B+

There is always a figure when you don't see the number 1 drawing

DETAILED DESCRIPTION OF THE INVENTION

Figure 1

[0001] FIG 1 is an isometric view of display device 100 according to a preferred embodiment of the invention. Display device 100 includes a display screen 110, an I/O port 120, a heartbeat system 130, shoulder straps 140 and 150, and a transparent casing 160. The shoulder straps 140 and 150 also include strap adjusters 170 and 180. The casing 160 includes a front surface 190, a rear surface 191, and a peripheral edge 192. The peripheral edge 192 includes a top portion 193, bottom portion 194, right-side portion 195, and left-side portion 196.

[0002] The display screen 110 is enclosed within casing 160 such that the display screen is visible from front surface 190 of casing 160. The heartbeat system 130 is attached to and extends outward from casing 160. The I/O port 120 is attached to and extends outward from casing 160. One end of shoulder strap 140 is preferably attached to the right-side portion 195 of peripheral edge 192. The other end of shoulder strap 140 is preferably attached to the top portion 193 of peripheral edge 192. One end of shoulder strap 150 is preferably attached to the left-side portion 194 of peripheral edge 192. The other end of shoulder strap 140 is preferably attached to the top portion 193 of peripheral edge 192.

? why the same? male/female?

[0003] In operation, the I/O port 120 is connected to a sister I/O port of a computer. The computer provides encoded data representative of an image, which is transmitted through the I/O port 120 into the display screen 110 of display device 100. The display screen 110 decodes the data and displays an image viewable through the transparent casing 160. The computer also provides power to the display device 100. The display screen 110

- good # of pgs including overall system diagram
- other figures need work
- lighton description in a few places + others are not clear
- claims need work- POV is paper + straps? OK, but are they your best?

preferably comprises "electronic paper" which maintains the display of the image without power.

[0004] In operation, the computer may transmit data to the heartbeat system 130 of display device 100. The heartbeat system 130 may store this data in internal memory. Once the image is displayed on the display screen 110, the computer may be disconnected from I/O port 120. Shoulder straps 140 and 150, which are adjustable in length, may be placed over the shoulders of a person carrying the display device 100. The straps are preferably nylon but may comprise other fabric-like materials. The shoulder strap adjusters 170 and 180 may be used to adjust the length of shoulder straps 140 and 150 respectively.

[0005] The I/O port 120 is preferably a USB port, but may alternatively be a fire wire or hardwire port, or a transceiver for a wireless connection. The display screen may also be a conventional LCD screen or another electronic display device used in electronic devices. The casing may alternatively comprise a translucent material, such that the display screen 110 is viewable from the casing 160. The thickness of peripheral edge 192 is generally larger than the width of the display screen 110. The display device 100 may also include multiple I/O ports and multiple displays.

[0006] ~~FIGS. 2 is~~ a cross sectional view of display device 200 according to a preferred embodiment of the invention. Display device 2 includes a display screen 210, an I/O port 220, a heartbeat system 230, shoulder straps 240 and 250, and a transparent casing 260. The shoulder straps 240 and 250 also include strap adjusters 270 and 280. The casing 260 includes a front surface 290, a rear surface 291, and a peripheral edge 292. The peripheral

edge 292 includes a top portion 293, bottom portion 294, right-side portion 295, and left-side portion 296.

[0007] The display screen 210 is enclosed within casing 260 such that the display screen is visible from front surface 290 of casing 260. The heartbeat system 230 is attached to and extends outward from casing 260. The I/O port is attached to and extends outward from casing 260. One end of shoulder strap 240 is preferably attached to the right-side portion 294 of peripheral edge 292. The other end of shoulder strap 140 is preferably attached to the top portion 293 of peripheral edge 292. One end of shoulder strap 250 is preferably attached to the left-side portion 294 of peripheral edge 292. The other end of shoulder strap 240 is preferably attached to the top portion 293 of peripheral edge 292.

[0008] In operation, the I/O port 220 is connected to a sister I/O port of a computer. The computer provides encoded data representative of an image, which is transmitted through the I/O port 220 into the display screen 210 of display device 200. The display screen 210 decodes the data and displays an image viewable through the transparent casing 260. The computer also provides power to the display device 200. The display screen 210 preferably comprises "electronic paper" which maintains the display of the image without power.

[0009] In operation, the computer may transmit data to the heartbeat system 230 of display device 200. The heartbeat system 230 may store this data in internal memory. Once the image is displayed on the display screen 210, the computer may be disconnected from I/O port 220. Shoulder straps 240 and 250, which are adjustable in length, may be placed over the shoulders of a person carrying the display device 200. The straps are preferably nylon but may comprise another fabric like material. Shoulder strap

adjusters 270 and 280 may be used to adjust the length of shoulder straps 240 and 250 respectively.

[0010] The I/O port 220 is preferably a USB port, but may alternatively be a firewire or hardwire port, or a transceiver for a wireless connection. The display screen may also be a conventional LCD screen or another electronic display device used in electronic devices. The casing may alternatively comprise a translucent material, such that the display screen 210 is viewable from the casing 260. The thickness of peripheral edge 292 is generally larger than the width of the display screen 210. The display device 200 may also include multiple I/O ports and multiple displays.

[0011] FIG 3 illustrates a block diagram of display system 300 according to a preferred embodiment of the invention. The display system includes a heartbeat system 310, an I/O port 320, a display 330, a mobile terminal 350, a wireless communication link 360, and a display ID unit 370. A computer 340 is also shown in FIG 3.

[0012] In the display system 300, the I/O port 320 is in bidirectional communication with the heartbeat system 310 and the display 330. The heartbeat system 310 is in bidirectional communication with mobile terminal 350 through the wireless communication link 360. The heartbeat system 310 includes an internal memory unit and a wireless transceiver. The I/O port 320 is electrically connected to the display ID unit 370. The computer 340 is in bidirectional communication with the I/O port 320.

[0013] In operation, I/O port 320 mechanically and electrically connects display system 300 to the female I/O port of a computer 340. The computer transmits digital data representative of an image and electrical power to the display 330. The digital data is then decoded into an image and displayed by the display screen 310. The I/O port 320 also

transfers electrical power to the heartbeat system 310. The heartbeat system 310 then stores the electrical power. The computer also retrieves data representative of the display system from the display ID unit 370. Once the image data is displayed on the display screen 310, the computer may be disconnected from the I/O port 320.

[0014] In operation, the wireless communication link 360 is preferably a Bluetooth communication link. The Bluetooth communication link is created when the heartbeat system 310 is in bidirectional communication with a sister Bluetooth enabled mobile terminal 350. Through the wireless communication link 360, the heartbeat system 310 transmits an electrical signal to the mobile terminal 350. Upon receiving the signal, the mobile terminal 350 receives data representative of the physical location of the mobile terminal 350. The mobile terminal 350 then transmits the data to the heartbeat system 310. The mobile terminal 350 is preferably a GPS enabled device and the data is GPS geographical coordinates acquired from a GPS satellite. Also, the mobile terminal 350 is located within a short distance of the display system 300 such that the geographical coordinates of the mobile terminal 350 are substantially similar to the geographical coordinates of the display system 300 and that the two systems are within the range of the Bluetooth network. Upon receiving the data, the heartbeat system 300 stores the data in its internal memory.

[0015] Alternatively, the wireless communication link 360 may be a Wireless Local Area Network (WLAN) or another short range wireless protocol. The display ID unit 370 may be data stored in a static memory unit, such as a ROM unit, that is electrically connected to the I/O port 320. Alternatively, the display ID unit 370 may be data stored in the internal memory of the heartbeat system 310. The display 330 may be an electronic paper

display, liquid crystal display or another type of display used in electronics. The I/O port 320 may be a USB port. Alternatively, the I/O port 320 may be a fireware or hardwire port, or a transceiver for a wireless connection.

[0016] Alternatively, the mobile terminal 350 may receive data representative of its physical location from a mobile network that performs triangulation calculations to estimate the location of the mobile terminal. The mobile network acquires the location by comparing the relative signal strength of the mobile terminal within an array of cell towers and performing the triangulation calculations. The mobile terminal 350 may be a mobile phone. Alternatively, the mobile terminal 350 may be a personal digital assistance device PDA, or another device in bidirectional communication with a mobile network

[0017] FIG 4 illustrates a block diagram of a heartbeat system 400 for the display system 300 according to a preferred embodiment of the invention. The heartbeat system 400 includes a battery 410, a transceiver 420, a memory unit 430, and a heartbeat processor 440. An I/O port 401, a wireless communication link 402, and a mobile terminal 403 are also shown in FIG 4. Preferably the time interval between each successive signal is constant. Kind of repeating Fig 3? Can you do this better?

[0018] In the heartbeat system 400, the heartbeat processor 440 is in bidirectional communication with the transceiver 420, the memory unit 430, and an I/O port 401. Battery 410 is electrically connected to transceiver 420, memory unit 430, the I/O port 401, and the heartbeat processor 440. The transceiver 420 is in bidirectional communication with the mobile terminal 403 through the wireless communication link 402.

[0019] In operation, when the I/O port 401 is connected to a computer, electrical power flows from the computer to the battery 410. From the battery 410 electrical power flows to the memory unit 430, the heartbeat processor 440, and the transceiver 420. Also, when the I/O port 401 is connected to a computer, the computer transfers electrical power to the battery 410. The battery 410 is a rechargeable battery and stores the electrical power transferred by the computer. When the I/O port 401 is detached from the computer, battery 410 supplies power to the memory unit 430, the heartbeat processor 440, and the transceiver 420.

[0020] In operation, the wireless communication link is preferably a Bluetooth communication link. When the I/O port 401 is connected to a computer, the Bluetooth ID data unit of the mobile terminal 403 enters the heartbeat processor 440 of heartbeat system 400. The heartbeat processor 440 then transmits a control signal to the transceiver 420 to bidirectionally communicate with the mobile terminal 403 having the Bluetooth ID data unit. Once the mobile terminal 403 and the transceiver 420 bidirectionally communicate, a Bluetooth link is created and the I/O port 401 may be disconnected from the computer. The transceiver 420 maintains communication with the mobile terminal 403 having the Bluetooth ID data unit.

[0021] In operation, the heartbeat processor 440 transmits control signals to the transceiver 420 such that the transceiver 420 transmits signals to the mobile terminal 403. The heartbeat processor 440 may transmit controls signals to the transceiver 420, such that the transceiver 420 transmits wireless signals to the mobile terminal 403 periodically. Also, the time interval between each successive wireless signal transmitted to the mobile terminal 403 may be controlled by the heartbeat processor 440.

[0022] In operation, the transceiver 420 receives data from the mobile terminal 403. The data may be representative of the physical location of the mobile terminal 403. The mobile terminal 403 preferably is a GPS enabled device including a GPS transceiver. The data is preferably GPS coordinates that are transmitted from a GPS satellite and sent to the GPS receiver of the mobile terminal 403. After receiving the data, the transceiver 420 of the heartbeat system 400 transmits the data to the heartbeat processor 440. The heartbeat processor 440 may then send the data to the memory unit 4, which stores the data.

[0023] In operation, the heartbeat processor 440 retrieves the data representative of a physical location from the memory unit. When the I/O port 401 is connected to a sister I/O port of a computer, the heartbeat processor 440 sends the data representative of a physical location to the computer through the I/O port 401. The computer may then decode the data into geographical coordinates.

[0024] In an alternative embodiment of the invention, the processor 440 is programmable by the computer. When the I/O port 401 is connected to a sister I/O port of a computer, the computer may program the heartbeat system 400 to alter the time interval between each wireless signal sent from the transceiver 420 to the mobile terminal 403. The mobile terminal 403 may be a mobile phone. Alternatively, the mobile terminal 403 may be a personal digital assistance device PDA, or another device in bidirectional communication with a mobile network. The I/O port 401 may be a USB port. Alternatively, the I/O port 401 may be a fireware or hardwire port, or a transceiver for a wireless connection.

[0025] In an alternative embodiment of the invention, the heartbeat processor 440 is in communication with the display 330 of FIG 3. Multiple data units representative of

images may be stored in the memory unit 430. The heartbeat processor 440 may retrieve the data units and periodically transmit them to the display 330, such that different images may be displayed periodically by the display 330.

[0026] FIG 5 illustrates a flow chart of a method of storing data representative of the location of display system 300 and retrieving that the stored data according to a preferred embodiment of the invention. The first step of the operation occurs by bonding the display system to a Bluetooth and GPS enabled mobile terminal 510. Bonding occurs when a Bluetooth ID is processed in the heartbeat processor 440 of the display system 300 and the heartbeat system 310 bidirectionally communicates with a blue tooth enabled mobile terminal having the Bluetooth ID.

[0027] Once the heartbeat system bidirectionally communicates with the mobile terminal, a Bluetooth connection is created that is only accessible by the heartbeat system and Bluetooth enabled devices having the Bluetooth ID. Bluetooth bonding may be done by connecting the display system to an external computer that sends the Bluetooth ID of the mobile terminal to the display system. The heartbeat system 310 of display system 300 then processes the Bluetooth ID and bidirectionally communicates with the mobile terminal through transceiver 420. After the Bluetooth ID is processed in the display system 300, the I/O port 320 of display system 300 may be disconnected from the computer.

[0028] The next step is transmitting control signals from the heartbeat system 310 of display system 300 to the mobile terminal 515. Preferably, the heartbeat system periodically transmits control signals, such that the time interval between each successive control signal is a constant time value. The next step is determining the presence of a

control signal by the mobile terminal 520. When the mobile terminal does not receive the control signal, it has not realized a request for data by the heartbeat system and it not transmit the data to the heartbeat system. The heartbeat system may continue transmitting control signals to the mobile terminal. When the mobile terminal does receive the control signal from the heartbeat system 310, the mobile terminal performs the step of receiving data representative of the mobile terminal's physical location is performed 525. The data is preferably GPS coordinates received from a GPS satellite.

[0029] The next step is transmitting data representative of the physical location of the mobile terminal to the transceiver 420 of the heartbeat system 530. The transceiver 420 then receives the data and transfers the data to the heartbeat processor 440. Then the heartbeat processor 440 performs the step of storing the data in its internal memory 540. This is done by transmitting the data into memory unit 430. The memory unit 430 preferably stores multiple data units such that multiple locations are stored in the memory unit 430.

[0030] The next step is determining the presence of a Bluetooth connection 550. When the Bluetooth connection is present, the heartbeat system may continue transmitting control signals to the mobile terminal. When the Bluetooth connection ends, the heartbeat system stops requesting data representative of a location from the mobile terminal and the stored data may be retrieved. The display system 300 is then connected to a computer by connecting the I/O port of the display system to a female I/O of a computer 560. The heartbeat processor of display system 300 then transmits the data of memory unit 430 to the computer. Once the computer retrieves the data, the final step is the computer decoding the data into geographical coordinates 570.

[0031] Alternatively, the method of storing data representative of a physical location of the display system may include the step of adjusting the time interval between each consecutive control signal that is transmitted by the transceiver to the mobile terminal. This may be done when the I/O port of the display system is connected to the I/O port of a computer. The computer then transmits control signals to the heartbeat processor that alter the frequency of each successive transmitted control signal. Alternatively, the frequency of each successive control signal is a constant value stored in the heartbeat system. Alternatively, the mobile terminal receives data representative of its physical location from a mobile network triangulating the mobile terminals relative signal strength within an array of cell towers.

[0032] FIG 6 illustrates a flow chart of a method of comparing the location of the display system 300 to a predetermined location according to an alternative embodiment of the invention. The first step in the operation is acquiring the identification number of a GPS enabled mobile terminal 610. This is preferably done by providing an online interface where clients can access and input the identification number of the mobile terminal. The online interface may then store the identification number.

[0033] The next step is positioning the mobile terminal in a close proximity of the display system 300 such that the mobile terminal and the display system have generally the same geographical coordinates 615. Preferably, the mobile terminal is carried by a client of the display system 300 such that the distance between the mobile terminal and the display system 300 is generally less than 1 meter. The mobile terminal preferably includes a GPS receiver that receives GPS coordinates from a GPS satellite.

[0034] The next step is periodically transmitting location queries ("pings") from a control station to a mobile terminal system for a predetermined time 620. The mobile terminal system is preferably a mobile network that is in communication with the mobile terminal. The control station is preferably another mobile terminal that is in communication with the mobile terminal system. The next step is relaying the location query to the mobile terminal of the client 625. Upon retrieval of successful location query, the next step is the mobile terminal receiving data representative of the geographic location of the mobile terminal and the display system 627. This data is preferably GPS coordinates the mobile terminal may receive from a GPS satellite. When the mobile terminal does not receive data representative of the physical location because the location query was unsuccessful 626, the control station may continue sending location queries to the mobile terminal.

[0035] The next step is transmitting the data representative of a physical location from the mobile terminal to the mobile terminal system 630. Upon receiving the data, the mobile terminal system responds by relaying the data representative of a physical location to the control station 635. The control station then processes the data and decodes it into geographical locations. The control station stores the locations by compiling the geographical locations 640. The last steps are confirming the geographic location of the mobile terminal 650 during at the times the location queries were sent and then comparing the geographic locations to the predetermined location 660. After this step, the step of determining whether more data representative of a location is needed is performed 665. When more data is needed the control station may continue sending more location queries ("pings") or end the process when no more data is needed.

[0036] Alternatively, the step of comparing the geographical location of the mobile terminal and the display system to the predetermined location may include the step of storing geographic locations matching the predetermined location in a memory unit and storing geographic location that do not match the predetermined location in a separate memory unit. Also, the step of confirming the geographical location may include the step of recording the number of unsuccessful location queries. When a substantial number of location queries are unsuccessful, the geographical location of the mobile terminal and display system may be confirmed as the predetermined location. In addition, the step of comparing the geographic locations to the predetermined location 660 may include the step of averaging the number of geographic locations matching the predetermined location to the number of geographic locations different than the predetermined location. Alternatively, the data representative of a geographical location is derived from triangulation calculations of the mobile terminal's relative signal strength within an array of cell towers. The triangulation calculations are used to estimate position of the mobile terminal located within an array of cell towers.

good idea to show whole system

[0037] FIG 7 illustrates a block diagram for a system of auctioning advertisement services 700 according to a preferred embodiment of the invention. The system 700 includes an auction system 710, a location system 715, a payment system 720, a locator system 725, a verification service 735, a provider computer 740, an advertiser computer 745, a display system 750, a web application/server 755, advertiser listing 760, provider memory 765, and a heartbeat verification system 770.

[0038] The locator system 725 is in bidirectional communication with the web application/server 755 and in bidirectional communication with the display system 750.

The provider computer 740 is in bidirectional communication with the web application/server 755 and in bidirectional communication with the display system 750. The location system 715 is in bidirectional communication with the display system 750 and the web application/server 755. The heartbeat verification system 770, the advertiser listing 760, the payment system 720, the verification service 735, the auction system 710 and the provider memory 765 are in bidirectional communication with the web application/server 755. The location system 715 is also in communication with the payment system 720.

[0039] In operation, an advertiser accesses the web application/server 755 through advertiser computer 745. The web application/server 755 is preferably a website. The advertiser sends information of the advertisement service to the web application/server 755. The web application/server 755 then sends the information to the advertiser listing 760, which stores the information. The information includes auction criteria, advertisement venue, and advertisement time. The web application/server then retrieves the bid criteria and sends it to the auction system 710.

[0040] In operation, an advertisement provider may register an account by accessing the web application/server 755 through the provider computer 740. The advertisement provider sends a credit card number, mobile phone number, and personal information to the web application/server 755, which stores the data in provider memory 765. The advertiser then connects the display system 750 to the provider computer 740. The provider computer may be any computer with access to the web application/server 755. The display system 750 sends a display ID to the provider computer 740. The provider computer 740 then sends the display ID to the web application/server 755, which stores

the display ID in provider memory 765. The web application/server 755 then sends the credit card number to the verification service 735 and confirms that the advertisement provider is at least 18.

[0041] In operation, the web application/server 755 retrieves the advertisement provider's mobile phone number from the provider memory 765, and relays the number to the locator system 725. The locator system 725 sends multiple location queries ("pings") to the mobile terminal in accordance with the method of FIG 6. Once the location queries ("pings") are successful, the locator system confirms that the location queries were successful and the web application/server 755 sends a digital image to the provider computer 740. The provider computer 740 then displays the image.

[0042] The web application/server 755 sends instructional information about "bonding" the display system 750 to a mobile terminal using a Bluetooth connection. The advertisement provider then attempts to "bond" the display system with the mobile terminal. The display system 750 then transmits a communication signal to the mobile terminal in accordance with the method of FIG 5. Once the display system 750 receives the communication signal from the mobile terminal, the display system 750 sends the data to the heartbeat verification system 770. When the heartbeat verification system 770, the heartbeat system confirms that the heartbeat system is working. When the heartbeat verification system 770, the locator system 725, and the verification system 735 confirms that the advertisement provider finished their respective steps, the advertisement provider is registered.

[0043] In operation, advertisement providers access the advertiser listing 760 through the web application/server 755. Once advertisement providers are registered, they may place

bids by accessing a provider computer 740 and sending the bids to the web application/server 755. The web application/server 755 then sends the bids to the auction system 710. When a bid matches the bid criteria, the auction system sends the advertiser ID of the winning bid to the web application/server 755. The web application/server 755 then sends information of the winning bid to the winning bidder.

[0044] In operation, during the advertising the display system stores data units representative of the location of the advertiser's display system 750 in accordance with the method of FIG 5. After the advertisement provider has finished the advertising, the advertisement provider may connect the display system 750 to the provider computer 740. The display system 750 then transmits the data units to the advertiser computer 740, which relays the data units to the web application/server 755. The web application/server transmits the data units to the location system 715, which decodes the data into a geographical location. The location system 715 then relays the geographic location to the payment system 720, which determines whether the geographic location is consistent with the advertising venue.

[0045] Alternatively, once the location queries ("pings") are successful, the web application/server 755 sends data representative of a digital image to the display system 750 through the advertiser computer 740. The display system 750 then displays the digital image. Alternatively, the advertiser listing memory is modifiable by the advertiser before the bidding is conducted by advertisement providers. Alternatively, the online advertising system includes a fee service system that chargers advertisers for sending listings.

[0046] FIG 8 illustrates an online auction payment method 800 according to a preferred embodiment of the invention. The first step is creating an online listing of advertisers 810. This is preferably done in accordance with the system of FIG 7. Advertisers access a website and create advertiser listings accessible to advertisement providers. Auction criteria, which may include reserve prices and bid closing times, is included in the consumer listing. Also, advertising criteria, which may include advertising venue and the number of advertisers, is also included in the consumer listings. The auction is a reverse auction for advertising services using the system of FIG 7. The next step is charging a fee to advertisers for creating a listing 820. This fee is preferably a flat fee for the establishment of the listings and another for a reserve price.

[0047] Once the advertiser has created a listing of advertising and auction criteria, the next step is the bidding by advertisers 830. This is done in accordance with the system of FIG 7, where advertisement providers register and bid on the consumer's listing. Preferably the smallest bid is chosen as the winning bid, but the advertiser may include other auction criteria such as auction times and the service history of the advertisement provider. The next step is deciding whether there is a winning bid 840. This is done by comparing the bids to the advertiser's auction criteria. When there is not a winning bid the consumer may create another auction listing. When there is a winning bid, the next step is acquiring the winning bid payment from the advertiser. The payment is preferably done using an online credit system, however other payment methods may be used. Also, the payment is preferably done before the winning bidder advertises at the venue. The next step is charging the advertiser a percentage of the winning bid 850. After the

advertiser is charged a fee, the payment is retained until there is confirmation the advertiser performed the advertisement service at the predetermined venue.

[0048] The next step is determining whether the winning bidder advertised at the venue 860. Preferably this step is a determination of the location of the advertisement provider during the advertising time in accordance with the method of FIG 5. While the advertisement provider is advertising, the display system stores data representative of the physical location of the display system. After the advertisement provider finishes advertising, the data stored in the display system is compared with the advertising venue in accordance to FIG 5. When the advertisement provider's location is confirmed as the predetermined venue, the step of paying the advertisement provider the full amount of the winning bid payment is performed 880. When the advertisement provider's location is not consistent with the advertising venue, the consumer is credited for the percentage of time the advertisement provider was not present at the particular venue 870.

[0049] Alternatively, a percentage of the winning bid may be charged to the advertiser for creating a listing. Alternatively, flat fees are charged for having more auction criteria, alternating reserve prices or special performances towards former advertisement providers. Alternatively, fees are charged for having more advertisement criteria such as special instructions given to the advertisement provider.

[0050] FIG 9 illustrates a flowchart of a method of use of a display system by a human advertisement provider 900 according to a preferred embodiment of the invention. In operation, the advertisement provider begins by acquiring a display system 905. An advertisement provider may acquire a display system by purchasing a display device from a website, obtaining a free sample, or acquiring a display system from the

advertiser. The next step is accessing the web application service by the advertisement provider 910. Once the advertisement provider accesses the provider entity service, the next step is registering an account 915 in accordance with the system of FIG 7. The advertisement provider accesses the web application/server 755 through computer 740 and sends identification information in accordance with the system of FIG 7.

[0051] Once the advertisement provider registers, the next step is bidding for advertisement services 920 in accordance with the system of FIG 7. The advertisement provider accesses the web application/server through a computer and places bids on advertiser's listings. The next step is determining a winning bidder 925. When the advertisement provider is not a winning bidder, the advertisement provider may access the web/application/server and place bids on other advertisement listings. When the advertisement provider is a winning bidder, the next step is notifying the advertisement provider of the winning bid. The notification may be sent to the advertisement provider's email or listed on the web application/platform 755 of FIG 7. The next step is advertising at the predetermined venue during the advertisement time 930. While the advertisement provider is advertising, the next step is storing data representative of the physical location of the display system in the display system 935. The advertisement provider preferably carries a mobile terminal such that the display system stores data representative of the physical location of the display system in accordance with the method of FIG 5.

[0052] After the advertisement provider performs the advertising at the predetermined venue, the next step is connecting the I/O port 320 of the display system 300 to a sister I/O port of a computer 940. The display system transmits the data representative of a location to the web application/server 755 which decodes the data into geographical

coordinates in accordance with the system of FIG 7. The web application/server then determines whether the display screen was within the predetermined venue. The final step is advertisement provider receiving payment for the advertising services 945. The advertisement provider may receive payment in accordance with the method of FIG 8.

[0053] Alternatively, the method of FIG 9 may include the step of sending the advertisement provider additional instructions to perform during the advertising. The instructions may include questions or answers the advertisement provider states to people about the image displayed on the display system. In addition, the step of informing people of a particular contact address, such as a phone number or an email, may be performed. Once the advertisement provider informs a person of the address, the person may contact the address. When the person contacts the particular address, the step of crediting the advertisement provider is performed.

[0054] In addition, the method of FIG 9 may alternatively include the step of calling a predetermined phone number when a person is interested in the advertisement and states their interest to the advertisement provider. A phone service tracks the advertisement provider's phone number and sends the advertisement providers identity to the advertiser. The advertiser may then offer payments to the advertisement provider. The advertiser may also inform the service that the advertisement provider has erroneously called the phone number. Then the advertisement provider phone number may not be tracked for a certain time. Preferably, the advertisement provider's phone number is not tracked for three days after erroneously calling the number.

[0055] Alternatively, the step of notifying the winning bidder may be replaced by providing an online interface accessible to all bidders that displays the winning bidder or

winning bidders. The online interface may be incorporated in the web application/server of the system of FIG 7. Alternatively, the advertisement provider can purchase a new display device when the display device breaks during advertising.

[0056] FIG 10 is illustrates a block diagram of display system 1000 according to an alternative embodiment of the invention. The display system includes a heartbeat system 1010, an I/O port 1020, a display 1030, a mobile terminal 1050, a wireless communication 1060, a display ID unit 1070, a memory unit 1080, an image processor 1090, and a battery 1011. A computer 1040 is also shown in FIG 3.

[0057] In the display system 1000, the I/O port 1020 is in bidirectional communication with the heartbeat system 1010 and the display 1030. The heartbeat system 1010 is in bidirectional communication with mobile terminal 1050 through wireless communication link 1060. The heartbeat system includes a processor, internal memory, and a wireless transceiver. The I/O port 1020 is electrically connected to the display ID unit 1070. The computer 1040 is in bidirectional communication with the I/O port 1020. The battery 1011 is electrically connected to the image processor 1090, the I/O port 1020, and the memory unit 1080. The image processor 1090 is in communication with the display 1030 and in bidirectional communication with the memory unit 1080.

[0058] In operation, when the I/O port 1020 is connected to a computer, electrical power flows from the computer to the battery 1011. From the battery 1011 electrical power flows to the memory unit 1080, the image processor 1090. Also, when the I/O port 1020 is connected to a computer, the computer transfers electrical power to the battery of heartbeat system 1010. The battery 1011 is a rechargeable battery and stores the electrical power transferred by the computer. When the I/O port 1020 is detached from the

computer, battery 1011 supplies power to the memory unit 1080 and the image processor 1090.

[0059] In operation, I/O port 1020 mechanically and electrically connects display system 1000 to the female I/O port of a computer 1040. The I/O port transmits data units representative of digital images and electrical power from a computer 1040 to image processor 1090. The image processor 1090 then compiles the data units in memory unit 1080. The image processor then periodically transmits different data units to the display 1030. The data is then decoded and displayed by the display screen 1030. The display is preferably an electronic paper display, such that the display maintains the display of an image without power. The I/O port 1020 also transfers electrical power to the heartbeat system 1010, the image processor 1090, and the memory unit 1080. Once the image data is saved on the memory unit 1010 the I/O port of the computer may be disconnected from the I/O port 320.

[0060] In operation, the wireless communication link 1060 is preferably a Bluetooth connection link. The Bluetooth connection link is created when the heartbeat system 1010 is in bidirectional communication with the mobile terminal 1050. Through the wireless communication link 1060, the heartbeat system 1010 transmits an electrical signal to the mobile terminal 1050. Mobile terminal 1050 acquires data representative of the physical location of mobile terminal 1050. Upon receiving the signal, the mobile terminal 1050 transmits the data to the heartbeat system 1010. This mobile terminal 1050 is preferably a GPS enabled device and the data is GPS geographical coordinates acquired from a GPS satellite. The mobile terminal 1050 is located within a short distance of the display system 1000 such that the geographical coordinates of the mobile

terminal 1050 are substantially similar to the geographical coordinates of the display system 1000. Upon receiving the data, the heartbeat system 1000 stores the data in memory.

[0061] Alternatively, the wireless communication link 1060 may be a Wireless Local Area Network (WLAN) or another short range wireless protocol. The display ID unit 1070 may be data stored in a static memory chip that is electrically connected to the I/O port 1020. Alternatively, the display ID unit 1070 may be data stored in the heartbeat system 1010 or in the memory unit 1011. The display 1030 may be an electronic paper display, liquid crystal display or another type of display used in electronics.

[0062] The I/O port 1020 may be a USB port. Alternatively, the I/O port 1020 may be a fireware or hardwire port, or a transceiver for a wireless connection. Alternatively, the mobile terminal may acquire data representative of its physical location from a mobile network using triangulation techniques. The mobile network acquires the location by comparing the relative signal strength of the mobile terminal within an array of cell towers and doing triangulation calculations. The mobile terminal may be a mobile phone, personal digital assistance device PDA, or another device in bidirectional communication with a mobile network

[0063] Alternatively, the image processor 1090 may be replaced by the processor of the heartbeat system 1010. The processor of heartbeat system is then in connection and communication with the same components of display system 1000. Also, the memory unit may be replaced by the memory unit of the heartbeat system 1010. Finally, the battery unit 1011 may also be replaced by the battery of heartbeat system 1010.

[0064] FIG 11 is a front view of a display device 1100 according to an alternative embodiment of the invention. Display device 1100 includes a display screen 1110, an I/O port 1120, a heartbeat system 1130, shoulder straps 1140 and 1150, and a transparent casing 1160. The shoulder straps 1140 and 1150 also include strap adjusters 1170 and 1180. The casing 1160 includes a front surface 1190, a rear surface 1191, and a peripheral edge 1192. The peripheral edge 1192 includes a top portion 1193, bottom portion 1194, right-side portion 1195, and left-side portion 1196. The display device 1100 also includes a plurality of light emitting devices 1199 situated along the periphery of the front surface 1190.

[0065] The display screen 1110 is enclosed within casing 1160 such that the display screen is visible from front surface 1190 of casing 1160. The heartbeat system 1130 is attached to and may extend outward from casing 1160. The I/O port is attached to and extends outward from casing 1160. One end of shoulder strap 1140 is preferably attached to the right-side portion 1194 of peripheral edge 1192. The other end of shoulder strap 1140 is preferably attached to the top portion 1193 of peripheral edge 1192. One end of shoulder strap 1150 is preferably attached to the left-side portion 1194 of peripheral edge 1192. The other end of shoulder strap 1140 is preferably attached to the top portion 1193 of peripheral edge 1192.

[0066] The plurality of light emitting devices 1199 are situated and attached along the periphery of the front surface 1190 of casing 1160. Each light emitting device in the plurality of light emitting devices 1199 is electrically connected to a universal bus, which is electrically connected to the battery of heartbeat system 1130.

[0067] In operation, the I/O port 1120 is connected to a sister I/O port of a computer. The computer provides encoded data representative of an image, which is transmitted through the I/O port 1120 into the display screen 1110 of display device 1100. The display screen 1110 decodes the data and displays an image viewable through the transparent casing 1160. The computer also provides power to the display device 1100. The display screen 1110 preferably comprises "electronic paper" which maintains the display of the image without power.

[0068] In operation, the computer may transmit data to the heartbeat system 1130 of display device 1100. The heartbeat system 1130 may store this data in internal memory. Once the image is displayed on the display screen computer may be disconnected from I/O port 1120. Shoulder straps 1140 and 1150, which are adjustable in length, may be placed over the shoulders of a person carrying the display device 1100. The straps are preferably nylon but may comprise other materials. Shoulder strap adjusters 1170 and 1180 may be used to adjust the length of the shoulder straps 1140 and 1150 respectively.

[0069] The I/O port 1120 is preferably a USB port, but may alternatively be a firewire or hardwire port, or a transceiver for a wireless connection. The display screen may also be a convention LCD screen or another electronic display device used in electronic devices. The casing may alternatively comprise a translucent material, such that the display screen 1110 is viewable from the casing 1160. The thickness of peripheral edge 1192 is generally larger than the width of the display screen 1110. The display device 1100 may also include multiple I/O ports and multiple displays.

[0070] The plurality of light emitting devices 1199 are preferably low power light emitting diodes. Alternatively, the light emitting device 1199 may comprise conventional light emitting diodes, high power light emitting diodes, or other types of lighting devices.

[0071] By incorporating electronic paper in portable advertising displays, the ease of transporting portable advertising displays has been greatly reduced. In addition electronic paper provides a power efficient display. Also, incorporating GPS technology, a web based reverse auction, and providing a reverse auction has greatly increased the efficiency and ease of reverse auctioning for advertising.

[0072] While particular elements, embodiments, and applications of the present invention have been shown and described, it is understood that the invention is not limited thereto because modifications may be made by those skilled in the art, particularly in light of the foregoing teaching. It is therefore contemplated by the appended claims to cover such modifications and incorporate those features which come within the spirit and scope of the invention.

[0073] What is claimed is:

1. A portable display device, said portable display device including:

at least one electronic paper display that maintains the display of an image without power; and

a plurality of shoulder straps attached to said main body such that, with said shoulder straps positioned over the shoulders of a person, said rear surface faces and is generally parallel to the chest of said person.

2. A portable display device as claimed in claim 1, wherein said main body comprises a flexible material.

3. A portable display device as claimed in claim 1, wherein said main body includes a peripheral edge having a thickness, wherein said thickness is about 3 mm to 4 mm.

4. A portable display device as claimed in claim 1, further including a plurality of shoulder straps attached to said main body such that, with said shoulder straps positioned over the shoulders of a person, said rear surface faces and is generally parallel to the chest of said person.

5. A portable display device as claimed in claim 1, further including an illumination system, said illumination system including:

a plurality of light emitting devices for illuminating said front surface; and

a power source, wherein said power source powers said plurality of light emitting devices.

6. A portable display device as claimed in claim 1, further including a memory unit in communication with said electronic paper display and attached to said main body, wherein said memory unit stores a plurality of images data and transmits said images to said electronic paper display.

8. A portable display device as claimed in claim 1, wherein said main body includes at least one substantially transparent or non-opaque, wherein said electronic paper display is visible from said region.

9. A portable display device as claimed in claim 1, wherein said electronic paper display is hermetically enclosed within said main body.

10. A portable display device, said portable display device including:

a transparent main body;

a display element for displaying image data, wherein said display element is enclosed within said main body; and

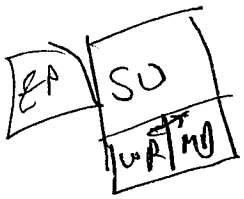
a plurality of shoulder straps attached to said main body such that, with said shoulder straps positioned over the shoulders of a person, said rear surface faces and is generally parallel to the chest of said person.

12. A portable display device as claimed in claim 11, further including an I/O port attached to said main body, wherein said I/O port is in communication with said display element for receiving said image data from a remote device.

13. A portable display device as claimed in claim 11, further including an illumination system, said illumination system including:

a plurality of light emitting devices for illuminating said front surface, wherein said plurality of light emitting devices are attached to said main body; and

a power source, wherein said power source powers said plurality of light emitting devices.



14. A portable display system, said portable display system including:

at least one electronic paper display that maintains the display of an image without power;

a wireless storage unit attached to said electronic paper display for storing wireless data, said storage unit including:

a wireless receiver for receiving data representative of the display's physical location from a mobile terminal; and

a memory device in communication with said wireless receiver for storing said wireless data.

15. A portable display system as claimed in claim 14, wherein said wireless storage unit includes a wireless transmitter for transmitting wireless data to a remote wireless device.

16. A portable display system as claimed in claim 14, further including an illumination system, said illumination system including:

a plurality of light emitting devices for illuminating said front surface, wherein said plurality of light emitting devices are attached to said main body; and

a power source, wherein said power source powers said plurality of light emitting devices.

17. A portable display system as claimed in claim 14, wherein said wireless storage unit includes a rechargeable battery for powering said wireless storage unit.

18. A portable display system as claimed in claim 14, further including an I/O port attached to said main body, wherein said I/O port is in communication with said electronic paper display for receiving said image data from a remote device.

19. A method of storing location-based data of a display device, said method including:

transmitting control signals from a wireless enabled display device to a mobile terminal;

acquiring data representative of the physical location of said mobile terminal;

transmitting said data from said mobile terminal to said display device; and

storing said data in said wireless unit.

20. The method of claim 19, wherein said mobile terminal comprises a wireless phone, wireless computer, a wireless PDA, or a combination thereof.

21. The method of claim 19, wherein said mobile terminal includes a GPS receiver that receives GPS data from a GPS satellite.

22. A method of facilitating an online reverse auction payment between an advertiser and a provider of advertisement services:

determining at least one winning bid of an online auction for advertising services;

tracking the provider of said advertising services during the auctioned advertising services by performing the steps of

periodically transmitting location queries to a mobile terminal carried by said provider of said advertising services; and

determining the location of said provider of from said location queries.

23. The method of claim 22, wherein said location queries are associated with triangulation calculations of a mobile terminal within a mobile network. .

24. The method of claim 22, wherein said location queries are associated with GPS coordinates the mobile terminal obtains from GPS satellite.

25. The method of claim 22, including the step of paying the said provider of advertising services according to the location of said provider from said location queries.

26. A method of conducting an online reverse auction for advertising services, said method including:

creating a listing of bid criteria and advertising criteria for a reverse auction of advertising services;

providing an online interface for providers of advertising to bid on said advertising services;

obtaining data representative of the location of said provider of advertising services

27. The method of claim 26, wherein said bid selection criteria and said notification is modifiable by said customer.

28. The method of claim 26, further including receiving a fee from an advertiser for listing said bid criteria and said auction criteria.

29. The method of claim 26, wherein said bid selection criteria includes obtaining the lowest bid below a fixed price, wherein said reserve price is modifiable by said customer.

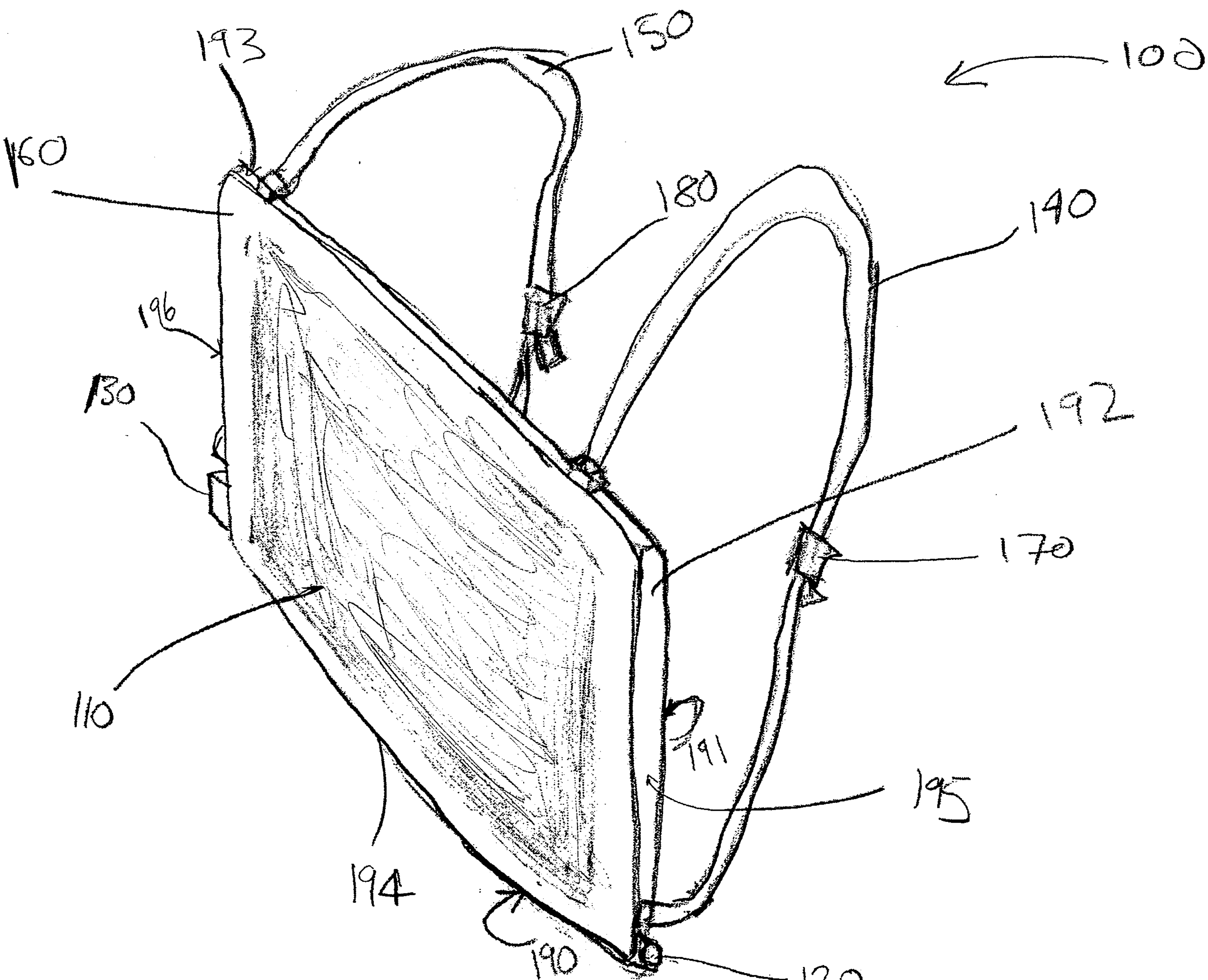


Fig 1

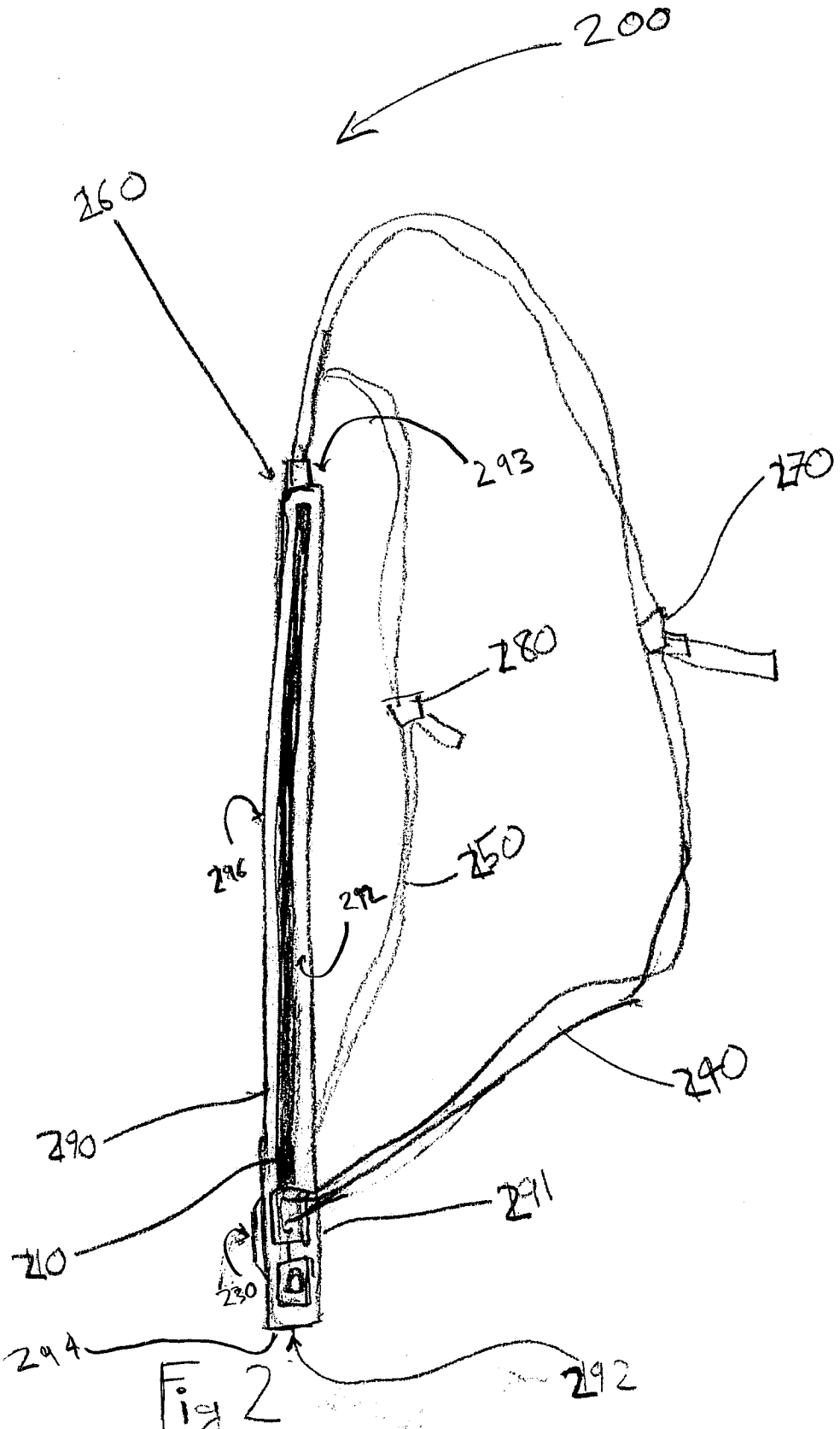


Fig 2

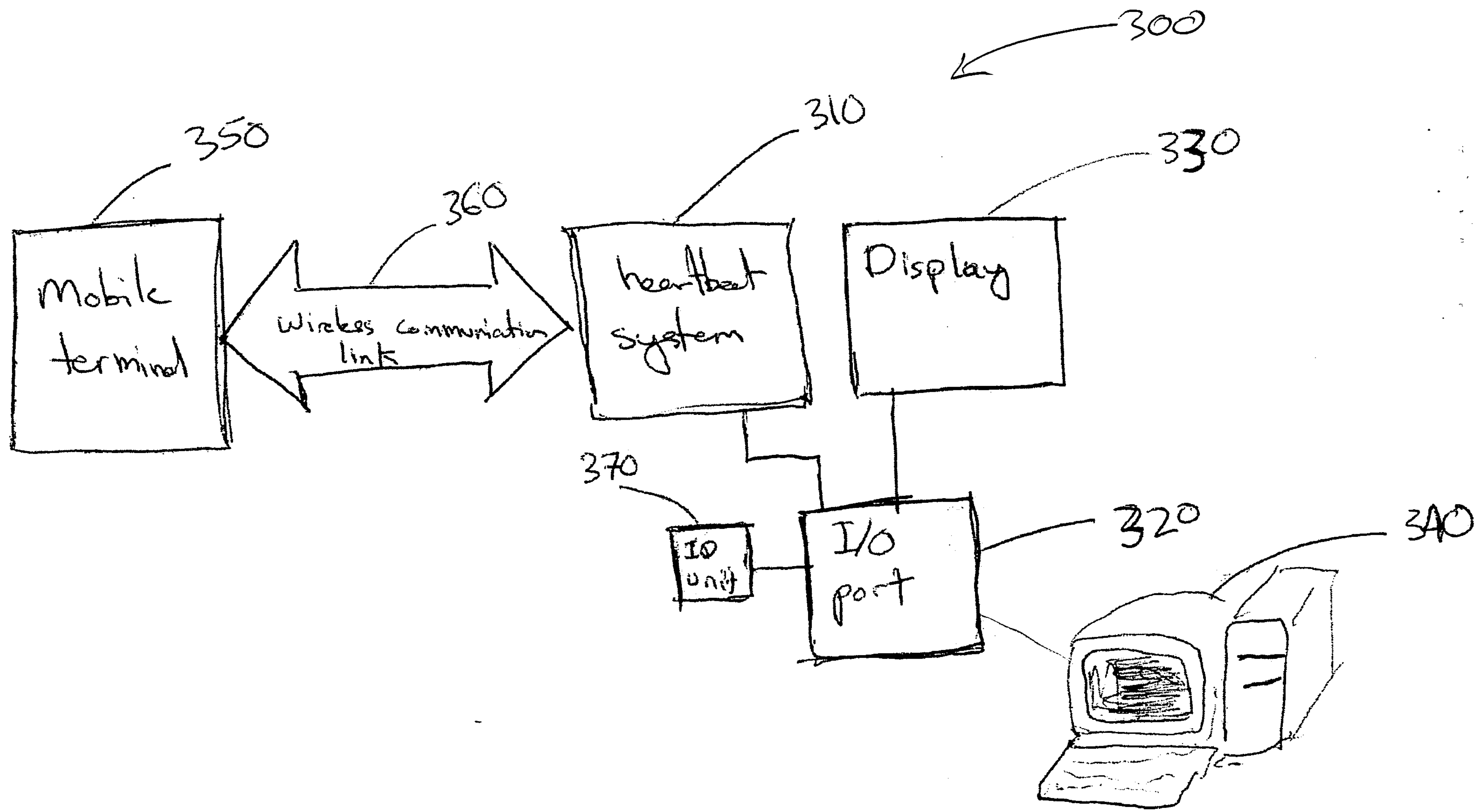

300
350
Mobile terminal
360
Wireless communication link
310
heartbeat system
330
Display
370
IO unit
I/O port
320
340

Fig 3

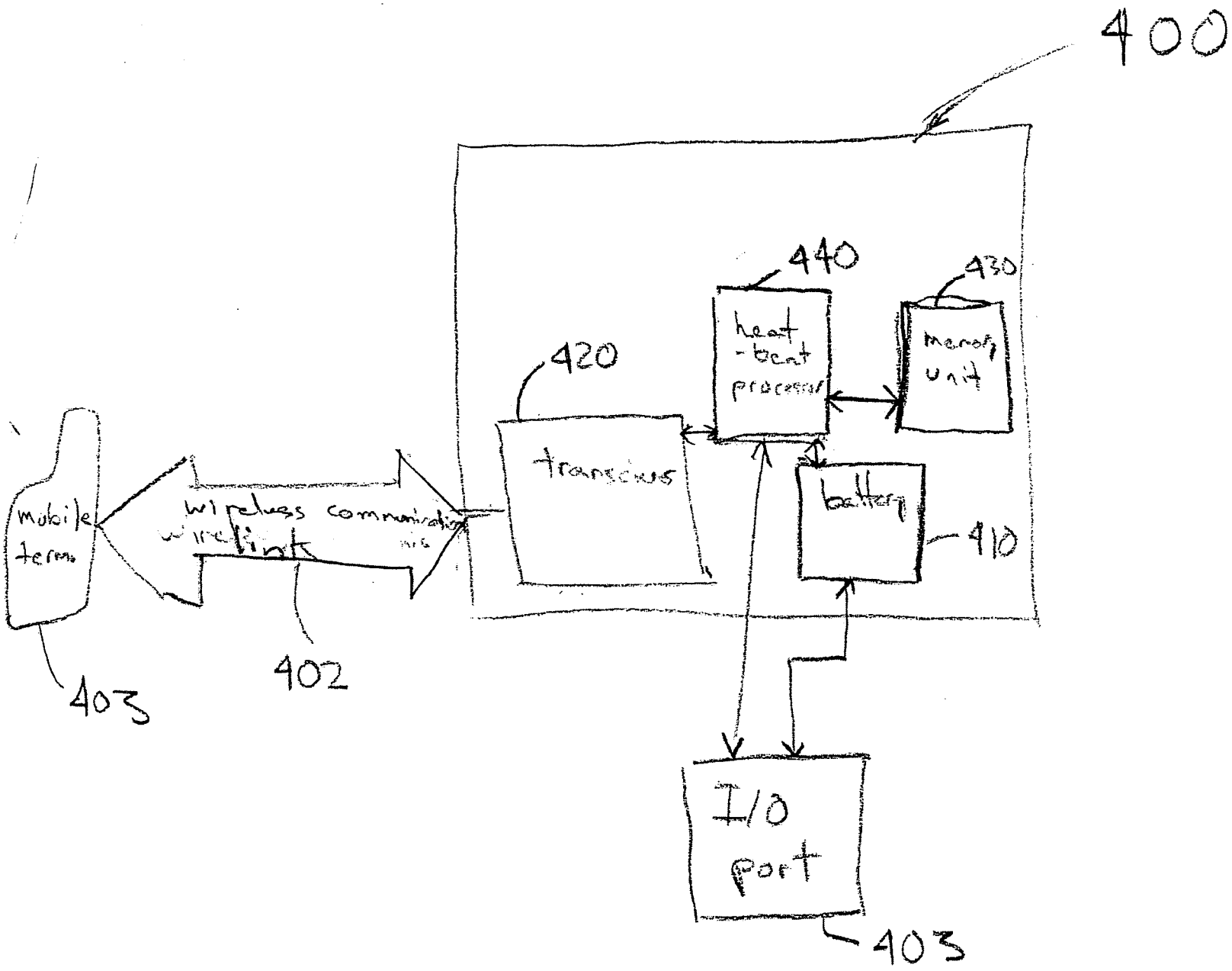

400
440
heat-beat processor
430
memory unit
420
transceiver
battery
410
mobile term
wireless communication wireless link
402
403
I/O port
403

Fig 4

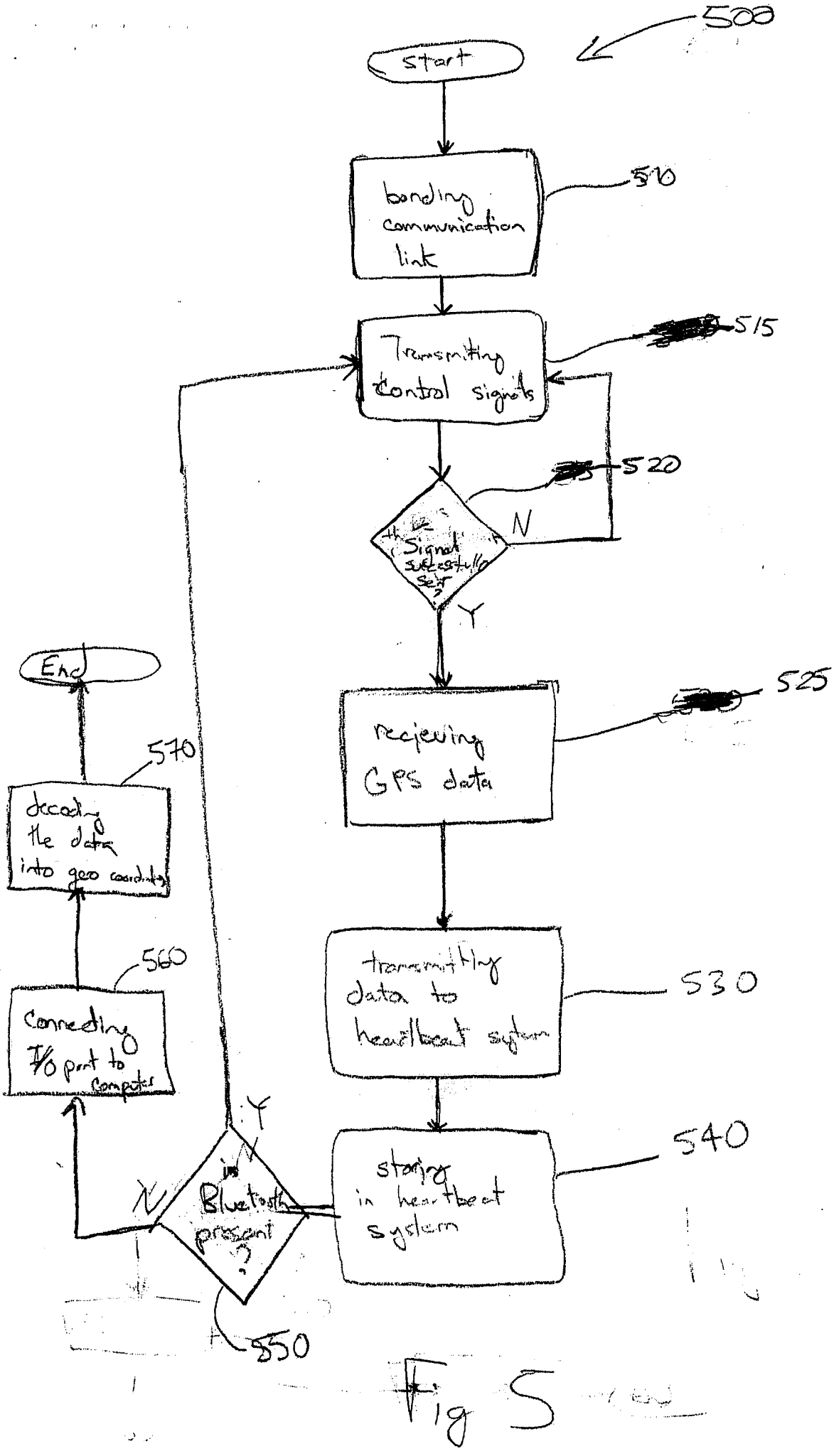

500
Start
bonding communication link
510
Transmitting control signals
515
Signal successfully sent?
520
N
Y
recieving GPS data
525
transmitting data to heartbeat system
530
storing in heartbeat system
540
Bluetooth present?
Y
N
550
connecting I/O port to computer
560
decoding the data into geo coordinates
570
End

Fig 5

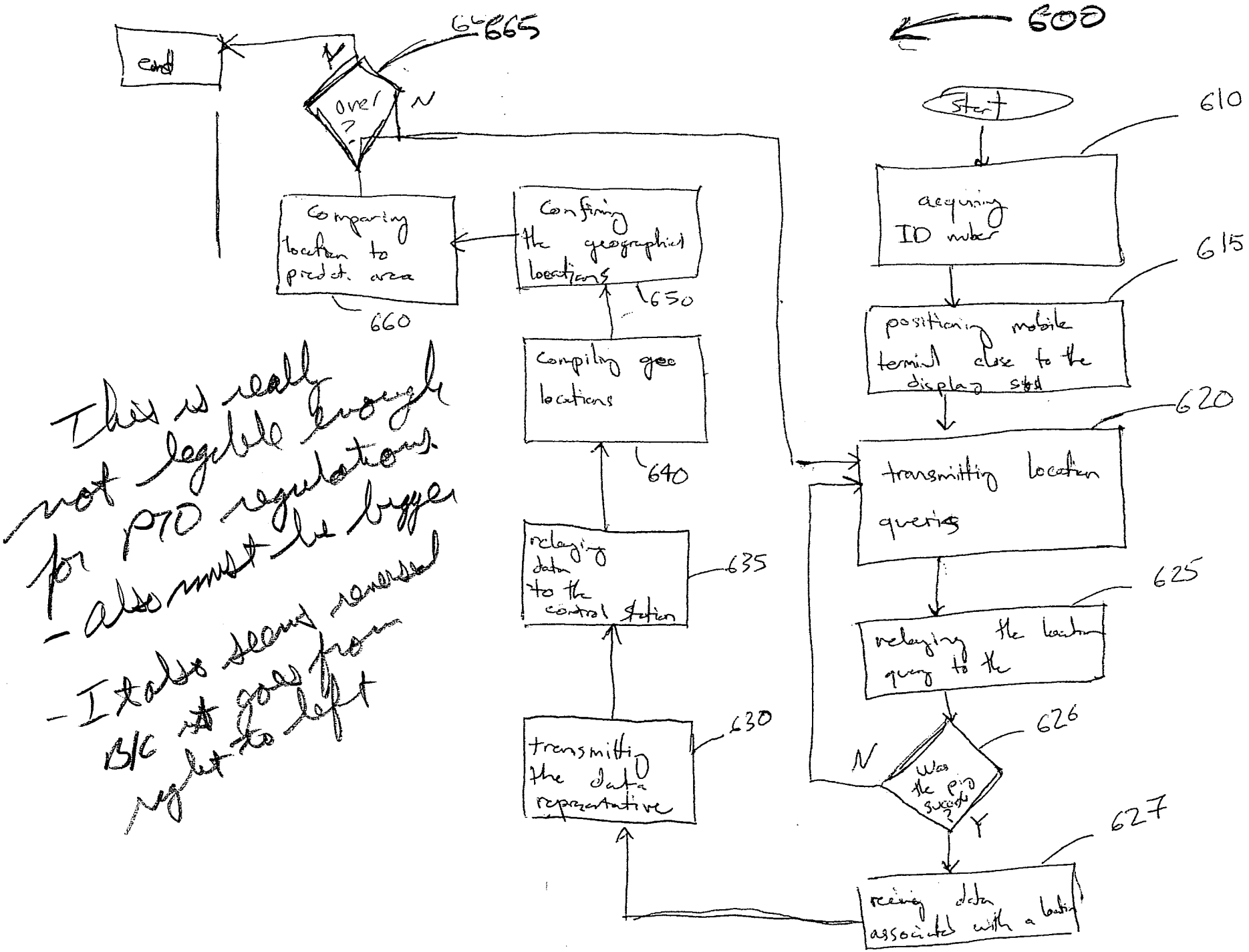

600
start
610
acquiring ID number
615
positioning mobile terminal close to the display std
620
transmitting location query
625
relaying the location query to the
626
Was the PD successful?
N
Y
627
receiving data associated with a location
630
transmitting the data representative
635
relaying data to the control station
640
compiling geo locations
650
confirming the geographical locations
660
comparing location to predet. area
665
over?
N
Y
end
This is really not legible enough for PTO regulations. - also must be bigger - It also seems reversed b/c it goes from right to left

Fig 6

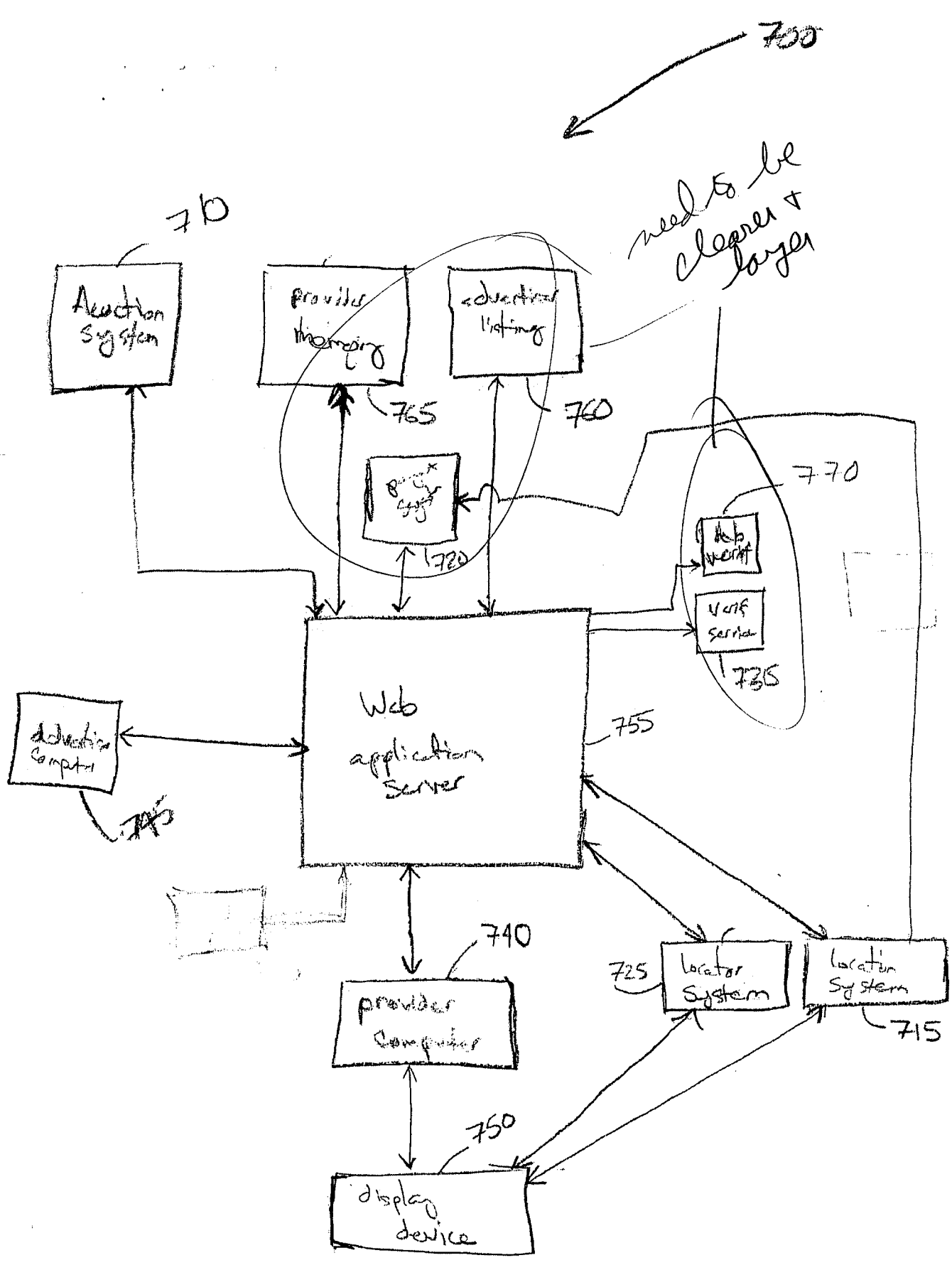

700
need to be clearer + larger
710
Auction System
765
760
770
Web application Server
755
740
provider Computer
725
Locator System
715
750
display device
735

Fig 7

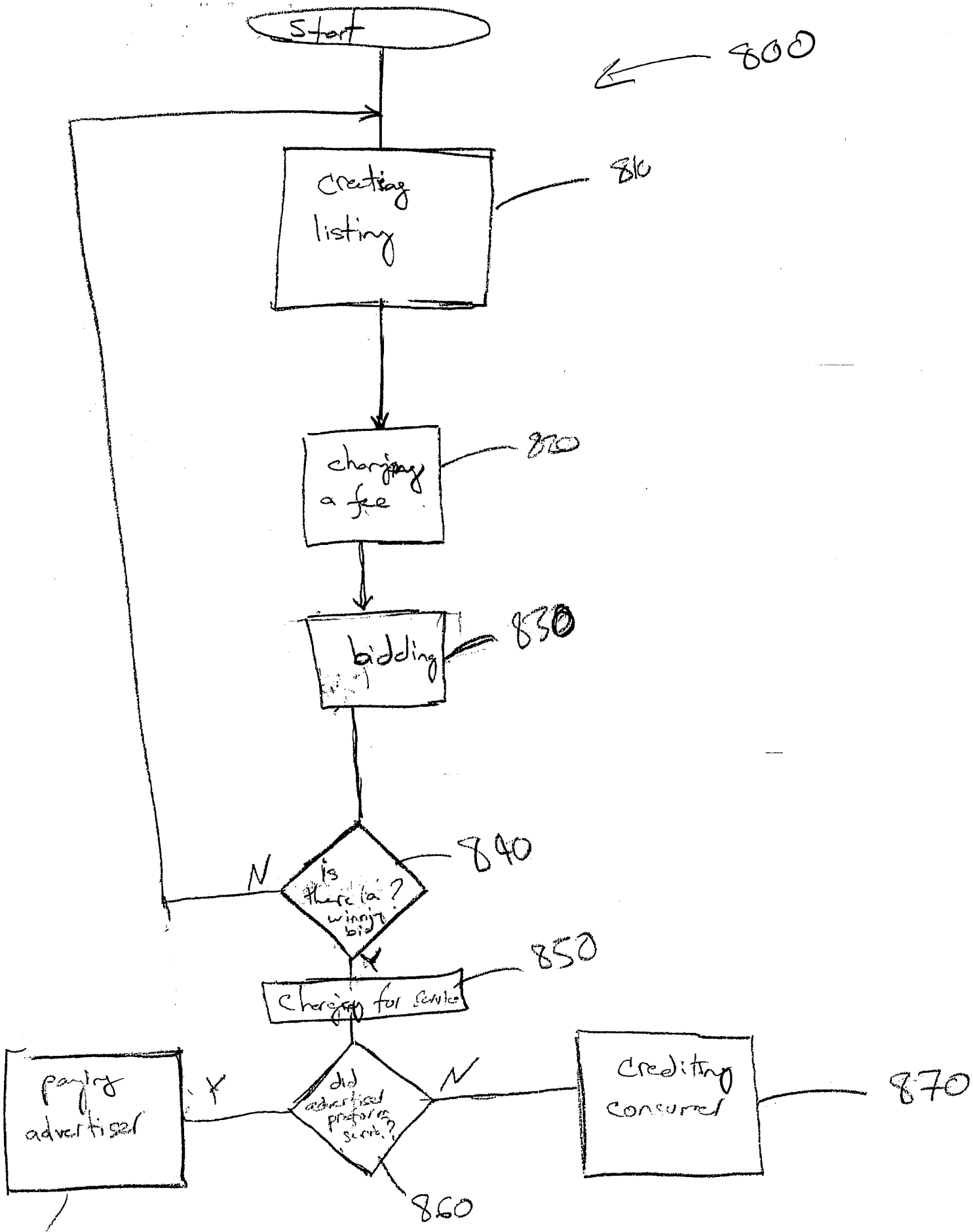

Start
800
creating listing
810
charging a fee
820
bidding
830
Is there a winning bid?
840
N
Y
Charging for service
850
did advertiser prefer a secret?
860
N
Y
crediting consumer
870
paying advertiser
880

Fig 8

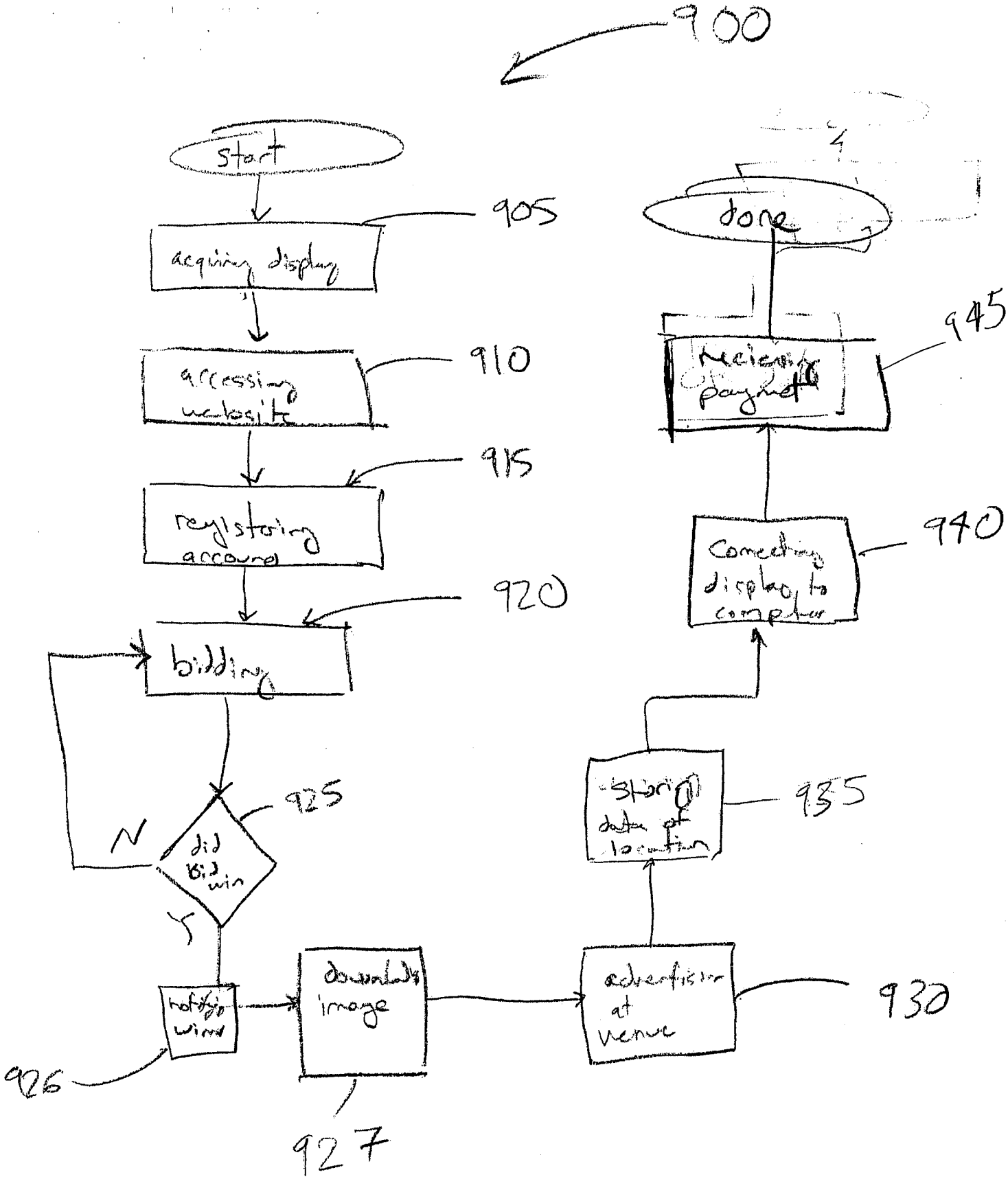

900
Start
905
acquiring display
910
accessing website
915
registering account
920
bidding
925
did bid win
N
Y
926
notify bid win
download image
927
advertising at venue
930
storing data of location
935
Collecting display to computer
940
receiving payment
945
done

Fig 9

1000

Isn't this similar to figs 3&4?

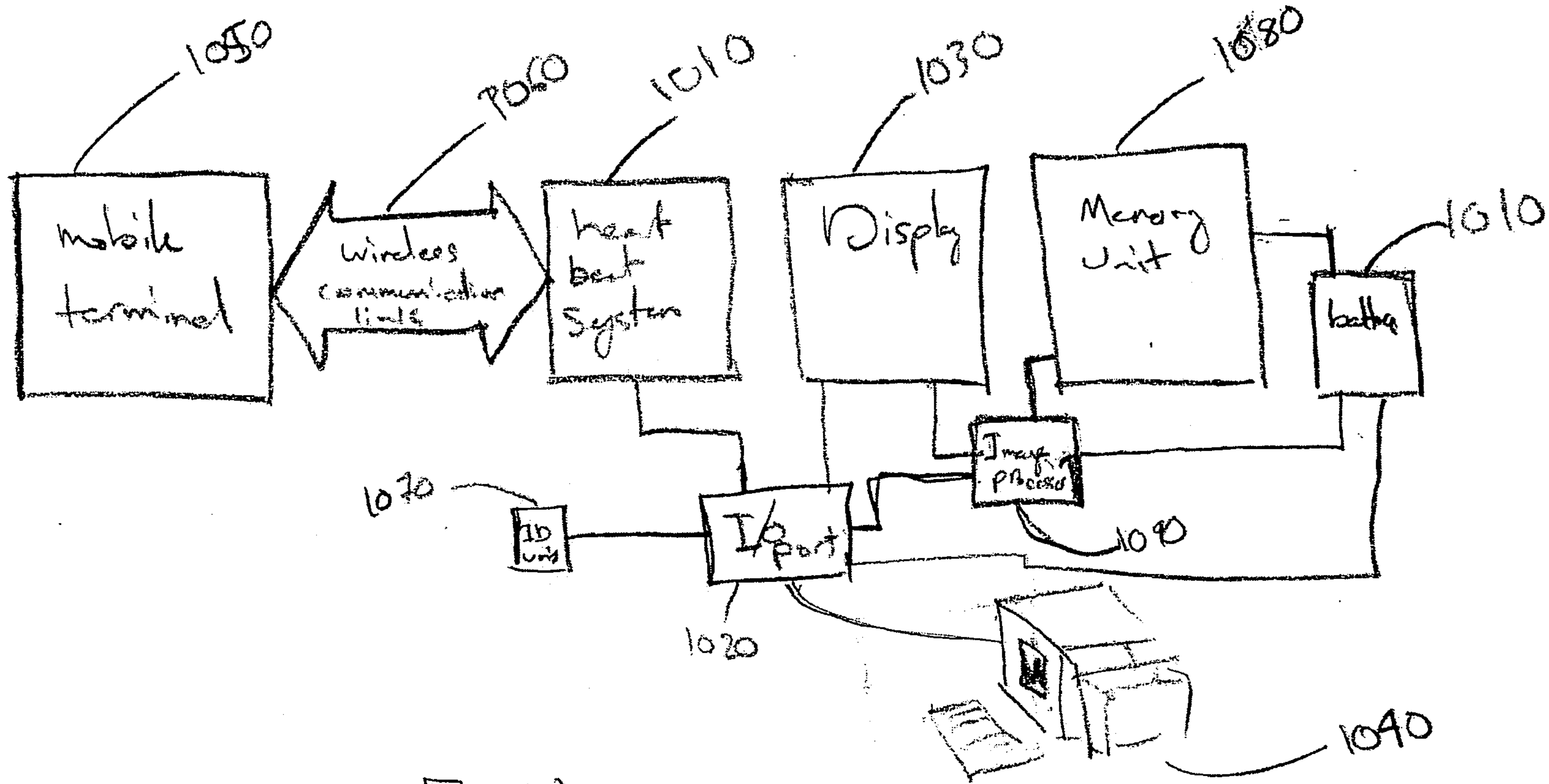


Fig 10