JDM/005 PROV

SYSTEMS AND METHODS FOR LOCATION BASED GAMES AND EMPLOYMENT OF THE SAME ON LOCATION ENABLED DEVICES

Background

Virtual reality games have been developed where a user places a helmet on his/her head and is immersed into an alternate reality via a display located in the helmet. A user is allowed to move a virtual game character through the alternate reality by means of a joystick that is hard wired to the game's processing circuitry. The user occasionally controls this virtual game character from a first person perspective such that the user believes he/she is the virtual game character. A user is limited in actual physical movement by means of a very small (e.g., 48 inches) enclosed virtual reality platform. There is no way to receive virtual game character control signals from user movements that are not translated by a joystick. It is therefore desirable to provide a virtual reality system that has increased user control of the virtual game character. Furthermore, a user has to physically interact with an input to

control the virtual game character. These systems are deficient because it does not allow transparent control (non-direct physical control) of a virtual game character. It is therefore desirable to provide a virtual reality system with transparent user controls.

Traditionally, a large amount of heavy computer hardware is also needed to fabricate a virtual reality system. Multiple platforms, interconnected systems, and control devices are required in order to immerse more than one user in the same virtual reality environment. The above-described virtual reality systems typically cost in the tens of thousands to hundreds of thousands of dollars. It is therefore desirable to create a virtual reality system that increases the user's ability to interact with an alternate reality while simultaneously decreases the cost of a system such that it is comparable to commercial video game systems (e.g., Nintendo GameCube).

At this time, no software exists that can take a commercial processing device and turn it into a virtual reality gaming system. It is therefore desirable to create software that can convert a commercial processing device into a virtual reality gaming system. This would reduce the costs of obtaining a virtual reality device to that of software costs (e.g., $5).

Zingy.com offers cell phone ringers for sale and download. Zingy.com allows a user to enter in a cellular phone number and a corresponding cellular phone model on the internet. The user must set up a user profile with an additional user identification such that the cellular phone number is sent a text message containing a confirmation code. A user may then enter in this confirmation code on the zingy.com website to confirm that the user is in possession of the cellular phone. These ringers must be paid for and downloaded one at a time. After the purchasing steps for a particular ringer have been completed, that user is sent, via text messaging, a WAP web address. The user then has to extract the internet address from the text message (or enter it into a wireless browser) to be directed to the location of a file to be downloaded. The user's cell phone will then ask the user if the material is ok to download. It is therefore desirable to provide more simplistic systems and methods of downloading ringers from the internet to a cellular phone or wireless device. It is also desirable to provide systems and methods for downloading other types of content from the internet to a cellular phone or wireless device. It is also desirable to provide a cellular phone and methods of operation of the same that provide simplistic third party download capabilities.

Only one ringer may be downloaded at any one time using Zingy.com. It is therefore desirably to provide systems and methods that allow a user to download multiple ringers in a single download. More particularly, it is desirable to provide systems and methods that allow a user to download multiple types of content in a single download.

Sprint offers a VISION PCS service in which the internet location of a Global Content Descriptor file (.GCD file) must be sent, via text messaging, to a Sprint VISION PCS cell phone in order to download a file (e.g., ringer) from a website (e.g., Zingy.com). This .GCD file contains a variety of data fields that tell the cell phone, for example, the amount of memory included in the cell phone. Other data fields include the data's title, creator, file type, and internet storage location. These cell phones contain programs that use certain aspects of this data. For example, if the size of the file, as contained in the .GCD file, is too large then the cell phone will prompt the user that the file is too large to download. These systems are deficient because two files must be transferred in order to obtain a download of a single file. It is therefore desirable to provide a cell phone that does not need a .GCD, or similar, file to download content.

Summary of the Invention

The present invention provides an actual reality based video game in which a user's physical (actual) location in the world, or on a playfield, reflects a virtual game character's virtual location in the video game. Depending on the embodiment, a user's actual environment may be completely visible to a user (transparent environment), semi-visible to a user such that a game layout blocks or manipulates a user's actual environment ("semi-transparent") or completely immerses a user into an alternate reality ("non-transparent"). As stated, the location of a user (e.g., the location of a portable gaming device being utilized by a user) is used as a control input for the game.

In one embodiment, a commercial device with a locating device and a display may be programmed to be a transparent gaming system. For example, the commercial device may be a cellular phone and the locating device may be the cellular phone's Global Positioning System (GPS) system. As a beneficial illustration of the attributes of the present invention, the game may be a reincarnation of the classic game of pacman. The game may include the ability for multiple players to join the game. Control of, for example, pacman may be provided to the user through the location of the device. In this manner, a virtual reality game may be downloaded to a

user's cell phone and, as a result, be obtained for a minimal cost. To give an example of the transparent game play, a user may look down at a display screen, see pacman, and run around his/her environment in order to similarly run pacman through the virtual maze.

A multiple player embodiment is provided that allows, for example, one user to control one character (e.g., pacman) and another user to control a different character (e.g., a ghost). These players do not have to be local to one another (e.g., they do not have to be on the same playground but may be on the other side of the world) in order to take advantage of multiplayer game. If the commercial device has a communications device (e.g., cellular phone) then, for example, a remote storage device (e.g., a remote database) may be constantly updated with each user's location (that is routinely accessed by each user's device to obtain the other user's location). Alternatively, the devices may establish a direct communications link with each other.

Additional locating devices may be placed on the user to obtain other transparent controls. For example, a GPS device (or any type of locating device) may be placed on a user's hand. GPS devices may be used to obtain the location of a receiver in a three-dimensional field. Therefore, the height, latitude, and longitude of the user's hand may control the height and

position of a virtual game character's hand (or other movement).

For play in a local area (e.g., the same playground), the device located may set an origin in order to calibrate each user's actual origin position to an origin position in the video game (e.g., all devices may be placed within a foot of each other before gameplay begins and then players may be directed to their starting positions in order to start gameplay).

Devices are also provided that are developed specifically (e.g., non-commercial devices that are customized like on the cell-phone embodiment) for a location-based controlled game. As per one example, a visor is provided that includes a transparent display such that objects can be overlayed onto the actual environment. Continuing the pacman example, maze walls may be provided to a transparent display. Thus, a user will see the actual environment that he/she is running in (e.g., the playground) and also see the maze walls that he/she has to follow. This overlay game information may be provided to a user depending upon his/her physical location direction that he/she is facing (a separate component may be utilized for direction).

However, one novel directional component may be an electronic compass embodied by two location devices (e.g., two GPS devices). If, for example, one location

device is placed in the front of the portable portion of the system, or as in some embodiments the entire portable system, (e.g., visor) and one location device is placed in the rear of the portable portion of the system, or as in some embodiments the entire portable system, (e.g., visor) then the direction the visor is pointing may be determined through these two location devices.

To cut the weight down of portable headsets, some of the computing for the game may be done at a base station and transmitted wirelessly to the headsets. Less intricate examples (e.g., a dedicated non-communicating one-player game) could be constructed and marketed for considerably less than compatible hardware (e.g., a cell phone). Other control features (e.g., action buttons on a controller) may be included to the user of the video game system of the present invention.

Delivery methods of content to a cellular phone are also provided. The present invention provides data interchange between cellular phones and the internet. More particularly, the present invention provides data interchange between cellular phones and the internet using a minimal number of steps for at least first time users.

Confirmation that a user is in possession of a cell phone is provided by having the user respond to a text message from the cellular phone.

Multiple types of content may be downloaded to a user either by themselves or in groups with a single download or email. Multiple links may be included in a text message to a cell phone such that multiple types of content may be downloaded with a single message.

The payment confirmation option is not provided to content that is free of charge. Multiple types of content may be downloaded to a cell phone using the systems and methods of the present invention. More particularly, phone numbers, applications, and pictures may be downloaded in addition to ringers.

A data interchange may be provided. Users may upload content from their cell phones and allow other people, or a select set of people, to download it to their respective cell phones or wireless devices. For example, phone numbers may be uploaded and stored on a webpage for a particular user. Thus, a user has a backup of his or her cell phone numbers that can then be downloaded to a different cell phone.

Interactive games are provided to cellular phones by including a database that can store the games progress. For example, to provide a simple wireless chess game, a user can upload his "next" move onto a remote database. In this manner, a second user may then download this "next" move from the remote database either himself, automatically, or the user may be prompted to do

so. In this manner, a user's location may be uploaded to a user database and downloaded to a subsequent user database.

An automatic update may be provided to a cell phone user. In this manner, a user may sign up for a particular service (e.g., daily wallpaper) and, every morning, that user may be provided a different background (e.g., a January 15th Calendar page exhibiting a comic personality) every day or period of time. This feature may be extended to games such that, every morning, a new game level is sent to a user.

A cell phone is provided that includes the ability to have non-service provider automatic updates without the consent of the cell phones user every time data is downloaded. For example, a program may be provided to the cell phone that allows a user to accept and begin downloading any type content from a particular entity. This program utilizes the "content provider" descriptor to determine if the content is allowable for download. Thus, a user only has to approve content from the "content provider" once and then all subsequent downloads from that content provider are automatically approved by the program. In order to protect from people falsifying the "content provider field", a cell phone may be configured to send a "file receipt message" to a source location (e.g., a cell phone may be configured to receive

a "source location" description field). If the acknowledgement does not match a shipment by the source location then the cell phone may be notified of a falsified transmission and the downloaded material deleted.

A cell phone is also provided to download a file directly without a .GCD, or similar, file. This cell phone preferably contains a large amount of memory (e.g., 128mb) such that the download of a file of an unrecognizable file type does not result in a user having to delete already downloaded content in order to make room for the new file. The cell phone can be configured to provide a message to a user if the downloaded file is of an unrecognizable type. The cell phone can also connect to a remote database to obtain a list of file types and associated programs and, if a program is associated to a file type, automatically download the program to run the previously unrecognized file type.

Brief Description of the Drawings

The above and other features of the present invention, its nature and various advantages will be more apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1 is an illustration of one embodiment of an actuality/virtuality gaming system topology in accordance with the principles of the present invention;

FIG. 2 is a flow chart for one embodiment of an actuality/virtuality gaming system in accordance with the principles of the present invention;

FIG. 3 is an illustration of a cellular phone for use as an actuality/virtuality gaming system in accordance with the principles of the present invention;

FIGS. 4-5 are illustrations of user interfaces, and accompanying functionality, in accordance with principles of the present invention;

FIG. 6 is an illustration of one embodiment of an actuality/virtuality gaming system in accordance with the principles of the present invention; and

FIG. 7 is an illustration of one embodiment of an actuality/virtuality gaming system in accordance with the principles of the present invention.

Detailed Description of the Drawings

FIG. 1 shows virtual gaming system 100 in which locating device 131 receives location signals from satellites 111-113. Persons skilled in the art will appreciate that satellites 111-113 may be transmitters placed around a physical playfield (e.g., may be placed around the perimeter/suspended above a football field).

Cell phone 130 may house locating device 131 and may provide a location-based game on display 140. To set a location-based game, the user may be asked to set an origin for the game. This screen may tell the user how much free space is needed on all sides of the origin so that the user can more efficiently find a proper spot to begin gameplay.

FIG. 2 shows flow chart 200 of one embodiment of a located-based game. Steps may be added to or removed from flow chart 200. Step 201 occurs when a request for a location-based game is received. This may be simply a user turning ON a location-based gaming device (e.g., a dedicated pacman location-based device) or a user selecting a location-based game from a list of location-based games. Step 203 determines if the game needs an origin setting. If the game does need an origin setting then step 205 occurs. Else, step 209 occurs. Step 205 prompts a user to position the device at the desired origin. Step 207 then occurs waiting for a user to submit the origin. Step 207 reiterates until a user selects a location as the origin for gameplay. Once a user selects a location for the origin of gameplay the device may record (e.g., in onboard memory or a remote database) the location of the selected origin (as read from a locating device) and use it as a reference during gameplay. Step 209 then may begin tracking the user's

location and the user may be prompted if a multiplayer game is desired in step 213. Persons skilled in the art will appreciate that step 213 (and related steps) may occur before step 203 (and related steps). Step 211 may be included to located nearby players that can play the game. For example, a communications device may send out a signal to "ping" if any other similar devices are on the playfield (or a surrounding area). Multiple other multiplayer configurations may be used. For example, the user may enter in the phone number of a cellular phone and ask if a multiplayer game wants to be played. In this manner, the requested cell phone can be anywhere (e.g., halfway across the world) and still play on the same playfield (by uploading data to a remote server or communicating directly with the cell phone). Step 215 may be utilized to initialize any communications link needed between the gaming devices (e.g., communications to a common remote database).

FIG. 3 shows cell phone 300 constructed in accordance with the principles of the present invention. Cell Phone 300 preferably includes speaker 330, antenna 310, display screen 320, control keys 360, alpha-numeric keys 350, and microphone 340. Cell phone 300 also preferably may include, for example, a communications transmitter (not shown), communications receiver (not

shown), memory (not shown), positioning device (not shown), and a microprocessor (not shown).

FIG. 4 shows display screens 425, 450, and 475 that may be incorporated into a virtual reality gaming device of the present invention. Persons skilled in the art will appreciate that a gaming device dedicated to a single game (e.g., frogger) may be easily incorporated into a device the size of a traditional Tamagochi device. Such dedicated devices may be sold relatively cheaply (e.g., $40). A gaming device may also accept cartridges of different games so as to reduce the need of purchasing a new location device with the purchase of a game. As discussed above, games can also be wirelessly downloaded to a portable gaming device or a traditional commercial device with a locating device.

Display screen 425 displays a list of location-based games that a user can choose from. Display screen 450 is one example of the information that may be presented when a location-based game is chosen. Display screen 450 may also contain a static (e.g., transparent) origin functionality such that when a user acknowledges reading the instructions, the system will record an origin location. Display screen 475 is one example of a multiplayer initialization screen and accompanying functionality.

FIG. 5 shows display screens 525, 550, and 575. Display screen 525 is a screen that allows a user to chose from a variety of characters for gameplay. These characters may have different modes of operation (e.g., different goals and gaming constraints). Display screen 550 may provide the user with a rule-set for the player that is chosen from display screen 525. Display screen 575 includes a screen taking from gameplay of a pacman game. Virtual character 576 is first displayed to a user at its origin. As a player moves around a playfield, the player's actual location is translated into a virtual location for character 576 by means of determining the difference between the user's current location and his/her origin location. Thus, as a user runs through a playground, character 26 runs through the virtual environment of display screen 575. Character 577 may be a second character controlled either by a program or by a second player. Character 577 may have a different origin on display screen 575. In this manner, a user may be physically directed to an origin after the first player sets his/her origin so that they are properly aligned on the physical playfield. Alternatively, both user's can have any origin (this allows for gameplay between two remote users).

FIG. 6. shows environment 600 that includes gaming devices 620 and 630. Remote hardware 610 is also

included to assist with multiplayer gameplay. Remote hardware 610 may be, for example, a remote database that contacts with devices 620 and 630 wirelessly. Remote hardware 610 may additionally be positioned around the playfield and emit a location signal. Devices 620 and 630 may then determine a rough location based on this signal. Additional devices 610 may be utilized so that devices 620 and 630 can more accurately obtain their physical positions. Persons skilled in the art will appreciate that remote hardware 610 is not necessary. Instead, devices 620 and 630 can communicate to each other and determine their relation to one another. This may be cost-efficient for simple multiplayer games such as, for example, the classic game of pong where the devices represent the paddles on the display field.

Device 620 may include one or more displays 621. These displays may be transparent such that a user can see the environment around him/her. Images can then be selectively displayed on displays 621 and 622 such that a user can be displayed gaming indicia. Virtual game character 622 may be presented to device 620 to represent the character that the user of device 620 is controlling. Furthermore, because the location of device 630 is known, device 620 can provide an image of game character 623 at the position where device 630 is located to represent the user of device 630. If the display can

provide images that completely blocks out the environment in front of the user then he/she will not see the user of device 630, but the virtual character the device represents. Display 631 of device 630 shows a more simplistic approach that does not overlay virtual characters over the positions of the physical players, but does include virtual environment indicia 633. Persons skilled in the art will appreciate that virtual environment indicia 633 may include software-controlled gaming characters. Circuitry 624 and 632 may include, for example, communications devices, processing circuitry, memory, speakers, and locating receivers/transmitters.

While FIG 6 shows a relatively expensive and complex location-based gaming system, FIG. 7 shows a relatively simplistic gaming system. Gaming system 700 of FIG. 7 includes no physical input devices other than optional ON/OFF switch 710. Persons skilled in the art will appreciate, however, that one or more buttons may be included on system 700 (e.g., one or more FIRE WEAPON/ACTION buttons). Due to the lack of physical input, the size of display screen 702 may be maximized. Gaming system 700 may include chain 704 and clip 703 and may be small enough to fit inside a user's pocket. A user interacts with game character 725 through his/her physical location. This location may be determined by

locating device 701 (e.g., a GPS receiver). Such a system may set an origin reference when the game is turned ON.

From the foregoing description, persons skilled in the art will recognize that this invention generally relates to providing a control mechanism to a game through the psychical location of a person in an actual environment and for improving data sharing and exchange in wireless devices such as cellular phones. Persons skilled in the art will appreciate that the various configurations described herein may be combined without departing from the present invention. It will also be recognized that the invention may take many forms other than those disclosed in this specification. Accordingly, it is emphasized that the invention is not limited to the disclosed assemblies and methods, but is intended to include variations to and modifications therefrom which are within the spirit of the following claims.

What is claimed is:

1. A video game system for playing a video game comprising:

a locating device that determines the physical location of said video game system; and

a display, wherein a game character is displayed on said display having a video game location in said video game that corresponds to said physical location.

2. The system of claim 1, wherein said device is a cellular phone.

3. A method for controlling a character in a video game comprising:

determining the a first physical location of a locating device in a physical playfield;

mapping a video game environment around said first physical location;

determining a second physical location of said locating device;

placing said character in said video game environment based on said second physical location.

4. A machine readable medium having program logic recorded thereon for use in a video game system for:

storing a first physical location from a locating device;

mapping a video game environment around said first physical location;

determining a second physical location of said locating device; and

placing a video game character in said video game environment based on said second physical location.

SYSTEMS AND METHODS FOR LOCATION BASED GAMES AND EMPLOYMENT OF THE SAME ON LOCATION ENABLED DEVICES

Abstract of the Disclosure

A compact virtual reality system is provided that can be embodied in a commercial device as a software module. More particularly, a cellular phone with a locating device (e.g., GPS system) may be configured to operate as a game where the location of the cellular phone corresponds to the location of a character in the game. As per one multiplayer construction, two game devices communicate their positions to a remote database which, in turn, forwards opponent location information to each device. Wireless communications protocols, self-configuration, and auto-download software applications are also provided to optimize integration into a commercial wireless device such as a cellular phone.

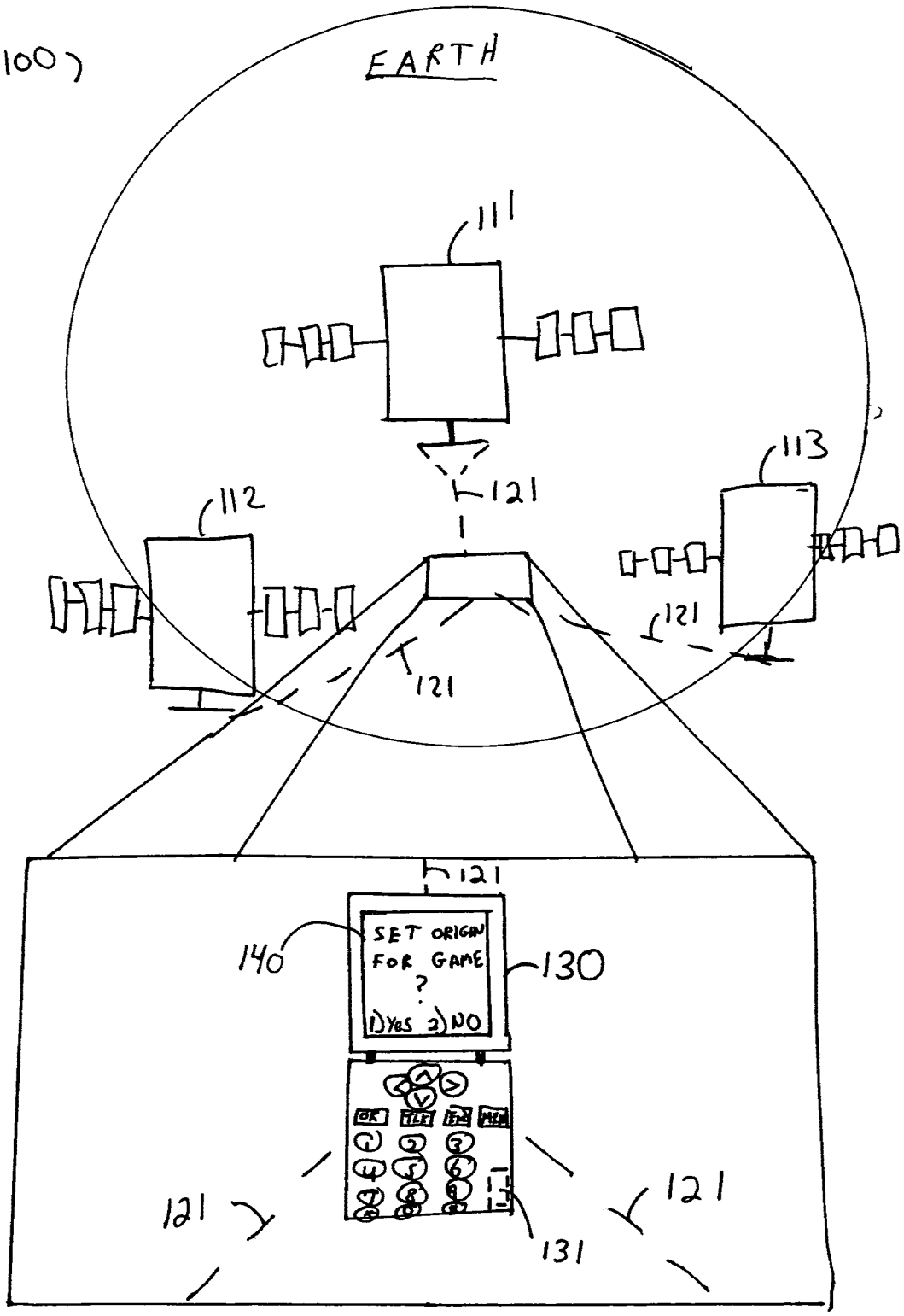

100
EARTH
111
112
113
121
121
121
121
121
SET ORIGIN
FOR GAME
?
1)YES 2)NO
140
130
131
121
121

FIG. 1

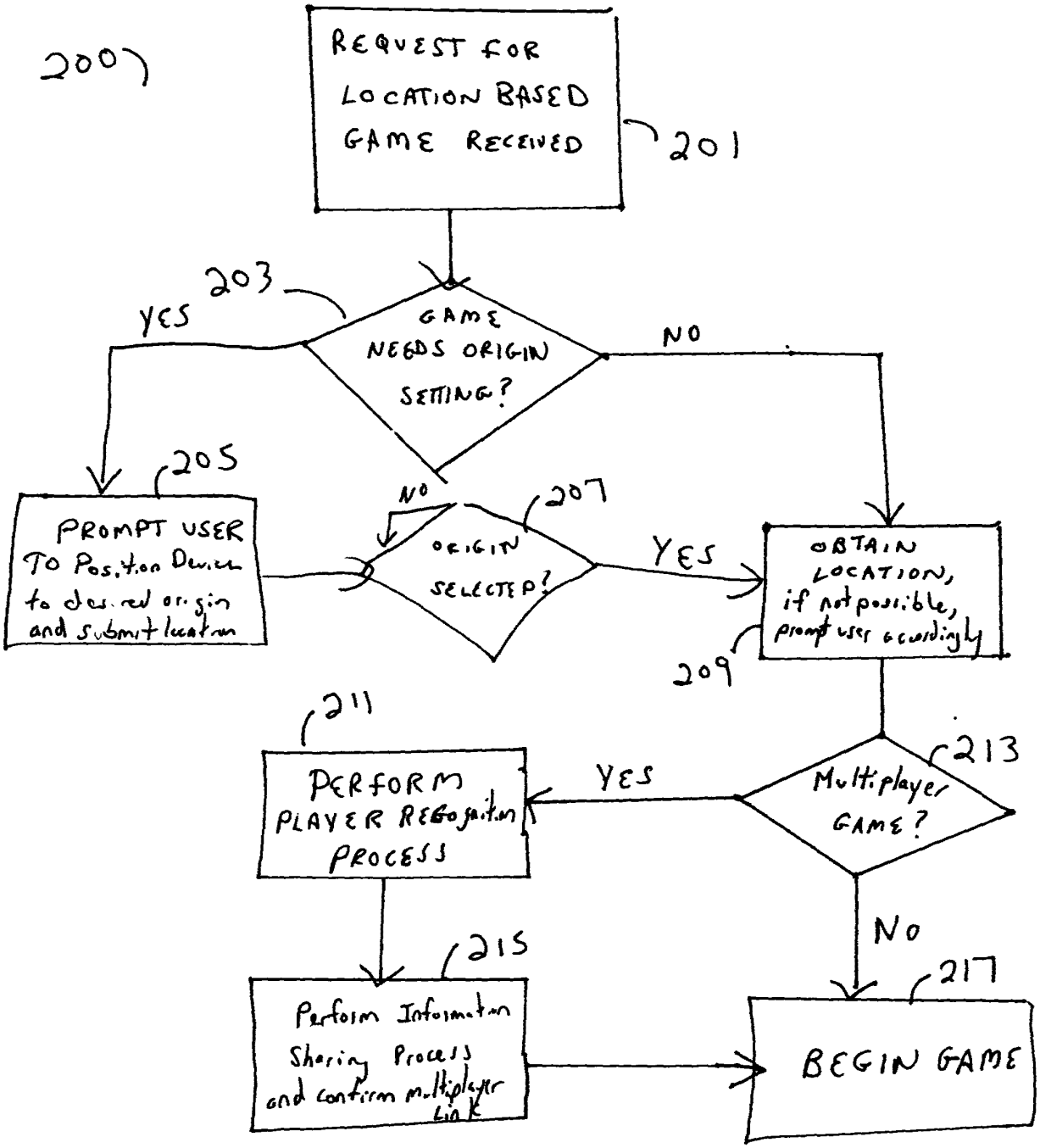

200
REQUEST FOR LOCATION BASED GAME RECEIVED
201
203
GAME NEEDS ORIGIN SETTING?
YES
NO
205
PROMPT USER TO Position Device to desired origin and submit location
NO
207
ORIGIN SELECTED?
YES
OBTAIN LOCATION, if not possible, prompt user accordingly
209
211
PERFORM PLAYER REGOpsition PROCESS
YES
213
Multiplayer GAME?
No
215
Perform Information Sharing Process and confirm multiplayer Link
217
BEGIN GAME

FIG. 2

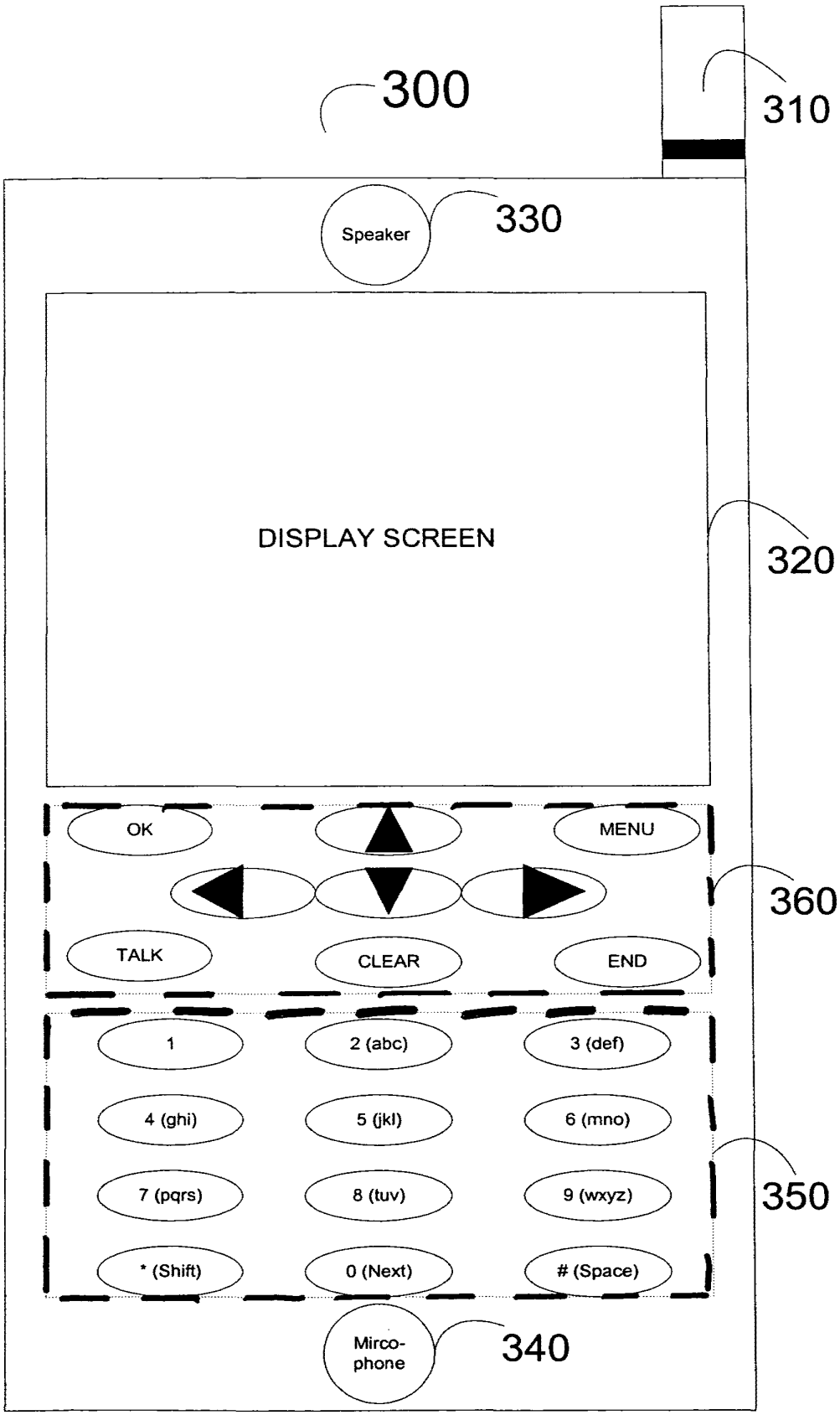

300
310
Speaker
330
DISPLAY SCREEN
320
OK
MENU
360
TALK
CLEAR
END
1
2 (abc)
3 (def)
4 (ghi)
5 (jkl)
6 (mno)
7 (pqrs)
8 (tuv)
9 (wxyz)
350
* (Shift)
0 (Next)
(Space)
Mirco-phone
340

FIG. 3

425

Pick Location Based Game

① Pacman

② Frogger

③ Track

④ Space Invaders

450

You Picked Pacman

Pacman is a location based game, pressing ok will mark your current location as pacman's origin in the maze. Press Ok to begin. You will need an open area of 200 feet x 200 feet to play this game

475

Pacman is a multiplayer Game

If you want to play with a remote player press ① and enter in players device ID or send this games ID, ID#PAC58312, to player.
If local player wants to join, have player place device within 1 feet of this device.

FIG. 4

MUITIPLAYER FOUND

One additional device has been found

Chose your character from the list of available characters

Press 1 for Pacman

Press 2 for Ghost

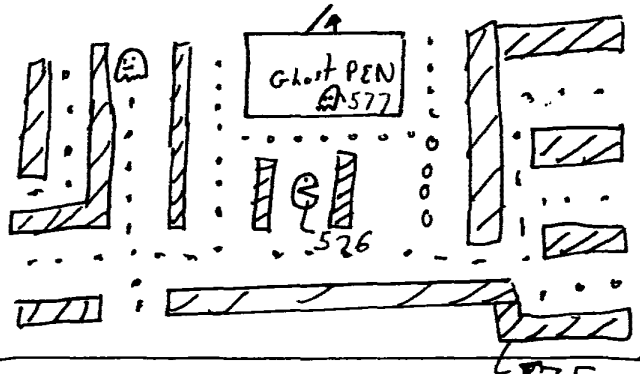
525

Rules for Actuality Pacman

Actuality Pacman Lets you play as Pacman. since you have selected Pacman, your mission is to literally run through the maze, your device will represent pacmans location, and gobble pellets while you flee ghosts (3 computer controlled, 1 player controlled). when powered up, you can consume ghosts, You cannot go through walls, hitting a wall will recalibrate your position (or in certain modes simply cost you 100 points)

550

Actuality Games Presents Pacman



575

FIG. 5

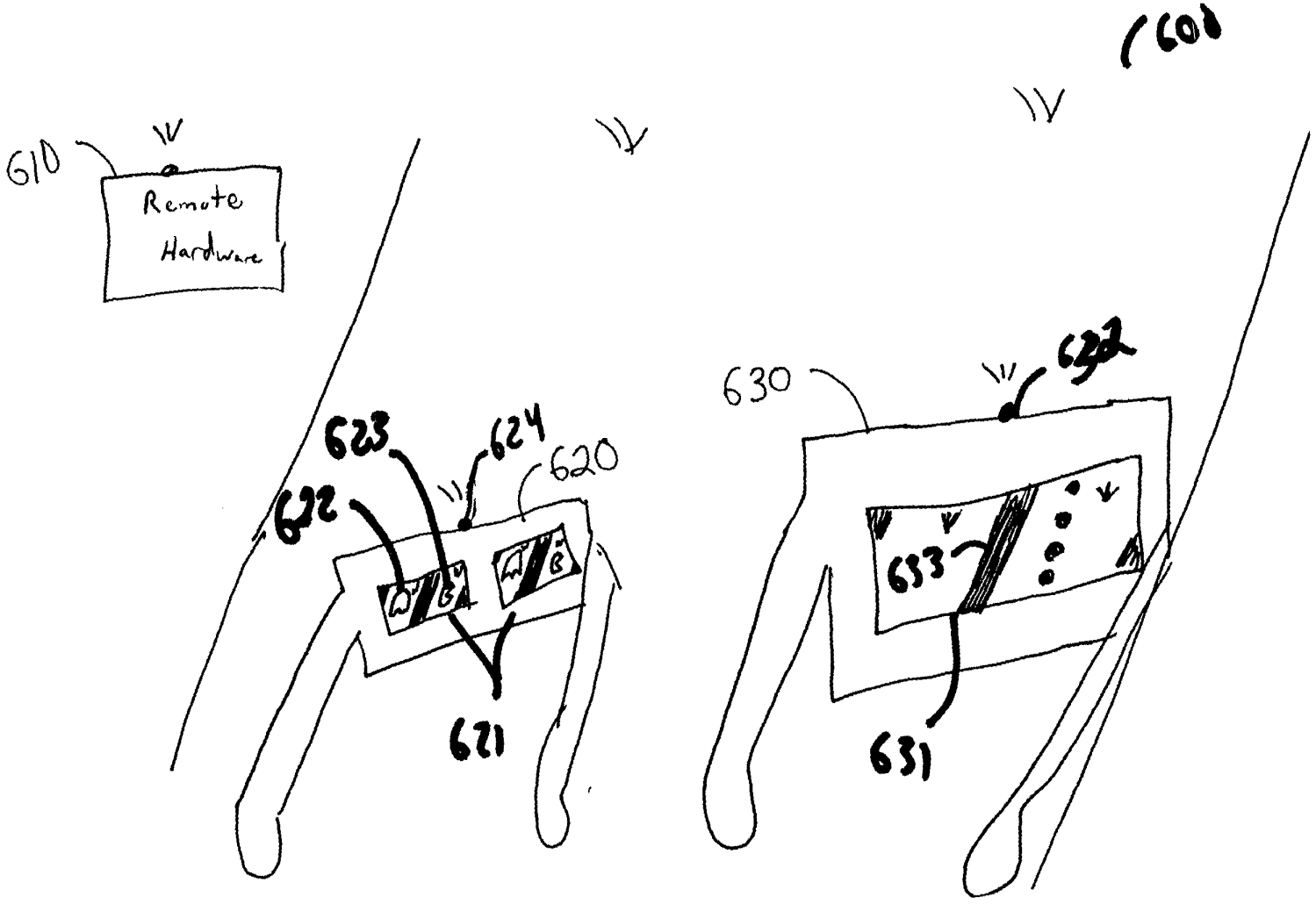


FIG. 6

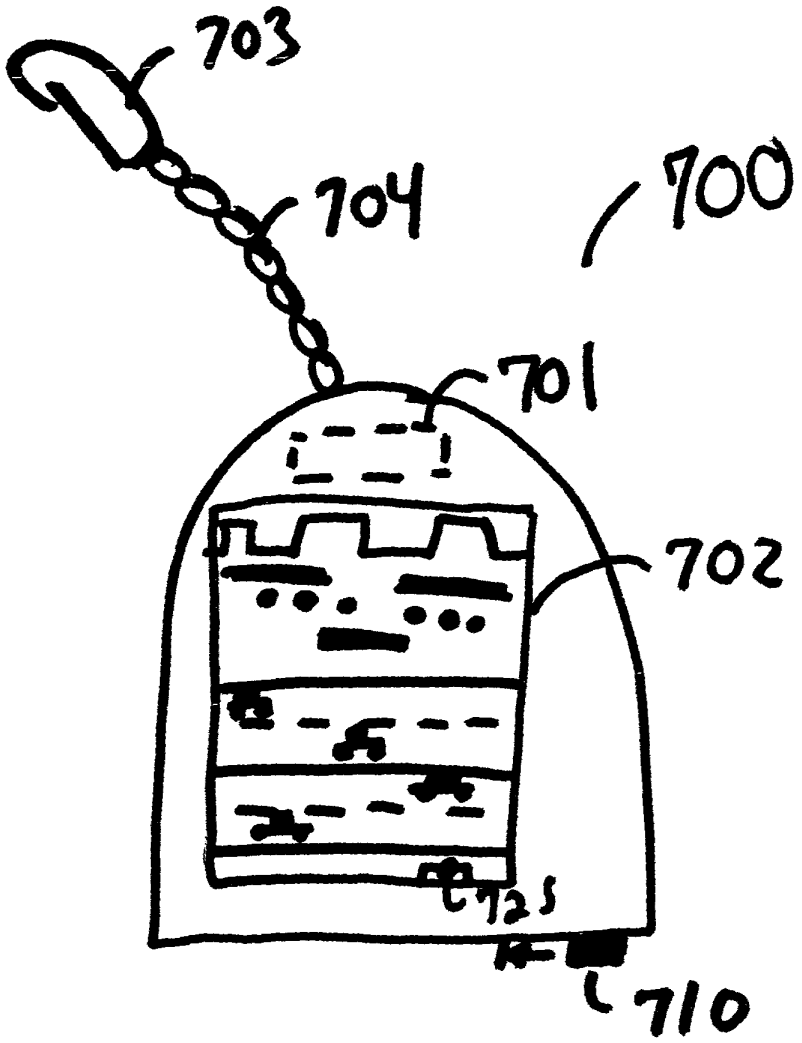


FIG. 7