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Matthews et al.

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(54) **SYSTEM FOR INCENTIVIZING CHARITABLE GIVING BASED ON PHYSICAL ACTIVITY AND A METHOD OF USING THE SAME**

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G06Q 30/02 (2012.01)

(52) **U.S. Cl.**
CPC ***G06Q 30/0217*** (2013.01); ***G06Q 30/02*** (2013.01); ***G06Q 30/0279*** (2013.01)

(58) **Field of Classification Search**
CPC G06Q 30/0217
See application file for complete search history.

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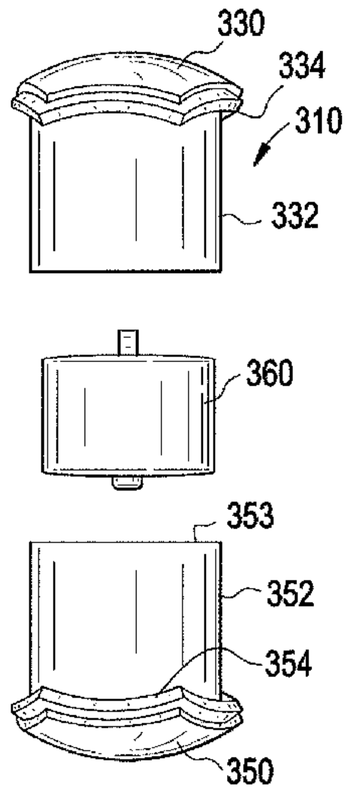
(57) **ABSTRACT**

A system and method for incentivizing charitable giving based on physical activity includes a computer and a sports ball associated with a first participant identifier. The sports ball includes a sensor that detects and logs activity data. The activity data is received by the computer, and in further transmitted to a server. The server stores the received activity data in a participant record associated with the first participant identifier and assigns a plurality of credits to the participant record associated with the first participant identifier based on the activity data stored in the participant record. Software executing on the server generates a report based on the credits assigned to the participant record associated with the first participant identifier and transmits the report to a participant computer associated with the first participant identifier.

9 Claims, 8 Drawing Sheets



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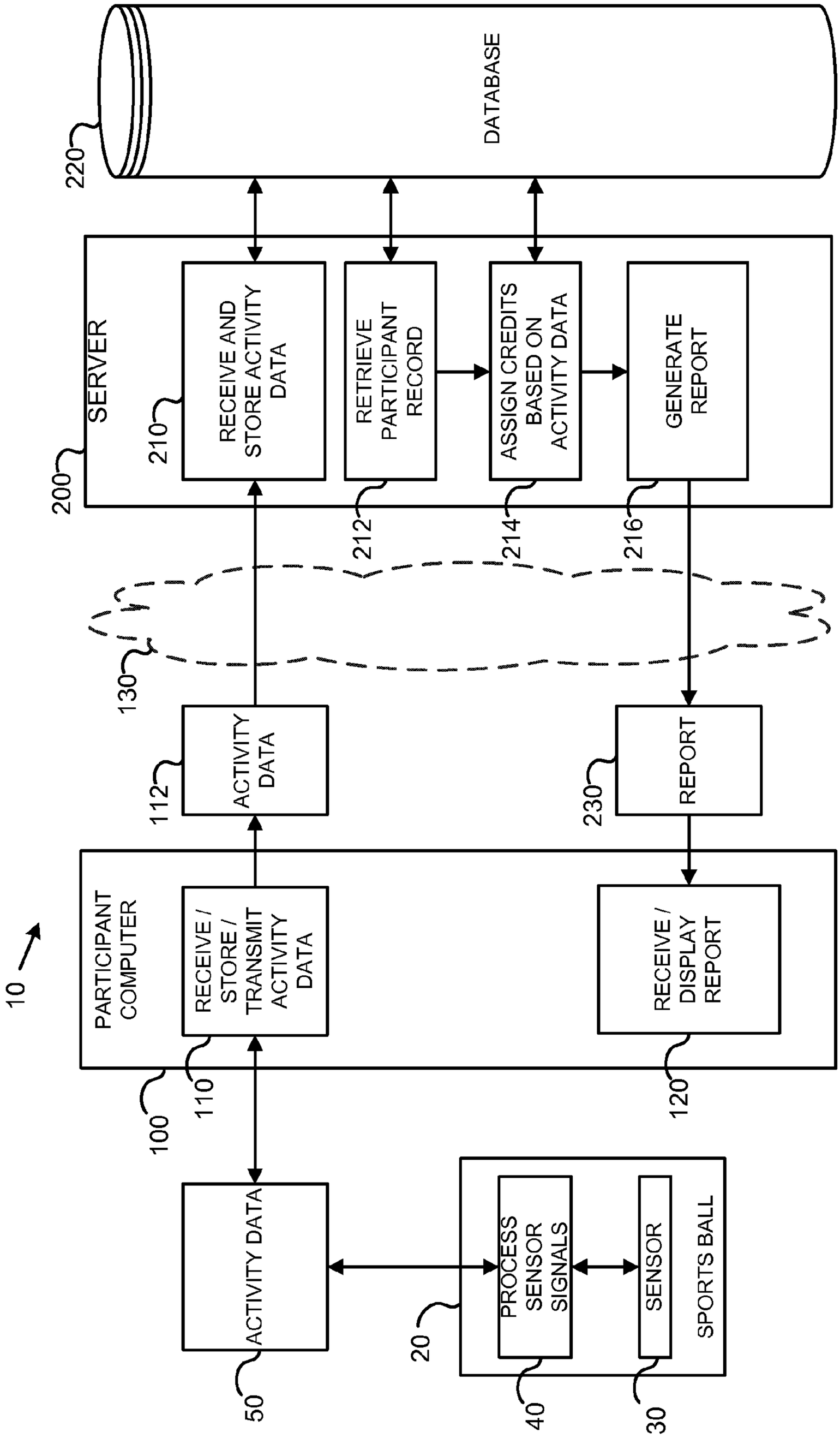
10
PARTICIPANT COMPUTER
100
RECEIVE / STORE / TRANSMIT ACTIVITY DATA
110
ACTIVITY DATA
112
ACTIVITY DATA
50
RECEIVE / DISPLAY REPORT
120
REPORT
230
SERVER
200
RECEIVE AND STORE ACTIVITY DATA
210
RETRIEVE PARTICIPANT RECORD
212
ASSIGN CREDITS BASED ON ACTIVITY DATA
214
GENERATE REPORT
216
DATABASE
220
130
SPORTS BALL
20
PROCESS SENSOR SIGNALS
40
SENSOR
30

FIG. 1

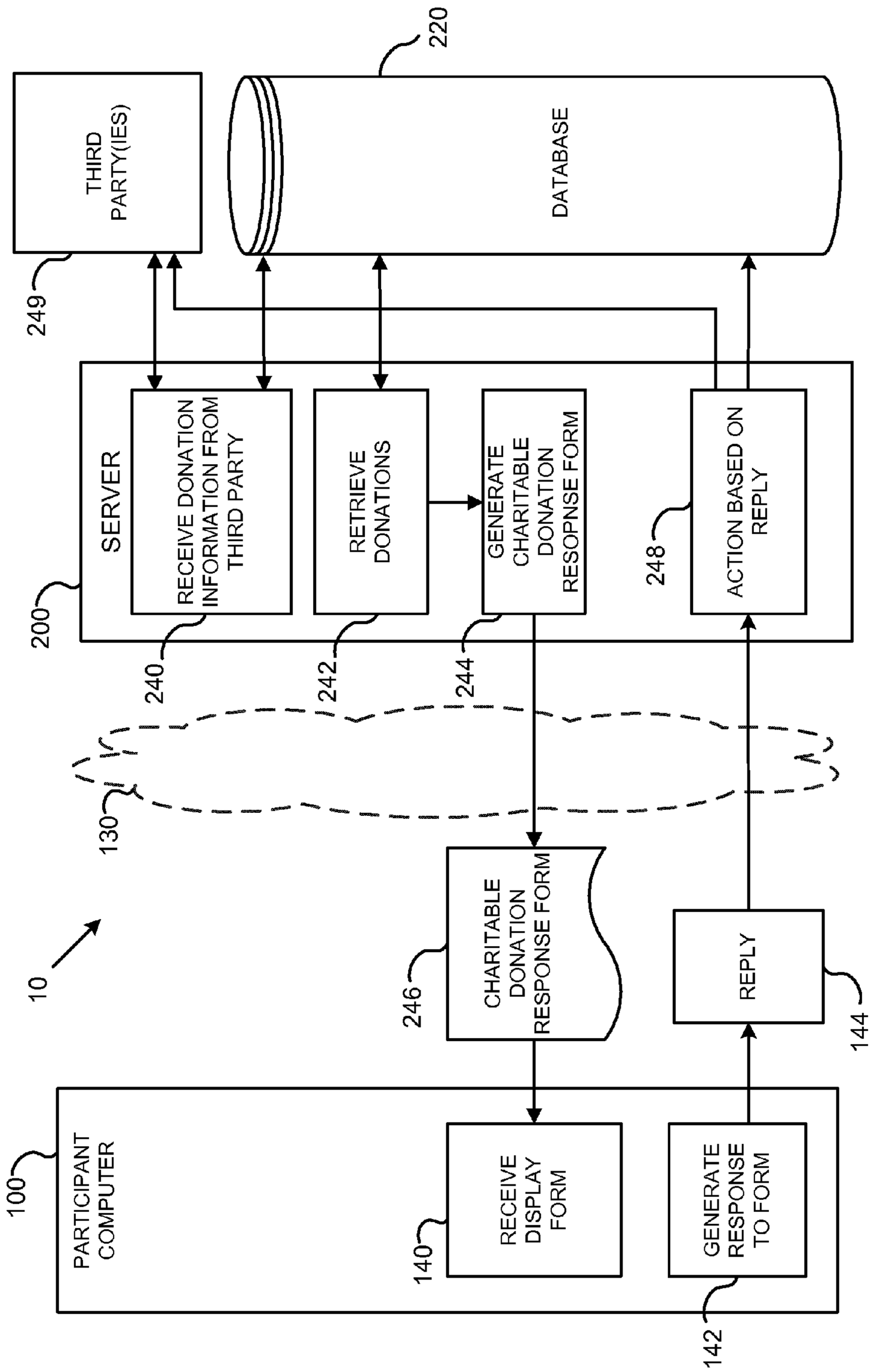
220
THIRD PARTY(IES)
DATABASE
249
SERVER
RECEIVE DONATION INFORMATION FROM THIRD PARTY
RETRIEVE DONATIONS
GENERATE CHARITABLE DONATION RESOPNSE FORM
ACTION BASED ON REPLY
200
240
242
244
248
130
10
CHARITABLE DONATION RESPONSE FORM
REPLY
246
144
PARTICIPANT COMPUTER
RECEIVE DISPLAY FORM
GENERATE RESPONSE TO FORM
100
140
142

FIG. 2

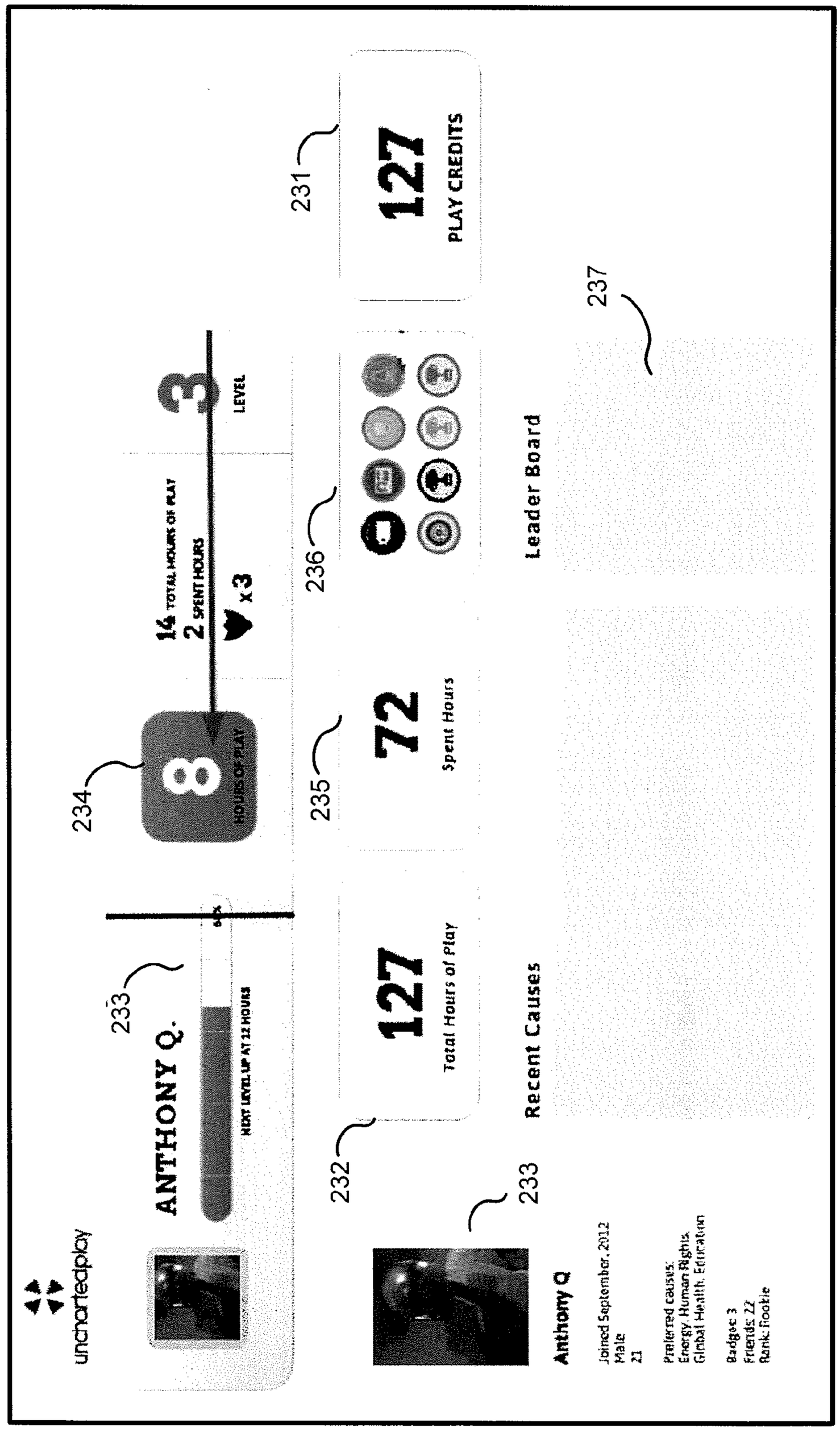
230
231
127
PLAY CREDITS
237
Leader Board
234
8
HOURS OF PLAY
14 TOTAL HOURS OF PLAY
2 SPENT HOURS
3
LEVEL
x3
236
235
72
Spent Hours
232
127
Total Hours of Play
233
ANTHONY Q.
NEXT LEVEL UP AT 22 HOURS
uncharted play
Recent Causes
Anthony Q
Joined September, 2012
Male
21
Preferred causes:
Energy, Human Rights,
Global Health, Education
Badges: 3
Friends: 22
Rank: Rookie

FIG. 3

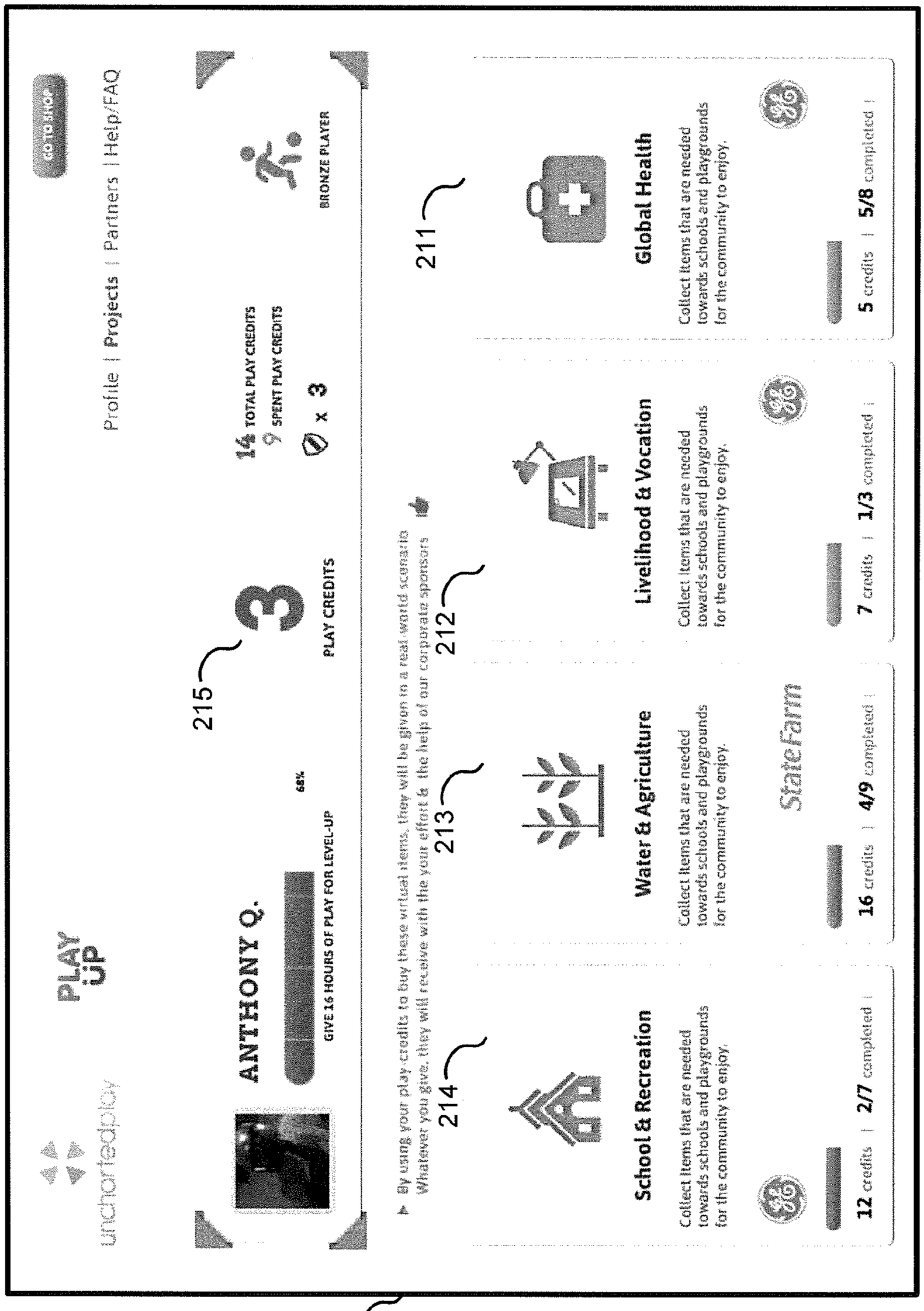
PLAY UP
uncharteredplay
Profile | Projects | Partners | Help/FAQ
GO TO SHOP
ANTHONY Q.
GIVE 16 HOURS OF PLAY FOR LEVEL-UP
68%
BRONZE PLAYER
14 TOTAL PLAY CREDITS
9 SPENT PLAY CREDITS
x 3
215
3
PLAY CREDITS
By using your play-credits to buy these virtual items, they will be given in a real-world scenario
Whatever you give, they will receive with the your effort & the help of our corporate sponsors
211
Global Health
Collect items that are needed towards schools and playgrounds for the community to enjoy.
5 credits | 5/8 completed
212
Livelihood & Vocation
Collect items that are needed towards schools and playgrounds for the community to enjoy.
7 credits | 1/3 completed
213
Water & Agriculture
Collect items that are needed towards schools and playgrounds for the community to enjoy.
16 credits | 4/9 completed
214
School & Recreation
Collect items that are needed towards schools and playgrounds for the community to enjoy.
12 credits | 2/7 completed
246

FIG. 4

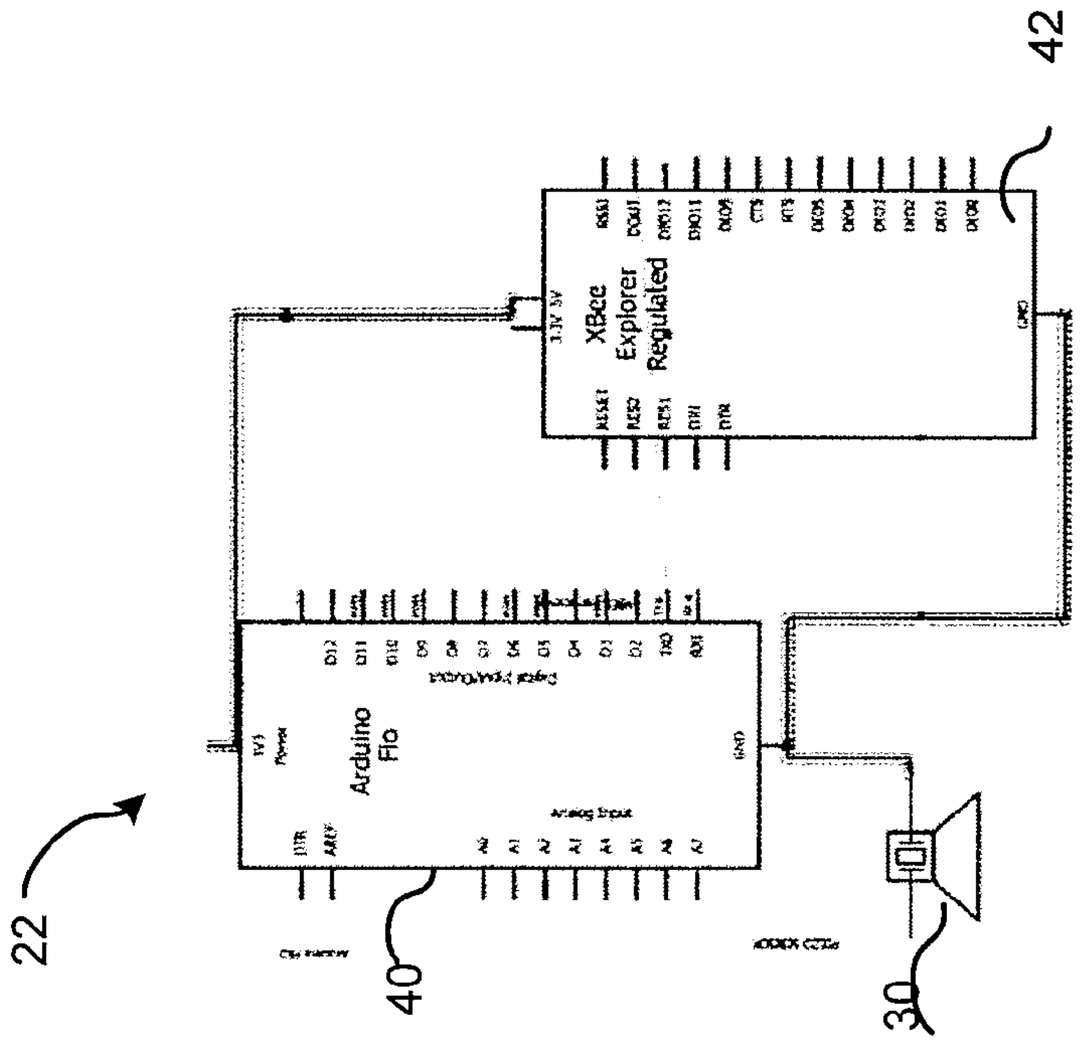
42
XBee Explorer Regulated
Arduino Fio
22
40
30

FIG. 5B

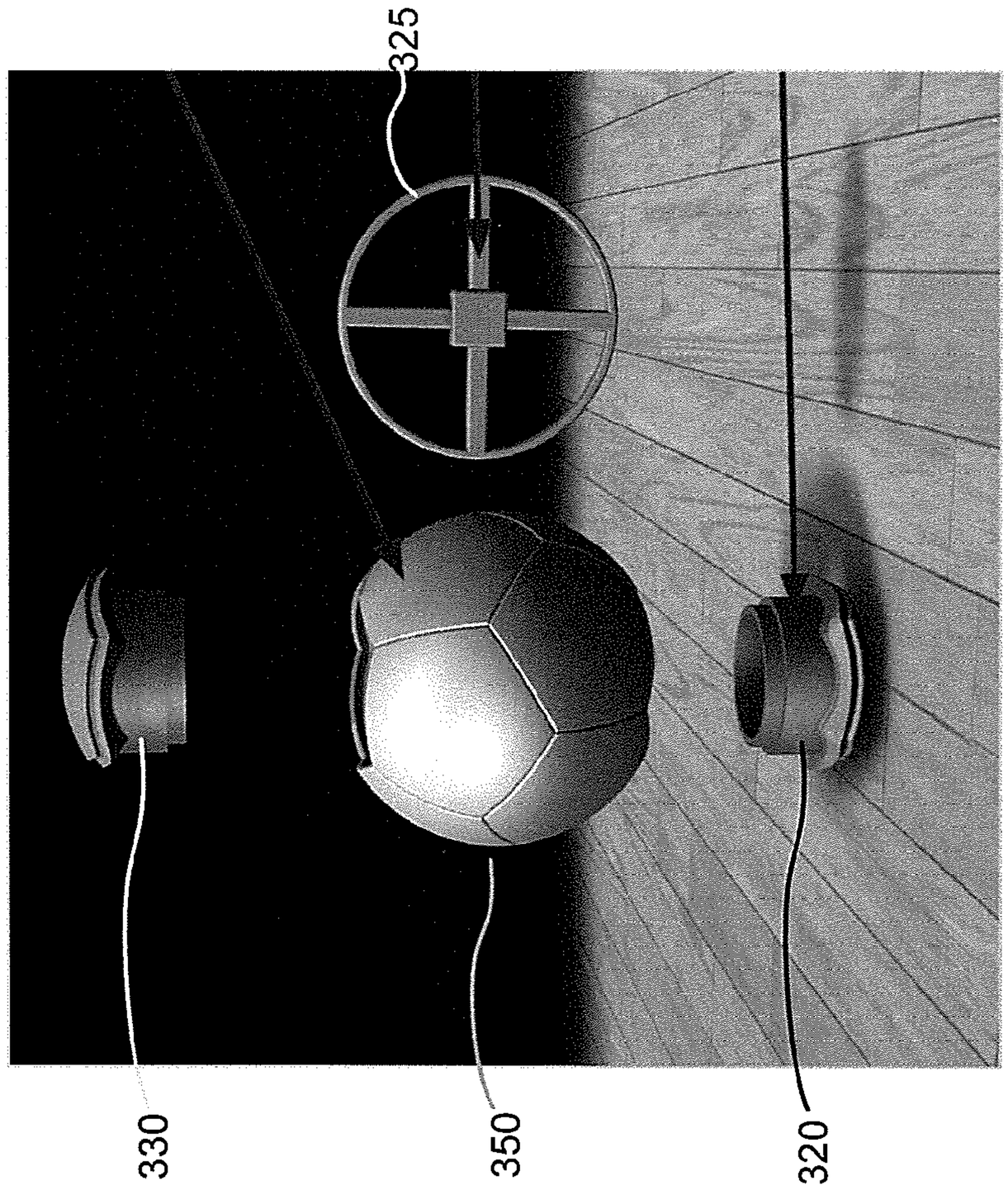
325
330
350
320

FIG. 5A

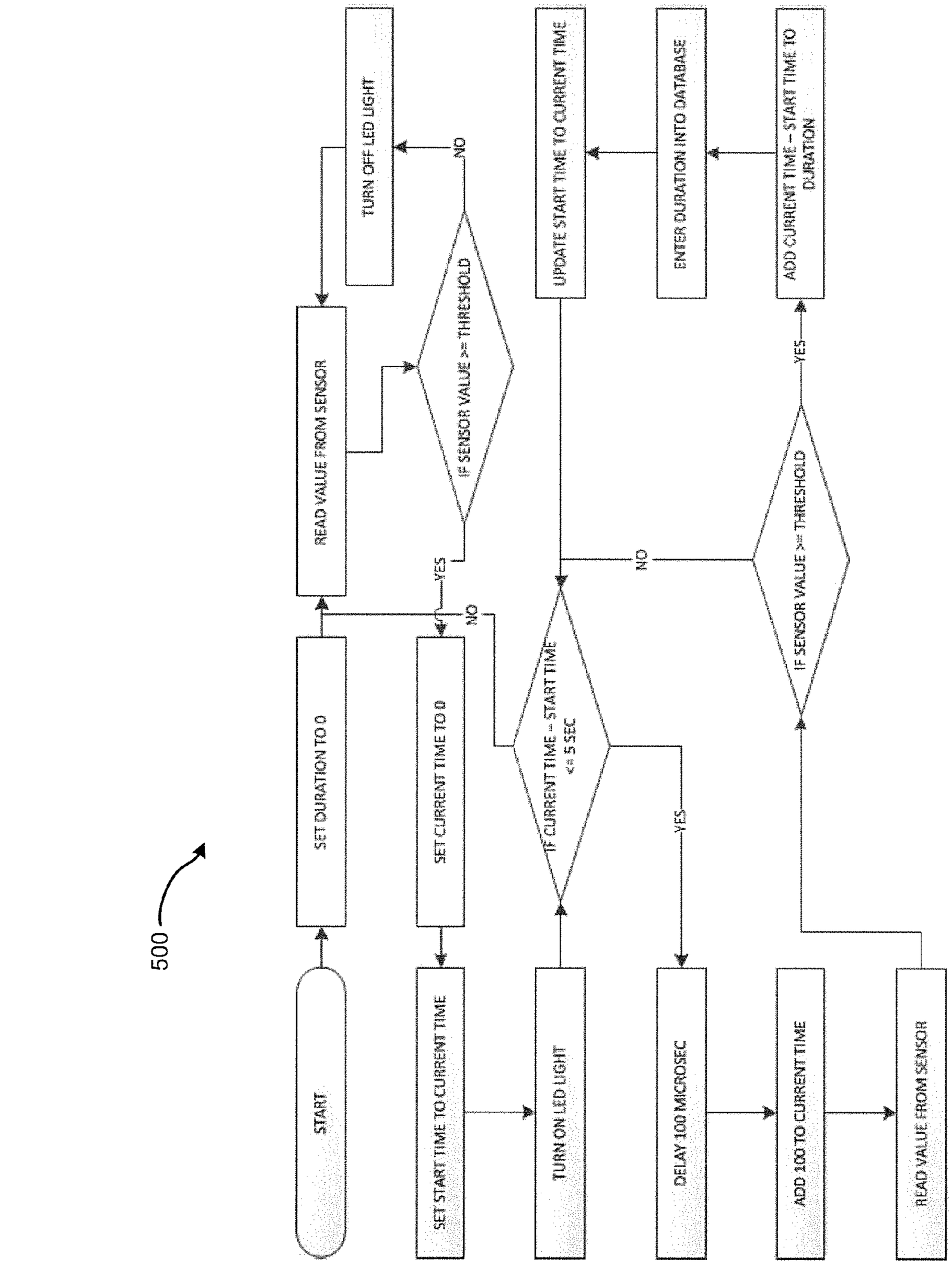
500
START
SET DURATION TO 0
SET CURRENT TIME TO 0
SET START TIME TO CURRENT TIME
TURN ON LED LIGHT
IF CURRENT TIME – START TIME <= 5 SEC
YES
NO
DELAY 100 MICROSEC
ADD 100 TO CURRENT TIME
READ VALUE FROM SENSOR
IF SENSOR VALUE >= THRESHOLD
YES
NO
UPDATE START TIME TO CURRENT TIME
ENTER DURATION INTO DATABASE
ADD CURRENT TIME – START TIME TO DURATION
READ VALUE FROM SENSOR
IF SENSOR VALUE >= THRESHOLD
YES
NO
TURN OFF LED LIGHT

FIG. 6

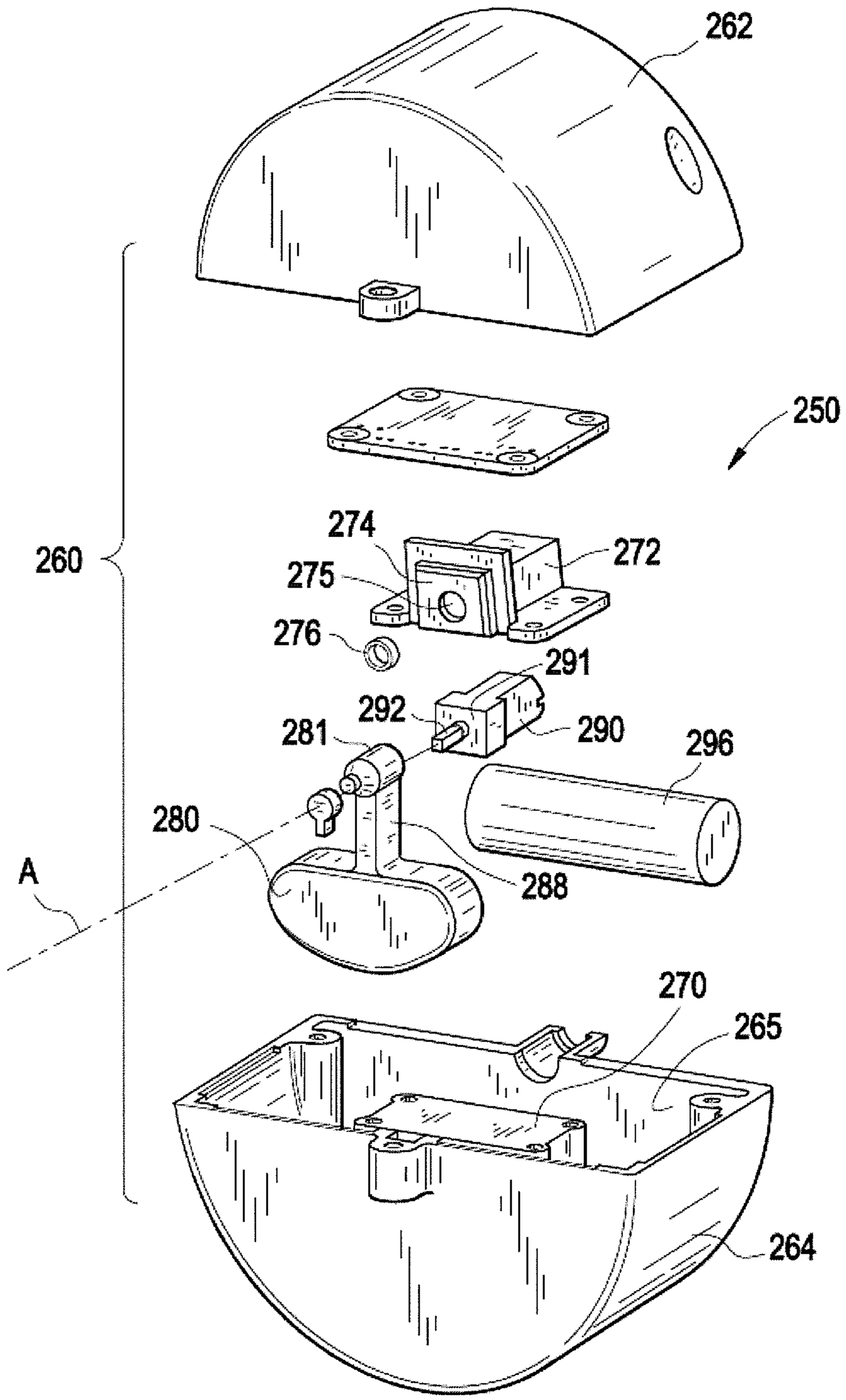
262
250
260
274
272
275
276
291
292
290
281
296
280
288
A
270
265
264

FIG. 7

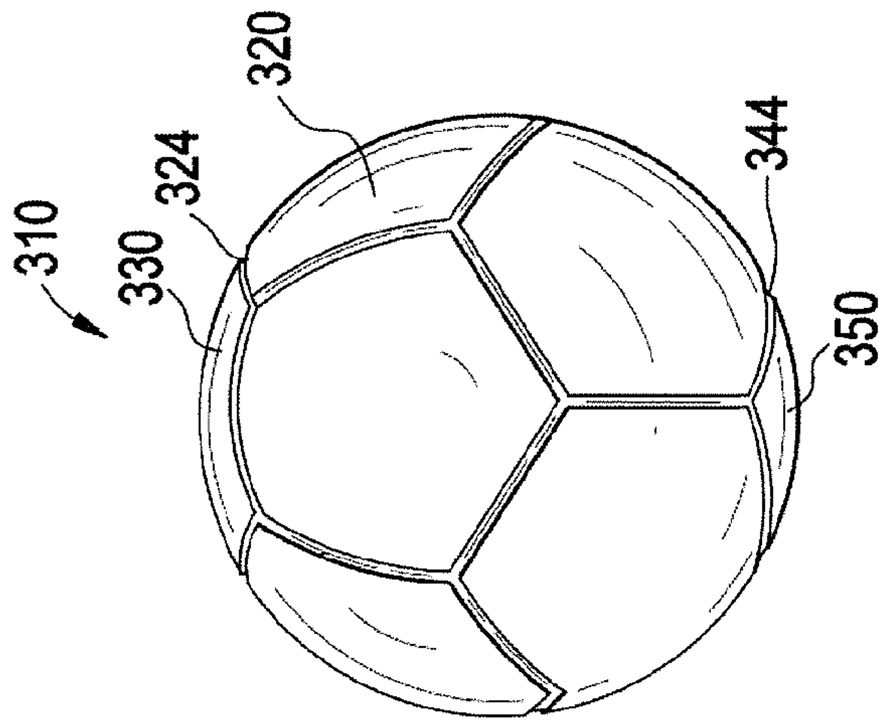

FIG. 8C

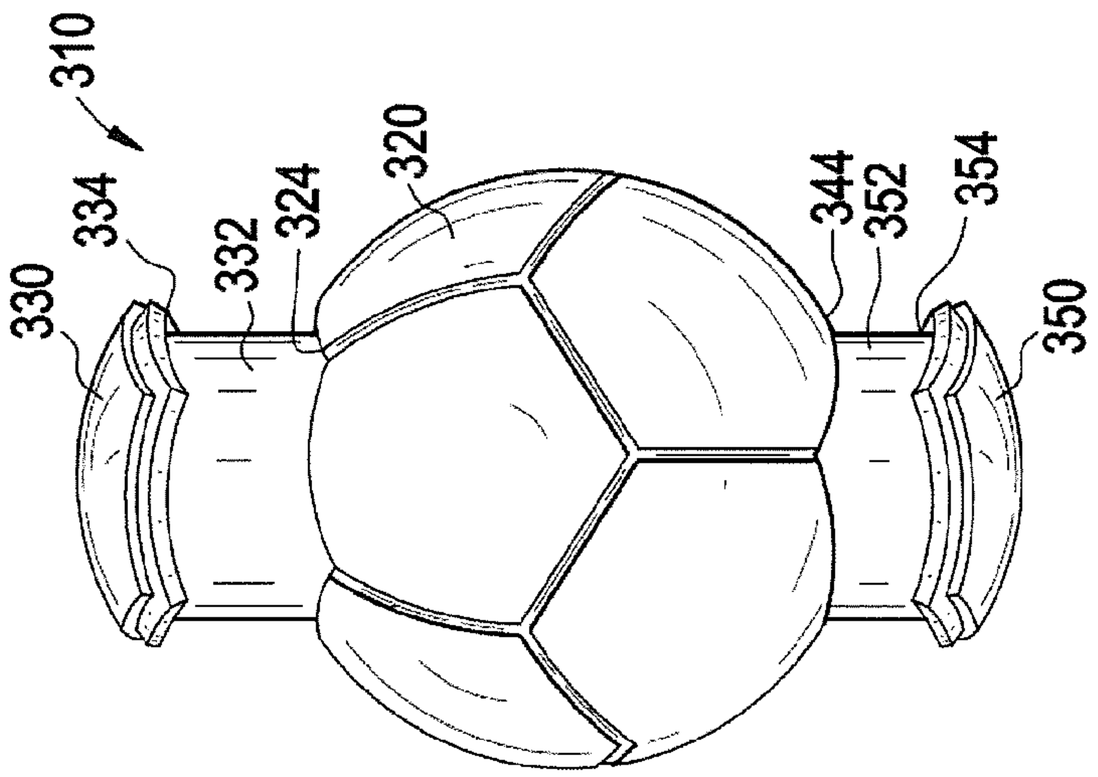

FIG. 8B

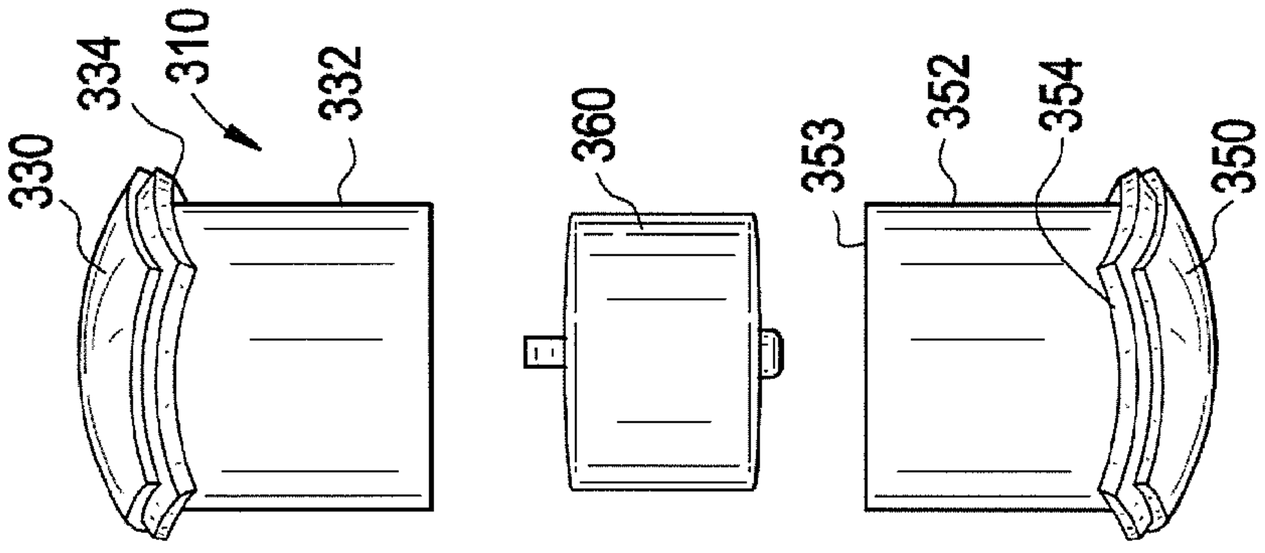

FIG. 8A

SYSTEM FOR INCENTIVIZING CHARITABLE GIVING BASED ON PHYSICAL ACTIVITY AND A METHOD OF USING THE SAME

CROSS-REFERENCE

This application claims the benefit of U.S Provisional Application Ser. No. 61/704,196, filed Sep. 21, 2012, which is entirely incorporated herein by reference.

FIELD OF THE INVENTION

The invention relates to collecting and distributing charitable donations. In particular, the present invention relates to a system and method for tracking physical activity and assigning credits based on the amount of physical activity, the credits being redeemable for charitable donations.

BACKGROUND OF THE INVENTION

Soliciting, making, and receiving charitable donations are important, are becoming ever more important as government resources allocated to charitable causes is decreases. At the same time, there is a growing need for such support.

There are a many different system and methods that facilitate charitable giving. For example, a person may donate a portion of their personal assets to a cause or charitable entity of their choosing. In another known method, a person may solicit funds from third parties for a specific charitable cause, for example building a new hospitable. Sometimes, such donors will pledge donations based on the completion of a goal, for example running a marathon.

SUMMARY OF THE INVENTION

The present invention resides in one aspect in a system for incentivizing charitable giving based on physical activity. The system includes a server having software executing thereon that receives activity data indicative of an amount of physical activity. The received activity data has a first participant identifier associated therewith. The system is in communication with a database that comprises a plurality of participant records. Each participant record has a participant identifier associated therewith. Software executing on the server stores the received activity data in the participant record associated with the first participant identifier. Software executing on the server assigns a plurality of credits to the participant record associated with the first participant identifier based on the activity data stored in the participant record associated with the first participant identifier. Software executing on the server generates a report based on the credits assigned to the participant record associated with the first participant identifier. The server has a communication link with the internet. Software executing on the server transmits the report to a participant computer associated with the first participant identifier via the communication link.

In one embodiment of the present invention, the activity data is indicative of a use of a sports ball associated with the first participant identifier.

In yet another embodiment of the present invention, the sports ball includes a sensor that is configured to detect an acceleration of the sports ball, the acceleration being indicative of the use of the sports ball.

In yet another embodiment of the present invention, the activity data received by the server is indicative of a duration of the use of the sports ball.

In yet another aspect of the present invention, the report generated by the software executing on the server identifies the duration of the use of the sports ball associated with the first participant identifier and further identifies a number of credits earned for the duration of the use of the sports ball.

In yet another embodiment of the present invention, software executing on the server generates a charitable donation response form. The form identifies at least one charitable donation option that is redeemable for a predetermined number of credits. The server further includes software executing thereon for receiving a reply to the charitable donation form.

In yet other embodiments of the present invention, the report generated by the server includes a rank associated with the first participant identifier. The rank is indicative of the duration of use with the sports ball associated with the first participant identifier relative to the duration of use of sports balls associated with one or more other participant identifiers.

The present invention resides in another aspect in a system for incentivizing charitable giving based on physical activity. The system includes a computer associated with a first participant identifier. The computer has a communication link to the internet. The system further includes a sports ball associated with the first participant identifier. The sports ball includes a sensor for detecting an acceleration of the sports ball. A processor is in communication with the sensor, and software executing on the processor receives signals from the sensor indicative of the acceleration of the sports ball. Software executing on the processor determines activity data based on the signals received from the sensor. The system includes a communication link between the sports ball and the computer. Software executing on the computer associated with the first participant identifier transmits the first participant activity data via the communication link with the internet. The system further includes a server having software executing thereon. Software executing on the server receives the activity data indicative of an amount of physical activity. The received activity data has a first participant identifier associated therewith. The system is in communication with a database that comprises a plurality of participant records. Each participant record has a participant identifier associated therewith. Software executing on the server stores the received activity data in the participant record associated with the first participant identifier. Software executing on the server assigns a plurality of credits to the participant record associated with the first participant identifier based on the activity data stored in the participant record associated with the first participant identifier. Software executing on the server generates a report based on the credits assigned to the participant record associated with the first participant identifier. The server has a communication link with the internet. Software executing on the server transmits the report to a participant computer associated with the first participant identifier via the communication link.

In one embodiment of the present invention, the activity data is indicative of a duration of the use of a sports ball associated with the first participant identifier.

In yet another embodiment of the present invention, the sports ball includes a sensor that is configured to detect an acceleration of the sports ball, the acceleration being indicative of use of the sports ball.

In yet another embodiment of the present invention, software executing on the server generates a charitable donation response form. The form identifies at least one charitable donation option that is redeemable for a predetermined number of credits. The server further includes software executing thereon for receiving a reply to the charitable donation form.

In yet another embodiment of the present invention, the system includes software executing on the server for subtracting a number of credits corresponding to the predetermined number of credits from the credits associated with the participant record associated with the first participant identifier in response a selection of a donation option.

In yet another embodiment of the present invention, the system includes software executing on the server for generating a donation redemption form that includes a confirmation that the donation has been redeemed.

In yet one embodiment of the present invention, the sensor comprises a piezoelectric component that generates an electrical current in response to an acceleration of the sports ball.

In yet another embodiment of the present invention, the ball includes a shell defining a spheroid, the shell defining a cavity. The shell defines a first opening and a second opening substantially diametrically opposite the first opening. A first panel is configured to substantially close the first opening. The first panel has a sleeve that extends radially inward from an inner surface of the first panel. A second panel is configured to substantially close the second opening. The second panel has a sleeve that extends radially inward from an inner surface of the second panel. The sensor and the processor are supported in a center of the sphere by a distal end of the first sleeve and a distal end of the second sleeve.

In yet another embodiment of the present invention, the ball further includes a foam ring disposed therein between the distal end of the first sleeve and the distal end of the second sleeve. The foam ring is configured to further support the sensor and the processor, and is further configured to increase the rigidity of the shell.

In yet another embodiment of the present invention, the sports ball further includes an electric generator and a battery disposed therein. A rotor of the electric generator is mechanically coupled to the pendulum at a first axis of rotation of the pendulum. The electric generator is electrically coupled to the battery. An acceleration of the ball relative to a playing surface causes the pendulum to rotate about the first axis of rotation. The rotation of the pendulum rotates the electric generator which generates electrical energy at least a portion of which is stored by the battery.

The invention and its particular features and advantages will become more apparent from the following detailed description considered with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a system and method in accordance with one embodiment of the present invention.

FIG. **2** illustrates a portion of a system and method in accordance with one embodiment of the present invention in which a participant is presented with one or more charitable donation options that are redeemable for assigned credits.

FIG. **3** illustrates a report in accordance with one embodiment of the present invention.

FIG. **4** illustrates a charitable donation response form in accordance with one embodiment of the present invention.

FIG. **5**A is an exploded view of a sports ball in accordance with one embodiment of the present invention.

FIG. **5**B is a schematic of a microprocessor, sensor, and transmitter in accordance with one embodiment of the present invention.

FIG. **6** is a flow diagram illustrating the control logic for use with the microprocessor shown in FIG. **5**B in accordance with one embodiment of the present invention.

FIG. **7** is an exploded perspective view of a generation module in accordance with one embodiment of the present invention.

FIG. **8**A is an exploded view of portion of a sports ball in accordance with one embodiment of the present invention.

FIG. **8**B is an exploded view of the sports ball shown in FIG. **8**A.

FIG. **8**C is a view of the ball shown in FIGS. **8**A and **8**B.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** illustrates a system **10** in accordance with one embodiment of the present invention for incentivizing charitable donations based on physical activity. The system **10** includes a server **200** having software executing thereon. The server **200** is in communication with a network **130** via a communication link. The network **130** may be, for example, the internet, an intranet, or some other type of network. A participant computer **100** is in communication with the network **130** and can communicate with the server **200** via the network **130**. Although one participant computer **100** is explicitly illustrated in FIGS. **1** and **2**, it should be understood that a plurality of participant computers **100** communicate with the server **200** via the network **130**. In this way, the server **200** can access and store a plurality of participant records and further provide objective comparisons of the performance of each participant thereby serving, in part, to incentivize charitable giving.

The server **200** may be any type of computer hardware that is configured to execute software and communicate with participant computers **100** and other third parties **249** via the network **130**. Although the term server is generally used throughout this disclosure, it is not intended to limit the present invention to a specific type of computer. Moreover, it should be understood that the server **200** may comprise a plurality of computers that communicate via a network. In yet other embodiments, the server **200** may comprise one or more cloud computers, including hardware and software, which are maintained by a third party.

The server **200** is in communication with a participant record database **220**. The database **220** is configured to provide storage of information on physical hardware by, for example, executing software on the server **200**. The database **220** may take many forms and may be accessible in many different manners. The database **220** allows the server **200** to store information and to retrieve information upon execution of software. The server **200** may be in communication with one or more third parties **249**, as is further described below via a network or through some other channel.

During operation of the system **10**, the server **200** receives and stores information regarding a participant record. The system **10** is premised on the concept of assigning credits to a participant based on an amount of physical activity that the participant performs. The credits can be redeemed through the system **10** for charitable donations. The participant uses a sports ball for a period of time. As will be disclosed in further detail below, the sports ball tracks and stores data indicative of the duration of the use of the ball. This is

referred to activity data. The activity data is transmitted to a participant computer, which in turn is transmitted to the server. Software executing on the server stores the activity data and assigns a number of credits to the participant based on the duration of physical activity.

In the embodiment disclosed in the FIGS., the server **200** hosts a website that is accessible by a plurality of participant computers **100** via the internet **130**. The plurality of participant computers **130** can communicate with the server **200** by accessing the webpage hosted by the server **200** via the internet **130**. It should be understood that in some embodiments of the present invention, the server **200** comprises a plurality of computers. For example, the server **200** may comprise a first computer for hosting the website, a second computer for performing backend analysis of the participant records, and a third computer for managing storage and access to the data and for communicating with one or more third parties, such as a charitable organization. Although the present invention discloses using an interactive website to facilitate the transfer of information between the server **200** and one or more participant computers **100**, the present invention is not limited in this regard. For example, the server **200** and the one or more participant computers **100** may exchange information by electronic mail or by some type of file transfer protocol.

A plurality of participants can access the system **10** via the one or more participant computers **100**. The participant computer **100**, for example, may include a desktop computer, a laptop, a smart phone, a tablet, or any other processor based device that enables communication via the internet. In some embodiments, the participant computer **100** includes an interface, such as a touch screen, that allows the participant to enter information and instructions into the participant computer **100** and enables the display of information to the participant.

In accordance with one embodiment of the present invention, the system **10** includes a sports ball **20**. A sports ball **20** may be a ball having any size and shape that may be used during a physical activity. For example, the sports ball **20** may include, but is not limited to, a soccer ball, a baseball, a football, a golf ball, and a basketball, among others. The terms sports ball is not intended to limit the present invention. As will be appreciated by a person having ordinary skill in the art and being familiar with this disclosure, the present invention may be practiced with other types of equipment used to perform physical activity. For example, the present invention may be practiced using a jump rope, a throwing disc, and a tennis racket, for example.

The sports ball **20** includes a sensor **30** that detects an acceleration of the sports ball **20**. The sports ball **20** also includes a processor **40** that is in communication with the sensor **30** so that the processor **40** receives data from the sensor **30** indicative of an acceleration of the sports ball **20**. As shown in FIG. **5**B, the sensor **30** and the processor **40** are referred to as sensor hardware **42**.

As the participant uses the sports ball **20**, the ball is subject to a series of accelerations. For example, the ball **20** is kicked, the ball is stopped, and the ball is bounced. Software executing on the processor **40** determines that the sports ball **20** is being used in response to receiving such data and generates activity data **50** indicative of a period of the use of the sports ball. For example, if a participant uses a sports ball **20** for one hour, the activity data **50** will indicate that the ball **20** was used for one hour.

The processor **40** in the sports ball **20** is in communication with the participant computer **100**. For example the sports ball **20** and the processor **40** may communicate by wireless or wired transmission such as Bluetooth, wifi, or radio frequency modules. In this manner, the participant can use the participant computer **100** to receive activity data **50** from the sports ball **20** and to further affect data stored in the ball **20** and update software executing on the processor **40**. Although the term processor is used herein, the sports ball **20** may comprise a microcontroller or other type of processor based computer having software executing thereon disposed therein.

The participant computer **100** includes software **110** executing thereon to receive the activity data **50** from the sports ball **20**. In one embodiment, the participant may open a software application associated with the sports ball **20** on the participant computer **100**. This may include, but is not limited to, an application executing on a smart phone. The application may provide an indication that the sports ball **20** is in communication with the participant computer **100** and is ready for an exchange of activity data **50**. In another embodiment, the software executing the participant computer **100** may automatically receive the activity data **50** from the sports ball **20**. In other embodiments, the software executing on the computer may prompt the participant to initiate the transmittal of activity data **50** from the sports ball **20** to the participant computer **100**. In some embodiments of the present invention, software executing on the participant computer **100** stores the activity data **50** in a database associated with the participant computer **100**. In one embodiment of the present invention, the participant computer **100** is a smart phone such as an iPhone or an Android phone.

Software **110** executing on the participant computer **100** transmits activity data **50** to the server **200** via the network **130**. Software executing on the server **100** receives the activity data **50** associated with the participant and stores the activity data **50** in the database **230**. In the embodiment shown, a unique participant identifier is assigned to each participants with access to the server **200**. Software executing on the server **200** uses the participant identifier to distinguish and delineate between different participants. The software **210** executing on the server **200** stores the activity data **50** is the database **220** in a participant record associated the participant identifier. The participant record includes all information and data associated with a participant identifier. For example the record may include personal information, charitable goals, past charitable donations, and the duration of use of the sports ball **20**. Although an embodiment disclosing a configuration of data stored by the server **200** is disclosed, the present invention is not limited in this regard as other configurations may be used.

Software executing on server **200** assigns credits to each participant record based on the activity data **50** associated with that participant record. Software executing on the server **212** receives a participant record from the database **220**. Software executing the server **214** assigns a number of credits to the participant record based on the activity data **50**. A person of ordinary skill in the art and familiar with this disclosure will understand that the formula for assigning the credits can vary based on the configuration of the system. For example, one credit will be assigned for each hour of use with the sports ball **20**. In other embodiments, different types of physical use can be incentivized by awarding more credits for the same amount of use as compared to as a different type of sports ball. The assigned credits are stored and associated with the participant identifier. In the embodiment shown, the system **10** is configured so a participant earns credits for performing physical activity.

Software executing on the server **216** generates a report **230** based on the assigned credits and transmits that report **230** via the network **130** to the participant computer **100**. Software **120** executing on the participant computer **100** receives the report **230**. In some embodiments, software **120** executing the participant computer **100** displays the report **230**. In reference to FIG. **3**, a report **230** in accordance with one embodiment of the present invention is shown. In the embodiment shown, the report **230** is a webpage that is displayed in a browser running on the participant computer **100**. The report **230** shows the participant name and displays information regarding the participant's use of the system **10**.

The report **230** displays a number of accumulated credits **231**. In the embodiment shown in FIG. **3**, the participant "Anthony Q" has earned 127 credits as illustrated by the report **231**. The report **230** also includes a leader board **237**. The leader board **237** displays a leader in charitable giving in a group. This ranking may be based on any number of factors, for example hours, credits, donation, etc., and the ranking may be among all participants of the system **10** or may be among a sub group using the system **10**. The report **230** further includes an avatar **233** chosen by the participant, an identification of the total hours of play **232**, and a display of the hours spent on donating to different charitable organizations **335**. The report **230** further includes a progress bar **233** that illustrates a participant's progress to a goal, and further illustrates a number of hours of play **234** required to reach a goal. Finally, in the embodiment shown in FIG. **3**, the report identifies a number of awards, also referred to as badges, earned by the participant. In some embodiments, the badges are assigned based on the duration of the physical use of the sports ball and the badges can be redeemed for donations. Although a particular embodiment of a report **230** is shown in FIG. **3**, the present invention is not limited in that regard. For example, a person of ordinary skill in the art and familiar with this disclosure will understand that the report may take many different forms and may display many different types of data.

The information displayed in the report **230** is stored in the participant record associated with a participant. In some embodiments of the present invention, participants may access software executing on the server **200** by a browser, a cloud application, or by some other method. It some embodiments it is possible for a participant to view records of other participants using the system **10**, or at least portions thereof. This sharing of information has been found to further incentivize participation and fundraising.

The system **10** allows a participant to redeem earned credits for charitable donations. For example, one or more third party entities or individuals, for example a corporation seeking to allocate a portion of money to a charitable causes, can sponsor charitable donations made through the system **10**. In reference to FIG. **2**, software executing on the server receives donation information from one or more third parties **249**. For example, a company may pledge $10,000 to be allocated to different donation goals and offered to participants of the system **10**. Software **240** executing on the server **200** stores the donation information in the database **220**. It should be understood that the present invention is not limited to receiving donation pledges from third parties, and that other funding models may be employed.

The charitable donation options may be displayed to the participant so that the participant can redeem credits. Software executing on the server **242** retrieves donation information from the database **220**. Software **244** executing on the server **200** generates a charitable donation response form **246** and transmits the form **246** to a participant computer **100** via the network **130**. Software **140** executing on the participant computer **100** receives and displays the charitable donation response form **246**.

In reference to FIG. **4**, a charitable donation response form **246** in accordance with one embodiment of the present invention is shown. The response form **246** identifies a number of available credits **215**. The form **246** also displays different charitable donation options. For example, the form **246** displays a schools and recreation donation option **214**, a water and agriculture donation option **213**, a livelihood and vocation option **212**, and a global health option **211**.

Through the participant computer **100**, the participant can select a charitable donation option presented on the form **246**. Based on the selection, software **142** executing on the participant computer **100** generates a reply **144** to the form **246** and transmits the reply **146** to the server **200**. Software executing on the server **200** receives the reply **144** and updates the participant record accordingly. Software executing on the server **200** may further generate one or more instructions, for example to make the donation, and transmit that instruction to one or more third parties **249**.

In reference to FIG. **5**B, sensor hardware **22** for use with the sports ball **20** in accordance with one embodiment of the present invention is shown. The sensor hardware **22** includes a sensor **30**, a microcontroller **40**, and a transmitter **42**. The microcontroller **40** is a processor based computer, and may also be referred to herein as a processor. The sensor hardware **22** also includes a battery (not shown in FIG. **5**B). In the embodiment shown, the sensor **30** is a piezoelectric component. As the ball **20** is accelerated, it vibrates the piezoelectric component, which generates an electrical current therein. The change in the piezoelectric element is detected by the microcontroller **40**. Software executing on the microcontroller **40** can determine whether the ball **20** is being used in a physical activity based on the received signal. If that software executing on the microcontroller **40** determines that physical activity is occurring, the microcontroller begins logging this use until it is stopped, thus determining activity data **50**. The microcontroller **40** stores the activity data so that it can be later transmitted to the participant computer **100**.

In the embodiment shown, the microcontroller **40** is an Arduino Fio Microcontroller Board, although the present invention is not limited in this regard. The sensor hardware **22** includes a wireless transceiver **42** that is in communication with the microcontroller **40**. The wireless transceiver **42** is used to transmit the activity data **50** to the participant computer **100**. It should be understood, however, that the present invention is not limited in this regard, and that there are many different ways in which the activity data can be transmitted between the sports ball **20** and the participant computer **100**. For example, the sports ball **20** may include a removable drive, or the data may be transmitted by a hard wire connection. It should also be understood that the present invention is not limited to the sensor hardware **22** disclosed herein, for example the piezoelectric component **30** and the microcontroller **40**. A person of ordinary skill in the art and familiar with this disclosure will understand that other types of hardware capable of detecting and logging use of the sports ball **20** may be used with the present invention.

In reference to FIG. **6**, the microcontroller **40** includes software executing thereon for determining whether changes in a signal received from the piezoelectric element is evidence of physical use and for determining when to start and stop logging based on intervals between received signals indicating physical use. The control logic **500** is illustrated in FIG. **6**. This logic **500** facilitates tracking of physical

activity because it enables the sensor hardware **22** to distinguish between periods of no acceleration during physical use of the ball and periods of no acceleration when the sports ball is not be used at all. In this manner, the sensor hardware can accurately track use of the ball. The sensitivity of the sensor hardware can be affected by adjusting the threshold value in the control logic. Although a specific logic is illustrated herein, for example in FIG. **6**, a person of ordinary skill in the art will understand that the present invention is not limited in this regard. In a different embodiment, the activity data **50** can be used to extrapolate/estimate the amount of kinetic energy generated by the ball, either represented in Watts or in minutes of light.

In some embodiments of the present invention, an energy generation module is included in the sports ball **20** to generate electric energy for the microprocessor **40** and the wireless transmitter **42** that are included in the sports ball **20**. Such an energy generation module is disclosed U.S. Patent Publication US20130023365 and titled Energy Storing Device and Method of Using the Same. That disclosure is incorporated herein by reference. It should be understood, however, that the present invention is not limited in this regard, as a battery or other source of electrical energy may be used to power the sensor hardware **22**.

In reference to FIG. **7**, an exploded view of a generation module **250** in accordance with one embodiment of the present invention in shown. The generation module **250** includes a housing **260**, a pendulum **280**, an electric generator **290**, a battery **296**, and supporting hardware including one or more brackets and fasteners as discussed in detail below. The housing **260** includes a first section **262** and a second section **264**. The electric generator **290** is mounted on pedestal **270** extending from an inner surface **265** of the second section **264** of the housing **260**. A U-shaped bracket **272** is mounted over the electric generator **290** and to the pedestal **270** using a plurality of fasteners (not shown in the FIG. **7**) to secure the electric generator **290** to the pedestal **270**. The electric generator **290** includes a rotor **292** extending from a surface **291** of the electric generator **290**.

The pendulum **280** rotates about a first axis of rotation A at or proximate to a proximal end **281** of the pendulum **280**. The first axis of rotation A of the pendulum **280** is perpendicular to a rod **288** of the pendulum **280**. The pendulum **280** includes a recess (not shown in the figures) proximate to the proximal end **281** for receiving the rotor **292** of the electric generator **290**. The recess is configured so that when the rotor **292** is received therein an axis of rotation of the rotor is coaxial with the first axis of rotation A. The rotor **292** may be secured in the recess of the pendulum **280** by any known method, including by a press-fit, an adhesive, or by a mechanical fastener. The rotor **292** is inserted through an opening **275** in a faceplate **274** of the U-bracket **272** and through a washer **276** before being inserted into the recess of the pendulum **280**. The faceplate **274** and the washer **276** serve to maintain the pendulum **280** rotating about a single axis of rotation, the first axis of rotation A, regardless of the axis(es) of rotation of the ball. The faceplate **274** further inhibits radial forces from being transferred from the pendulum **280** to the electric generator **290** along the rotor **292**.

In reference to FIGS. **8**A-**8**C, a ball **310** in accordance with one embodiment of the present invention is shown. The ball **310** includes a generally spherical shell **320** that defines a cavity. The ball **310** includes a generation module **360** that harnesses kinetic energy of the ball **310** to generate and store electrical energy. It should be understood that in the embodiment shown in FIGS. **8**A and **8**B, the sensor hardware **22** is disposed in the generation module **360**. The shell **320** defines a first opening **324** for accessing the cavity and includes a first panel **330** for substantially closing the first opening **324**. The first panel **330** includes a cylindrical sleeve **332** that extends radially inward from an inner surface **334** of the first panel **330**. The shell **320** defines a second opening **344** for accessing the cavity and includes a second panel **350** for substantially closing the second opening **344**. In the embodiment shown, the second opening **344** is substantially opposite the first opening **324** in the shell **320**. The second panel **350** includes a cylindrical sleeve **352** that extends radially inward from an inner surface **354** of the second panel **350**.

During assembly the generation module **360** and the sensor hardware **22** is secured in one or more of the first sleeve **332** and the second sleeve **353**. In some embodiments, the sensor hardware **22** is disposed in the case of the generation module. The first panel **330** and the second panel **350** are secured in the respective first opening **324** and second opening **344** so that the first sleeve **332** and the second sleeve **352** are disposed in the cavity. In some embodiments, the first sleeve **332** is adapted to receive a distal portion **353** of the second sleeve **352** when the first sleeve **332** and the second sleeve **352** are fully inserted into the shell **320** thereby increasing the rigidity of the assembled ball **310**. In yet other embodiments, a portion of the generation module **360** is received in the first sleeve **332** and a portion of the generation module is received in the second sleeve **352** when the first sleeve and the second sleeve are fully inserted into the shell **320** thereby increasing the rigidity of the assembled ball **310**. One of the first and the second panel **330**, **350** includes an opening for an outlet, however, the present invention is not limited in this regarding as there may be more than one outlet or no outlets.

In reference to FIG. **5**A, another embodiment of a ball **20** in accordance with one embodiment of the present invention is shown. The ball **20** includes a first panel and a second panel **320**, **330**. The ball **20** further includes a ring structure **325**. The ring **325** is supported between the distal ends of the two panel **320**, **330** so that the sensor hardware **42** is disposed substantially in the center of the ball **20**. The ring **325** further serves to provide additional support to the ball. In yet another embodiment of the present invention, the sensor hardware **22** is disposed in soft foam which in turn is disposed in the cavity a shell defining a spheroid. In this embodiment, the foam maintains the position of the sensor hardware **22** in the sports ball **20**. It should be understood to a person of ordinary skill in the art, that while certain specific configurations are disclosed relating to the configuration position of the sensor hardware relative to the ball, the present invention is not limited in this regard and that different options may be used.

Although the present invention has been disclosed and described with reference to certain embodiments thereof, it should be noted that other variations and modifications may be made, and it is intended that the following claims cover the variations and modifications within the true scope of the invention.

What is claimed is:

1. A system for incentivizing charitable giving based on physical activity, comprising:

a computer associated with a first participant identifier and having a communication link with the internet;

a sports ball associated with the first participant identifier, the sports ball comprising:

a sensor for detecting an acceleration of the sports ball;

a processor in communication with the sensor, so that software executing on the processor receives signals from the sensor indicative of an acceleration of the sports ball;

software executing on the processor for determining activity data based on the signals received from the sensor;

a communication link between the sports ball and the computer;

software executing on the computer associated with the first participant identifier for receiving first participant activity data indicative of a duration of the use of the sports ball;

software executing on the computer associated with the first participant identifier for transmitting first participant activity data via the communication link with the internet;

a server having a communication link with the internet;

software executing on the server for receiving the first participant activity data;

a database comprising a plurality of participant records, each participant record having a participant identifier associated therewith;

software executing on the server for storing the received first participant activity data, indicative of a duration of the use of the sports ball, in a participant record associated with the first participant identifier;

software executing on the server for assigning a plurality of credits to the participant record associated with the first participant identifier based on the activity data stored in the participant record associated with the first participant identifier;

software executing on the server for generating a report based on the credits assigned to the participant record associated with the first participant identifier;

a communication link between the server and the internet;

software executing on server for transmitting the report to a participant computer associated with the first participant identifier via the communication link;

wherein the ball comprises a shell defining a spheroid, the shell defining a cavity;

wherein the shell defines a first opening and a second opening substantially diametrically opposite the first opening,

a first panel configured to substantially close the first opening, the first panel having a sleeve extending radially inward from an inner surface thereof;

a second panel configured to substantially close the second opening, the second panel having a sleeve extending radially inward from an inner surface thereof;

wherein the sensor and the processor are supported in a center of the sphere by a distal end of the first sleeve and a distal end of the second sleeve.

2. The system of claim **1** wherein the sensor comprises a piezoelectric component that generates an electrical current in response to an acceleration of the sports ball.

3. The system of claim **1**, wherein the ball further comprises a foam ring disposed therein between the distal end of the first sleeve and the distal end of the second sleeve, the foam ring being configured to further support the sensor and the processor.

4. The system of claim **3**, wherein the ball further comprises a pendulum, an electric generator, and a battery disposed in the housing, a rotor of the electric generator being mechanically coupled to the pendulum at a first axis of rotation of the pendulum, the electric generator being electrically coupled to the battery;

wherein an acceleration of the ball relative to a playing surface causes the pendulum to rotate about the first axis of rotation;

wherein the rotation of the pendulum rotates the electric generator which generates electrical energy at least a portion of which is stored by the battery.

5. The system of claim **1**, further comprising:

software executing on the server for generating a donation response form, the form identifying at least one donation option redeemable for a predetermined number of credits;

software executing on the server for receiving a reply to the charitable donation response form.

6. The system of claim **5**, further comprising:

software executing on the server for subtracting credits corresponding to the predetermined number of credits from the total number of credits associated with the participant record associated with the first participant identifier in response to a selection of the first donation option.

7. The system of claim **6**, further comprising:

software executing on the server for generating a donation redemption form that includes a confirmation that the donation has been redeemed.

8. The system of claim **7**, wherein the report includes a rank associated with the first participant identifier, the rank being indicative of the duration of use with the sports ball associated with the first participant identifier relative to the duration of use of sports balls associated with one or more other participant identifiers.

9. The system of claim **8**, wherein the report identifies a duration of use of the sports ball associated with the first participant identifier and wherein the report identifies a number of credits corresponding to a period of use of the sports ball.

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