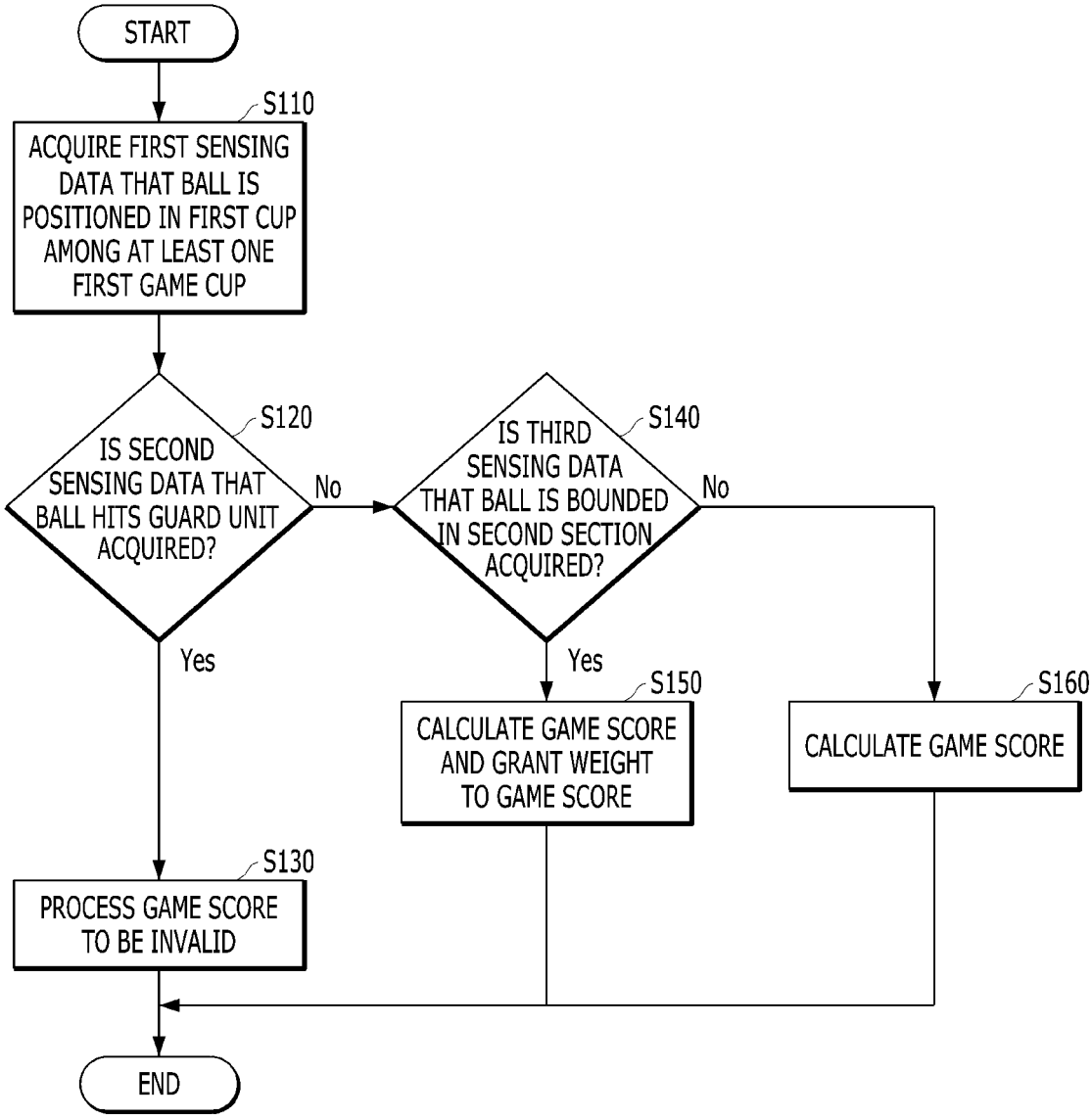
【Figure 18A】



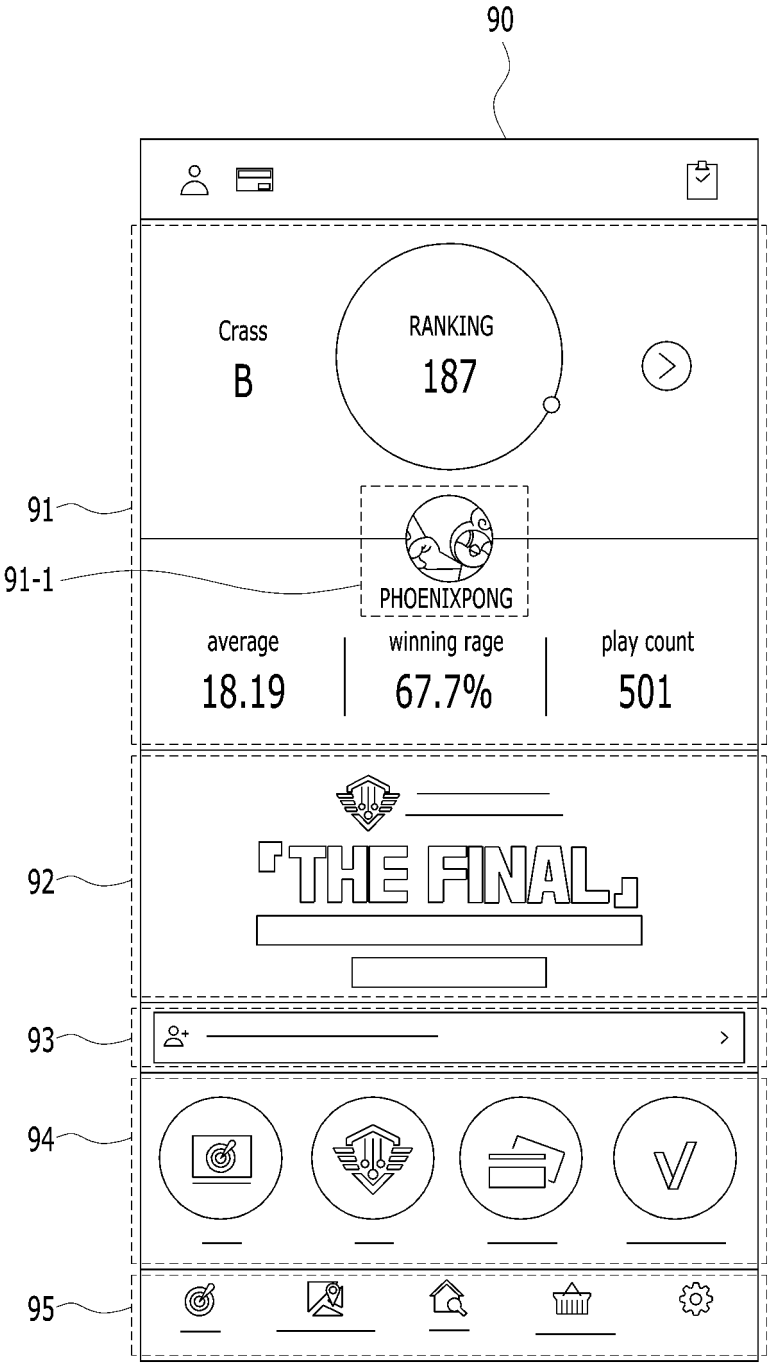
【Figure 18B】



【Figure 19】


START
S110
ACQUIRE FIRST SENSING DATA THAT BALL IS POSITIONED IN FIRST CUP AMONG AT LEAST ONE FIRST GAME CUP
S120
IS SECOND SENSING DATA THAT BALL HITS GUARD UNIT ACQUIRED?
No
S140
IS THIRD SENSING DATA THAT BALL IS BOUNDED IN SECOND SECTION ACQUIRED?
No
Yes
Yes
S150
CALCULATE GAME SCORE AND GRANT WEIGHT TO GAME SCORE
S160
CALCULATE GAME SCORE
S130
PROCESS GAME SCORE TO BE INVALID
END

【Figure 20】


90
Crass
B
RANKING
187
91
91-1
PHOENIXPONG
average
18.19
winning rage
67.7%
play count
501
92
「THE FINAL」
93
94
95

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2021/006740

A. CLASSIFICATION OF SUBJECT MATTER

A63F 7/00(2006.01)i; **A63F 7/30**(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A63F 7/00(2006.01); A63B 63/08(2006.01); A63B 67/00(2006.01); A63B 67/04(2006.01); A63B 67/06(2006.01); A63F 9/02(2006.01); A63F 9/24(2006.01); F41J 3/00(2006.01); F41J 3/02(2006.01); F41J 5/02(2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & keywords: 게임(game), 컵(cup), 섹션(section), 볼(ball), 바운드(bound), 테이블(table), 센싱(sensing), 진동(vibration), 무게(weight), 카메라(camera), 자계(magnetic field), 트랜지스터(transistor), 전자기장(electromagnetic field), 태그(tag), 리더(reader), 라운드(round), 점수(score), 패드(pad), 스로우 라인(throw line), 이벤트(event), 음향(sound), 메모리(memory), 디스플레이(display), 오디오(audio)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 8282457 B1 (EDWARDS, Brandon) 09 October 2012 (2012-10-09) See column 3, line 45; column 5, lines 9-21; column 6, lines 7-28; column 7, lines 37-40; claim 1; and figures 1-4.	1,6-11,14,19-20
Y		2-5,12-13,15-18
Y	JP 2015-051147 A (KONAMI DIGITAL ENTERTAINMENT CO., LTD.) 19 March 2015 (2015-03-19) See paragraphs [0012], [0014], [0029] and [0040]; and figures 1-2.	2-5,13
Y	KR 10-1627264 B1 (HONG INTERNATIONAL CORP.) 03 June 2016 (2016-06-03) See paragraph [0043]; and figure 1.	12
Y	US 2019-0060729 A1 (SALEEBY, Mark) 28 February 2019 (2019-02-28) See paragraphs [0041]-[0042]; and figure 14A.	15

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
06 October 2021	**06 October 2021**
Name and mailing address of the ISA/KR **Korean Intellectual Property Office** **Government Complex-Daejeon Building 4, 189 Cheongsa-ro, Seo-gu, Daejeon 35208** Facsimile No. **+82-42-481-8578**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2021/006740

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2014-0252718 A1 (RIEMAN, Austen Roberto) 11 September 2014 (2014-09-11) See paragraphs [0073] and [0079]-[0080]; and figures 1-2 and 8-9.	16-17
Y	DE 102017109859 A1 (LÖWEN ENTERTAINMENT GMBH) 08 November 2018 (2018-11-08) See paragraph [0030]; and figures 1 and 5-6.	18

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2021/006740

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
US	8282457	B1	09 October 2012	None			
JP	2015-051147	A	19 March 2015	CN	105517640	A	20 April 2016
				JP	6206657	B2	04 October 2017
				WO	2015-033994	A1	12 March 2015
KR	10-1627264	B1	03 June 2016	CN	106573172	A	19 April 2017
				EP	3156754	A1	19 April 2017
				EP	3156754	A4	21 February 2018
				JP	2017-535737	A	30 November 2017
				JP	6381672	B2	29 August 2018
				KR	10-1722488	B1	03 April 2017
				KR	10-2017-0026435	A	08 March 2017
				TW	201706026	A	16 February 2017
				TW	201808415	A	16 March 2018
				TW	I612992	B	01 February 2018
				US	2017-0167832	A1	15 June 2017
				WO	2017-026609	A1	16 February 2017
US	2019-0060729	A1	28 February 2019	US	2019-0054359	A1	21 February 2019
US	2014-0252718	A1	11 September 2014	US	9555301	B2	31 January 2017
DE	102017109859	A1	08 November 2018	EP	3621706	A1	18 March 2020
				EP	3621706	B1	03 March 2021
				WO	2018-206223	A1	15 November 2018

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