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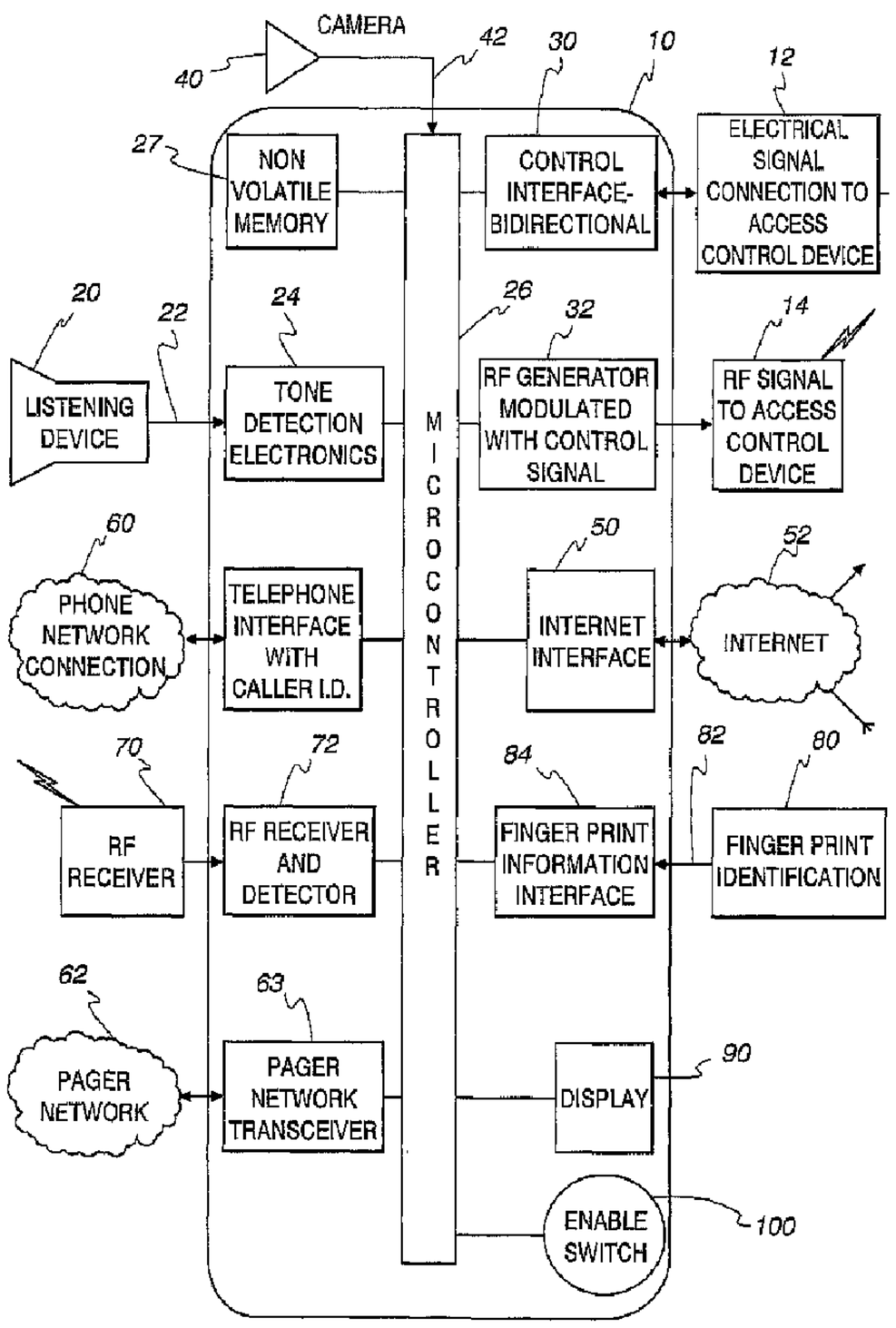
(54) Titre : PROCEDE ET APPAREIL PERMETTANT L'ACCES A UNE ZONE SECURISEE
(54) Title: METHOD AND APPARATUS FOR PROVIDING ACCESS TO A SECURE REGION



(57) Abrégé/Abstract:
Apparatus (10) for controlling access to a secure region has an audio transducer. A DTMF decoder is connected to the audio transducer (24). A processor (26) is connected to the DTMF decoder to receive DTMF signals. A memory is connected to the

CA 2399355 A1 2001/07/19

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(57) Abrégé(suite)/Abstract(continued):
processor (26) storing a code. The processor (26) compares the stored code to the signal from the DTMF decoder and generates an access enable signal in response thereto. A baseband signal output system for connection to a wall control of a garage door operator and for providing a base signal in response to the access enable signal. A radio frequency transmitter (14) provides a radio frequency signal to a radio frequency receiver of the garage door operator in response to the access signal.

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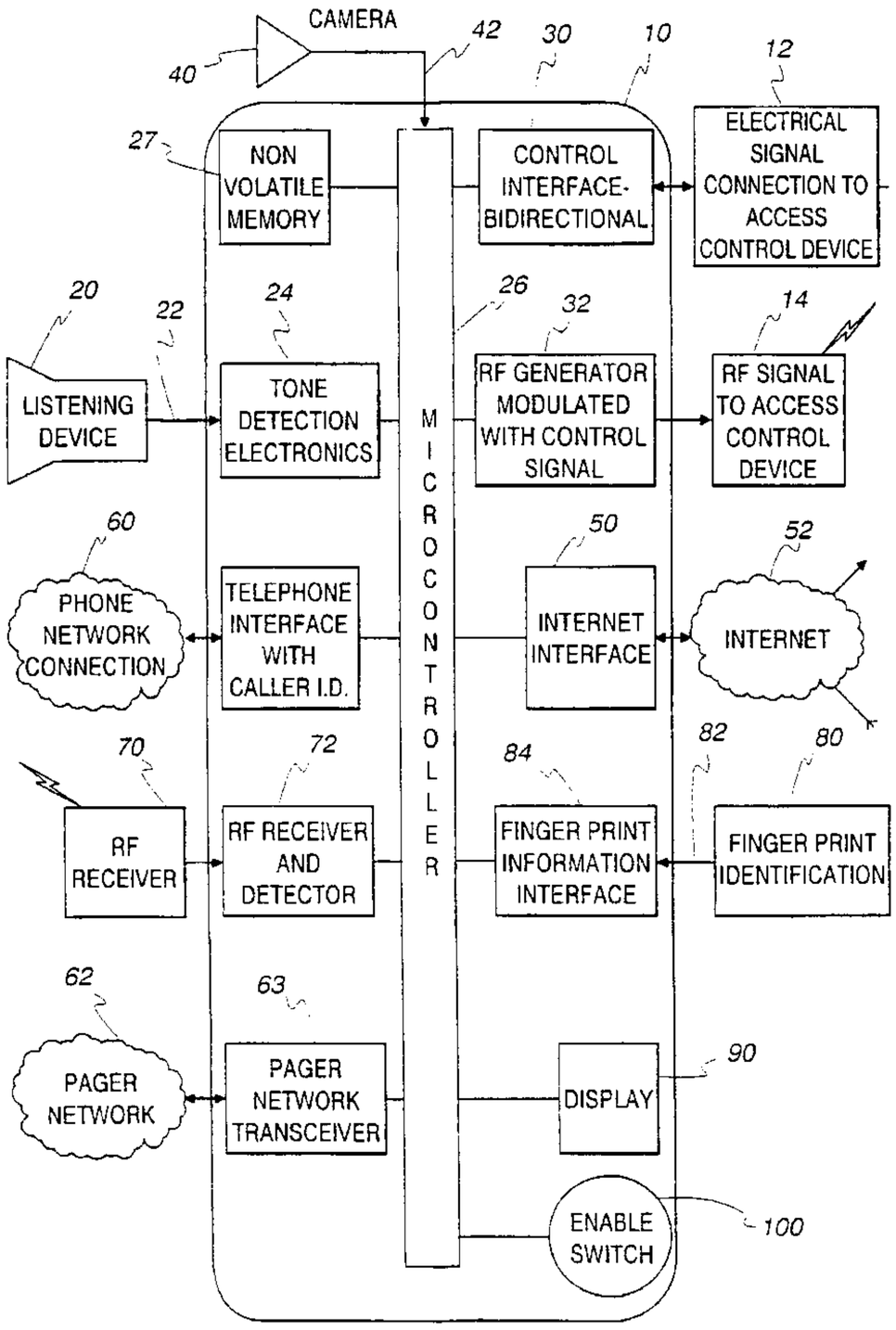
(54) Title: METHOD AND APPARATUS FOR PROVIDING ACCESS TO A SECURE REGION



(57) Abstract: Apparatus (10) for controlling access to a secure region has an audio transducer. A DTMF decoder is connected to the audio transducer (24). A processor (26) is connected to the DTMF decoder to receive DTMF signals. A memory is connected to the processor (26) storing a code. The processor (26) compares the stored code to the signal from the DTMF decoder and generates an access enable signal in response thereto. A baseband signal output system for connection to a wall control of a garage door operator and for providing a base signal in response to the access enable signal. A radio frequency transmitter (14) provides a radio frequency signal to a radio frequency receiver of the garage door operator in response to the access signal.

WO 01/52561 A3

METHOD AND APPARATUS FOR PROVIDING ACCESS TO A SECURE REGION

BACKGROUND OF THE INVENTION

The invention relates in general to a home security system and in particular to a home security system which can be controlled remotely to allow entry to a dwelling.

While local entry only systems exist there are not many systems that will allow entry to a portion or all of the dwelling in response to a remote signal. One of the oldest types of systems which will allow such entry at least to a portion of the dwelling is a remote control garage door operator. Such operators typically respond to one or more radio frequency transmitters. The RF transmitters emit code-modulated signals. When the signals are received by a receiver in the operator they identify the transmitter as an authorized transmitter. In response the receiver signals other parts of the operator to open or close a garage door. Upon obtaining access to the garage further access may be obtained to other portions of the dwelling.

Another non-keyed system for obtaining access to dwellings is the Weiser lock. The Weiser system has a keypad transmitter of the type used for operating a garage door operator. The keypad transmitter transmits a signal to a door lock of the type provided by the Weiser Company causing the lock to release or become unlocked. The Weiser system can cycle a deadbolt from a locked to an unlocked position and then from the unlocked to the locked position. It operates at the approximate range of a garage door operator transmitter.

Still another system is disclosed in U.S. Patent No. 5,872,513 to Fitzgibbon et al. Fitzgibbon et

al. teach a system that has a garage door operator having a temporary password programming feature.

While these non-keyed systems are convenient to use they nevertheless fail to address several important considerations. One of which is that a person may wish to allow access to the dwelling while the dwelling is unoccupied at particular times of the day but not be present to grant such permission. No such system is presently available other than to leave the door of the dwelling unlocked or to request a neighbor to provide access to package delivery personnel, home maintenance personnel, tradesmen and the like.

What is needed then is a system which can operate over almost any range to provide immediate access to a home on a remote basis quickly and conveniently.

SUMMARY OF THE INVENTION

The present invention is embodied in an apparatus for receiving an audio signal of the DTMF type and supplying it to a DTMF decoder. The DTMF decoder supplies a decoded signal to a microcontroller which in turn is connected to a non-volatile memory having codes stored therein. The non-volatile memory codes may be learned automatically via a variety of channels such as an RF channel, an Internet channel or the like. The system in one embodiment matches the DTMF code to the stored code and the microcontroller provides an access output signal in response thereto. The access output signal is sent both to a wall control signal generator as well as to an RF transmitter. They then supply output signals respectively available for a wall controller and for a radio receiver of a garage door operator.

In addition this system has a phone network connection, a pager network connection, and an Internet connection for providing pre-authorized remote access signals to the system and also for providing access state output signals to the user at a remote location to indicate that a delivery has been made, a child has arrived home safely or the like.

It is a principal aspect of the present invention to provide an apparatus for remotely enabled and locally enabled access to a dwelling which is simple and easy to use and in which remotely enabled pre-authorized access to be provided or withdrawn in real time.

Other aspects and advantages of the present invention will become obvious to one of ordinary skill in the art upon review following specification and claims in light of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of an access system for providing access to a dwelling and embodying the present invention;

FIG. 2 is a block diagram showing further detail of the access system of FIG. 1;

FIG. 3 is a block diagram of another embodiment of the present invention;

FIG. 4 is a block diagram of a third embodiment of the present invention;

FIG. 5 is a block diagram of a fourth embodiment of the present invention; and

FIG. 6 is a block diagram of a fifth embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings and especially to FIG. 1, an apparatus embodying the present invention is generally shown therein and identified by reference numeral 10. The apparatus 10 is an electronic apparatus for providing access to a dwelling on a remote basis. The apparatus 10 is adaptable and may receive relatively short range signals over a distance of a few inches to a few feet to long range signals which may travel more than half way around the world. The apparatus 10 may, for instance, comprise a portion of or be connected to a garage door operator which will include a motor for operating a garage door. The system includes an electrical output port 12 and a radio frequency output port 14. The electrical output port 12 may provide electrical signals compatible with, for instance, a wall controller of a garage door operator. A radio frequency output port 14 may provide radio frequency signals, for instance, from an antenna which would be received by the receiving antenna of a garage door operator located a short distance away, for instance, within a garage or immediate adjacent to the garage.

In order to actuate the device in a preferred embodiment a listening device such as a microphone 20 is connected by a line 22 to electronics 24 which are conventionally and which may be used for the detection of DTMF type signals of the type which might be emitted in an audio stream from a DTMF encoder of the type which might be included for instance in a cellular telephone. No electrical connection need be made between the microphone 20 and the DTMF encoder. It merely needs to "hear" the tone codes which are then detected by the detector 24 which forwards the signal to a

microcontroller 26 which will then convert and represent the tone codes as a code and send a signal to the control interface for the electrical access control 30 or to an RF generator 32 to provide the RF access signal at the unit 14.

The unit may also include a video camera such as a CCD camera 40 connected via a cable 42 to the microcontroller 26. This would provide an input indication to the microcontroller 26 as to the presence of an individual and may also be used to send a video signal from the camera via a packet switched network interface 50 to an Internet or intranet 52 which may remotely supply information about the person attempting to gain access to the garage door or other portions of the interior of the dwelling.

While it is often desirable in order to conform with standards making bodies such as Underwriters Laboratory to only provide final access authorization through a channel which can only be locally accessed requiring a person to be within a very short distance for instance of the garage door operator. Pre-authorization for that person or class of persons can be provided over a relatively long distance for instance over the Internet. Signals may be received over a phone network connection 60, by pager network connection 62, or from the Internet 52 through the Internet interface 50 being supplied to the microcontroller 26 to provide preauthorization for a subset of persons such as delivery persons and the like in order to limit the likelihood that the system 10 may be spoofed into allowing an unauthorized person to enter the premises. A radio frequency receiver 70 feeds an RF receiver and detector circuit 72. The radio receiver 70 may be similar to a radio receiver in a garage door operator it may be a

super-heterodyne receiver or a super-regenerative receiver either being capable of receiving an amplitude modulated, a frequency modulated, a pulse code modulated signal, or the like. However, the receiver only receives a relatively short range signal from an RF transmitter, such as a garage door operator transmitter. The signal is then supplied to the microcontroller 26 which can compare it with a code stored in the non-volatile memory 27 and take action to open and close a garage door or a door of a dwelling, or the like.

In addition, another local method of detection is through the use of a fingerprint identification system 80 connected via a line 82 to a fingerprint information interface 84 which performs fingerprint processing for identification. The fingerprint information interface 84 feeds the fingerprint signal to the microcontroller 86 to actuate either the electrical connection access control device 12 or the RF signal access control device 14. A display 90, which might be a liquid crystal display, a light emitting diode display, a vacuum fluorescent display, or the like, provides a local output to a user to indicate the state of the apparatus 10 for instance to provide information such as enable, disabled.

The system 10 also can be preprogramed, for instance by a vendor, that a package will be received on a certain date and a certain time. The display 90 will indicate that the system 10 has received that message. It also has provided that it remotely, for instance over the Internet 52, at a phone network connection to the owner of the dwelling. After the authorized person has delivered the package cycling of the controller may be indicated on the display 90 as well and an output indication may be provided via the Internet 52, phone network 60, pager network 62, or the like, remotely to

the person having provided the access authorization to indicate that the transaction of completed.

One advantage of using the local fingerprint identification systems in combination with the remote information transfer channels, whether over the phone line, pager network, or the Internet, resides in allowing data representative of a particular fingerprint or thumbprint to be transferred from a remote location to the microcontroller 26 and stored in the non-nolatile memory 27 in a compressed or uncompressed form. That data would then be used to match with a fingerprint presented to the fingerprint identification device 80. This allows the system to be custom configured on the fly for allowing access to a new temporary user via the fingerprint identification channel. In addition, the system 10 can have permissions provided to it remotely to allow for only a limited number of access or attempts to access via the fingerprint identification channel. That a particular fingerprint will not provide access after the transaction has been completed. Such access also can be limited on a time and date basis through either local loading or remote loading via the Internet or the like.

A further advantage of the system is that the return messaging, which can occur over the Internet channel, pager channel, phone network channel or the like, allows messages to be sent to the company whose drivers or repair personnel are providing the service. This indicates that the authorized person has arrived at the dwelling at a particular date and time. In this way it allows the service-providing company to determine whether the person will be able to complete his or her scheduled tasks for the day or will need to reschedule some tasks for a later time.

In addition, either through the fingerprint channel or the other authorization channels, a child may have authorization to come and go in the house. The system 10 will provide a parent or other authorizing party with information at their office or place of business on a real time basis that the child has arrived home and has been granted admission to the dwelling. This provides parents with a heightened sense of security by knowing on a real time basis that their children have arrived home safely.

Furthermore the apparatus 10 can learn a touch code via the RF channel and store it in the non-volatile memory to provide a temporary touch code simulator function for operating the garage door operator. The temporary code is received during the learn phase from a touch code transmitter after having been placed in learn mode via a signal received over the RF channel.

In a second embodiment of the present invention an apparatus or system 200 may be retrofitted to an existing movable barrier operator or garage door operator 202 of a type which is currently commercially available. The system 200 includes an external keypad unit 204 for monitoring outside a protected area such as a garage. The system 200 has a standard keypad 206 with nine digit keys on it mounted on the garage, as well as a liquid crystal display 208 associated with the keypad 204 for displaying information related thereto. A microcontroller 210 is connected to receive key input signals from the keypad 204 and to drive the LCD display 208.

A radio frequency transmitter 212 and a radio frequency transceiver 214 are also associated with the keypad 204. The radio frequency transmitter 212 may communicate via a fixed or a rolling code with the

existing garage door operator to provide commands to it through its existing radio frequency receiver. The microcontroller 210 can likewise receive identifying or authorizing inputs from an infrared detector 220, a biometric detector 222, which may include a fingerprint reader, or the like, or a transponder 224 which may be carried on a key fob. The system 200 is driven from a power supply 226 which, in the present embodiment, would be battery operated.

A desktop control device or indoor unit 230 includes a display 232, which may be a liquid crystal display, a video monitor display, or the like. A keypad 234 may provide user input to a microcontroller 236 having on-board memory 238 including RAM and ROM. The user input would control permission and various other control aspects of the barrier operator 202. A plurality of dedicated function keys 240 would also be associated with the microcontroller 236 for providing control inputs, which would then be fed to an onboard radio frequency transmitter 242 which can emit coded radio frequency signals for receipt by the existing garage door operator 202.

A communication section 250 may communicate with the Internet 252 or other packet switching network, receive signals from a biometric input device 254, such as a fingerprint reader, or the like, or receive signals from a camera 256.

A radio frequency transceiver 260 may receive communication from the radio frequency transceiver 214 of the keypad transmitter 204 or from a door-position transmitter 262 associated with a garage door for indicating a position of the garage door with respect to other portions of the access control 200.

In a third embodiment of the present invention an apparatus or system 300 may be attached to an existing movable barrier operator or garage door operator 302 of the type which is currently commercially available. The system 300 includes an external keypad unit 304 having a standard keypad 306 with nine digits on it, as well as a liquid crystal display 308 associated with the keypad 306 for displaying information related thereto. A microcontroller 310 is connected to receive signals from the keypad 306 and to drive the display 308.

A radio frequency transmitter 312 and a radio frequency transceiver 314 are also associated with the keypad 304. The radio frequency transmitter 312 may communicate with the existing garage door operator 302 to provide commands to it through its existing radio frequency receiver. The microcontroller 310 can likewise receive inputs from an infrared detector 320, a biometric detector 322, which may include a fingerprint reader, or the like, or a transponder 324 which may be carried on a key fob. The system is driven from a power supply 326 which, in the present embodiment, would be battery operated.

A desktop control device or indoor unit 330 includes a display 332, which may be a liquid crystal display, a video monitor display, or the like. A keypad 334 may provide input to a microcontroller 336 having on-board memory 338 including RAM and ROM. A plurality of dedicated function keys 340 would also be associated with the microcontroller 336 for providing control inputs, which would then be fed to an onboard radio frequency transmitter 342 which can emit coded radio frequency signals for receipt by the existing garage door operator.

A communication section 350 may communicate with the Internet 352 or other packet-switching network, with a biometric input device 354, such as a fingerprint reader, or the like, or with a camera 356. An authorized user on the Internet could access the barrier operator 302 and change its state and permission levels as well as determine whether the operator is open, closed or in a fault condition.

A radio frequency receiver 360 may receive RF communications from the radio frequency transceiver 314 of the keypad transmitter 304 or it may receive communications from a door-position transmitter 362 associated with a garage door which indicates a position of a garage door to other portions of the access control 300.

In a fourth embodiment of the present invention an apparatus or system 400 may be attached to a movable barrier operator or garage door operator 402. The system includes an external keypad unit 404 having a standard keypad 406 with nine digits on it, as well as a liquid crystal display 408 associated with the keypad 406 for displaying information related thereto. A microcontroller 410 is connected to receive signals from the keypad 406 and to drive the liquid crystal display 408.

A radio frequency transmitter 412 and a radio frequency transceiver 414 are also associated with the external keypad unit 404. The radio frequency transmitter 412 may communicate with the garage door operator 402 to provide commands to it through the operator's radio frequency receiver. The microcontroller 410 can likewise receive inputs from an infrared detector 420, a biometric detector 422, which may include a fingerprint reader, or the like, or a transponder 424

which may be carried on a key fob. The system 400 is driven from a power supply 426 which, in the present embodiment, may be battery operated.

A desktop control device or indoor unit 430 includes a display 432, which may be a liquid crystal display, a video monitor display, or the like. A keypad 434 may provide input to a microcontroller 436 having on-board memory 438 including RAM and ROM. A plurality of dedicated function keys 440 also would be associated with the microcontroller 436 for providing control inputs, which would then be fed to an onboard radio frequency transmitter 442 which can emit coded radio frequency signals for receipt by a radio frequency receiver in the garage door operator 402.

A communication section 450 may communicate with the Internet 452 or other packet switching network, with a biometric input device 454, such as a fingerprint reader, or the like, or with a camera 456. A radio frequency receiver 460 may communicate with the radio frequency transceiver 414 of the keypad transmitter 404 or with a door-position transmitter 462 associated with a garage door for indicating a position of a garage door to other portions of the access control 400.

A wall control device 480, which may be used with the garage door operator 402, may include a display 482 such as a liquid crystal display, light emitting diode display, vacuum fluorescent display, or the like. An alphanumeric keypad 484 may be used to communicate, along with a plurality of special feature keys 486, with a garage door operator control 488. The garage door operator control 488 sends control signals to and receives status signals from the garage door operator 402 over a wireline 489.

A radio frequency transceiver 490 is also operatively coupled to the garage door operator control 488 and can receive signals from the door position transmitter 462 as well as send signals to and receive signals from the RF transceiver in the user entry device 404.

A power supply 494 may be energized by dc battery power or ac line power and supplies power to the wall control 480. A microcontroller 492 mediates functions among the display 482, keypad 484, and special feature keys 486, the RF transceiver 490 and the garage door operator control 488. The wall control device 480 is thus responsive to inputs from its keypad 482 and special feature keys 484 as well as from the radio frequency transceiver 414 from the user entry device 404 thus allowing user communication with the wall control 480 as well as sending and receiving control and status signals to and from the radio frequency transceiver 460 and the desktop control device 430 and the RF door position transmitter 462.

In a fifth embodiment of the present invention an apparatus 500 or system 500 includes a movable barrier operator or garage door operator 502. The system 500 also includes a user entry device comprising an external keypad unit 504 having a standard keypad 506 with nine digits on it, as well as a liquid crystal display 508 associated with the keypad 506 for displaying information related thereto. A microcontroller 510 is connected to receive signals from the keypad 506 and to drive the display 508.

A radio frequency transmitter 512 and a radio frequency transceiver 514 are also associated with the keypad 504. The radio frequency transmitter 512 may communicate with the existing garage door operator to

provide commands to it through its existing radio frequency receiver. The microcontroller 510 likewise can receive inputs from an infrared detector 520, a biometric detector 522, which may include a fingerprint reader, or the like, or a transponder 524 which may be carried on a key fob. The system is driven from a power supply 526 which, in the present embodiment, would be battery operated.

The garage door operator 502 includes a microcontroller 561 having a memory 560 associated with it for storing instructions and operands for execution. The receiver 564 and a radio frequency transmitter 563 are available for communicating with other units including the user entry device 504. The communications unit is also available for providing communications protocols along the microcontroller to communicate remotely with the user via the Internet to receive biometric input signals from a fingerprint reader, retinal reader, or the like, or facial reader 566, or from a camera 567.

In addition to the user entry device 504 which may be located on the outside of the area to which access is to be secured, a wall control device 568 may also be provided which includes a liquid crystal display 569, or the like, driven by a microcontroller 573. The microcontroller 573 would include RAM memory for holding temporary operands and ROM memory for holding a program, as well as possibly a nonvolatile or flash memory. In addition, an RF transmitter 571 and a radio frequency transceiver 572 would be available for communication via radio frequency link either with the user entry device 504 or with the garage door operator 502 allowing the display of conditions for the garage door operator 502 to

be displayed on the display 568, and they may also be on the LCD display 504.

The microcontroller 573 also would have connected to it an infrared sensor 574 for determining when persons might be present in the garage or secure area for controlling access to and security aspects thereof. In addition, a biometric reader 575, which might be a fingerprint reader a retinal reader, or a facial scanner, would be available for providing an input to the microcontroller 573, which would allow the microcontroller 573 to determine whether the garage door operator 502 should be opened or closed depending upon the identity of the person providing the biometric information. A transponder 576 may also communicate with the microcontroller via, ultrasonics, or the like. The transponder 576 may be carried from a key fob, for instance, of the user and identify the user to the microcontroller 573, allowing the user to provide control inputs to the movable barrier operator 502. In addition, a keypad 570 may be used to provide control inputs to the movable barrier operator 502. The wall control device 568 would be driven from a power supply 577, which might include AC power or might be driven from battery power.

While there have been illustrated and described particular embodiments of the present invention, it will be appreciated that numerous changes and modifications will occur to those skilled in the art, and it is intended in the appended claims to cover all those changes and modifications which fall within the true spirit and scope of the present invention.

WHAT IS CLAIMED IS:

1. Apparatus for electronically controlling access to a secure region comprising:

a network interface for receiving an authorization from a network;

a controller connected to the network interface to receive the authorization signal therefrom and to generate a barrier control signal;

a radio frequency transmitter responsive to the barrier control signal for generating an RF control signal for a barrier operator;

a baseband control interface connected to the controller for issuing a baseband control signal to the barrier operator; and

a memory associated with the controller for storing authentication information.

2. Apparatus for electronically controlling access to a secure region according to claim 1 further comprising a radio frequency receiver for receiving a radio frequency signal control.

3. Apparatus for electronically controlling access to a secure region according to claim 1, further comprising a biometric input device for supplying a biometric signal to the controller to determine whether an operator has been authenticated to operate the apparatus.

4. Apparatus for electronically controlling access to a secure region according to claim 1, further comprising a telephone network interface for receiving

control signals from a telephone network and supplying status signals to the telephone network.

5. Apparatus for electronically controlling access to a secure region according to claim 1, further comprising a pager interface for receiving a control signal and an authorization signal from a pager network and supplying status signals back to the pager network.

6. Apparatus for electronically controlling access to a secure region according to claim 1, wherein the network interface receives an authorization signal from the Internet.

7. Apparatus for electronically controlling access to a secure region according to claim 3 wherein the biometric input device comprises a fingerprint reader.

8. Apparatus for electronically controlling access to a secure region comprising:

a movable barrier operator having a radio frequency receiver for receiving a radio frequency control signal;

a radio frequency user entry device including a keypad for entry of a user code and an infrared transceiver for sending and receiving infrared signals;

a microcontroller responding to the infrared signals and generating an authorization signal;

a radio frequency transmitter responding to the authorization signal to generate a radio frequency signal received by the barrier operator to operate the barrier;

a controller remotely positioned from the user entry device and including a processor and a radio frequency transmitter for sending signals to a radio

frequency transceiver in the user entry device, the processor receiving signals from an input device to provide an authorization signal thereto.

9. Apparatus for electronically controlling access to a secure region according to claim 8, wherein the user entry device further comprises a biometric authorization sensor coupled with the microcontroller.

10. Apparatus for electronically controlling access to a secure region according to claim 8,further comprising a transponder in communication with the microcontroller.

11. Apparatus for electronically controlling access to a secure region according to claim 8, wherein the controller further comprises a communication link for sending and receiving signals from the Internet.

12. Apparatus for electronically controlling access to a secure region according to claim 8, wherein the controller further comprises a biometric characteristic reader for receiving biometric authorization data therefrom.

13. Apparatus for electronically controlling access to a secure region according to claim 8, further comprising a camera coupled to the interior control device for providing video information which may be sent to an area exterior of the desktop control device.

14. Apparatus for electronically controlling access to a secure region according to claim 8, further

comprising a wall control device in baseband communication with the barrier operator.

15. Apparatus for electronically controlling access to a secure region according to claim 14, wherein the wall control device further comprises a wireless transceiver for communication with the controller device, the user entry device, and the barrier operator.

16. Apparatus for electronically controlling access to a secure region comprising:

an audio transducer;

a DTMF decoder;

a processor connected to the DTMF decoder to receive DTMF signals therefrom;

a memory connected to the processor storing a code;

the processor comparing the stored code to the signal from the DTMF decoder and providing an access enable signal in response thereto;

a baseband signal output system for connection to a wall control of a garage door operator and for providing a baseband signal in response to the access enable signal; and

a radio frequency transmitter for providing a radio frequency signal to a radio frequency receiver of a barrier operator in response to said access signal.

17. A method of providing remote access to a secure area, comprising:

receiving a remote authorization signal via a digital network;

confirming the authorization signal by receiving a local signal;

generating a wireless command signal;

receiving the wireless command signal;

operating a barrier control in response to the received wireless command signal.

18. A method of providing remote access to a secure area according to claim 17, wherein the wireless command signal comprises a radio frequency command signal.

19. A method of providing remote access to a secure area wherein the remote authorization signal is received from the Internet.

20. A method of providing remote access to a secure area according to claim 17, wherein the remote authorization signal is received from a pager network.

21. A method of providing remote access to a secure area according to claim 17, further comprising generating a baseband command signal for controlling a barrier operator.

22. A method of providing remote access to a secure area according to claim 21, further comprising the barrier operator providing a baseband status signal

23. A method of providing remote access to a secure area according to claim 17, wherein the local signal comprises a keypad signal.

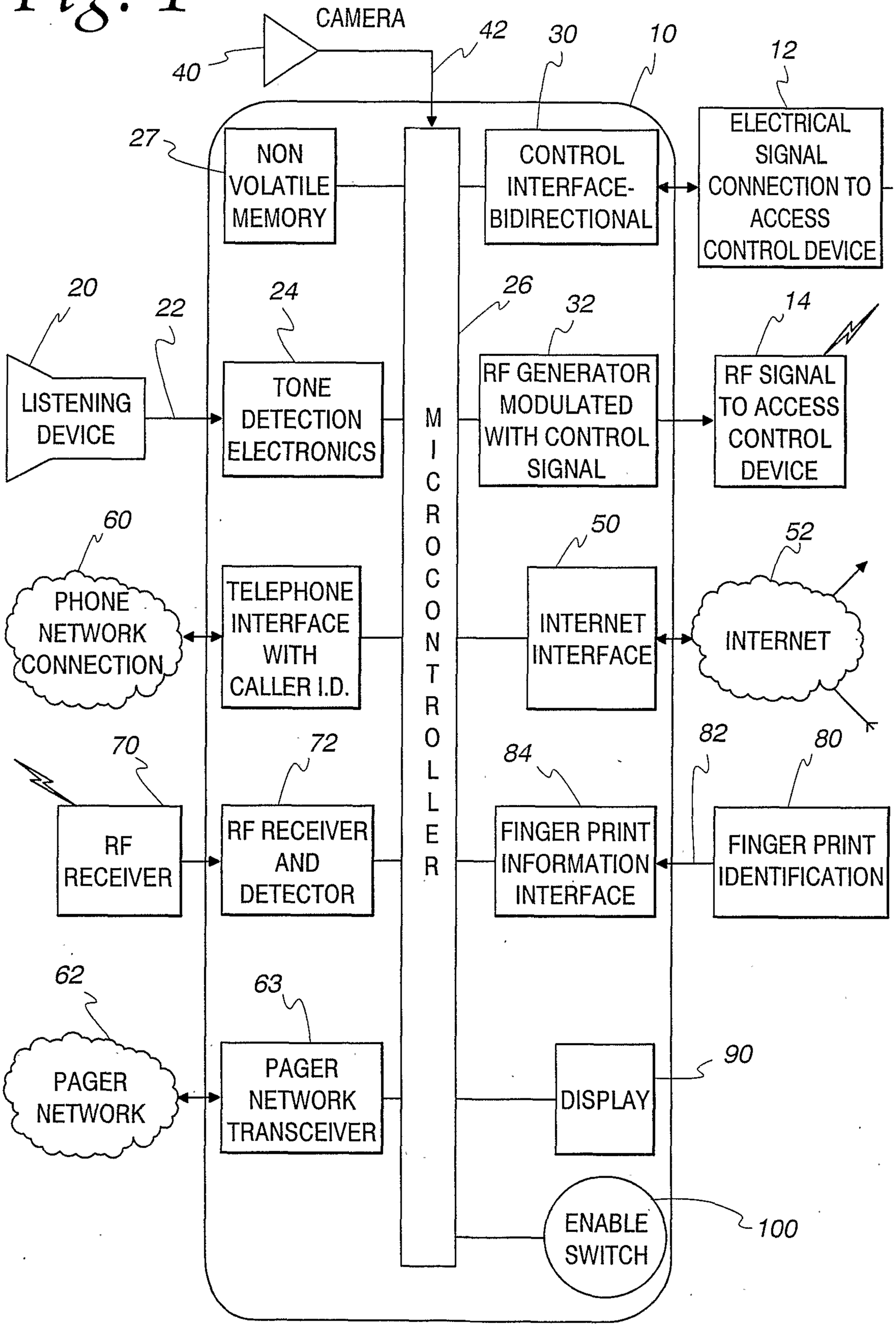
24. A method of providing remote access to a secure area according to claim 17, wherein the local signal comprises a biometric signal.

25. A method of providing remote access to a secure area according to the previous claim, wherein the biometric signal comprises a fingerprint signal.

26. A method of providing remote access to a secure area according to claim 17, wherein the local signal comprises an infrared signal.

27. A method of providing remote access to a secure area according to claim 17, wherein the local signal comprises a transponder signal.

Fig. 1


CAMERA
40
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NON VOLATILE MEMORY
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ELECTRICAL SIGNAL CONNECTION TO ACCESS CONTROL DEVICE
20
22
24
26
32
14
LISTENING DEVICE
TONE DETECTION ELECTRONICS
MICROCONTROLLER
RF GENERATOR MODULATED WITH CONTROL SIGNAL
RF SIGNAL TO ACCESS CONTROL DEVICE
60
50
52
PHONE NETWORK CONNECTION
TELEPHONE INTERFACE WITH CALLER I.D.
INTERNET INTERFACE
INTERNET
70
72
84
82
80
RF RECEIVER
RF RECEIVER AND DETECTOR
FINGER PRINT INFORMATION INTERFACE
FINGER PRINT IDENTIFICATION
62
63
PAGER NETWORK
PAGER NETWORK TRANSCEIVER
DISPLAY
90
ENABLE SWITCH
100

Fig. 2a

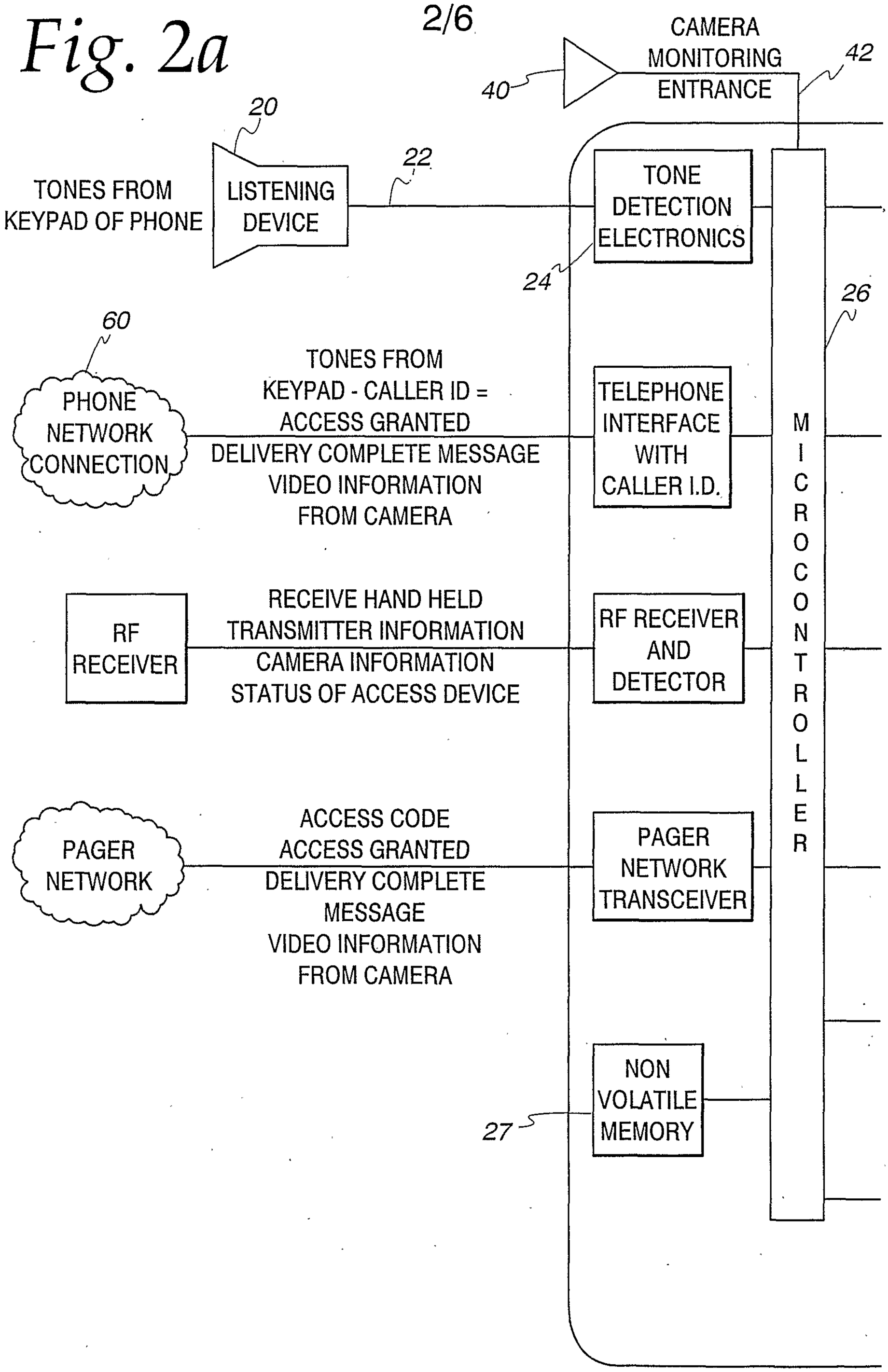

CAMERA MONITORING ENTRANCE
40
42
20
22
TONES FROM KEYPAD OF PHONE
LISTENING DEVICE
TONE DETECTION ELECTRONICS
24
26
60
PHONE NETWORK CONNECTION
TONES FROM KEYPAD - CALLER ID = ACCESS GRANTED
DELIVERY COMPLETE MESSAGE
VIDEO INFORMATION FROM CAMERA
TELEPHONE INTERFACE WITH CALLER I.D.
RF RECEIVER
RECEIVE HAND HELD TRANSMITTER INFORMATION
CAMERA INFORMATION
STATUS OF ACCESS DEVICE
RF RECEIVER AND DETECTOR
PAGER NETWORK
ACCESS CODE
ACCESS GRANTED
DELIVERY COMPLETE MESSAGE
VIDEO INFORMATION FROM CAMERA
PAGER NETWORK TRANSCEIVER
MICROCONTROLLER
NON VOLATILE MEMORY
27

Fig. 2b

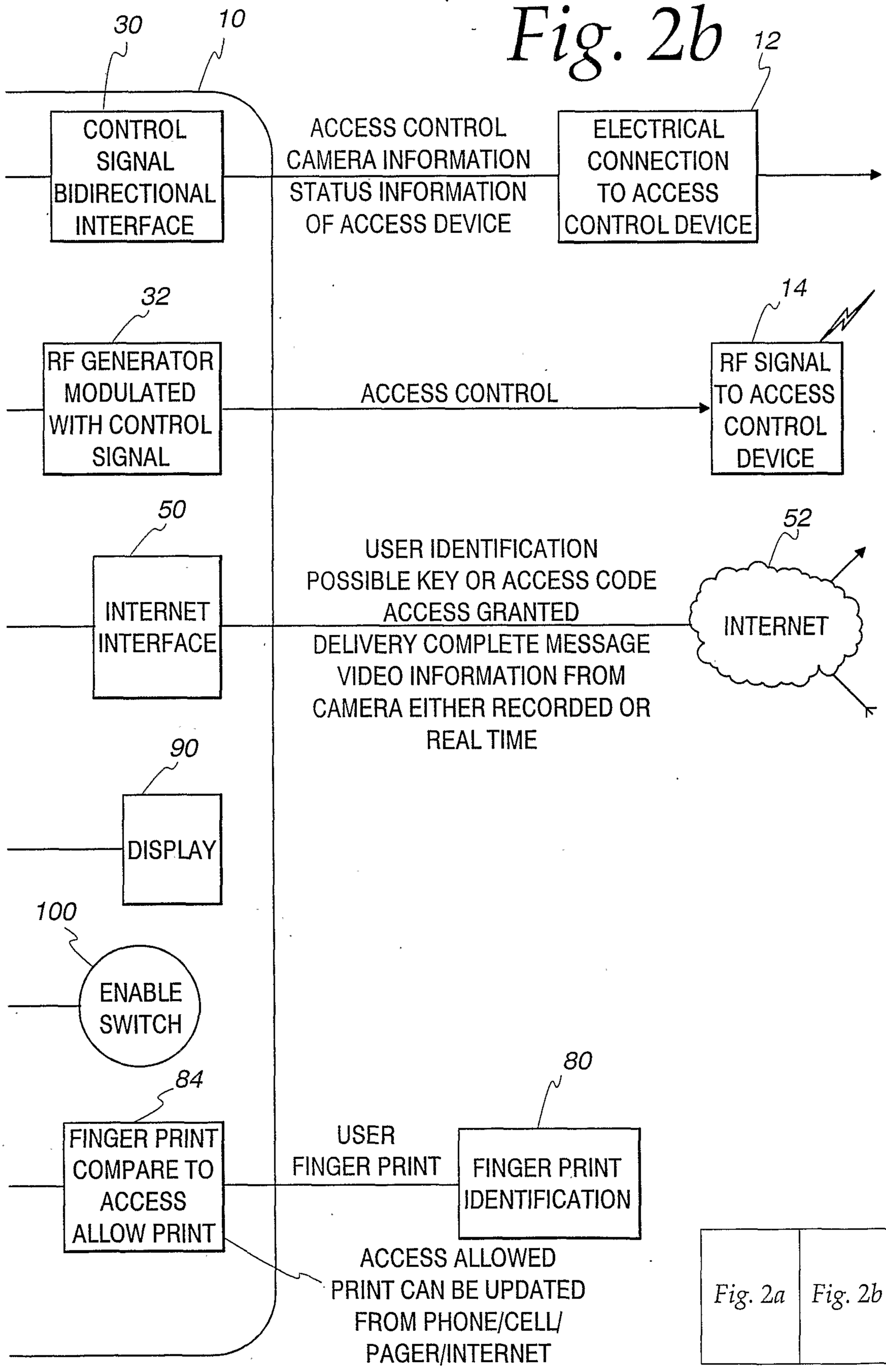


Fig. 2a	Fig. 2b

Fig. 3

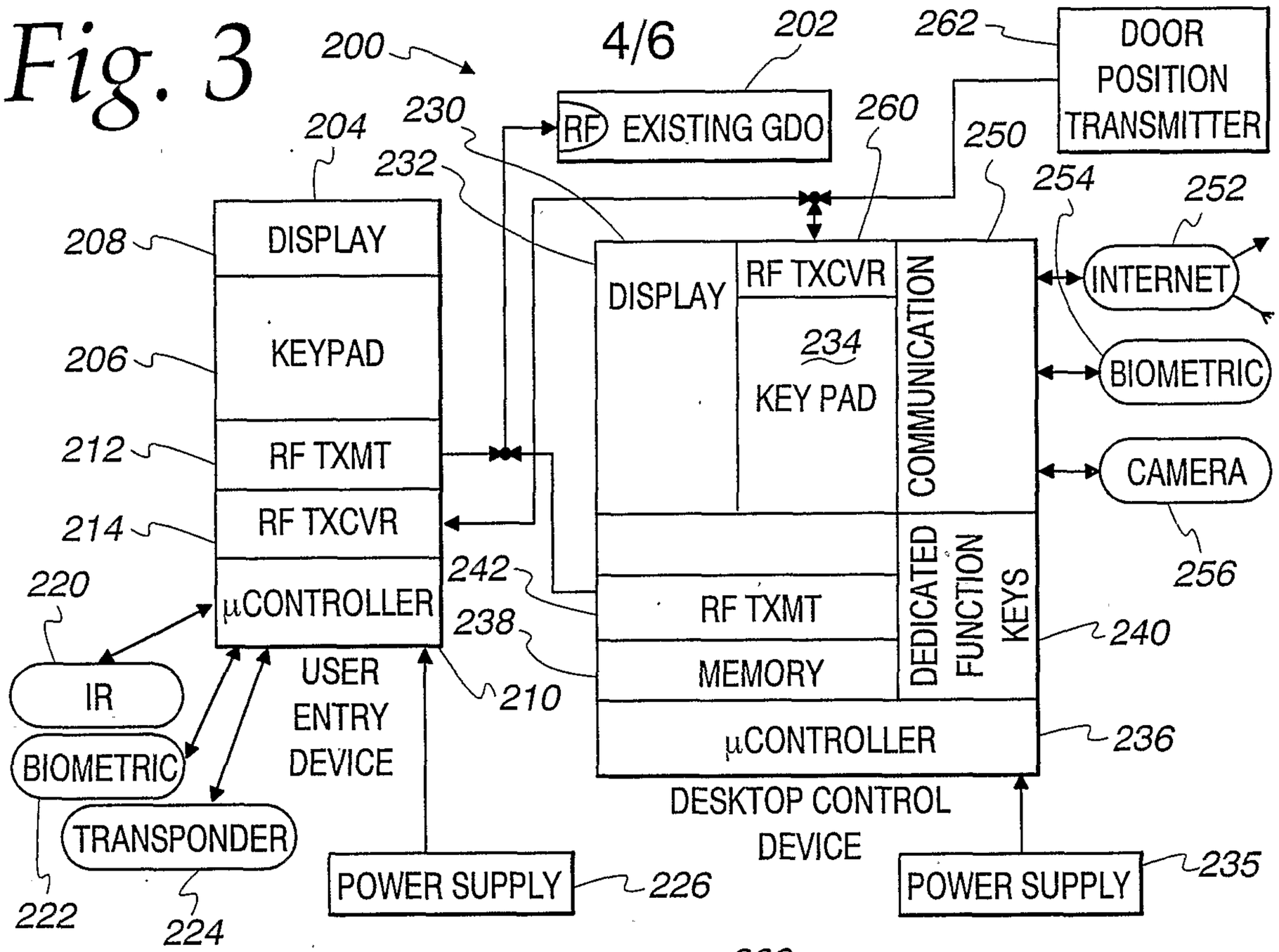
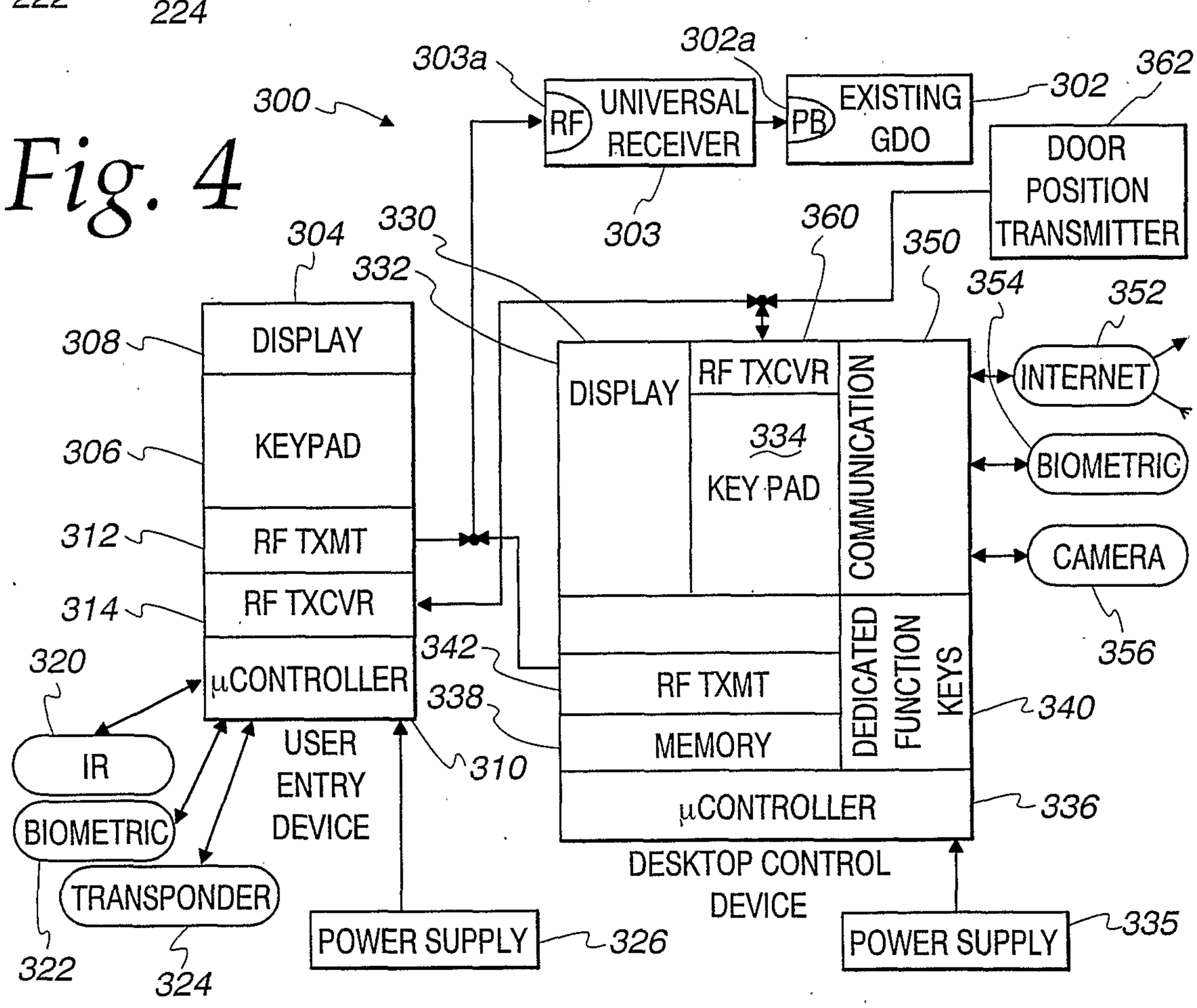

200
202
262
DOOR POSITION TRANSMITTER
RF EXISTING GDO
230
260
250
204
232
254
252
208
DISPLAY
DISPLAY
RF TXCVR
INTERNET
206
KEYPAD
234
KEY PAD
COMMUNICATION
BIOMETRIC
212
RF TXMT
CAMERA
214
RF TXCVR
242
256
220
µCONTROLLER
RF TXMT
238
DEDICATED FUNCTION KEYS
240
MEMORY
IR
USER ENTRY DEVICE
210
µCONTROLLER
236
BIOMETRIC
DESKTOP CONTROL DEVICE
TRANSPONDER
POWER SUPPLY
226
POWER SUPPLY
235
222
224

Fig. 4


303a
302a
362
300
RF UNIVERSAL RECEIVER
PB EXISTING GDO
302
DOOR POSITION TRANSMITTER
303
330
360
350
304
332
354
352
308
DISPLAY
DISPLAY
RF TXCVR
INTERNET
306
KEYPAD
334
KEY PAD
COMMUNICATION
BIOMETRIC
312
RF TXMT
CAMERA
314
RF TXCVR
342
356
320
µCONTROLLER
RF TXMT
338
DEDICATED FUNCTION KEYS
340
MEMORY
IR
USER ENTRY DEVICE
310
µCONTROLLER
336
BIOMETRIC
DESKTOP CONTROL DEVICE
TRANSPONDER
POWER SUPPLY
326
POWER SUPPLY
335
322
324

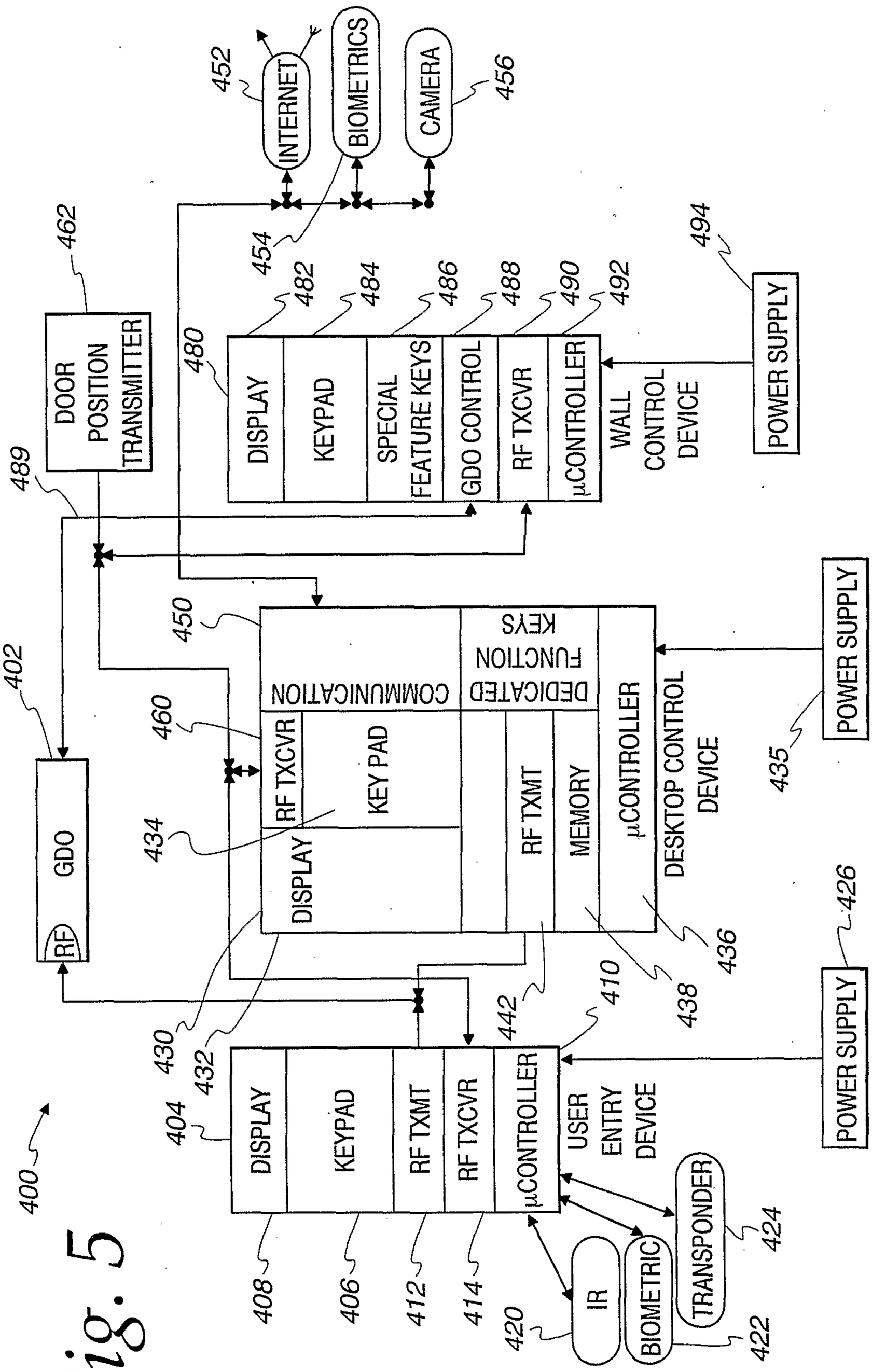
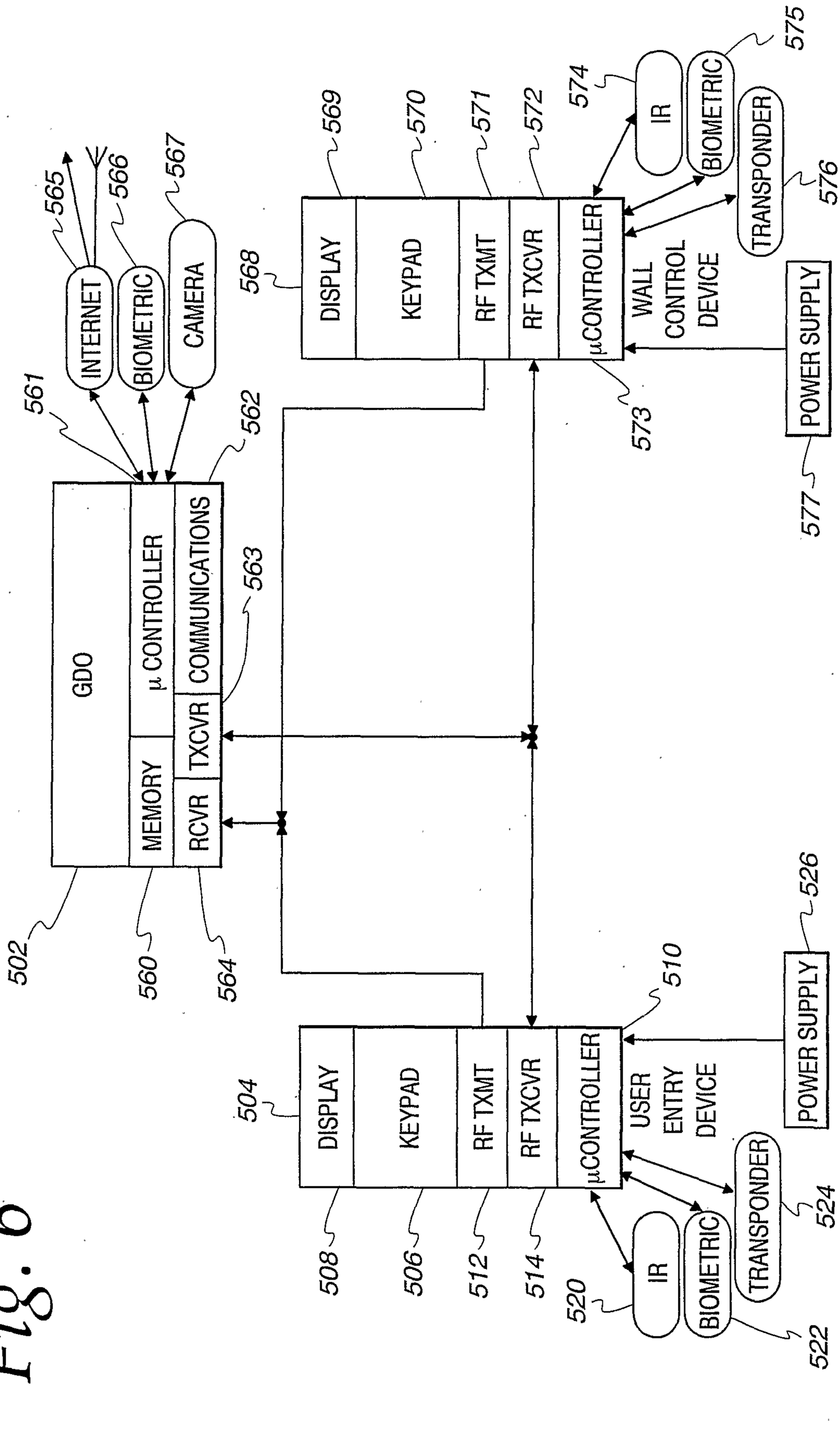

400
402
GDO
RF
404
DISPLAY
406
KEYPAD
408
410
RF TXMT
412
RF TXCVR
414
µCONTROLLER
420
IR
422
BIOMETRIC
424
TRANSPONDER
426
POWER SUPPLY
430
432
434
DISPLAY
436
KEY PAD
438
RF TXCVR
440
COMMUNICATION
442
DEDICATED FUNCTION KEYS
444
µCONTROLLER
446
MEMORY
448
RF TXMT
450
DESKTOP CONTROL DEVICE
452
INTERNET
454
BIOMETRICS
456
CAMERA
460
462
DOOR POSITION TRANSMITTER
480
DISPLAY
482
KEYPAD
484
SPECIAL FEATURE KEYS
486
GDO CONTROL
488
RF TXCVR
489
490
µCONTROLLER
492
WALL CONTROL DEVICE
494
POWER SUPPLY
435
POWER SUPPLY

Fig. 5


GDO
µCONTROLLER
COMMUNICATIONS
MEMORY
TXCVR
RCVR
INTERNET
BIOMETRIC
CAMERA
DISPLAY
KEYPAD
RF TXMT
RF TXCVR
µCONTROLLER
WALL CONTROL DEVICE
IR
BIOMETRIC
TRANSPONDER
POWER SUPPLY
USER ENTRY DEVICE
IR
BIOMETRIC
TRANSPONDER
POWER SUPPLY
561
562
563
565
566
567
568
569
570
571
572
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502
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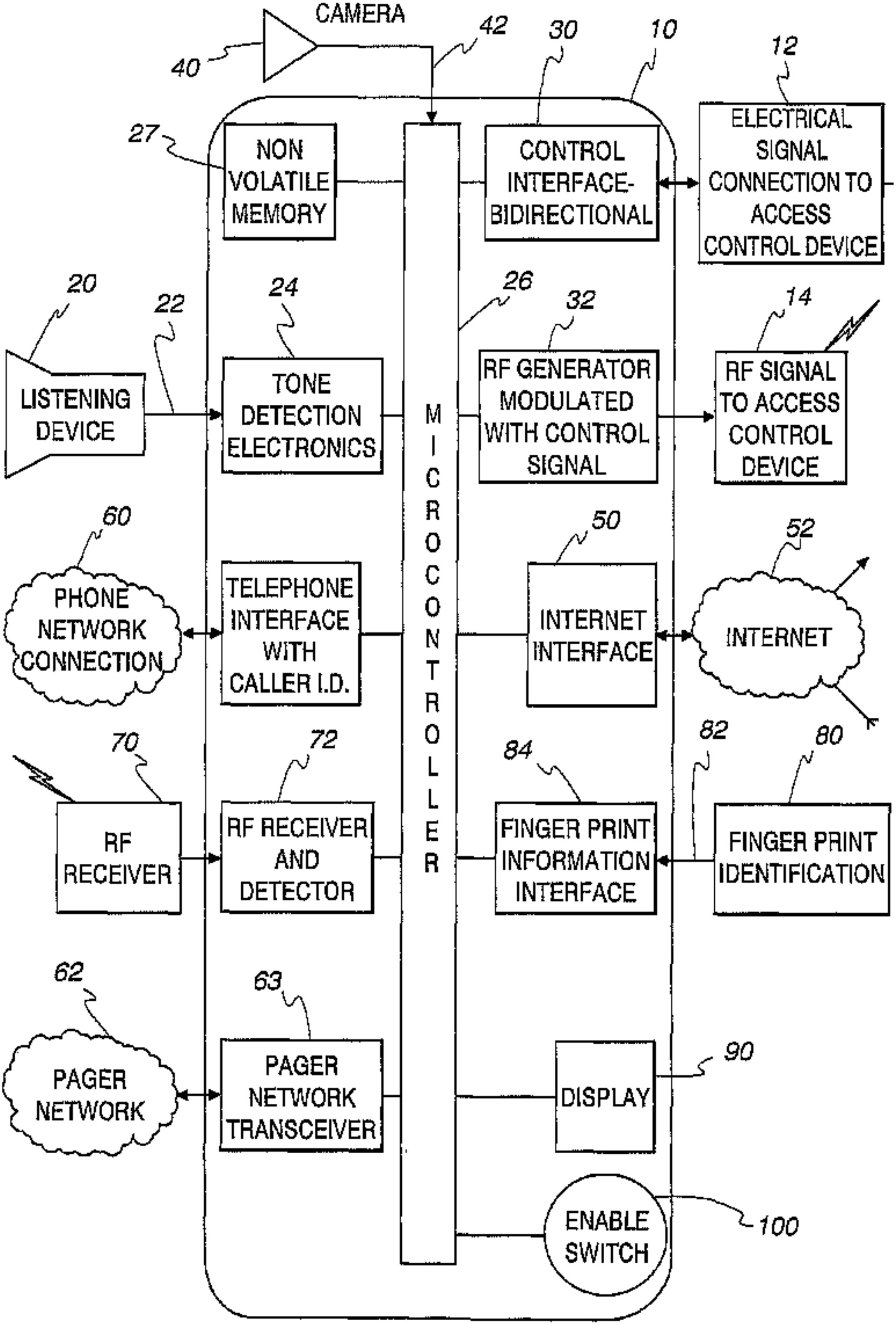
Fig. 6


CAMERA
40
42
30
10
12
27
NON VOLATILE MEMORY
CONTROL INTERFACE-BIDIRECTIONAL
ELECTRICAL SIGNAL CONNECTION TO ACCESS CONTROL DEVICE
20
22
24
26
32
14
LISTENING DEVICE
TONE DETECTION ELECTRONICS
MICROCONTROLLER
RF GENERATOR MODULATED WITH CONTROL SIGNAL
RF SIGNAL TO ACCESS CONTROL DEVICE
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FINGER PRINT IDENTIFICATION
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PAGER NETWORK TRANSCEIVER
DISPLAY
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ENABLE SWITCH
100