Further information regarding error correcting codes may be found in Gallagher, "Information Theory and Reliable Communication," Wiley 1968, which is hereby incorporated by reference.

The systemwide forward batch 2704 field generally includes a zonal header time interval including overhead information and a series of 64 batches. Also, the zonal forward interval 2710 similarly includes a zonal header time interval with overhead information and a series of 64 batches. Each batch is a string of data containing information specifically directed to a single group of mobile units. Each batch preferably contains information directed to a certain class of mobile units with the classes divided by the types of service provided. For example, a first batch could be directed to all mobile transceiver units, and a second batch could be directed to all mobile receiver units. Further, each batch may contain several messages, each intended for different mobile units within the particular class of unit to which that batch is directed. Generally, Fig. 27(B) shows the forward batch interval protocol 2750 preferred for both the systemwide forward interval 2704 and the zonal forward interval 2708.

The systemwide forward interval 2704 is preferably used only for sending a probe signal to a mobile transceiver unit which does not respond to zonal messages (i.e. a "lost" unit). However, when necessary, the systemwide forward interval 2704 may be used to deliver messages to mobile units located in overlap areas. The ID number, or address, of the lost mobile unit is preferably followed by data indicating a timing offset which is a time delay amount

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until the beginning of the time slot designated for the return signal of that mobile unit. An alternative implementation, which may be useful for mobile units that have not responded for a period of time, could have mobile units that have received a probe signal respond during the reverse contention interval.

After the end of the broadcast on the systemwide forward batch time interval 2704, all network base transmitters shut down until the beginning of the zonal forward batch time interval 2708.

The forward batch interval protocol 2750 includes a forward channel header interval 2714 which includes data to allow the timing circuitry of the mobile units to synchronize themselves with the incoming data stream. The forward channel header 2714 also preferably includes data indicating a timing offset scheduling a reverse channel time interval for each batch, as may be required. Of course, the forward channel header 2714 for the systemwide forward interval 2704 would indicate a timing offset for reverse channel transmission during the systemwide response interval 2706, and the forward channel header 2714 for the zonal forward interval 2708 would indicate a timing offset for reverse channel transmission during the zonal reverse interval 2710.

The forward channel header 2714 further includes a data stream to the mobile unit listing which of the 64 batches will follow and the timing offsets indicating when those batches will be transmitted. Again, this feature advantageously allows the mobile unit to "power down" during the systemwide and zonal forward intervals 2704 and 2708 until the appropriate time for receiving its batch information, thereby conserving the battery

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power of the mobile unit. The remaining fields batch i 2720, batch j 2722, and batch k 2724 are the individual batches directed to the mobile units.

It should be understood that different classes of mobile units can follow different desirable batch protocols, depending on the type of service, processing power, battery capacity, or other factors.

The individual batch protocol 2780 is shown in Fig. 27(C). The batch header field 2726 is similar to the header fields discussed above for Figs. 27(A) and (B). The batch header 2726 includes a list of particular mobile units to receive messages within the batch and includes timing offsets indicating when such messages will be broadcast. Further, the batch header 2726 includes data indicating a timing offset scheduling a reverse channel interval in the system reverse interval, the zonal reverse interval, or the reverse contention interval, as appropriate. Again, this information allows the mobile unit to extend its battery life because the mobile unit need only power up at the appropriate time to receive or transmit the appropriate message. Further, it is preferred that the reverse channel timing offset data be transmitted using error correction codes to insure accurate receipt thereof by the mobile unit. Accurate receipt of the reverse channel timing offset data will prevent unwanted or untimely transmissions by the mobile unit and insure that a mobile unit may properly transmit a negative acknowledgment signal if it fails to properly receive an unencoded message.

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The individual message interval 2732 includes the individual message intended for a particular mobile unit or units. The duration of each message and number of messages within a batch may be varied by the network operations center 600 and is traffic dependent.

Each mobile unit with transmit capability that has received a message in the immediately previous systemwide forward interval 2704 or the zonal forward interval 2708 will have an appropriate time slot for transmission scheduled in the systemwide response interval 2706, or the zonal reverse interval 2710, respectively. The timing circuit in the mobile transceiver unit determines the assigned time slot for transmission. For example, if the mobile unit simply intends to transmit an acknowledgment signal, which indicates that the mobile unit has properly received the message from the network, an 8 bit preamble followed by the address of that mobile unit need only be transmitted and a 3 bit acknowledgment. However, if a more extensive reply from the mobile unit is required, additional data could be transferred during this time slot. In particular, long reverse messages could be scheduled in response to a request from the mobile unit sent during the contention interval 2712, as discussed hereafter.

Due to the low power transmit capability of the mobile transceiver units, there is an increased likelihood of data transmission errors for reply signals. The extended Golay code for error protection may be utilized for reverse channel messages from mobile transceiver units to the network.

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The systemwide response interval 2706 and the zonal reverse interval 2710 provide communication capability from the mobile transceiver units to the network (i.e. the reverse channel).

Still further, a preferred embodiment accommodates mobile terminals with extensive reverse message generation capabilities (e.g., a laptop computer connected to a radio transceiver) by allowing for contention messages that request extended reverse channel time for the transmission of a long reverse message. The reverse contention interval 2712 is located after the zonal reverse interval 2710 and provides for unscheduled messages from the mobile unit to the network. For example, the mobile transceiver unit could send a message to the network during the reverse contention interval 2712 indicating that the user no longer wishes to receive messages, thereby terminating service. Also, the user could transmit a message to the network during the reverse contention interval 2712 indicating that the user now desires to reestablish services and begin receiving messages from the network. Further, a "registration signal," which is discussed *infra*, could be transmitted during the reverse contention interval 2712.

The reverse contention interval preferably utilizes a so-called "slotted ALOHA" protocol, which allows the mobile unit to randomly select a predefined time slot within the contention interval to transmit a message. A mobile station wanting to transmit will first divide the contention interval into slots, preferably 5.33 ms in length, and then choose randomly any of them to start transmitting. The slotted ALOHA protocol is preferred

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because of the low likelihood of data "collisions" (i.e. 2 or more mobile units transmitting during the same time slot).

I. Registration of the Mobile Unit

Because the network operations center 600 stores the location of each mobile unit in the system in the user database 2100, it is preferred that each mobile transceiver unit have the capability to "register" with the network operations center 600 by sending a registration signal to a base receiver into the network to update the location data.

The mobile transceiver unit preferably registers by simply transmitting its identification number to a base receiver, which forwards this data and data representing the location of the base receiver to the network operations center 600.

The mobile transceiver preferably registers upon crossing zonal boundaries to alert the network operation center that the mobile transceiver has left one zone and entered another. For example, the mobile unit could receive information from the nearest base transmitter identifying which zone that base transmitter is assigned to at the beginning of each communication cycle. Upon receipt of such information from a base transmitter indicating that a nearby base transmitter is assigned to a new zone, the mobile transceiver then preferably transmits a registration signal.

The mobile transceiver unit may also transmit a registration signal in other desirable instances. For example, if the mobile transceiver unit has moved away from the transmitter coverage areas of the network for a period of time, the mobile transceiver

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unit may preferably transmit a registration signal upon returning to a coverage area. The display and storage logic 1508 of the mobile transceiver unit preferably recognizes that the unit has left the coverage area of the network upon failure to receive data from a base transmitter in the network during the cycle header time interval 2702, for example. The mobile unit may leave the coverage area of a base transmitter of the network when the user takes the unit out of the country, or enters the basement of a building, for example.

The mobile unit may also preferably transmit a registration signal when power is restored to the mobile unit after having power removed, such as after being turned off by the user. Of course, the power may be restored to the unit by replacing or recharging a dead battery, which may also cause transmission of a registration signal.

In general, the network must balance the need for frequent registrations by the mobile transceiver units, and the desirable result of accurately knowing the location of each mobile unit, thereby preventing the need for probe signals, with the undesirable overhead costs of too frequent registration, which sacrifices data throughput by utilizing valuable transmit time.

In the preferred embodiment, the central computer 2002 of the network operations center 600 can achieve desirable performance by implementing one or more algorithms to evaluate the need for registration by a mobile unit, and then appropriately controlling the registration performance of that mobile unit. If the central computer determines that registration of a particular mobile unit

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is useful, then the mobile unit preferably should receive a message from the network to cause the mobile unit to send registration signals at appropriate times. Conversely, if the central computer determines that the registration signals from the mobile unit are too frequently not useful, the mobile unit preferably should receive a message from the network to cause the mobile unit not to transmit registration signals.

To implement this feature, the mobile transceiver unit further preferably includes a registration flag (not shown) in the display and storage logic section 1508. If the registration flag is set, the display and storage logic section 1508 causes the mobile transceiver to autonomously send a registration signal to the network operations center on a desired basis. If the registration flag is not set, the display and storage logic section 1508 prevents any registration signals from being sent. The registration flag may be set or removed upon command from the network operations center by transmission of an appropriate signal from a base transmitter near the mobile unit. A variety of algorithms, possibly regarding individual users or groups of users, can be used to determine whether or not the registration flag should be set. It should be appreciated that the present invention provides two distinct algorithms for implementing these registration concepts depending upon whether the registration flag is set or not in the mobile unit (i.e. the state of the mobile unit).

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Fig. 28(A) shows a flow chart describing a preferred method 2800 for implementing the registration concepts of the present invention wherein the registration feature of the mobile unit is disabled. In step 2802, the network sends a message to disable the registration feature (i.e. set the registration flag to zero) of the mobile unit to disable the mobile transceiver's capability to transmit a registration signal. As can be seen, step 2802 determines the initial state for the method set forth in Fig. 28(A).

In step 2804, the network stores the number of probe signals sent to the mobile transceiver during a first period of time, and the number of messages successfully delivered to the mobile transceiver by the network during a second period of time. Preferably, the first and second time intervals are identical. The traffic statistics database 2200 of the database 2008 is preferably used to store the number of probe signals and successful messages for each mobile unit. As explained hereinafter, these two statistics from the operation of the network are preferably used to determine whether registration by the mobile unit is useful.

In step 2806, the stored number of probe signals and number of messages successfully delivered is processed to evaluate a likelihood that a probe signal will be required to be set by the network to locate the mobile unit to deliver a message. The preferred embodiment of the invention processes the stored number of probe signals and messages successfully delivered in accordance with the method set forth in Fig. 29(A).

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Referring now to Fig. 29(A), therein is shown a series of substeps which are preferably performed during the implementation of the processing step 2804 shown in Fig. 28(A). In particular, steps 2902 and 2904 are event driven and only proceed to the next step after an input has been received by the network. Step 2902 determines if the network sent a probe signal to a lost mobile transceiver unit and if a reply to the probe signal was received by a base receiver in the network. If this event occurs, a counter (not shown) is incremented by a value P by the central computer 2002.

In step 2904, if a message was successfully delivered to a mobile transceiver, preferably including an acknowledgment signal return from the mobile transceiver to the network, the counter (not shown) in the central computer 2002 is decremented by a value D.

After the occurrence of either of the events tested for in step 2902 or step 2904, the algorithm proceeds to step 2906. In step 2906, if the counter value is greater than a predetermined value J, this indicates that the likelihood that a probe signal will be necessary to locate the mobile transceiver is greater than a selected value.

As can be seen, the process of substeps in Fig. 29(A) balances the frequency of probe signals sent to a particular unit against the number of successfully delivered messages to that unit. If the system must send a large number of probe signals, it would be useful to enable the registration feature by setting the registration flag on that mobile unit to enable the registration

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feature. In contrast, if many messages have been successfully delivered without requiring a probe signal, it is unnecessary to enable the registration feature by setting the registration flag.

In step 2808, a message is sent to the mobile unit to enable the mobile transceiver's capability to transmit a registration signal if the calculated likelihood in step 2804 exceeds a selected value. As can be seen, step 2808 preferably sets the registration flag in the mobile transceiver unit.

Fig. 28(B) shows a flow chart describing a method 2810 for implementing the registration concepts of the present invention wherein the registration feature of the mobile unit is enabled. In step 2812, the network sends a message to enable the registration feature (i.e. set the registration flag to 1) of the mobile unit to enable the mobile transceiver's capability to transmit a registration signal. As can be seen, step 2812 determines the initial state for the method set forth in Fig. 28(B).

In step 2814, the network stores the number of registration signals received by the network during a first period of time, and the number of messages successfully delivered to the mobile transceiver by the network during a second period of time. Preferably, the first and second time intervals are identical. The traffic statistics database 2200 of the database 2008 is preferably used to store the number of registration signals and successful messages for each mobile unit. As explained hereinafter, these two statistics from the operation of the

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network are preferably used to determine whether the registration by the mobile unit is useful.

In step 2816, the stored number of registration signals and number of messages successfully delivered is processed to evaluate the likelihood that a registration signal will be received by a base receiver in the network that will not be used by the network to determine a set of base transmitters to be operated to transmit a message to the mobile transceiver. The preferred embodiment of the invention processes the stored number of registration signals received and number of messages successfully delivered in accordance with the method set forth in Fig. 29(B).

Referring now to Fig. 29(B), therein is shown a series of substeps which are preferably performed during the implementation of the processing step 2814 shown in Fig. 28(B). In particular, steps 2912 and 2914 are event driven and only proceed to the next step after an input has been received by the network. Step 2912 determines if a registration signal was received by a base receiver in the network. If so, a counter (not shown) in the central computer 2002 is incremented by a value A.

In step 2914, if a message was successfully delivered to a mobile transceiver, preferably including an acknowledgment signal return from the mobile transceiver to the system, the counter (not shown) in the central computer 2002 is decremented by a value M.

It should be understood that the counter referred to with regard to steps 2912 and 2914 is different then the counter referred to with regard to steps 2902 and 2904 since each counter is only necessary when the registration feature is enabled or

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disabled in the mobile transceiver. However, the same physical or logical device may be used to implement both counters.

After the occurrence of either events in the step 2912 or step 2914, the algorithm proceeds to step 2916. In step 2916, the process determines if the counter value is greater than a predetermined value T. The value of T can be varied to meet the needs of a particular network. When the counter value exceeds T, it is indicated that the likelihood that a registration signal from that mobile unit will not be used by the network to determine a new set of base transmitters, and therefore the registration status for that mobile unit needs to be changed to disable the registration feature.

In other words, the process in Fig. 29(B) balances the frequency of registration signals sent by a particular unit against the number of successfully delivered messages to that unit. As can be seen, if the mobile unit sends a large number of registration signals without the system using these registration signals, it would be useful to have the registration feature on that mobile unit disabled. In contrast, if many messages have been successfully delivered without too many registration signals being sent by the mobile unit, it is unnecessary for the registration feature to be disabled.

In step 2818, a message is sent to the mobile unit to disable the mobile transceiver's capability to transmit a registration signal if the calculated likelihood in step 2814 exceeds a selected value. As can be seen, step 2818 may preferably remove the registration flag in the mobile transceiver unit.

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Of course, it should be understood that the variables P, D, and J used in Fig. 29(A), and the variables A, M, and T used in Fig. 29(B) can be adjusted as desired to enhance system performance, as will be apparent to one of ordinary skill in the art. The counters can be implemented with so-called "reflective boundaries" so that if a counter reaches a minimum value (e.g., zero), it will continuously reset to that minimum value when further decremented.

It will be apparent to those skilled in the art that various modifications and variations can be made in the systems and methods of the present invention without departing from the scope or spirit of the invention.

Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

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WHAT IS CLAIMED IS:

1. A method for information transmission by a plurality of transmitters to provide broad communication capability over a region of space, the information transmission occurring during at least both a first time period and a second time period and the plurality of transmitters being divided into at least a first and second set of transmitters, the method comprising the steps of:

(a) generating a system information signal which includes a plurality of blocks of information;

(b) transmitting the system information signal to the plurality of transmitters;

(c) transmitting by the first and second sets of transmitters a first block of information in simulcast during the first time period;

(d) transmitting by the first set of transmitters a second block of information during the second time period; and

(e) transmitting by the second set of transmitters a third block of information during the second time period.

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2. A multi-carrier simulcast transmission system for transmitting in a desired frequency band a message contained in an information signal, the system comprising:

first transmitter means for transmitting an information signal by generating a first plurality of carrier signals within the desired frequency band and by modulating the first plurality of carrier signals to convey the information signal; and

second transmitter means, spatially separated from the first transmitter, for transmitting the information signal in simulcast with the first transmitter by generating a second plurality of carrier signals at substantially the same frequencies as the first plurality of carrier signals and by modulating the second plurality of carrier signals to convey the information signal.

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3. A communication method implemented in a computer controlled communication network for locating a mobile transceiver within a region of space, the region of space being divided into a plurality of zones with each zone serviced by at least one base transmitter and at least one base receiver, the network storing data corresponding to a zone where the mobile transceiver was last known to be located, the communication method comprising the steps of:

(a) transmitting a message signal by a base transmitter servicing a zone where the mobile transceiver was last known to be located;

(b) transmitting a systemwide probe signal by a plurality of base transmitters servicing a plurality of zones if the mobile transceiver does not indicate receipt of the message signal from the base transmitter;

(c) receiving the regional probe signal by the mobile transceiver;

(d) transmitting an acknowledgment signal by the mobile transceiver in response to the received regional probe signal;

(e) receiving the acknowledgment signal from the mobile transceiver by a base receiver; and

(f) updating the data to reflect the zone of the base receiver that received the acknowledgment signal as the last known location of the mobile transceiver.

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4. A method of communicating messages between a plurality of base transmitters and mobile receivers within a region of space divided into a plurality of zones with each zone having at least one base transmitter assigned thereto, the communication method comprising the steps of:

(a) transmitting substantially simultaneously a first information signal and a second information signal to communicate messages to the mobile receivers, the first information signal being transmitted in simulcast by a first set of base transmitters assigned to a first zone, and the second information signal being transmitted in simulcast by a second set of base transmitters assigned to a second zone;

(b) dynamically reassigning one or more of the base transmitters in the first set of base transmitter assigned to the first zone to the second set of base transmitters assigned to the second zone as a function of the messages to be communicated in an area, thereby creating an updated first set of base transmitters and an updated second set of base transmitters; and

(c) transmitting substantially simultaneously a third information signal and a fourth information signal, the third information signal being transmitted in simulcast by the updated first set of base transmitters, and the fourth information signal being transmitted in simulcast by the updated second set of base transmitters to communicate additional messages to said mobile receivers.

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5. A mobile transceiver unit for transmitting messages to and receiving messages from a network comprising:

input means for allowing the user to input a user message to the unit;

transmitter means for transmitting a radio frequency signal including the user message from the mobile unit to the network;

receiver means for receiving radio frequency signals having a message from the network;

signal detector means for detecting at least one type of electromagnetic signal generated external to the mobile unit and the network; and

a circuit, connecting the signal detector means to the transmitter means, for disabling the transmitter means upon detection of the electromagnetic signal, thereby preventing unwanted radio frequency transmission.

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6. A communication method for controlling a mobile transceiver which may communicate with a communication network controlled by a computer, the network including a plurality of base transmitters for transmitting messages from the network to the mobile transceiver and base receivers for receiving messages from the mobile transceiver, the mobile transceiver being capable of sending a registration signal to be received by a base receiver in the network to identify the mobile transceiver's location and the plurality of base transmitters in the network being capable of sending a probe signal to the mobile transceiver to cause the mobile transceiver to transmit a signal to a base receiver to identify its location, the method comprising the steps of:

(a) sending a message from the network to the mobile transceiver to disable the mobile transceiver's capability to transmit a registration signal;

(b) storing the number of probe signals sent by the network to the mobile transceiver during a first period of time and the number of messages successfully delivered to the mobile transceiver by the network during a second period of time;

(c) processing by the computer the stored number of probe signals and number of messages successfully delivered to evaluate a likelihood that a probe signal will be required to be sent by the network to locate the mobile unit to deliver a message; and

(d) sending a message to the mobile unit to enable the mobile transceiver's capability to transmit a registration signal if the calculated likelihood exceeds a selected value.

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7. A communication method for controlling a mobile transceiver which may communicate with a communication network controlled by a computer, the network including a plurality of base transmitters for transmitting messages to the mobile transceiver and base receivers for receiving messages from the mobile transceiver, the mobile transceiver being capable of sending a registration signal to be received by a base receiver in the network to identify the mobile transceiver's location, the network using received registration signals to determine a set of base transmitters to be operated to transmit a message to the mobile transceiver, the method comprising the steps of:

(a) sending a message from the network to the mobile transceiver to enable the mobile transceiver's capability to transmit a registration signal;

(b) storing the number of registration signals from the mobile transceiver to the network during a first period of time and the number of messages successfully delivered to the mobile transceiver by the network during a period of time;

(c) processing the stored number of registration signals and number of messages successfully delivered to evaluate a likelihood that a registration signal from said mobile unit will not be used by the network to determine a set of base transmitters; and

(d) sending a message to the mobile unit to disable the mobile transceiver's capability to transmit a registration signal if the likelihood exceeds a selected value.

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DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

A NATIONWIDE COMMUNICATION SYSTEM

the specification of which is ☐ attached and/or ☒ was filed on November 12, 1992 as Application Serial No. ..... and was amended on (if applicable) .....

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE OF FILING	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			☐ YES ☐ NO
			☐ YES ☐ NO

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION NUMBER	DATE OF FILING	STATUS (Patented, Pending, Abandoned)

I hereby appoint the following attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Finnegan, Henderson, Farabow, Garrett and Dunner, Reg. No. 22,540; Douglas B. Henderson, Reg. No. 20,291; Ford. F. Farabow, Jr., Reg. No. 20,630; Arthur S. Garrett, Reg. No. 20,338; Donald R. Dunner, Reg. No. 19,073; Brian G. Brunsvold, Reg. No. 22,593; Tipton D. Jennings, IV, Reg. No. 20,645; Jerry D. Voight, Reg. No. 23,020; Laurence R. Hefter, Reg. No. 20,827; Kenneth E. Payne, Reg. No. 23,098; Herbert H. Mintz, Reg. No. 26,691; C. Larry O'Rourke, Reg. No. 26,014; Albert J. Santorelli, Reg. No. 22,610; Michael C. Elmer, Reg. No. 25,857; Richard H. Smith, Reg. No. 20,609; Stephen L. Peterson, Reg. No. 26,325; John M. Romary, Reg. No. 26,331; Bruce C. Zotter, Reg. No. 27,680; Dennis P. O'Reilley, Reg. No. 27,932; Allen M. Sokal, Reg. No. 26,695; Robert D. Bajefsky, Reg. No. 25,387; Richard L. Stroup, Reg. No. 28,478; David W. Hill, Reg. No. 28,220; Thomas L. Irving, Reg. No. 28,619; Charles E. Lipsey, Reg. No. 28,165; Thomas W. Winland, Reg. No. 27,605; Basil J. Lewris, Reg. No. 28,818; Robert J. Gaybrick, Reg. No. 27,890; Martin I. Fuchs, Reg. No. 28,508; E. Robert Yoches, Reg. No. 30,120; Stephen J. Rosenman, Reg. No. 29,209; Barry W. Graham, Reg. No. 29,924; Thomas H. Jenkins, Reg. No. 30,857; and MATTHEW T. BAILEY, Reg. No. 33,829 .....Please address all correspondence to FINNEGAN, HENDERSON, FARABOW, GARRETT AND DUNNER, 1300 I Street, N.W., Washington, D.C. 20005, Telephone No. (202) 408-4000.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

see Page #98

100

FULL NAME OF SOLE OR FIRST INVENTOR	INVENTOR'S SIGNATURE	DATE
DENNIS WAYNE CAMERON	Dennis Wayne Cameron	1/8/93
RESIDENCE		CITIZENSHIP
29 POLO DRIVE, JACKSON, MS 39211		U.S.A.
POST OFFICE ADDRESS		
29 POLO DRIVE, JACKSON, MS 39211		

200

FULL NAME OF SECOND JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
WALTER CHARLES ROEHR, JR. VC 85Jan93	Walter C. Charles Roehr	8 JAN '93
RESIDENCE		CITIZENSHIP
11317 SOUTH SHORE ROAD, RESTON, VA 22090 VA		U.S.A.
POST OFFICE ADDRESS		
11317 SOUTH SHORE ROAD, RESTON, VA 22090		

Listing of Inventors Continued on Page 2 hereof. ☒ Yes ☐ No

FHFGD For...

ATTORNEY DOCKET NO: 03680.0083-00000

Listing of Inventors Continued from Page 1 of Declaration and Power of Attorney for invention entitled:

A NATIONWIDE COMMUNICATION SYSTEM

300 FULL NAME OF THIRD JOINT INVENTOR, IF ANY RADE PETROVIC	INVENTOR'S SIGNATURE Rade Petrovic	DATE 1-11-93
RESIDENCE 406 REDBUD LANE, OXFORD, MS 38655 MS		CITIZENSHIP YUGOSLAVIA
POST OFFICE ADDRESS P.O. BOX 9031, UNIVERSITY, MS 38677		
400 FULL NAME OF FOURTH JOINT INVENTOR, IF ANY JAI P. BHAGAT	INVENTOR'S SIGNATURE	DATE 1-6-93
RESIDENCE 155 ROLLING MEADOWS DRIVE, JACKSON, MS 39211 MS		CITIZENSHIP U.S.A.
POST OFFICE ADDRESS 155 ROLLING MEADOWS DRIVE, JACKSON, MS 39211		
500 FULL NAME OF FIFTH JOINT INVENTOR, IF ANY MASOOD GARAHI	INVENTOR'S SIGNATURE	DATE 1/7/93
RESIDENCE 454 MORNING FOREST LANE, MADISON, MS 39110 MS		CITIZENSHIP U.S.A.
POST OFFICE ADDRESS 454 MORNING FOREST LANE, MADISON, MS 39110		
600 FULL NAME OF SIXTH JOINT INVENTOR, IF ANY WILLIAM D. HAYS	INVENTOR'S SIGNATURE	DATE 1-6-93
RESIDENCE 2345 TWIN LAKE CIRCLE, JACKSON, MS 39211 MS		CITIZENSHIP U.S.A.
POST OFFICE ADDRESS 2345 TWIN LAKE CIRCLE, JACKSON, MS 39211		
700 FULL NAME OF SEVENTH JOINT INVENTOR, IF ANY DAVID W. ACKERMAN	INVENTOR'S SIGNATURE	DATE 1-8-93
RESIDENCE 3730 W STREET, N.W., WASHINGTON, DC 20007 DC		CITIZENSHIP U.S.A.
POST OFFICE ADDRESS 3730 W STREET, N.W., WASHINGTON, DC 20007		
FULL NAME OF EIGHTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP
POST OFFICE ADDRESS		
FULL NAME OF NINTH JOINT INVENTOR, IF ANY	INVENTOR'S SIGNATURE	DATE
RESIDENCE		CITIZENSHIP
POST OFFICE ADDRESS		

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899,476

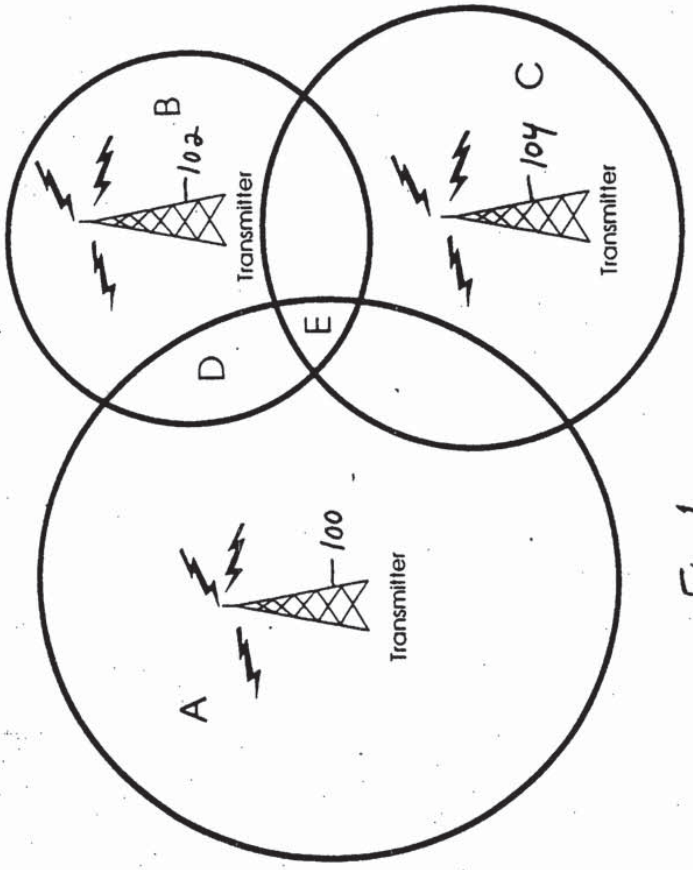

Fig. 1

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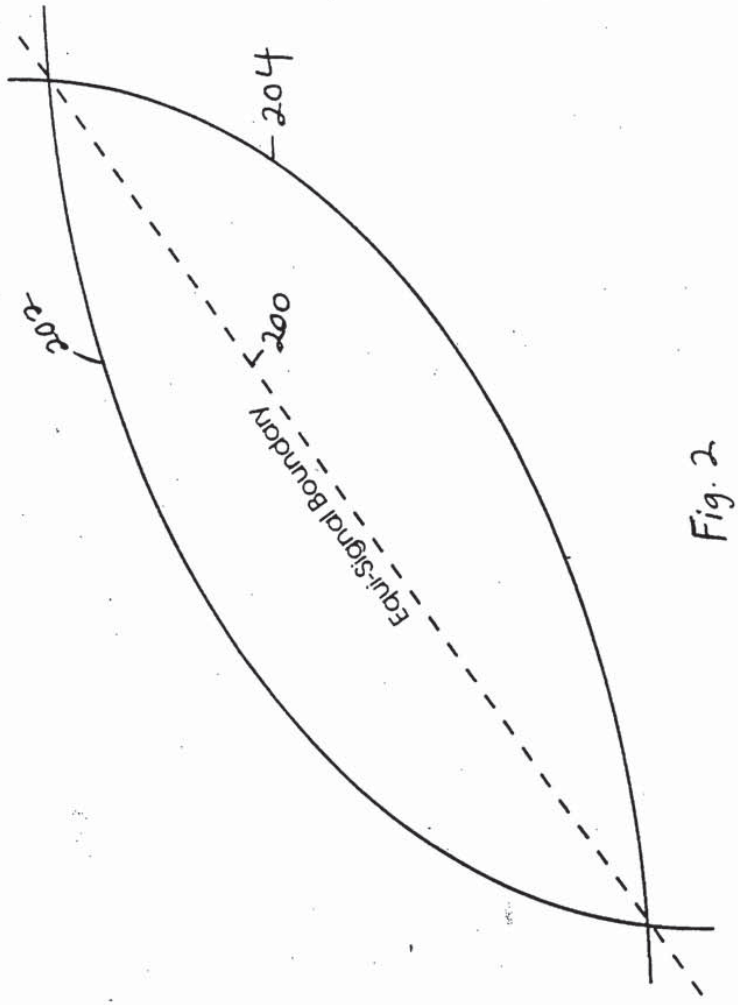

Fig. 2

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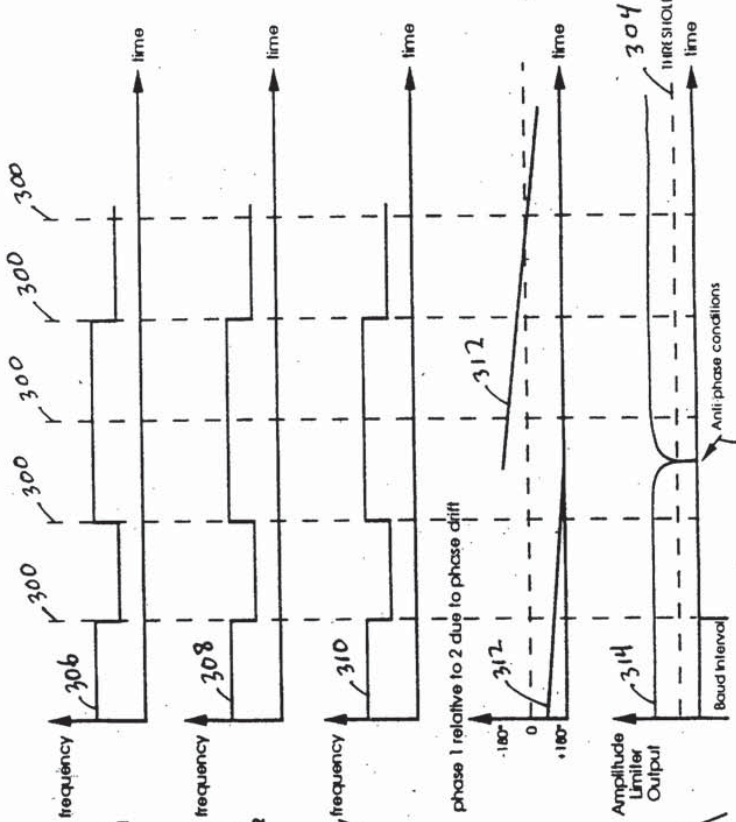

Fig. 3

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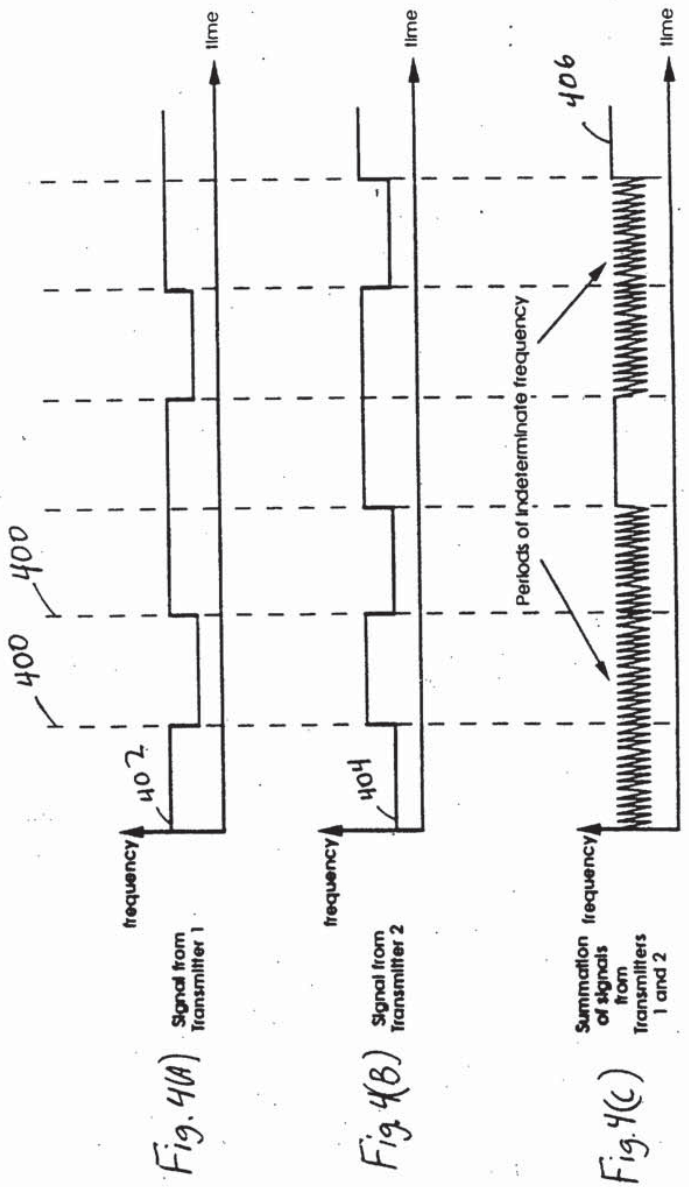

Fig. 4(A)

Fig. 4(B)

Fig. 4(C)

Fig. 4

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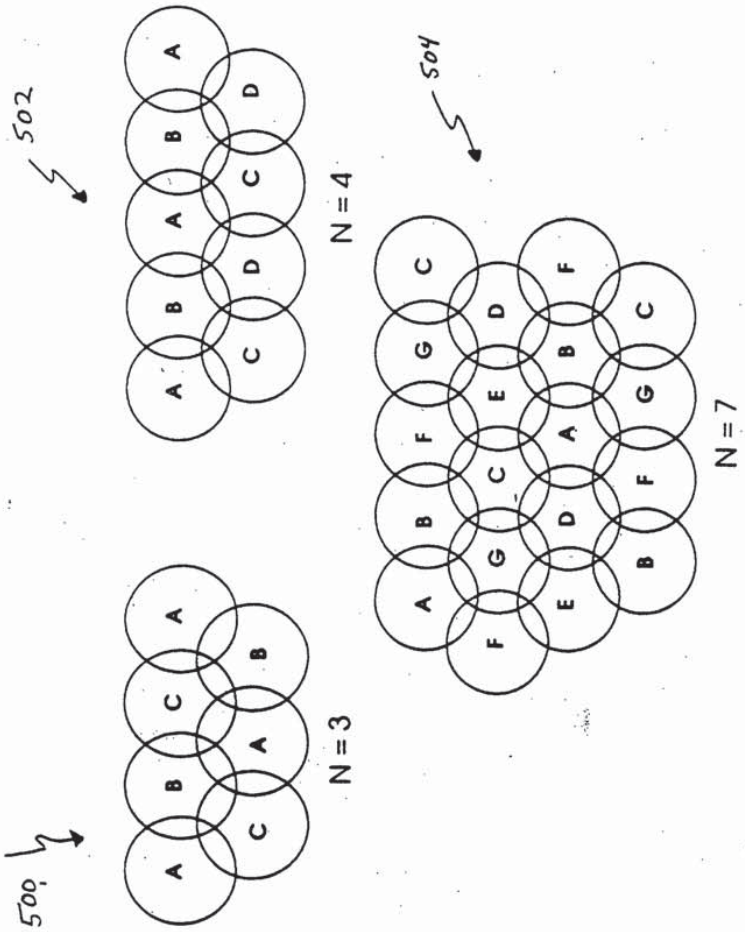

Fig. 5

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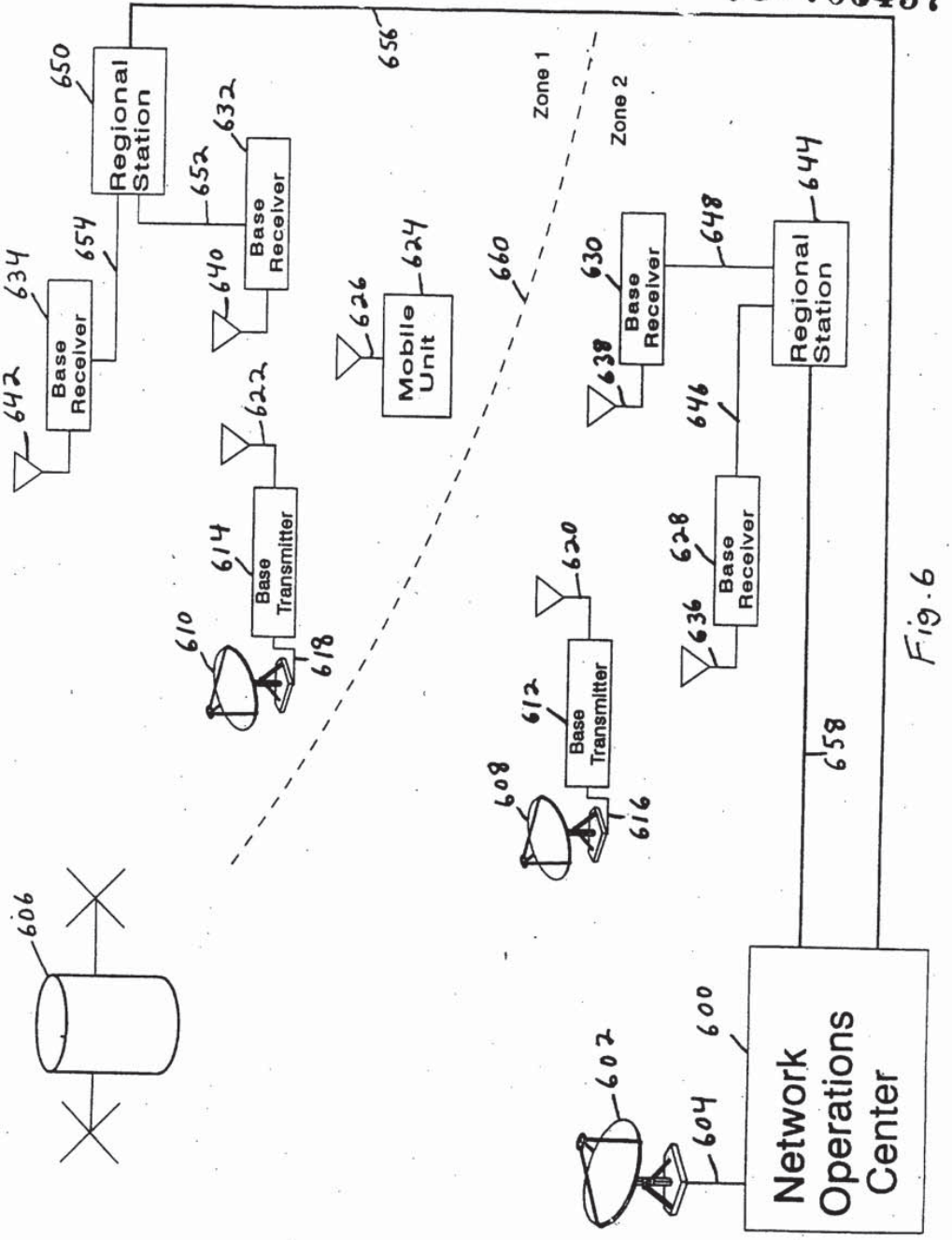

Fig. 6

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899,476

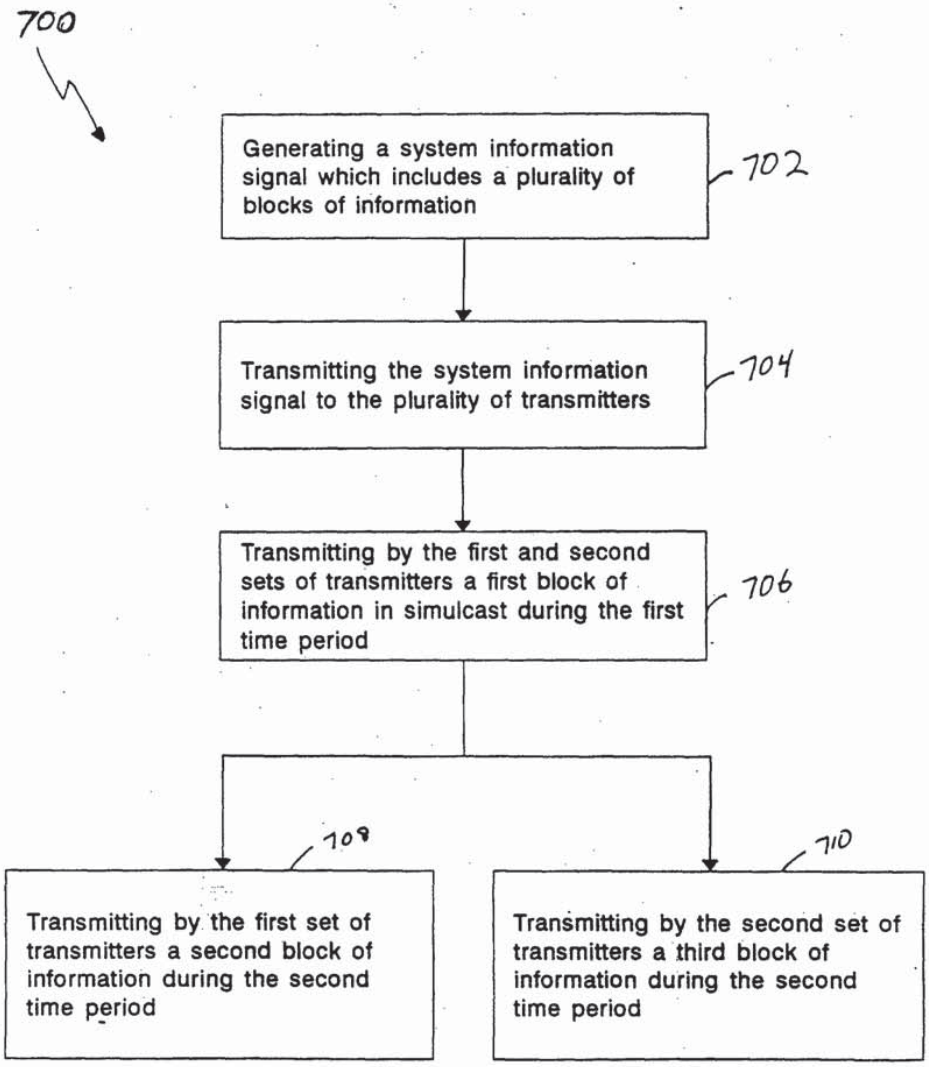

Fig. 7

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899,476

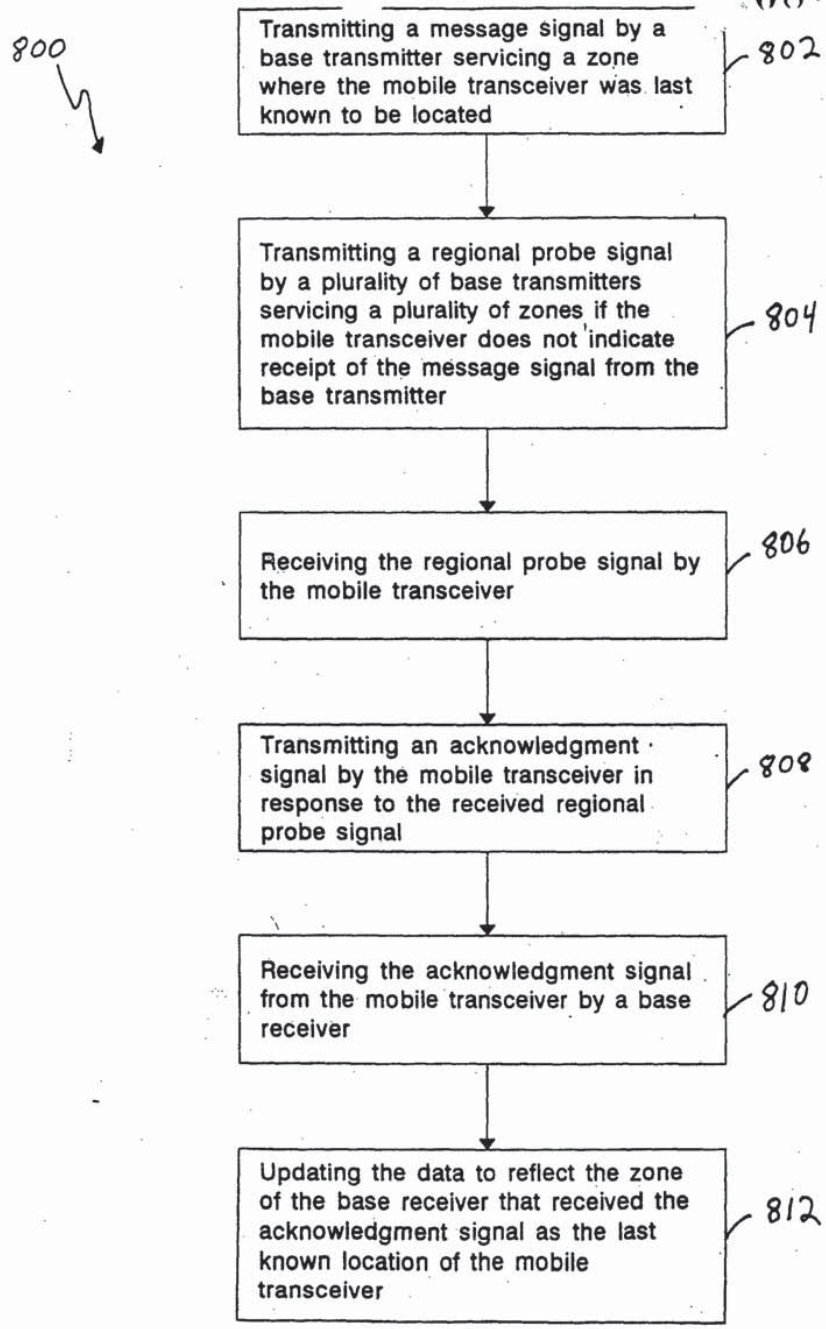

Fig. 8

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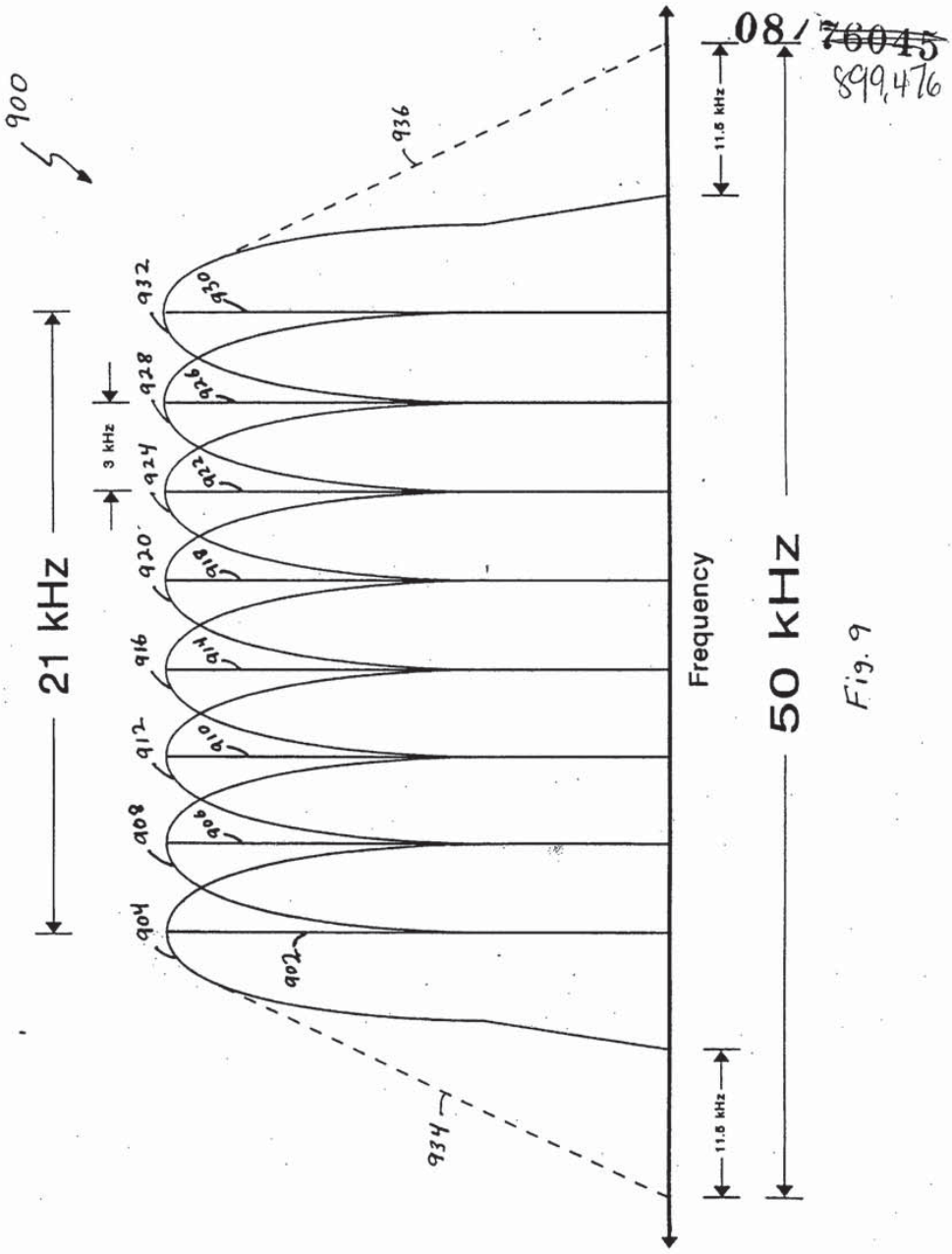

Fig. 9

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899,476

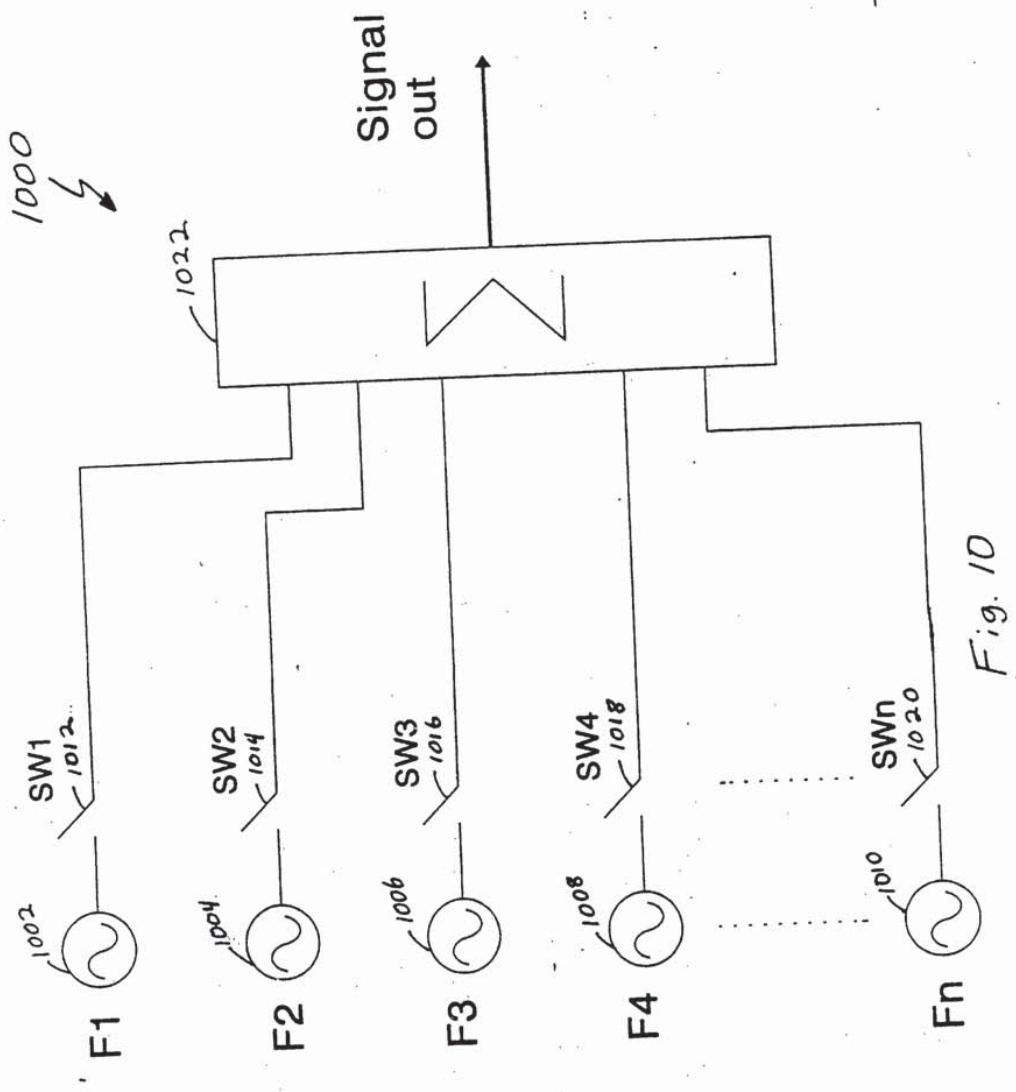

Fig. 10

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899,476

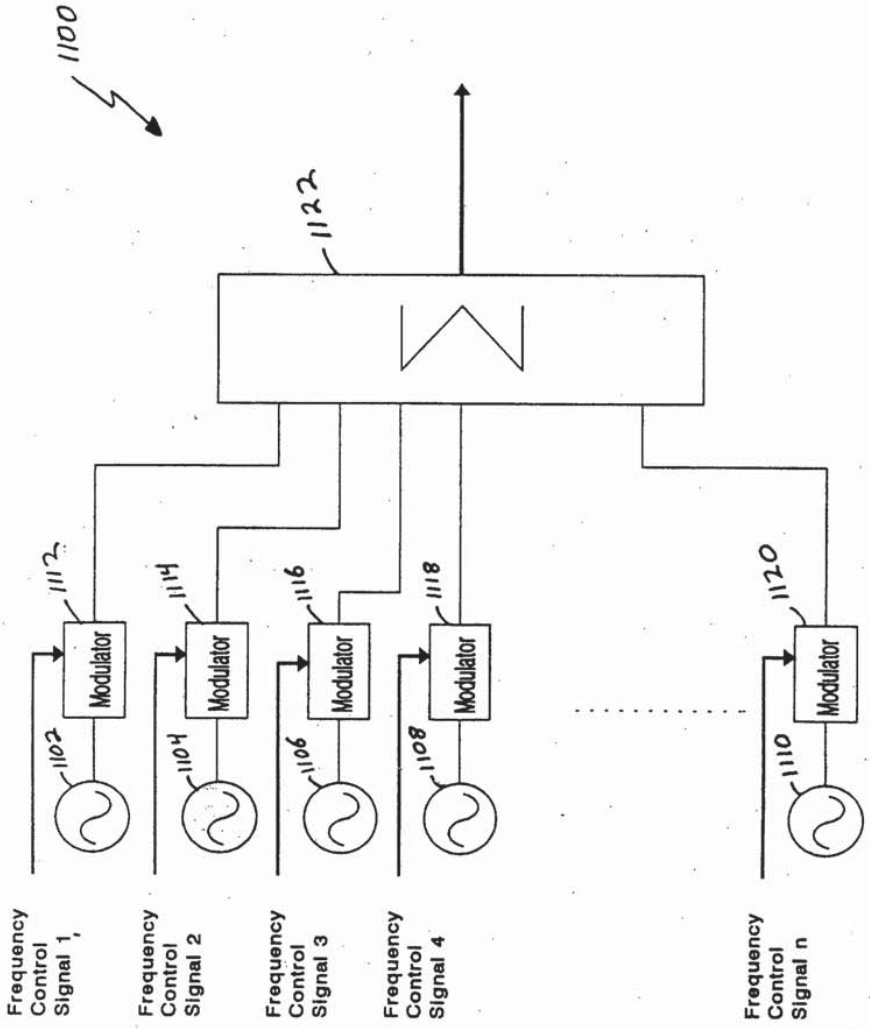

Fig. 11

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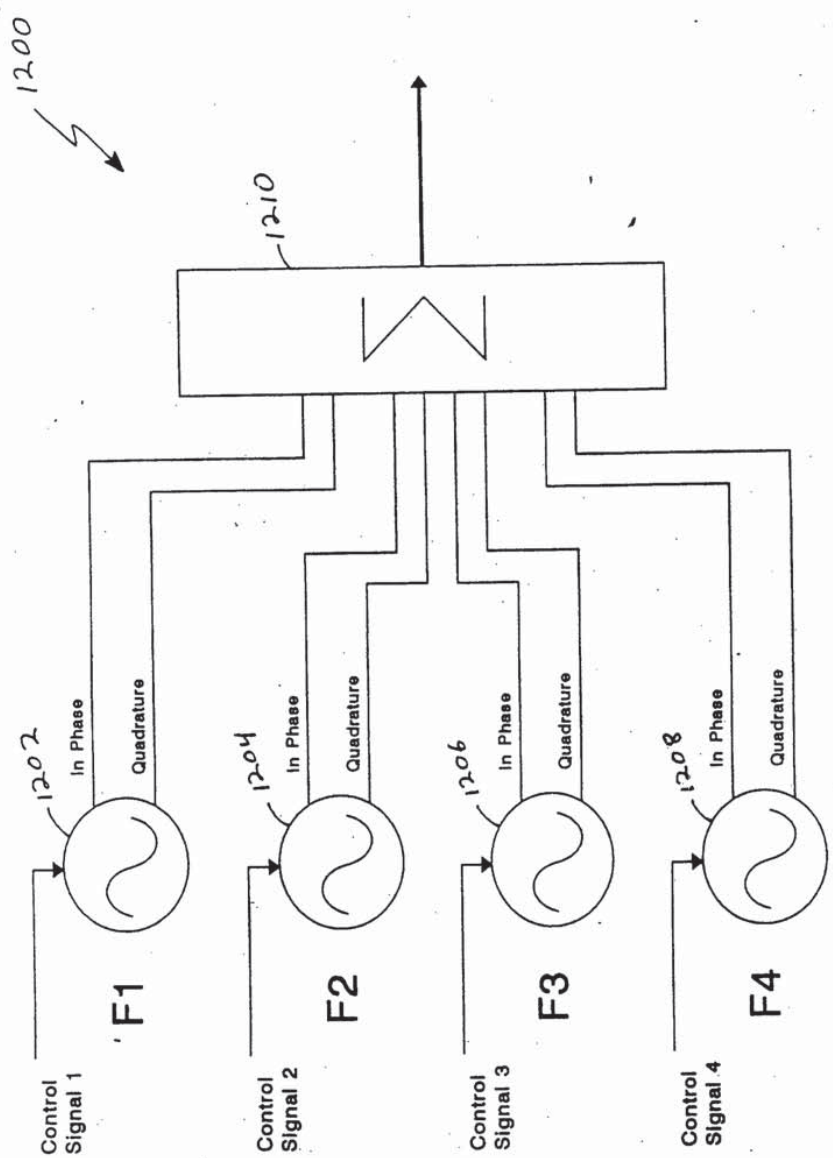

Four Carrier Quadrature Modulator

Fig. 12

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899,476

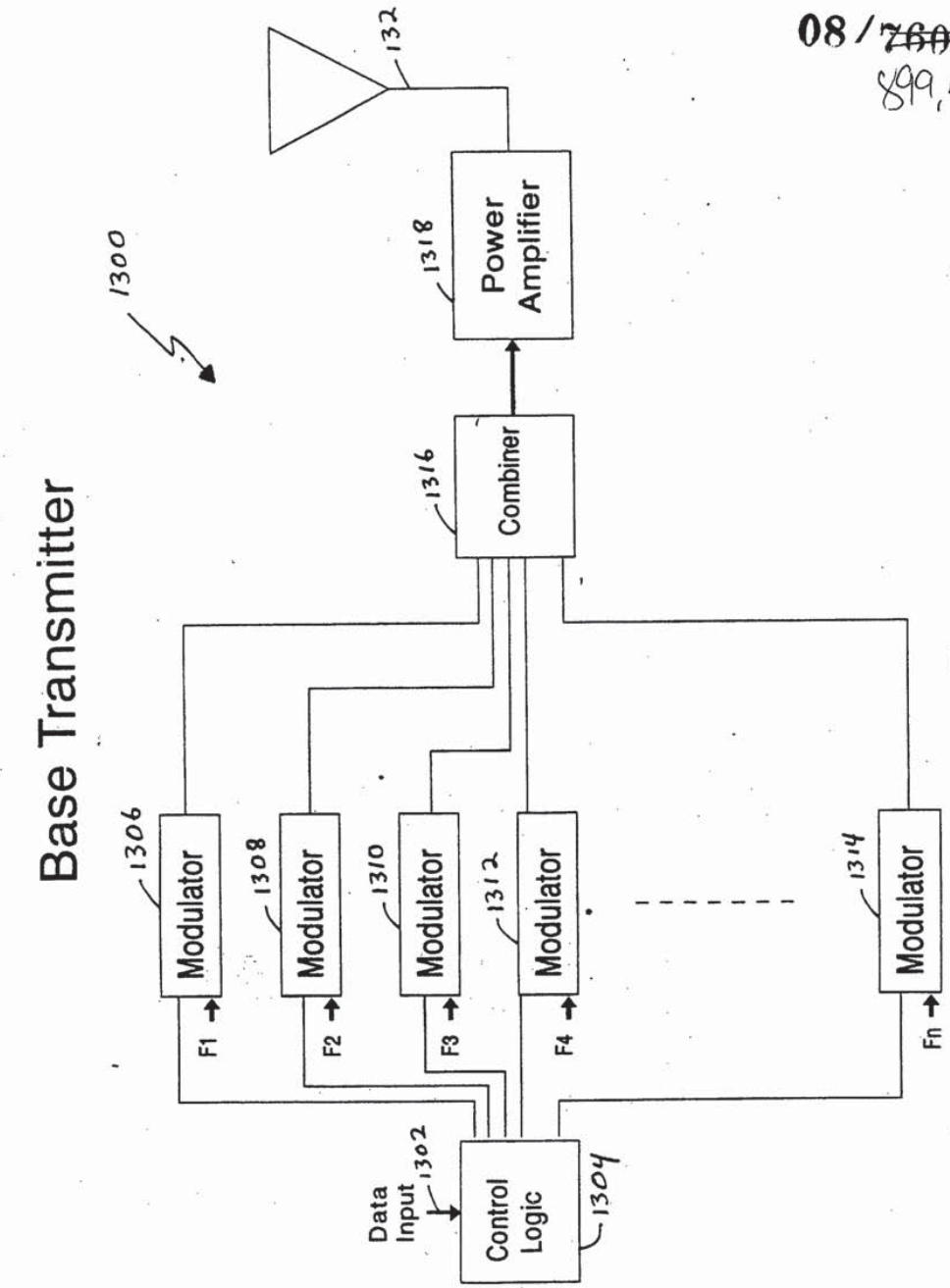

Fig. 13

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899,476

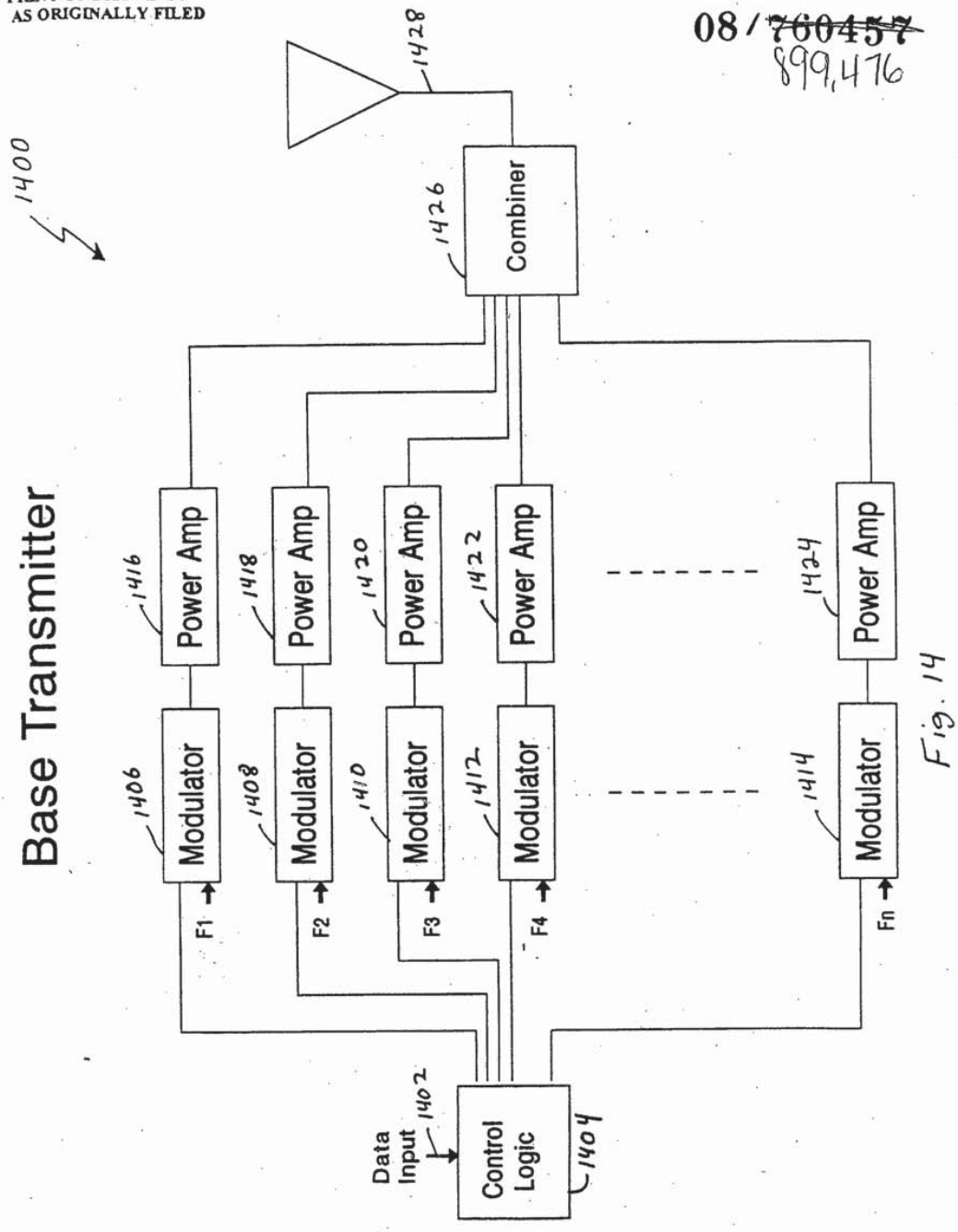

Fig. 14

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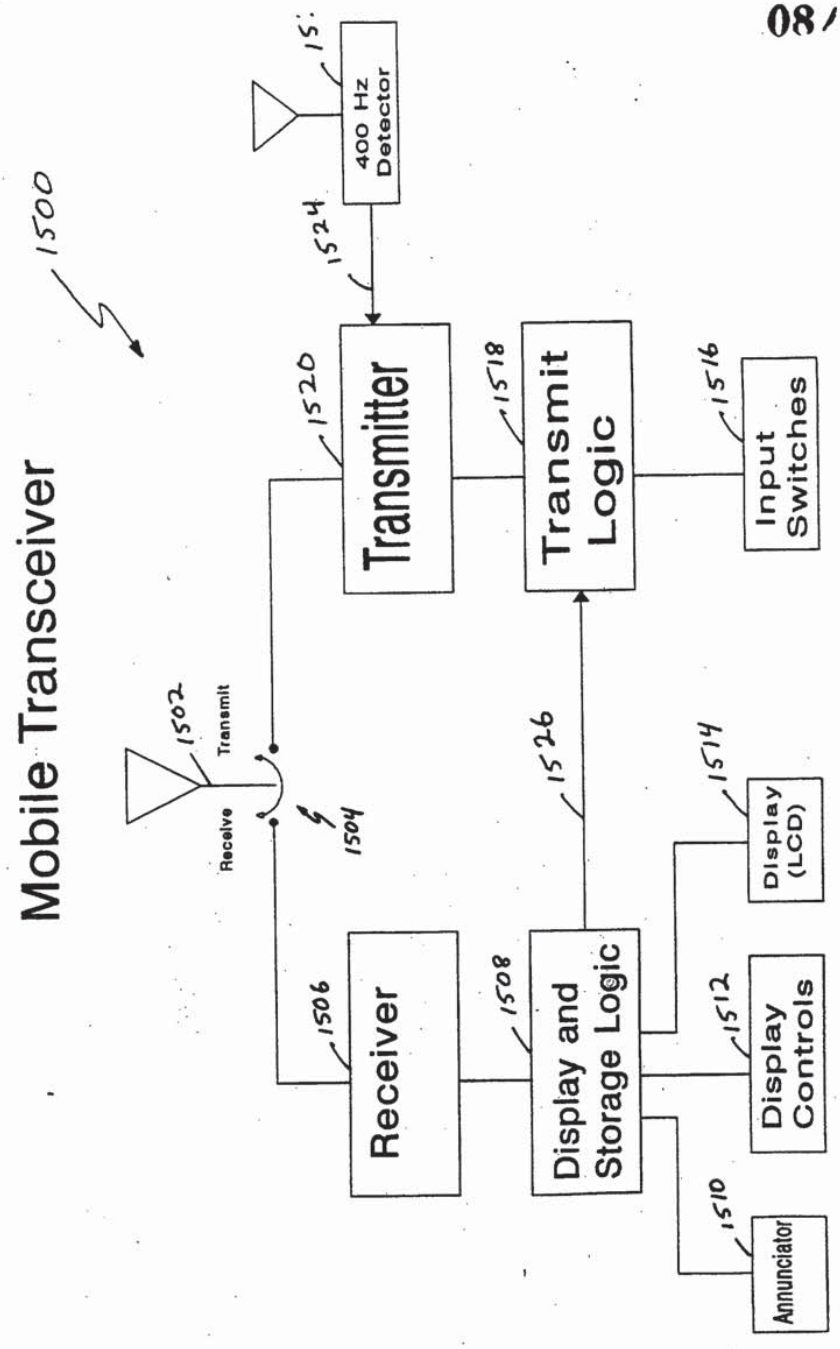

Fig. 15

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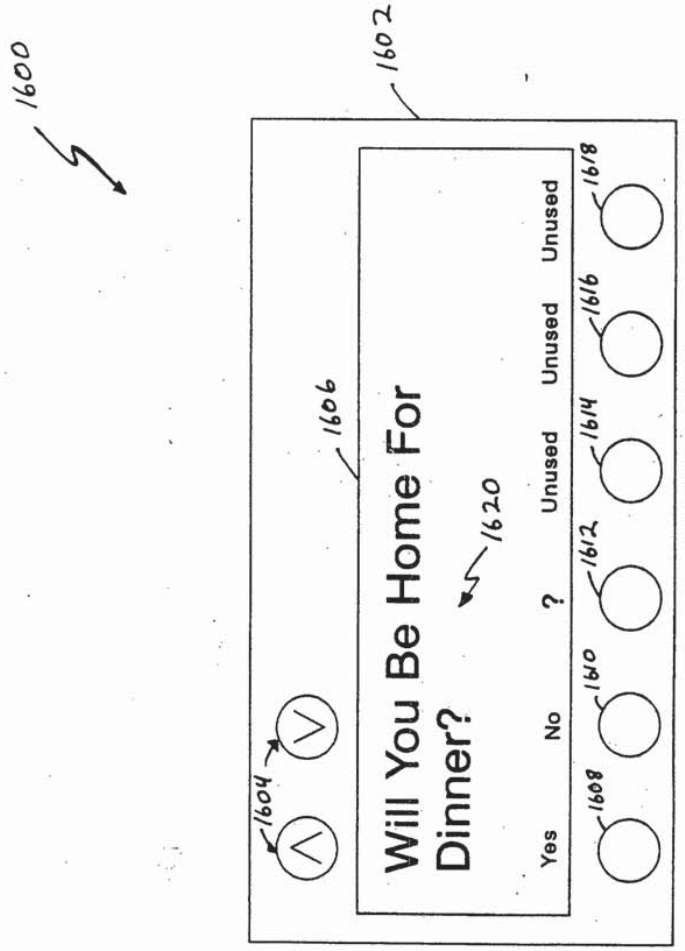
499,476



Mobile Transceiver

Fig. 16

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899,476

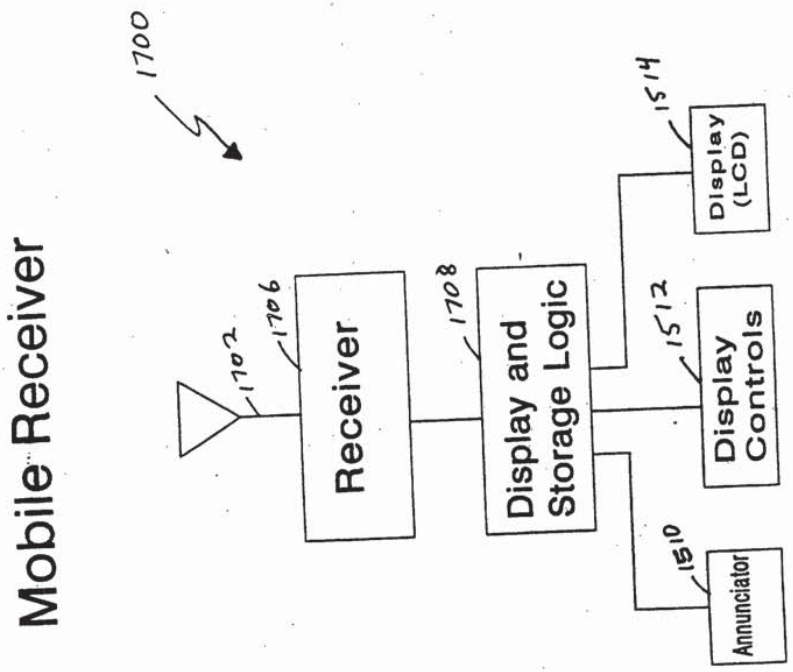

Fig. 17

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Fig. 18(A)

Fig. 18(B)

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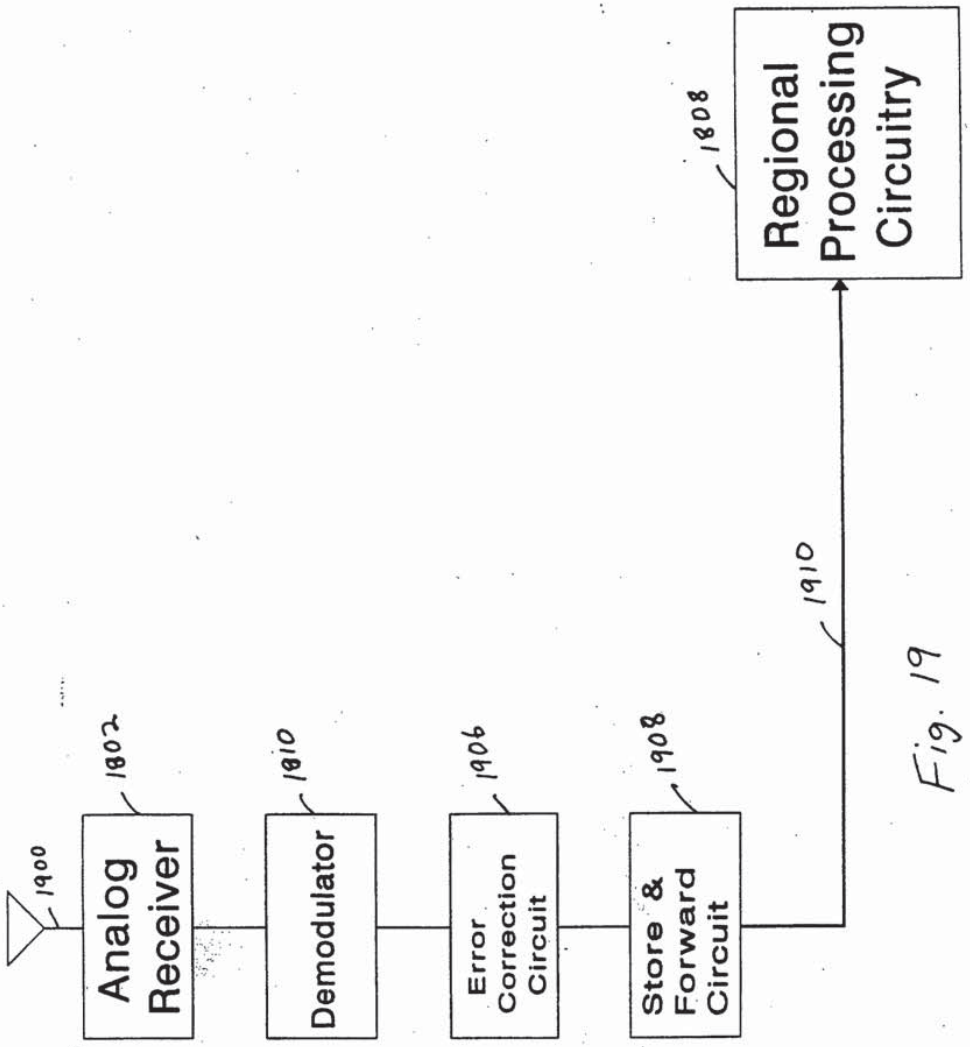

Fig. 19

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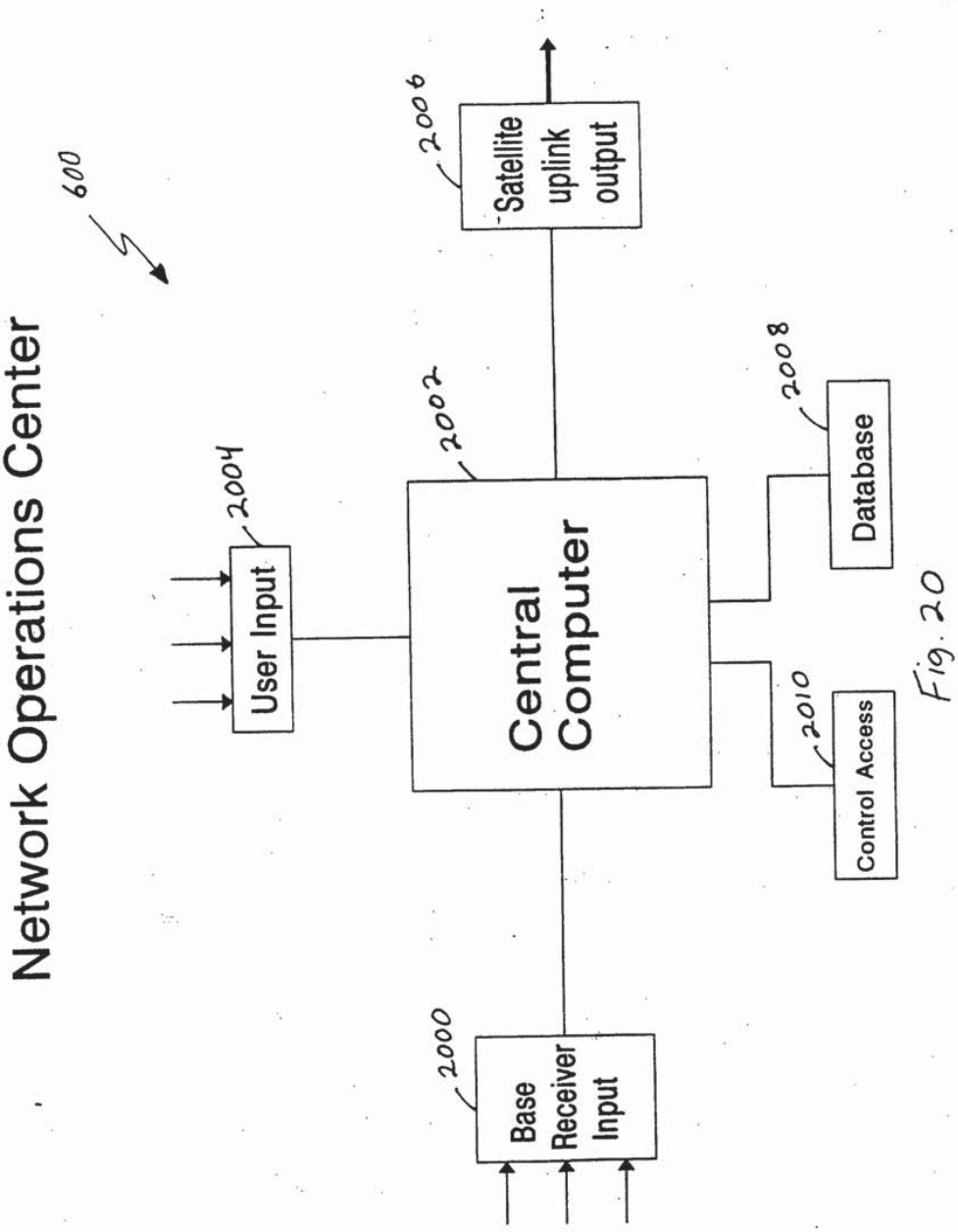

Fig. 20

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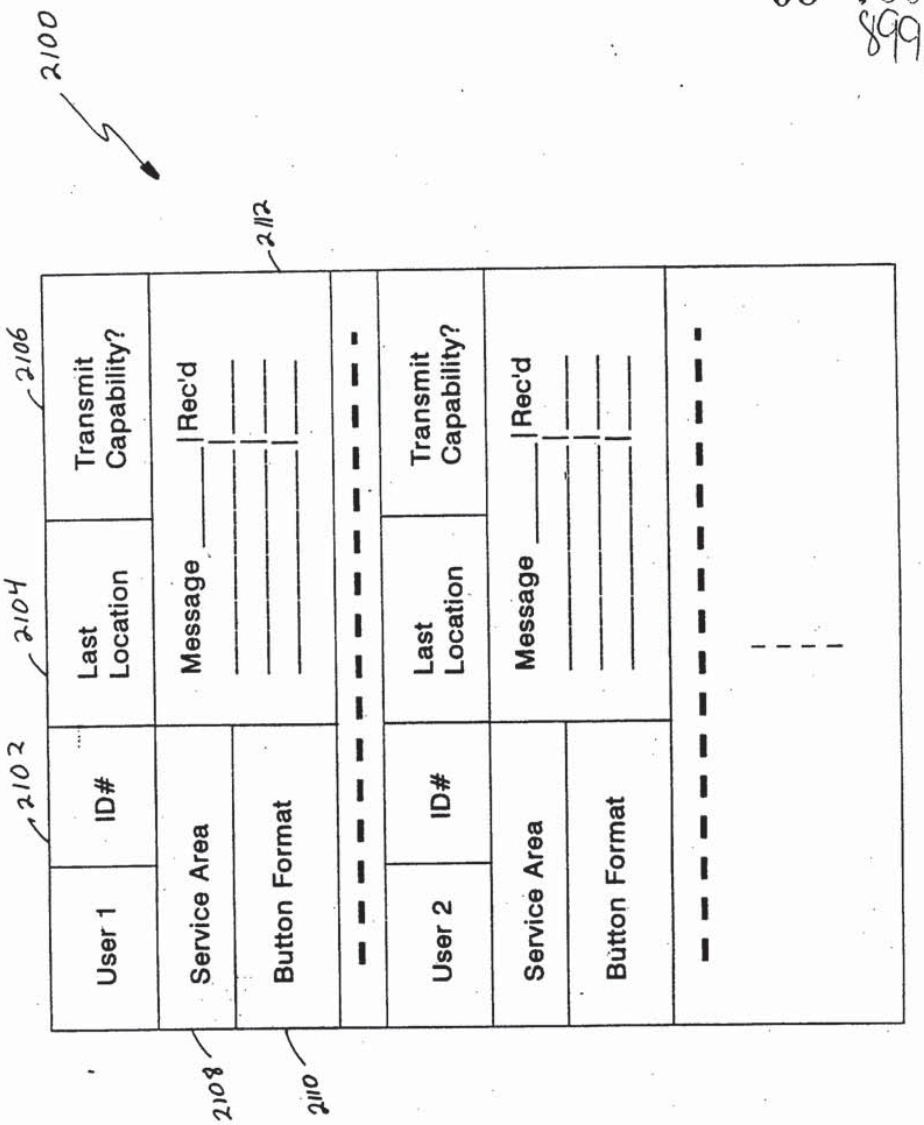

User Database

Fig. 21

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2200

2202	2204	2206	2208	2210
User 1	No. of Probe Signals Sent	No. of Registration Signals Received	No. of Messages Successfully Delivered	Other Traffic Data
User 2	No. of Probe Signals Sent	No. of Registration Signals Received	No. of Messages Successfully Delivered	Other Traffic Data
User 3	No. of Probe Signals Sent	No. of Registration Signals Received	No. of Messages Successfully Delivered	Other Traffic Data
User 4	No. of Probe Signals Sent	No. of Registration Signals Received	No. of Messages Successfully Delivered	Other Traffic Data
		■ ■ ■		

Traffic Database

Fig. 22

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899,476

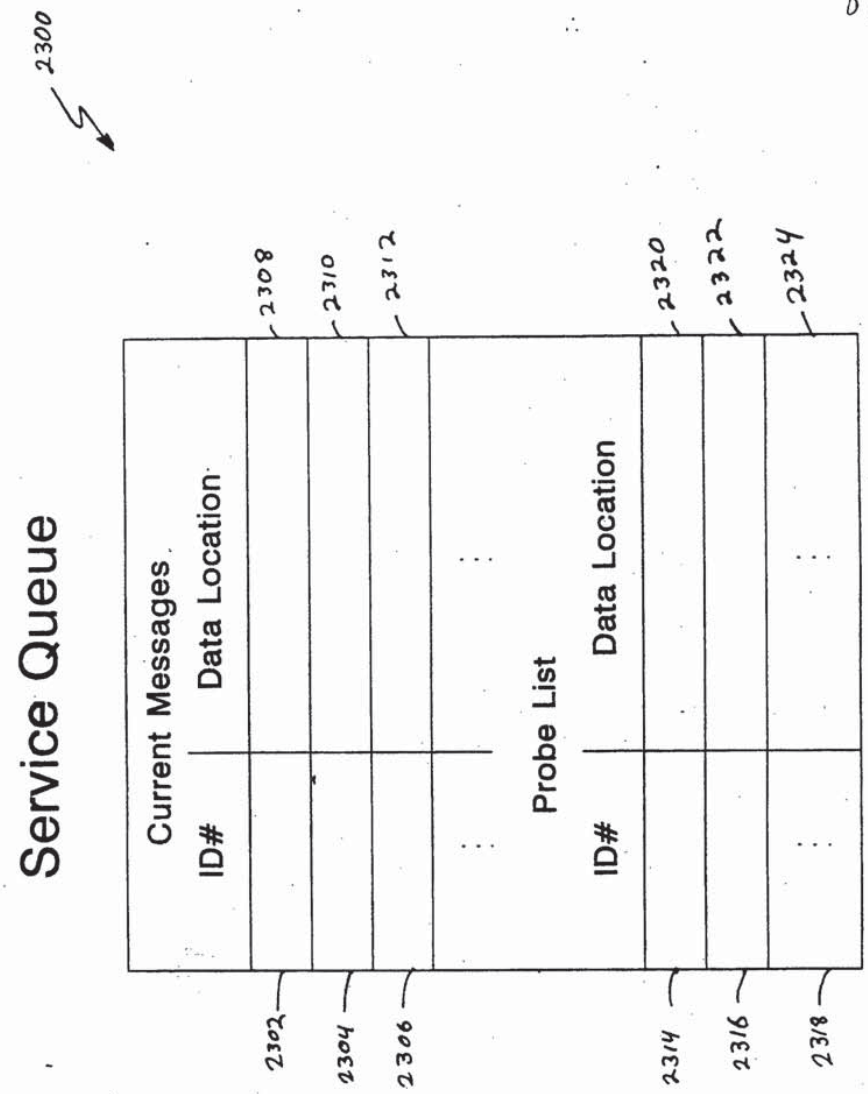

Fig. 23

PRINT OF DRAWINGS
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2402 2404 2406 2408

Base Transmitter 1	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 2	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 3	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 4	Zonal Assignment	Base Receivers in Coverage Area	Other Data
		▪ ▪ ▪	

Base Transmitter Database

Fig. 24

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899,476

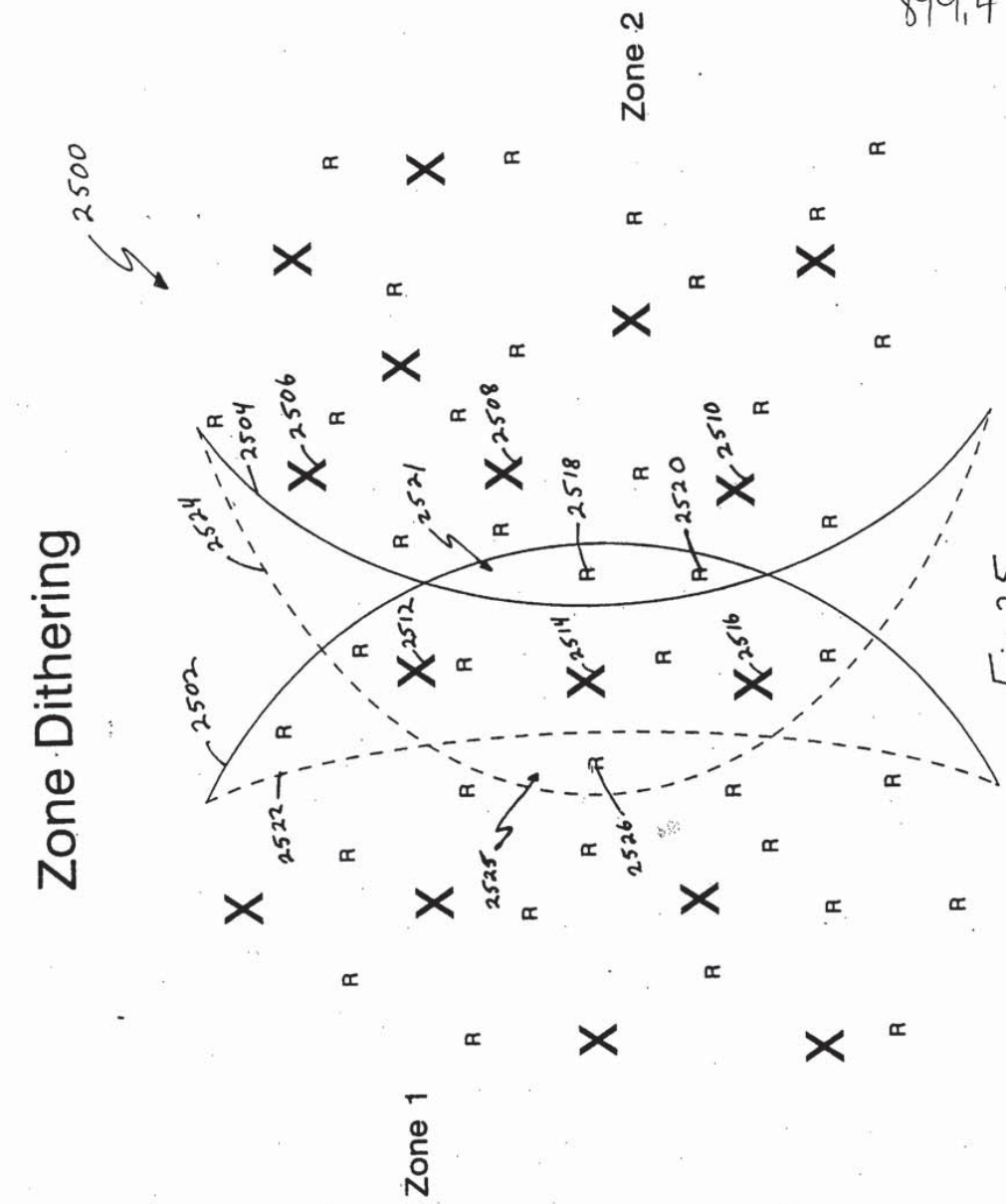

Fig. 25

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899,476

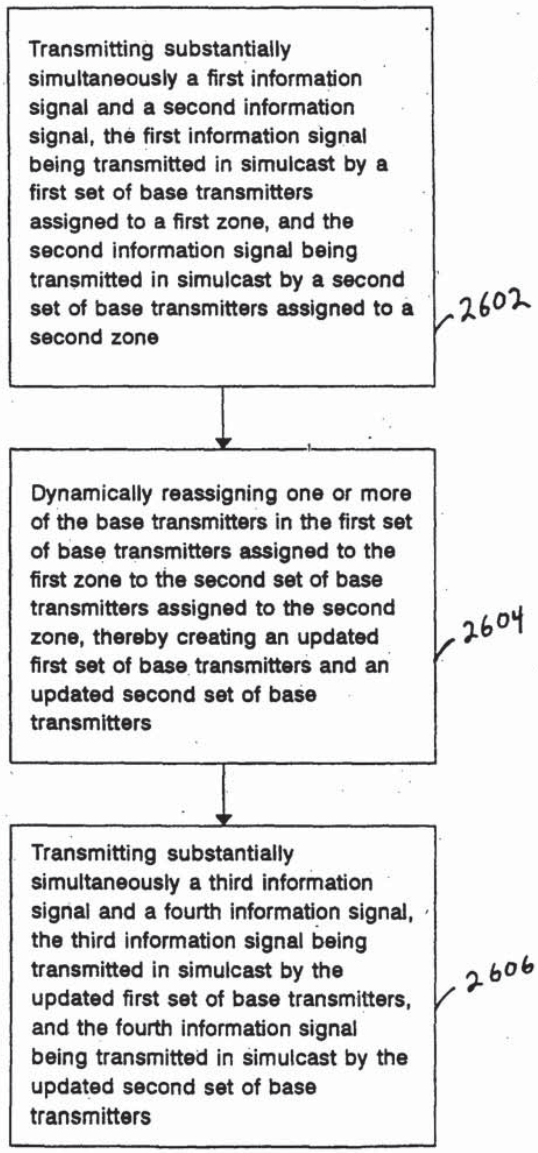

Fig. 26

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2700

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Cycle Protocol

Fig. 27(A)

Forward Interval Protocol

2750

Fig. 27(B)

Individual Batch Protocol

2780

Fig. 27(C)

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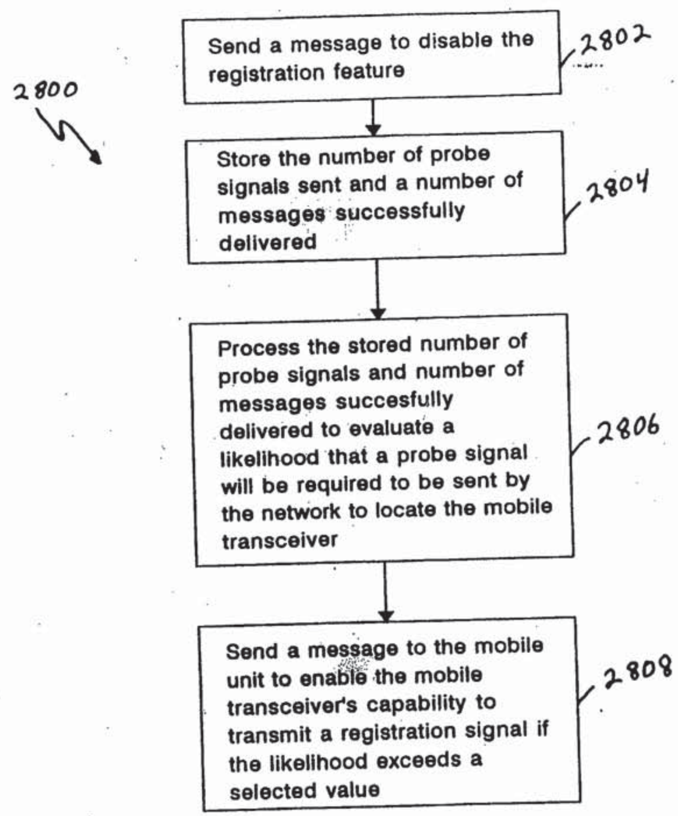

Fig. 28(A)

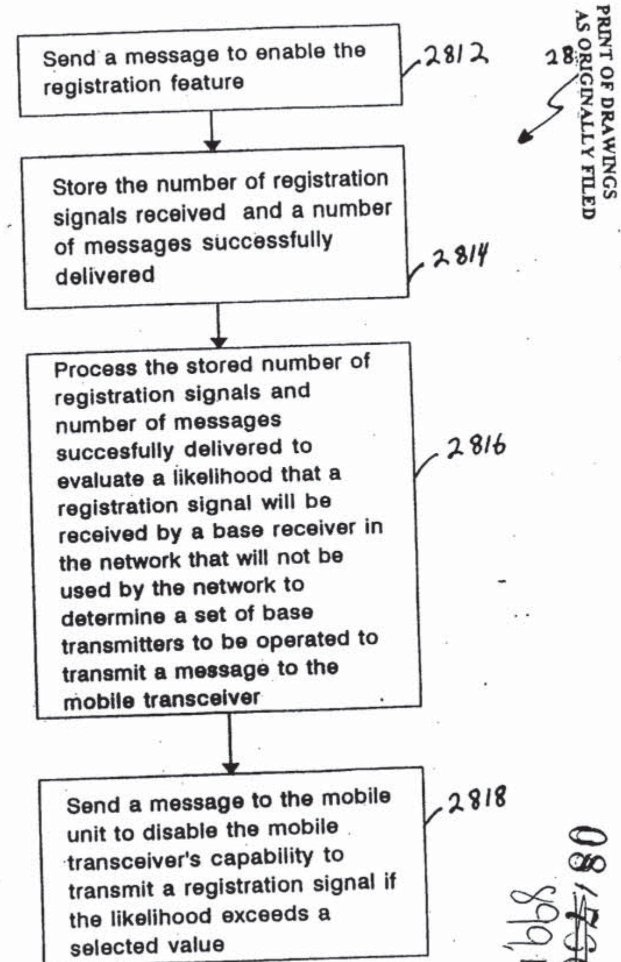

Fig. 28(B)

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899,476

Fig. 29(A)

Fig 29(B)

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899,476

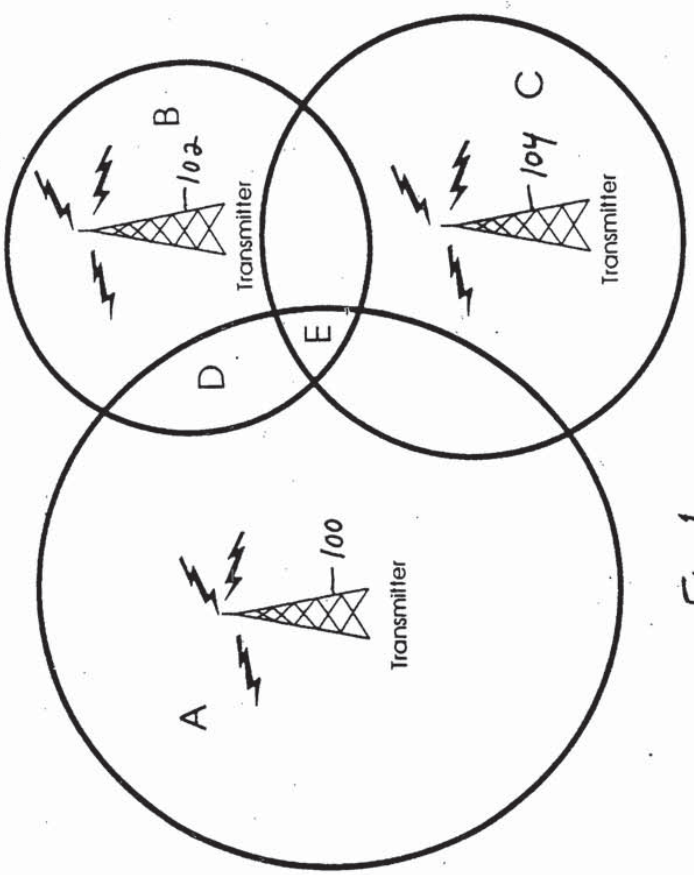

Fig. 1

40

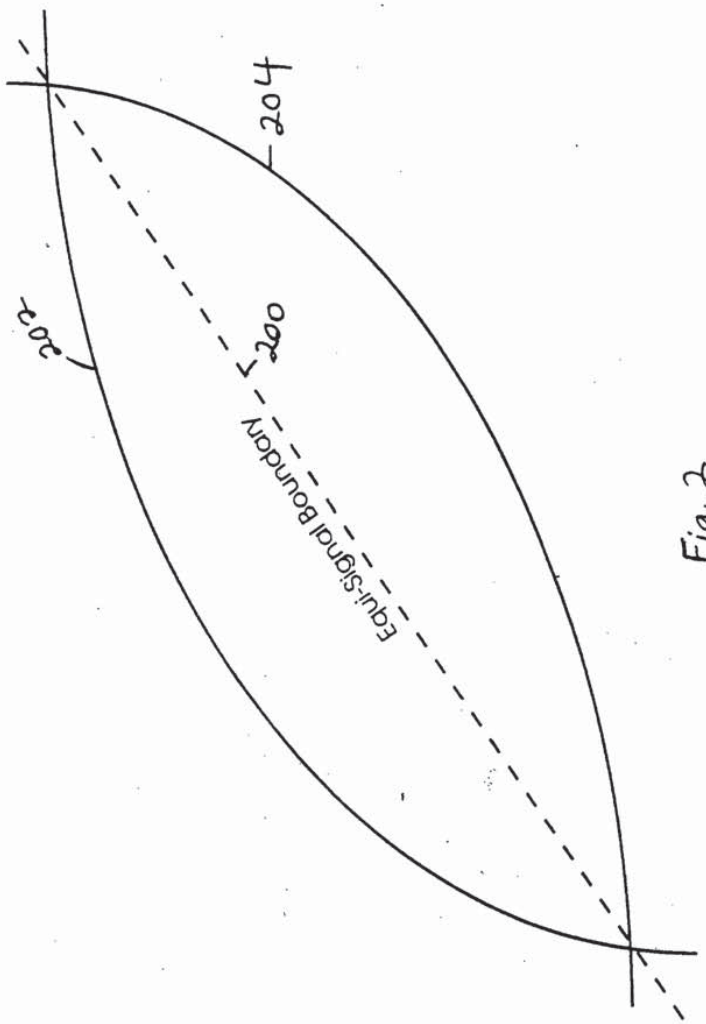

Fig. 2

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~~08/611457~~

Fig. 3(A)
Fig. 3(B)
Fig. 3(C)
Fig. 3(D)
Fig. 3(E)
Fig. 3

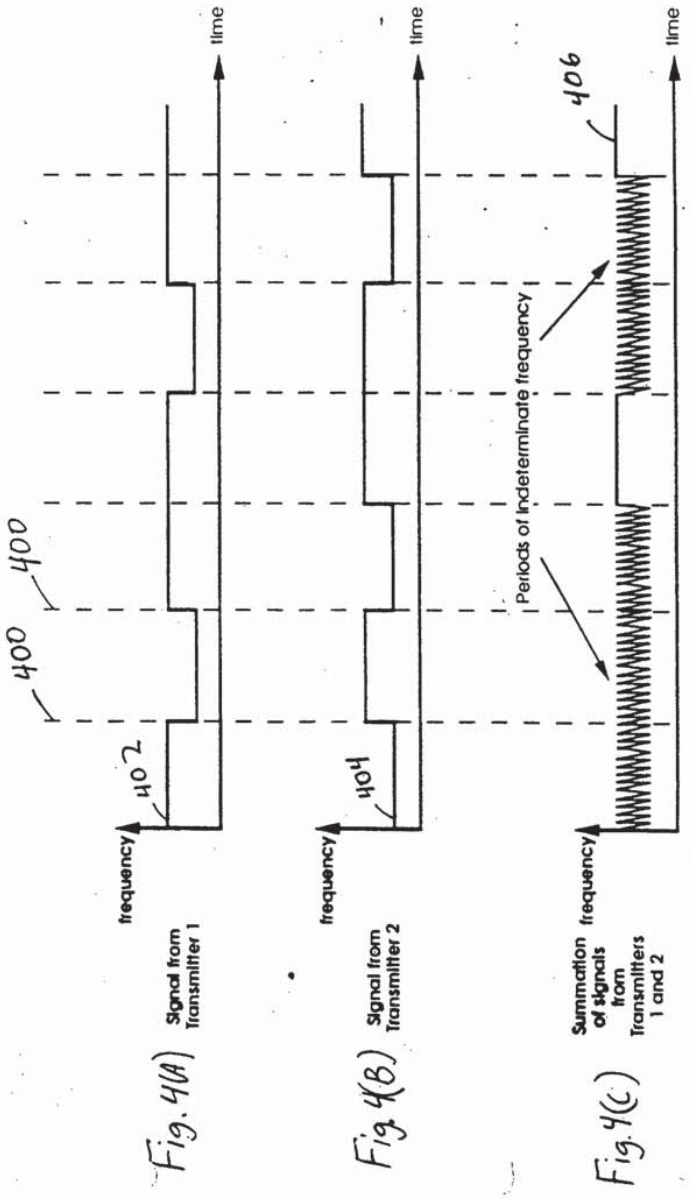

Fig. 4(A)

Fig. 4(B)

Fig. 4(C)

Fig. 4

08/~~760457~~ 899496

Fig. 5

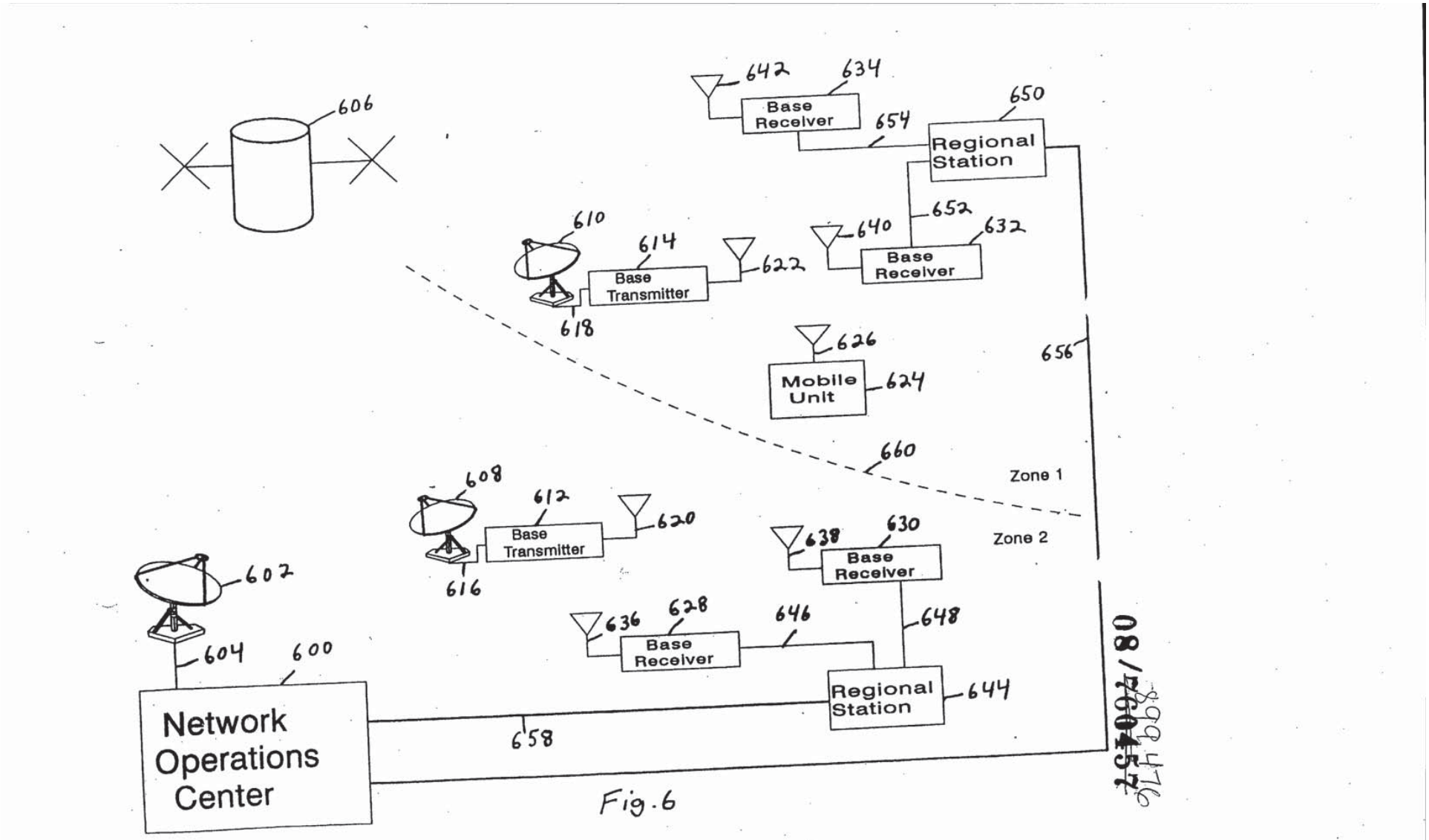

Fig. 6

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Page 00192

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899,476

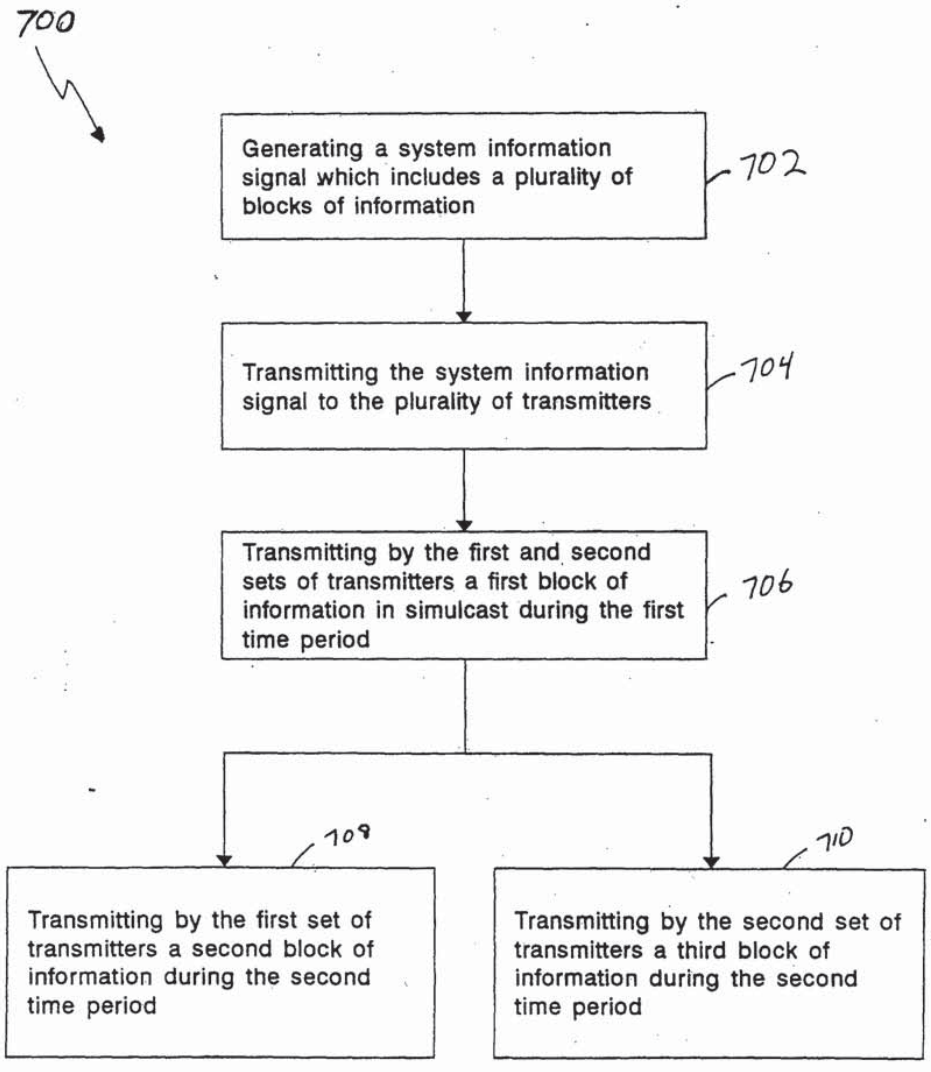

Fig. 7

08/~~760457~~ 899,476

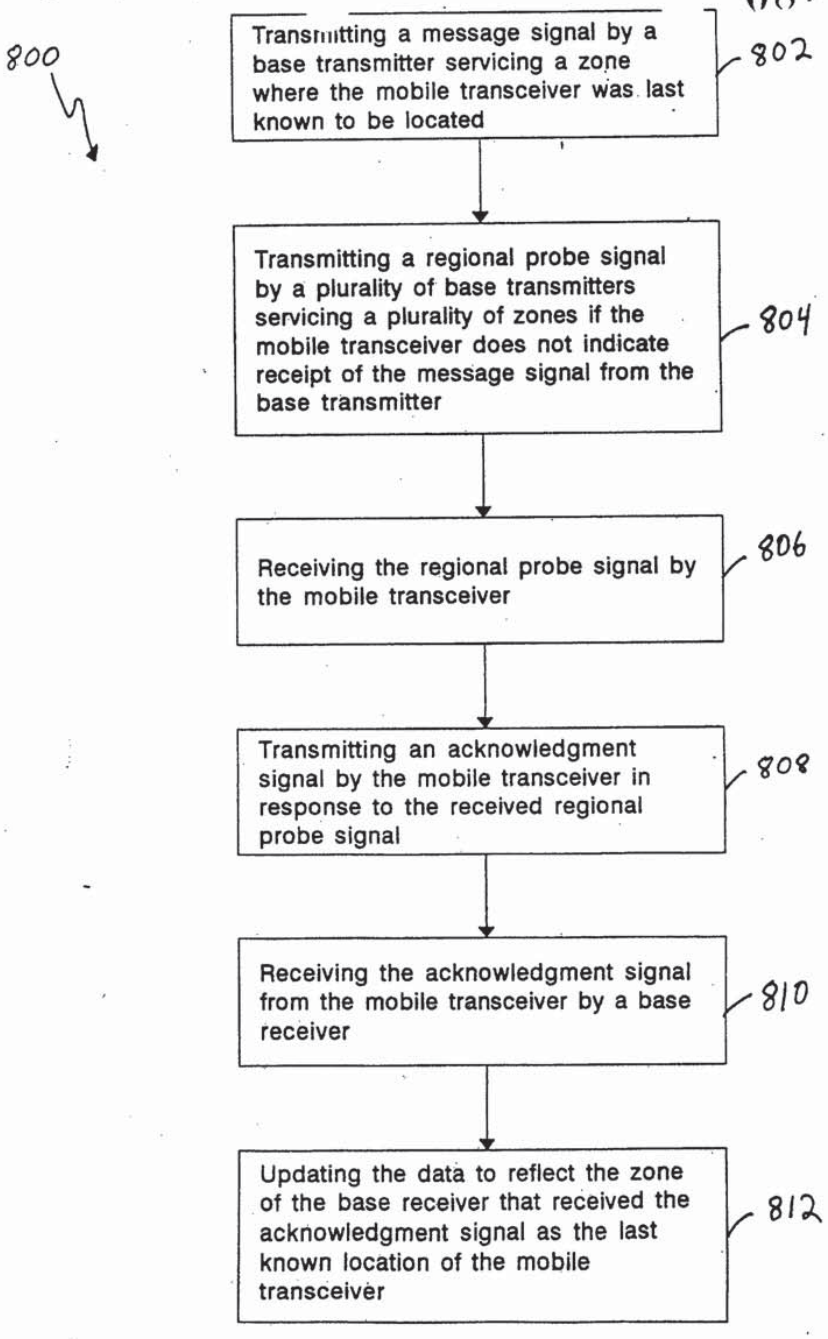

Fig. 8

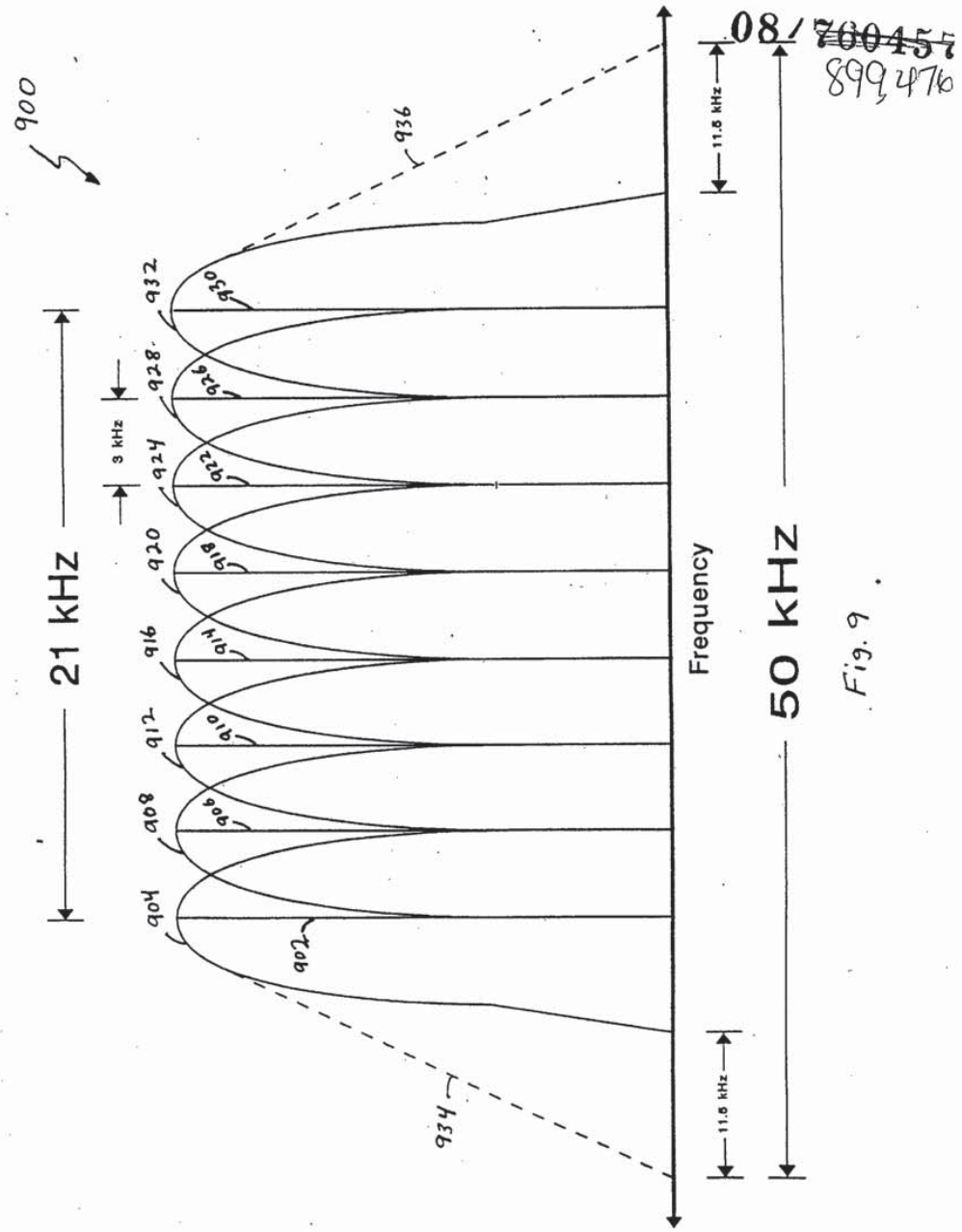
900
936
932
930
928
926
924
922
920
918
916
914
912
910
908
906
904
902
934
21 kHz
3 kHz
11.8 kHz
Frequency
50 kHz
11.8 kHz

Fig. 9

08/~~760457~~
899,476

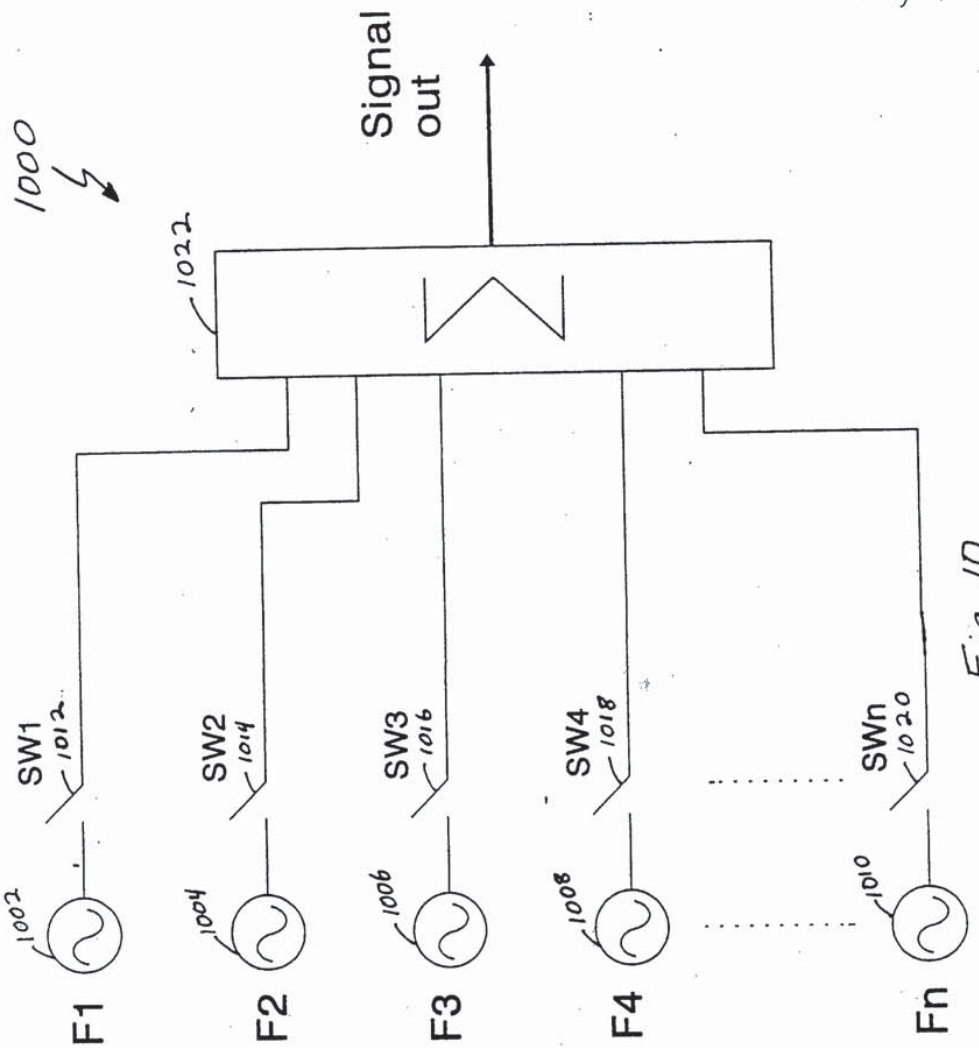

Fig. 10

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899,476

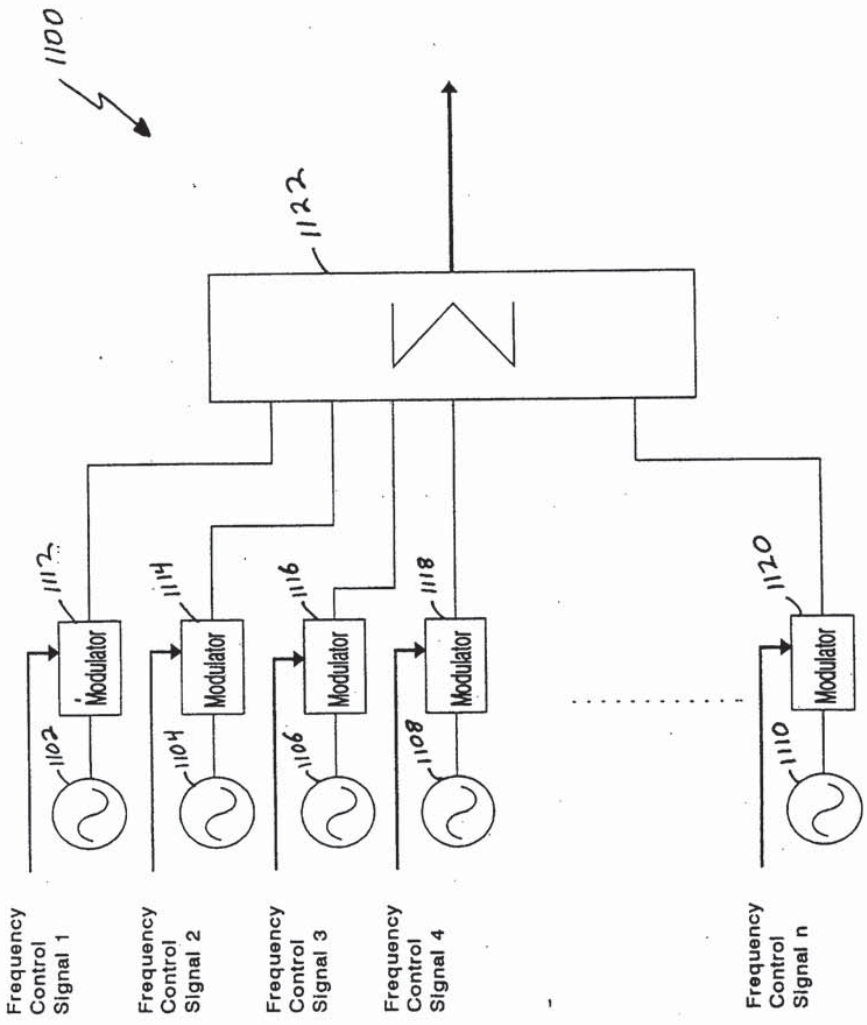

Fig. 11

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899,476

Four Carrier Quadrature Modulator

Fig. 12

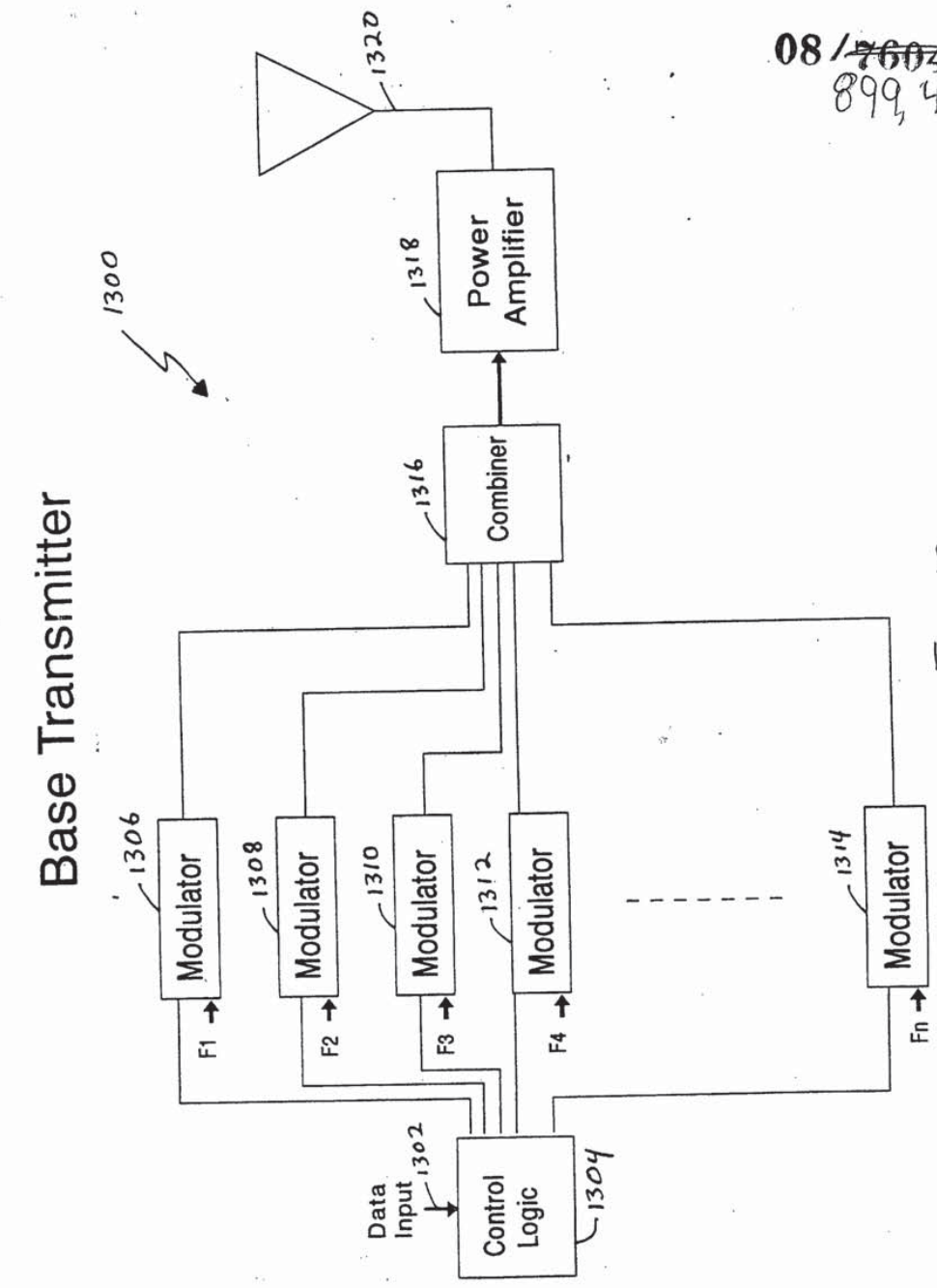

Fig. 13

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899,476

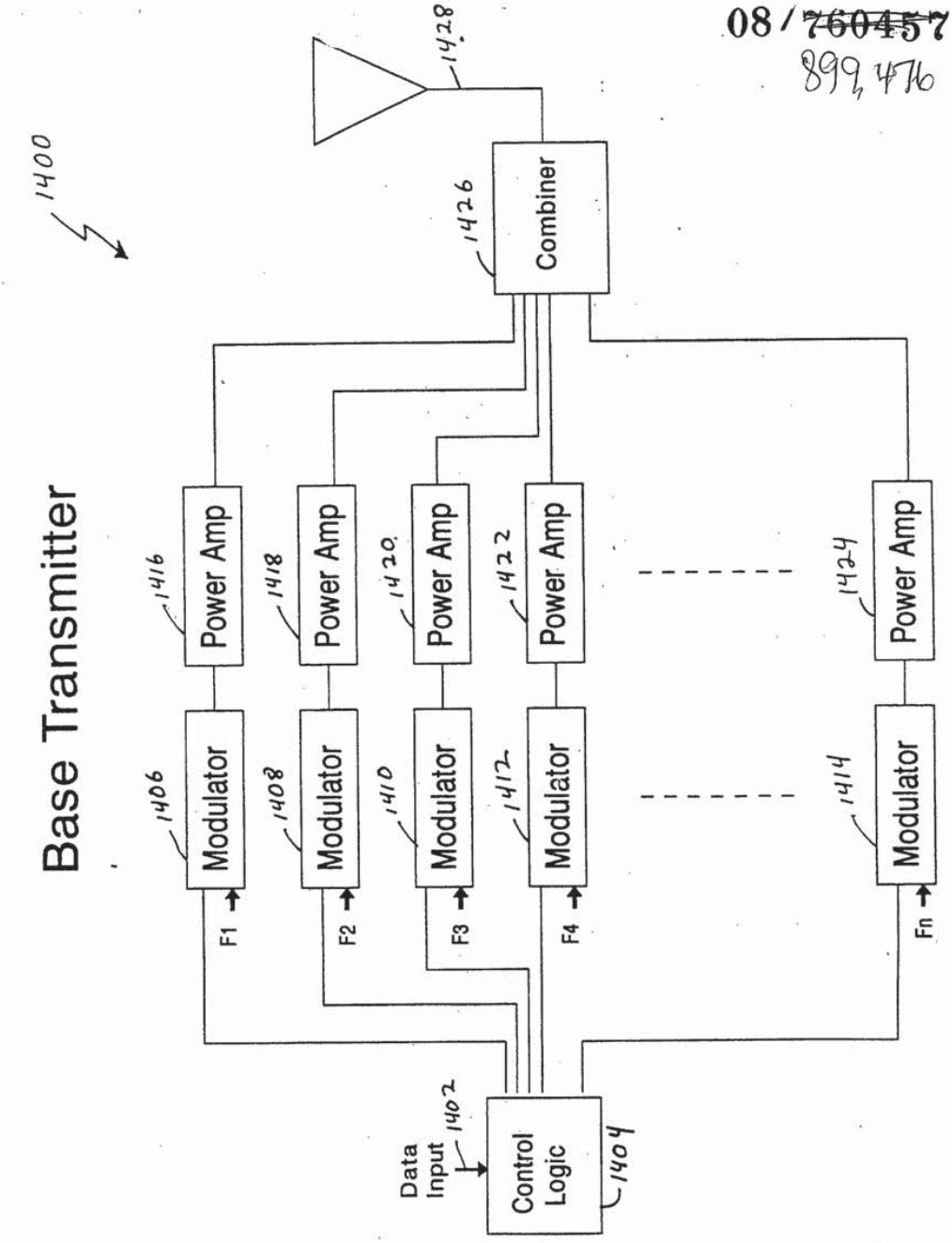
Base Transmitter
1400
1428
Combiner
1426
Power Amp
1416
Power Amp
1418
Power Amp
1420
Power Amp
1422
Power Amp
1424
Modulator
1406
Modulator
1408
Modulator
1410
Modulator
1412
Modulator
1414
F1
F2
F3
F4
Fn
Data Input
1402
Control Logic
1404

Fig. 14

08/~~760457~~
899,476

Fig. 15

08/~~760457~~
899,476

Fig. 16

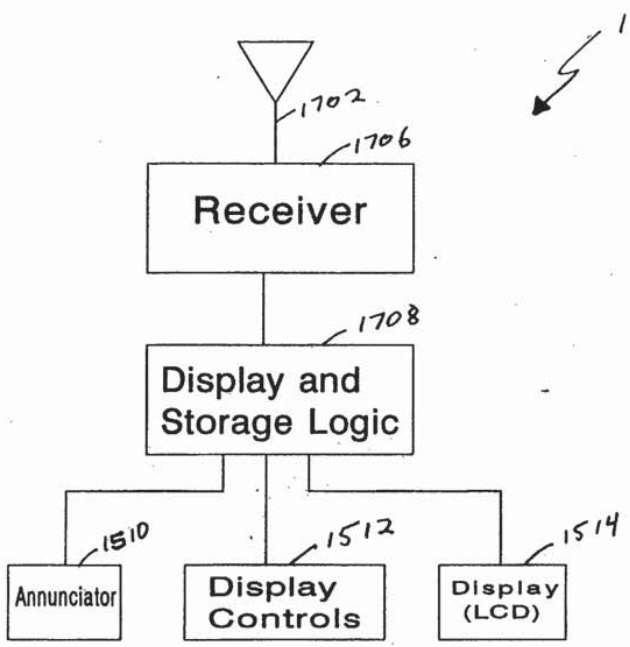

Fig. 17

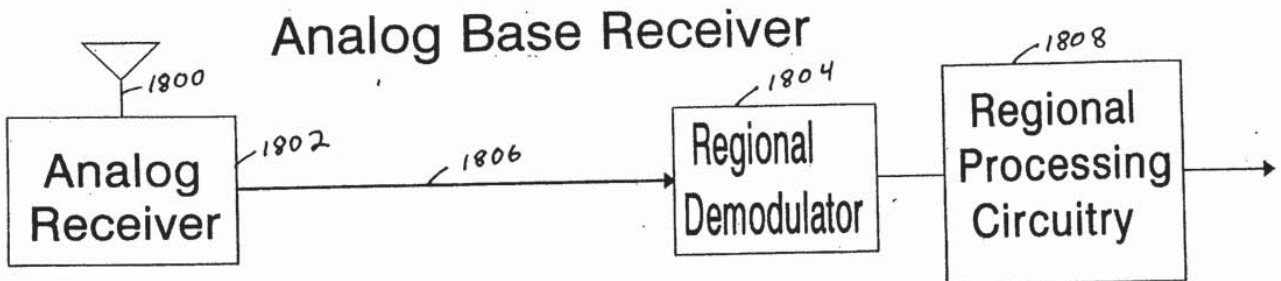

Fig. 18(A)

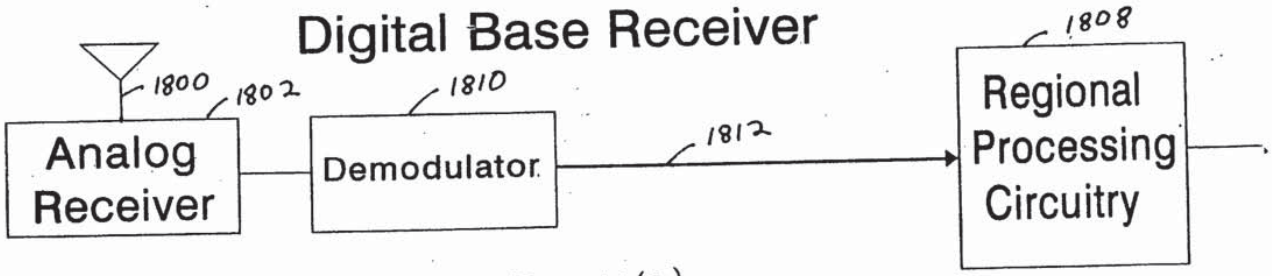

Fig. 18(B)

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899,476

Fig. 19

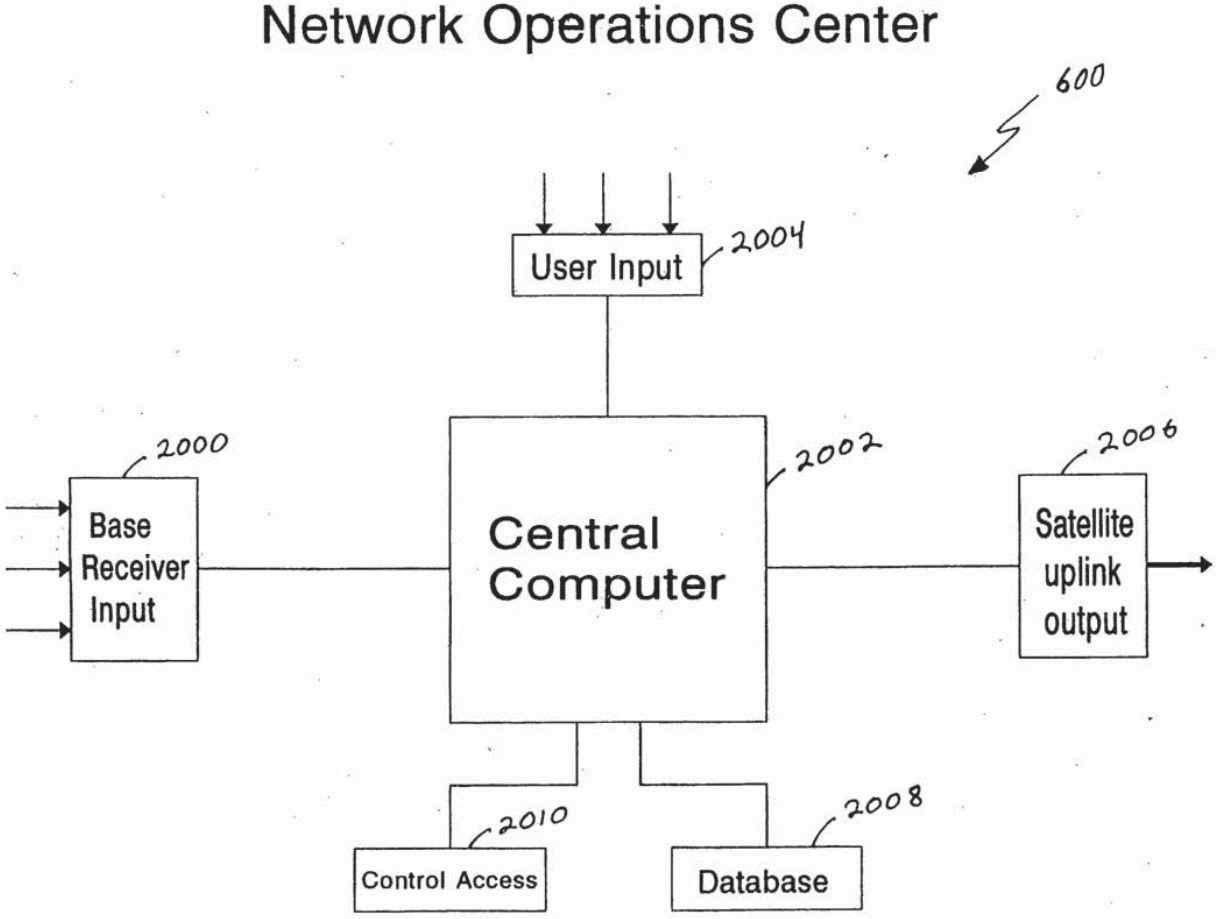
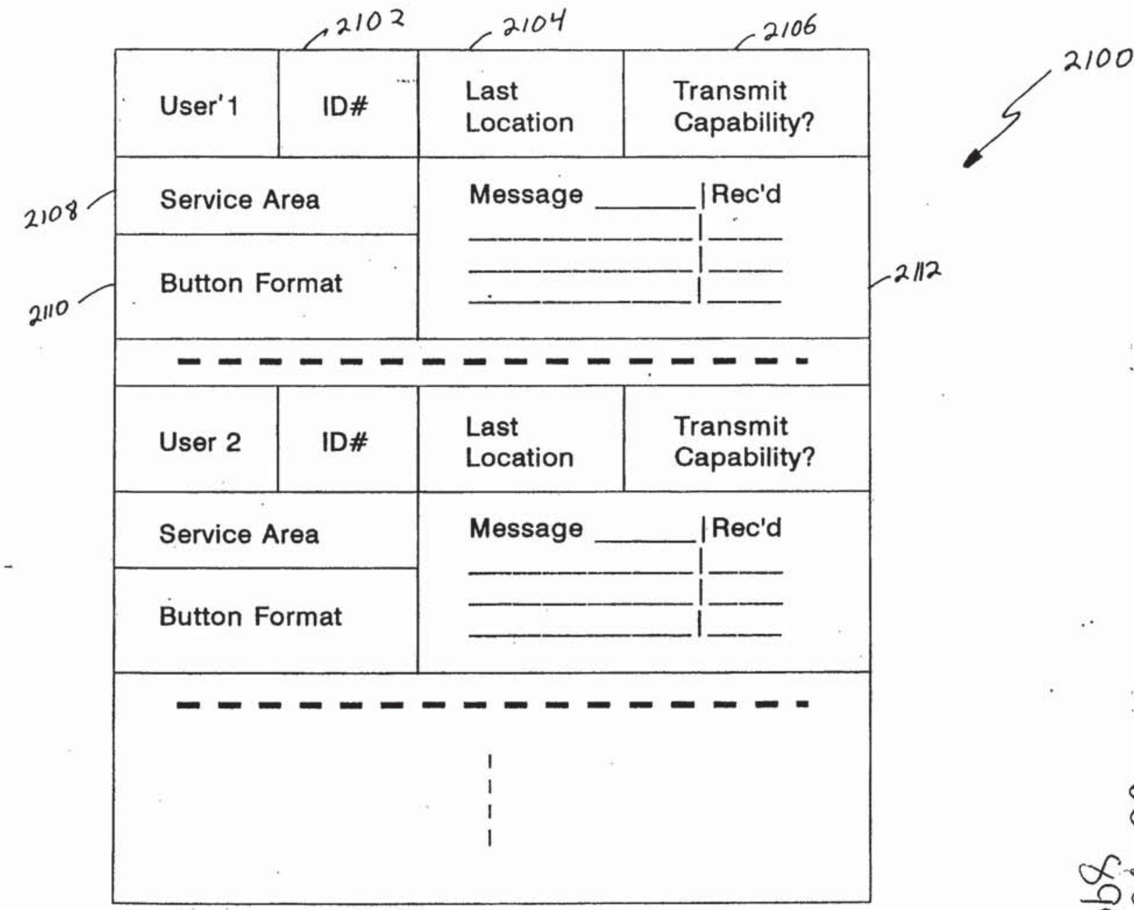

Network Operations Center
600
User Input
2004
2000
Base Receiver Input
Central Computer
2002
2006
Satellite uplink output
2010
Control Access
2008
Database

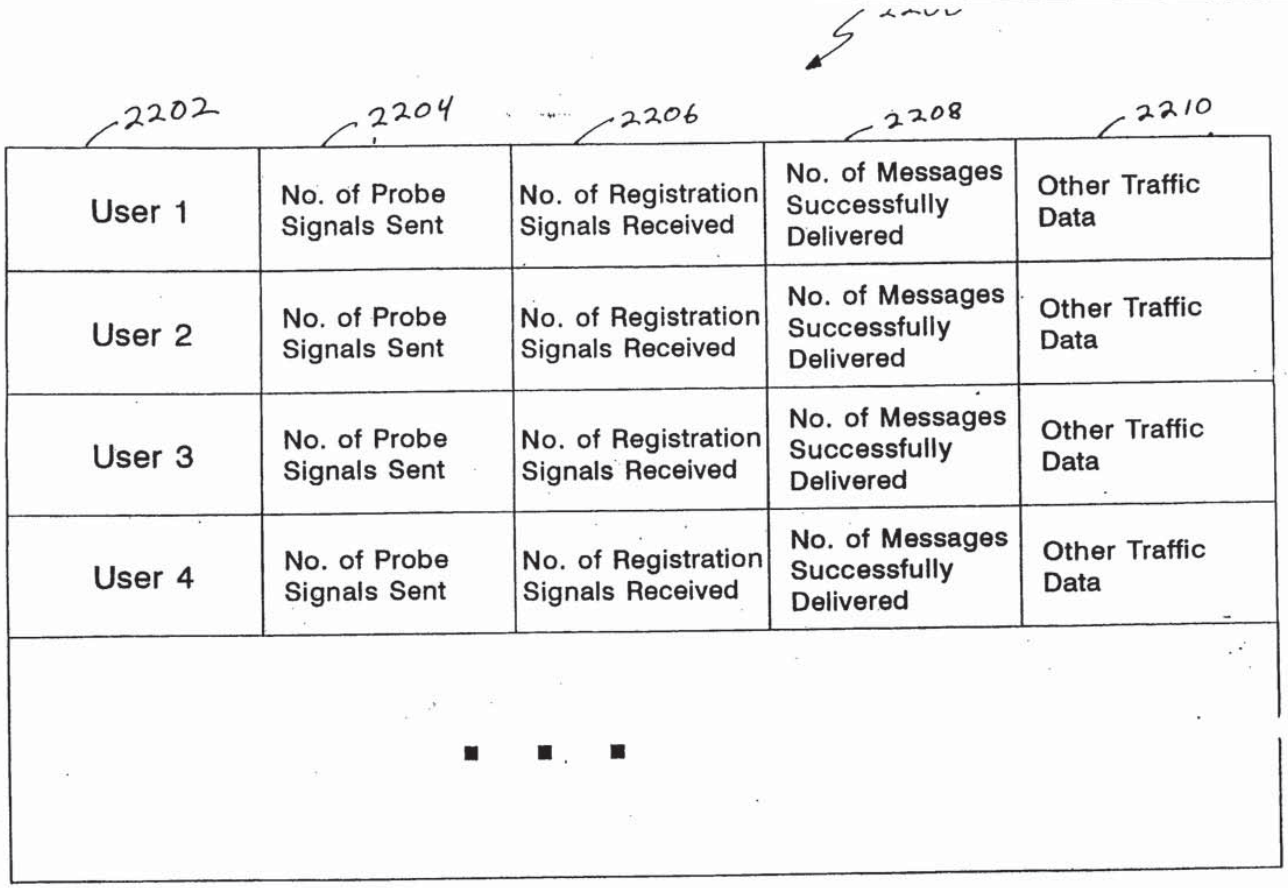
Fig. 20



User Database

Fig. 21

08/~~760457~~ 899,476



Traffic Database

Fig. 22

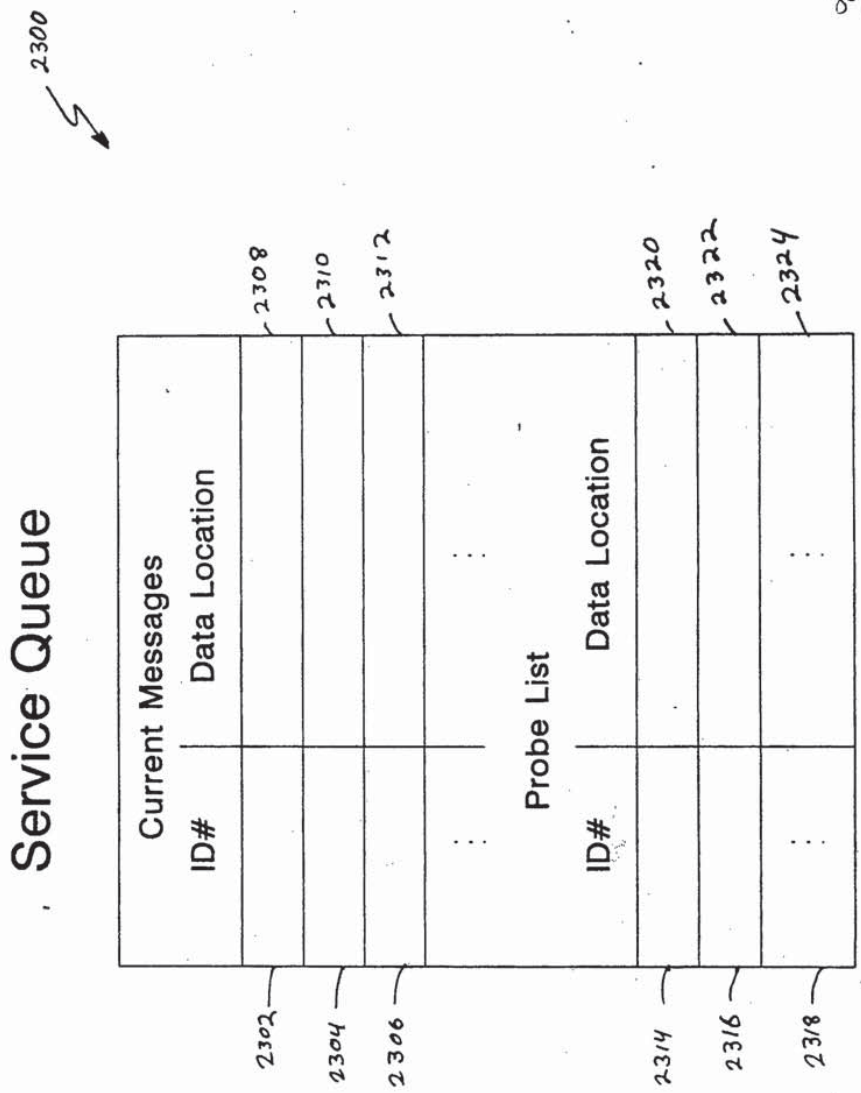

2300
Service Queue
Current Messages
ID#
Data Location
Probe List
ID#
Data Location
2302
2304
2306
2308
2310
2312
2314
2316
2318
2320
2322
2324

Fig. 23

2400

2402	2404	2406	2408
Base Transmitter 1	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 2	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 3	Zonal Assignment	Base Receivers in Coverage Area	Other Data
Base Transmitter 4	Zonal Assignment	Base Receivers in Coverage Area	Other Data
■ ■ ■			

08/~~760457~~ 899,476

Base Transmitter Database

Fig. 24

08/~~760,457~~
899,476

Fig. 25

08/~~760~~45
899,476

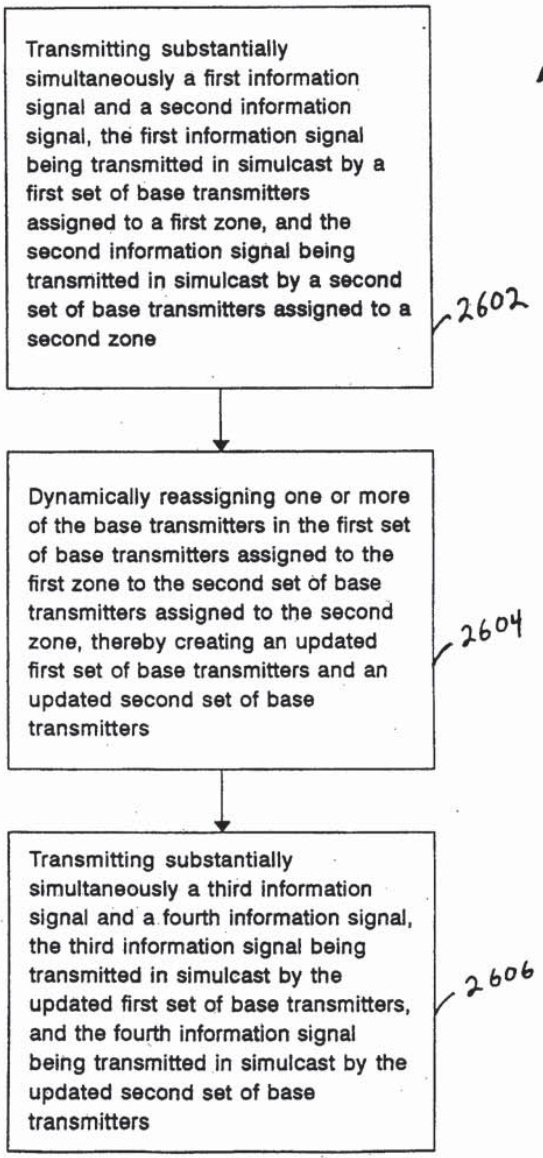


Fig. 26

Cycle Protocol

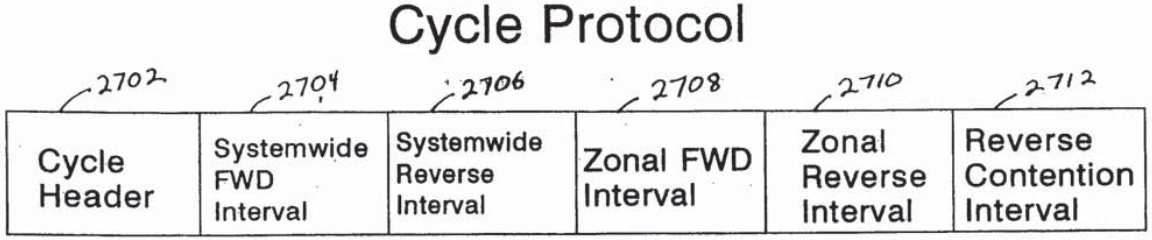


Fig. 27(A)

Forward Interval Protocol

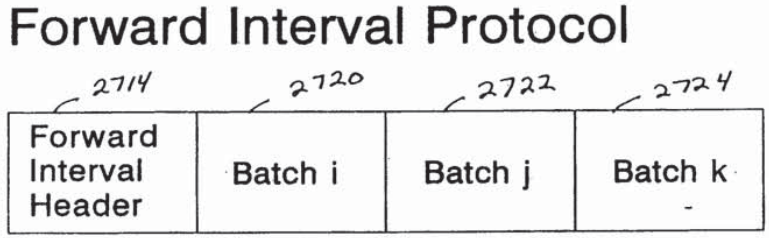


Fig. 27(B)

Individual Batch Protocol

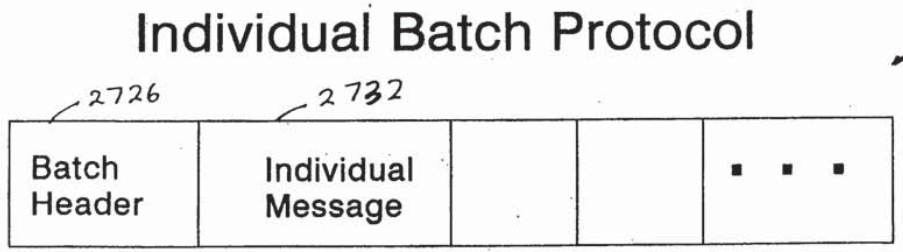


Fig. 27(C)

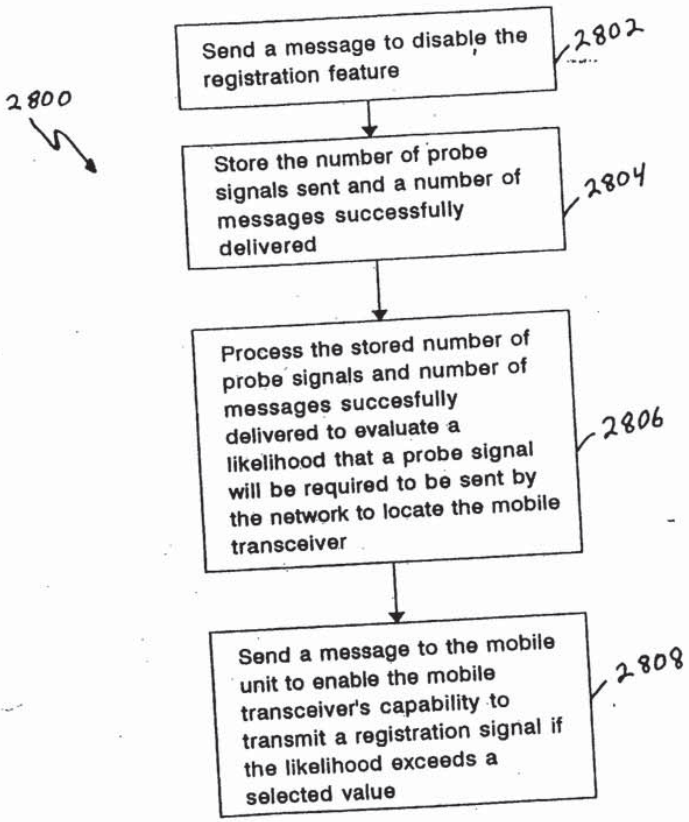


Fig. 28(A)

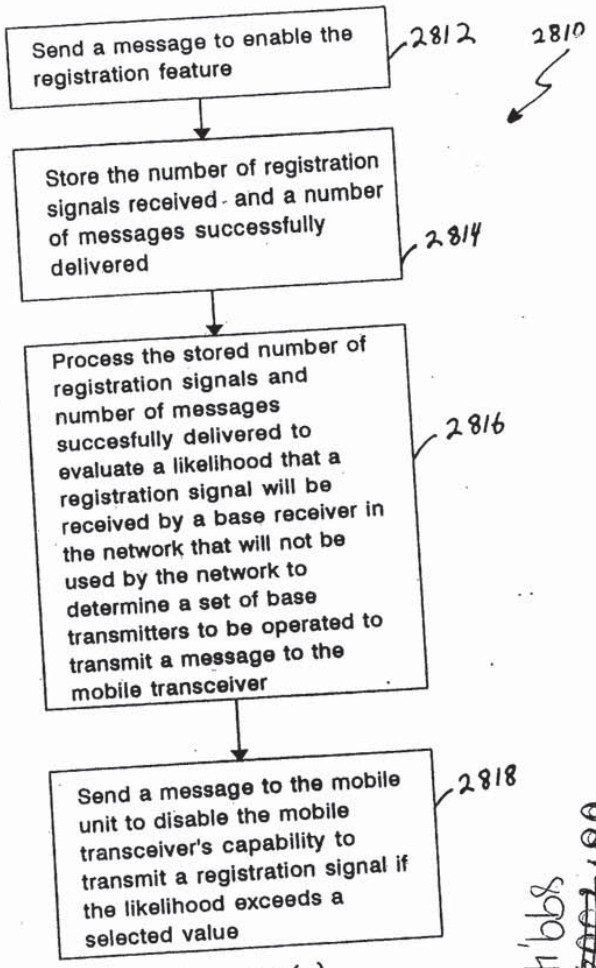


Fig. 28(B)

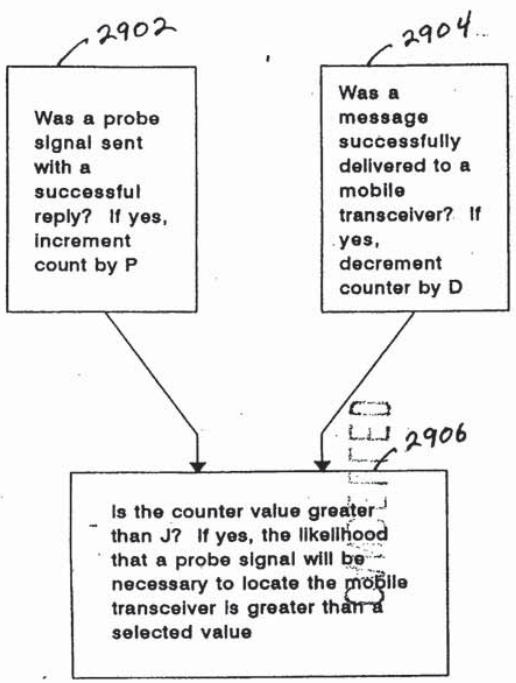


Fig. 29(A)

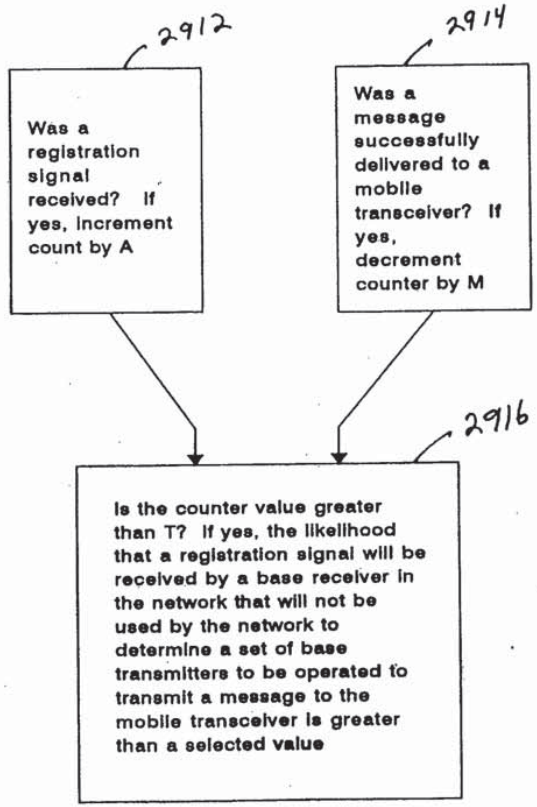
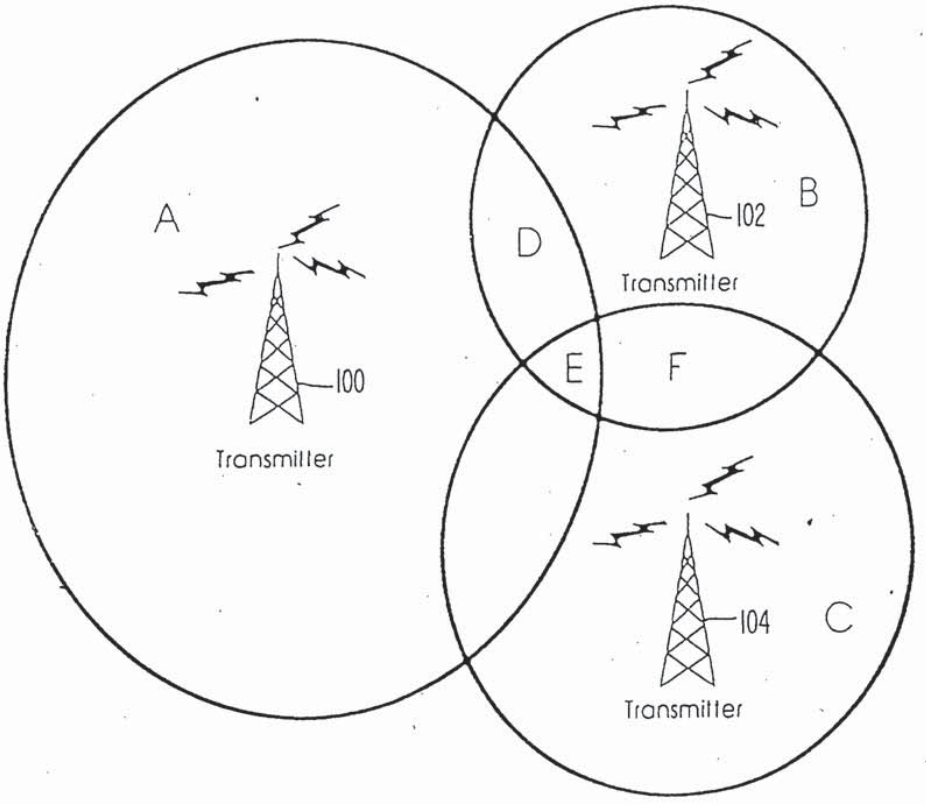


Fig 29(B)

08/~~780457~~
809,476

FIG. 1
PRIOR ART



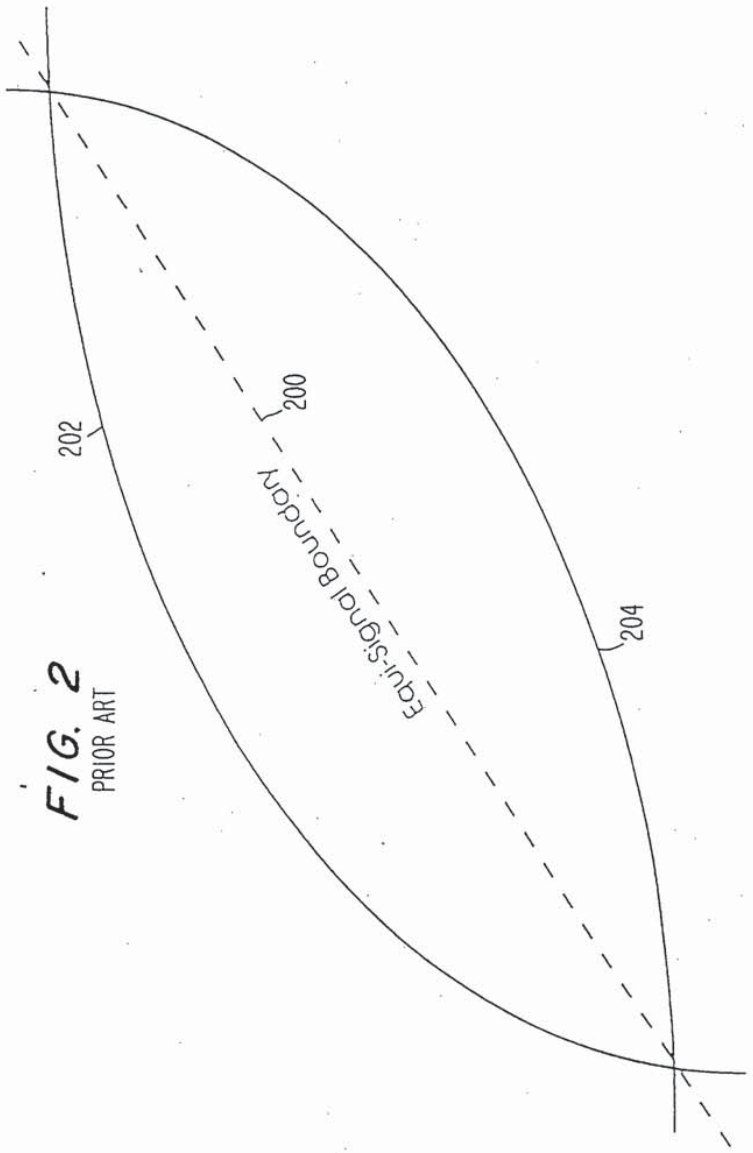


FIG. 2
PRIOR ART

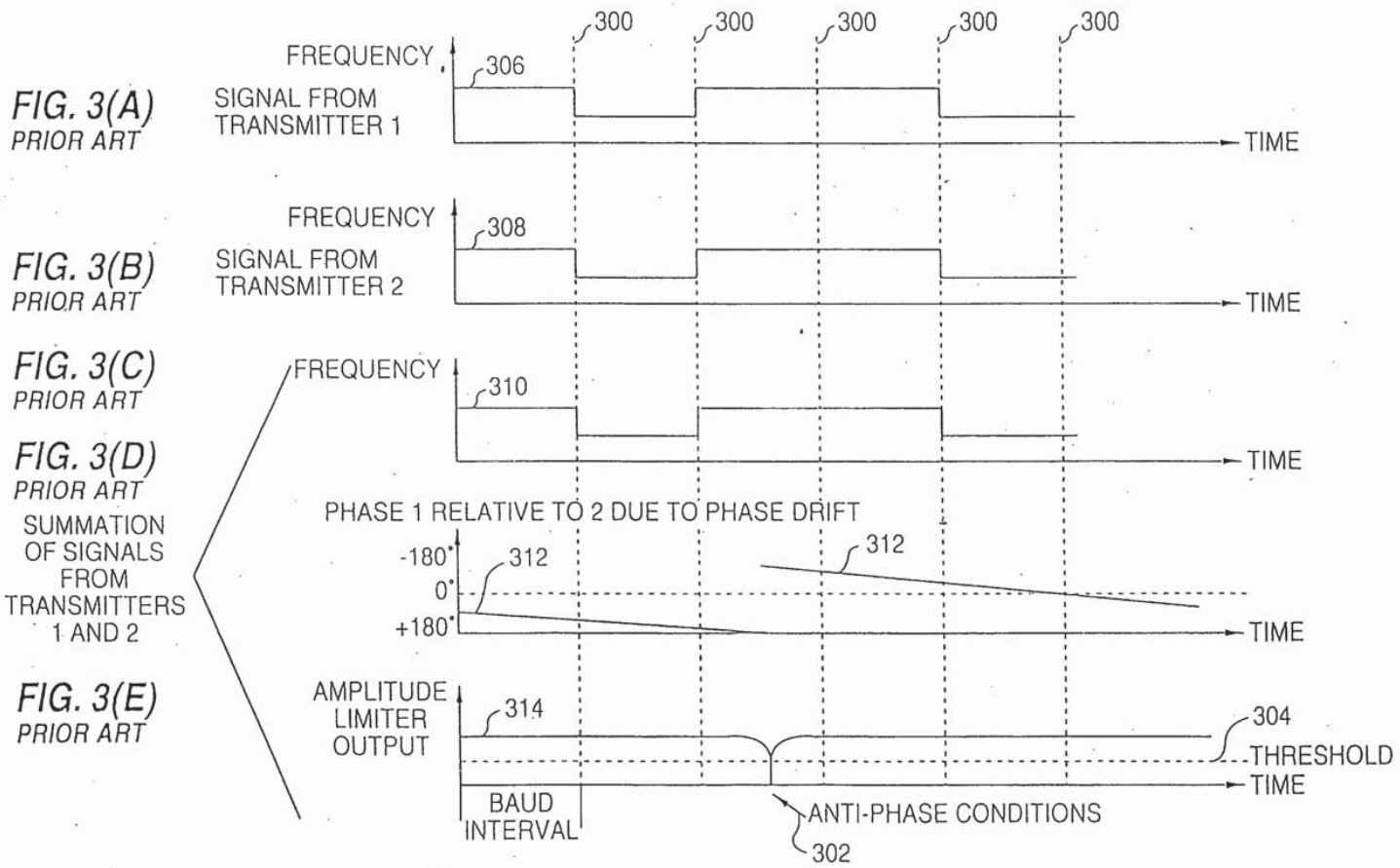


FIG. 3(A)
PRIOR ART
FREQUENCY
SIGNAL FROM TRANSMITTER 1
306
300
300
300
300
300
TIME
FIG. 3(B)
PRIOR ART
FREQUENCY
SIGNAL FROM TRANSMITTER 2
308
TIME
FIG. 3(C)
PRIOR ART
FREQUENCY
310
TIME
FIG. 3(D)
PRIOR ART
SUMMATION OF SIGNALS FROM TRANSMITTERS 1 AND 2
PHASE 1 RELATIVE TO 2 DUE TO PHASE DRIFT
-180°
0°
+180°
312
312
TIME
FIG. 3(E)
PRIOR ART
AMPLITUDE LIMITER OUTPUT
314
304
THRESHOLD
TIME
BAUD INTERVAL
ANTI-PHASE CONDITIONS
302

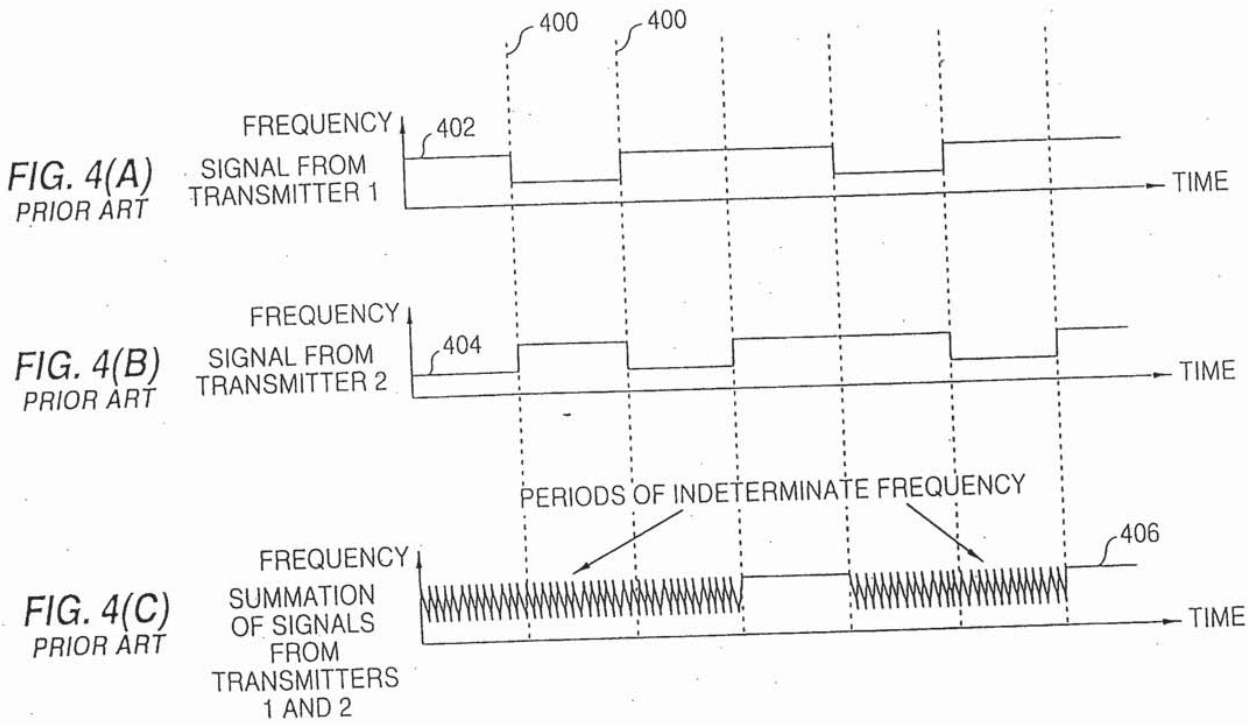


FIG. 4(A) PRIOR ART

FIG. 4(B) PRIOR ART

FIG. 4(C) PRIOR ART

FIG. 5 PRIOR ART

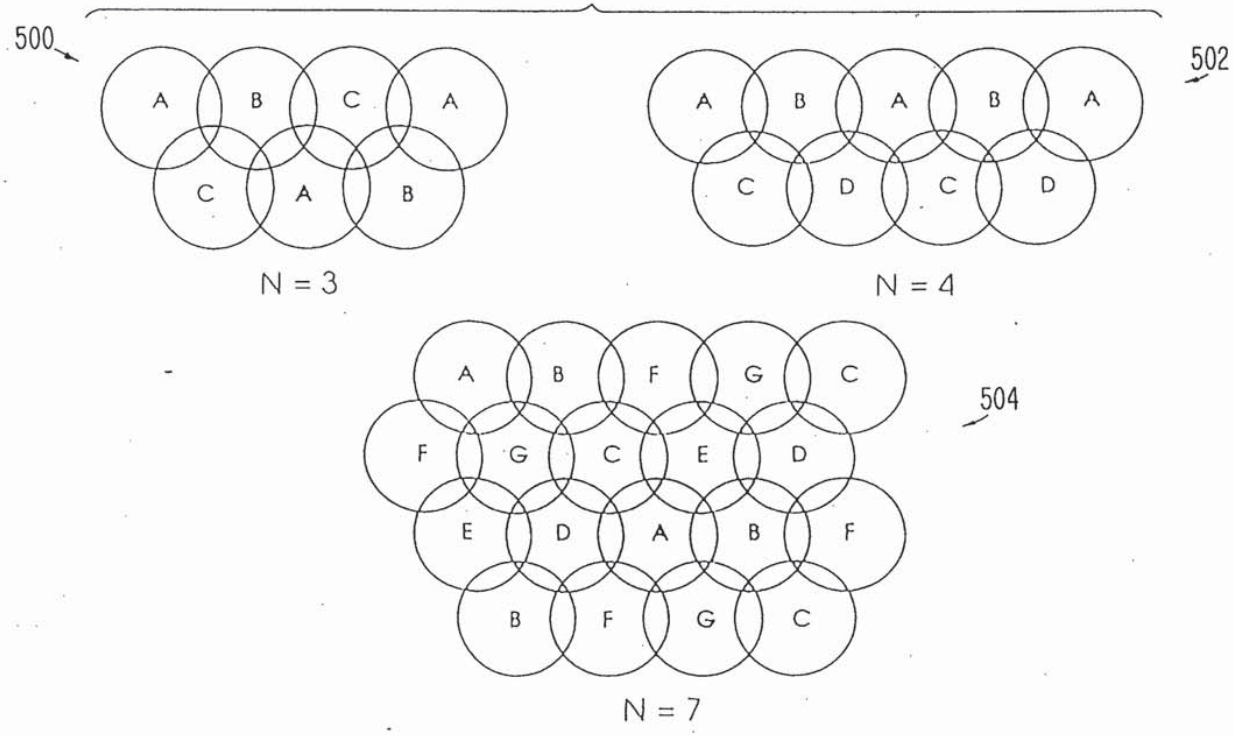


FIG. 6

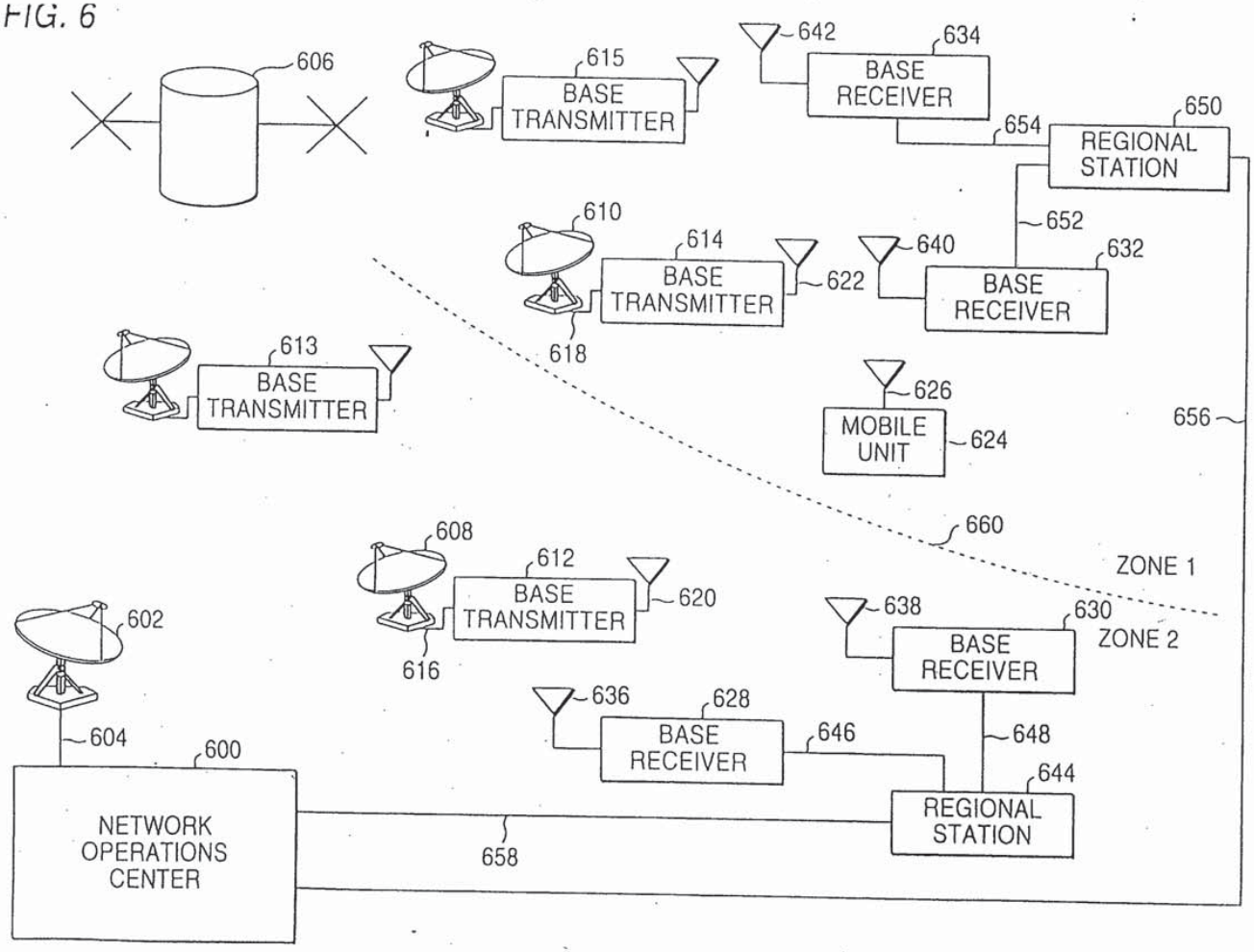

606
615
BASE TRANSMITTER
642
634
BASE RECEIVER
654
650
REGIONAL STATION
652
610
614
BASE TRANSMITTER
622
640
632
BASE RECEIVER
618
613
BASE TRANSMITTER
626
MOBILE UNIT
624
656
660
ZONE 1
608
612
BASE TRANSMITTER
620
638
630
ZONE 2
BASE RECEIVER
602
616
636
628
BASE RECEIVER
646
648
644
REGIONAL STATION
604
600
NETWORK OPERATIONS CENTER
658

FIG. 7

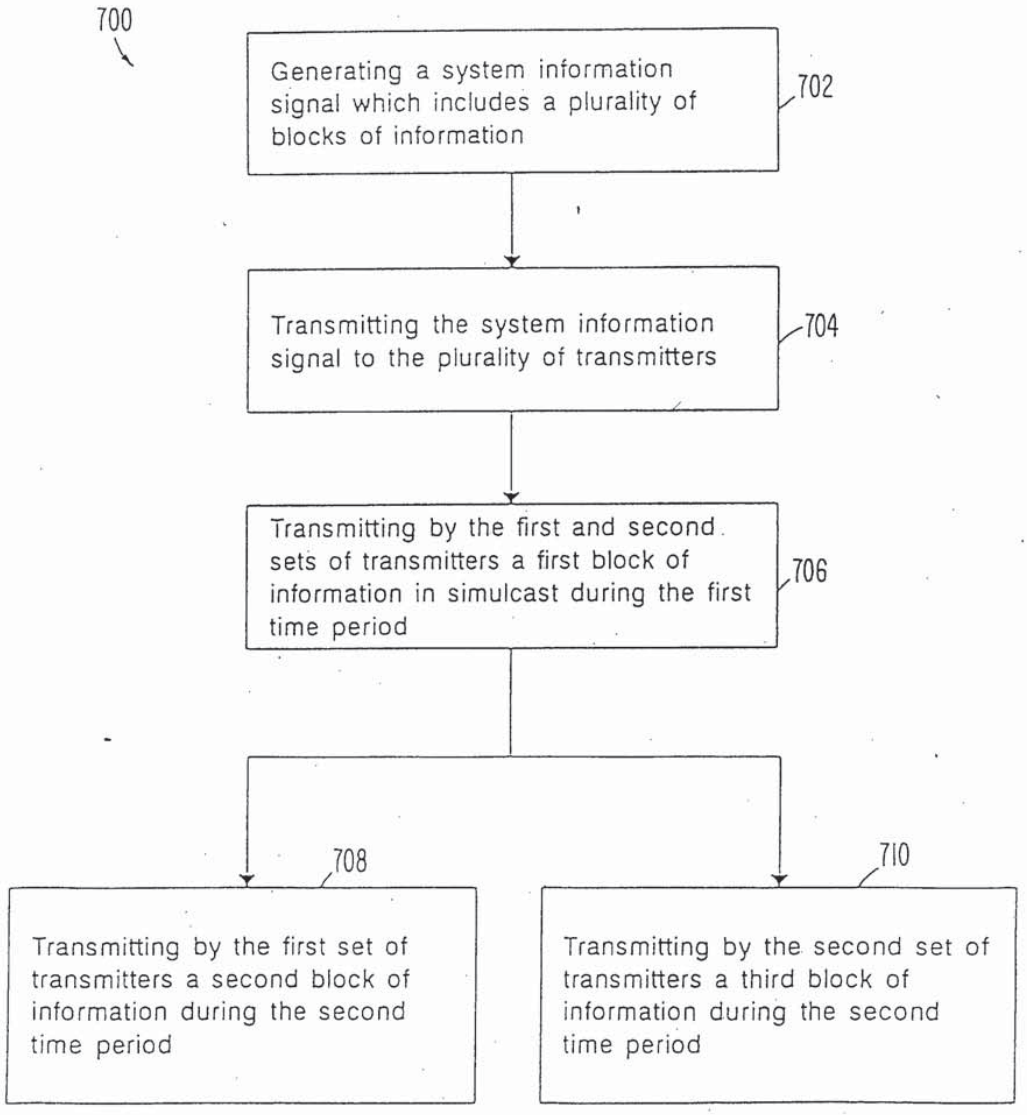

700
Generating a system information signal which includes a plurality of blocks of information
702
Transmitting the system information signal to the plurality of transmitters
704
Transmitting by the first and second sets of transmitters a first block of information in simulcast during the first time period
706
708
Transmitting by the first set of transmitters a second block of information during the second time period
710
Transmitting by the second set of transmitters a third block of information during the second time period

FIG. 8

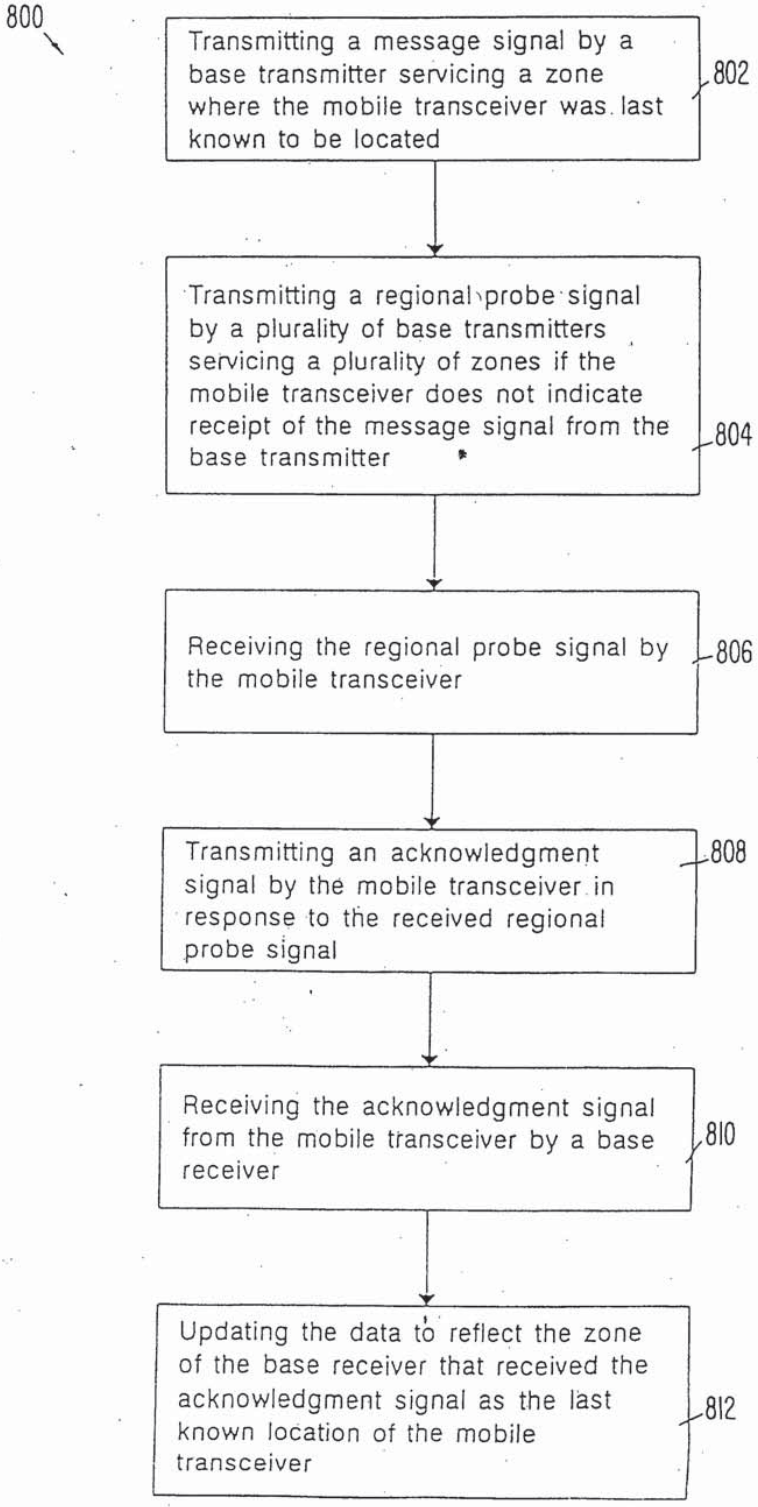

800
Transmitting a message signal by a base transmitter servicing a zone where the mobile transceiver was last known to be located
802
Transmitting a regional probe signal by a plurality of base transmitters servicing a plurality of zones if the mobile transceiver does not indicate receipt of the message signal from the base transmitter
804
Receiving the regional probe signal by the mobile transceiver
806
Transmitting an acknowledgment signal by the mobile transceiver in response to the received regional probe signal
808
Receiving the acknowledgment signal from the mobile transceiver by a base receiver
810
Updating the data to reflect the zone of the base receiver that received the acknowledgment signal as the last known location of the mobile transceiver
812

FIG. 9

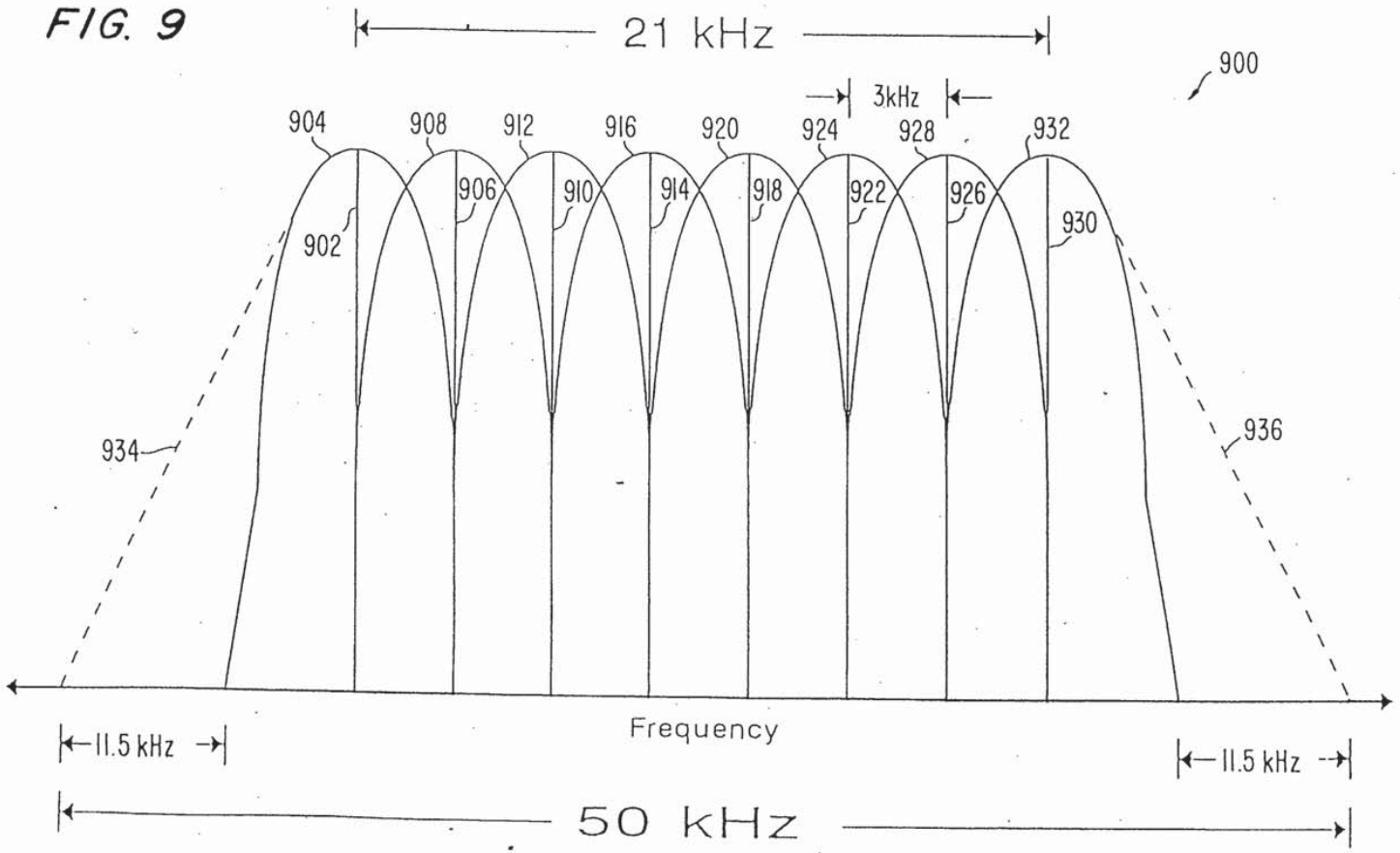

21 kHz
3kHz
900
904
908
912
916
920
924
928
932
906
910
914
918
922
926
930
902
934
936
11.5 kHz
Frequency
11.5 kHz
50 kHz

FIG. 10

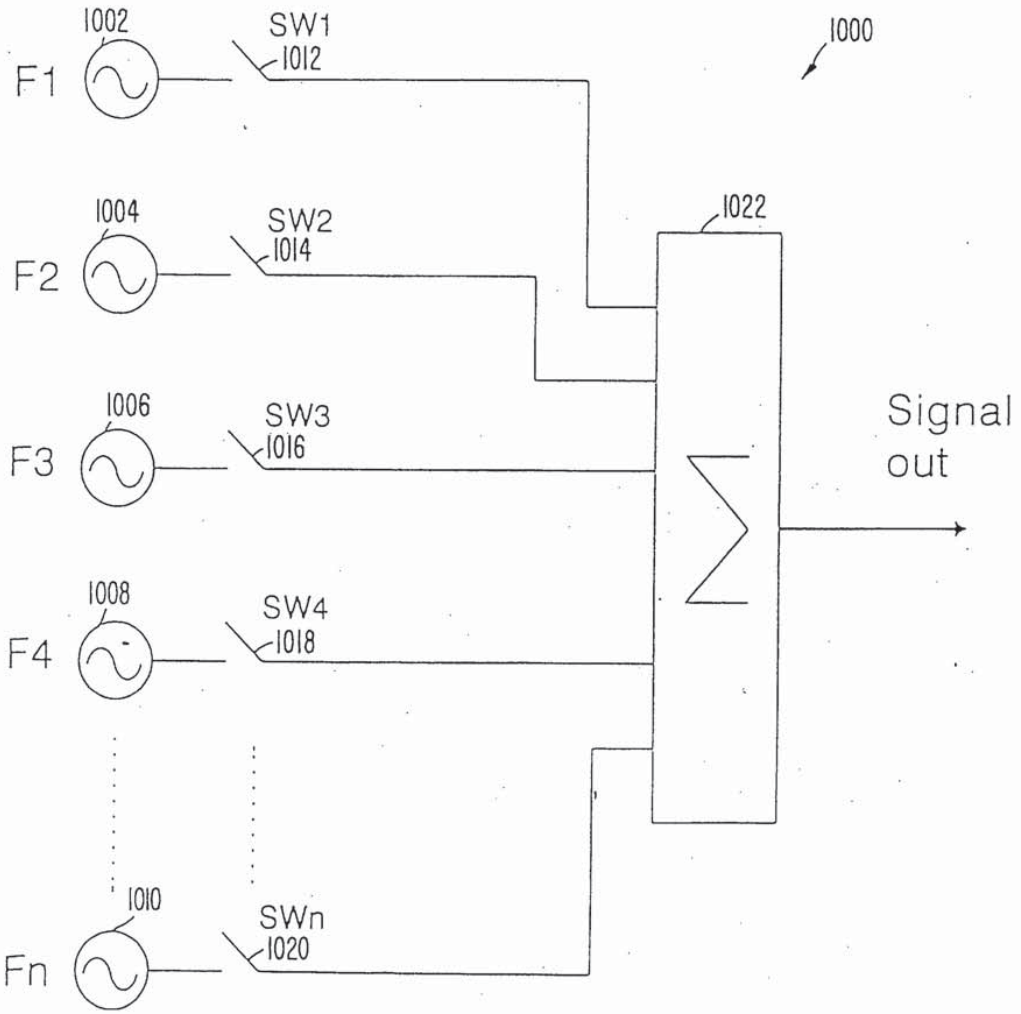

1002
SW1
1012
F1
1000
1004
SW2
1014
F2
1022
1006
SW3
1016
F3
Signal
out
1008
SW4
1018
F4
1010
SWn
1020
Fn

FIG. 11

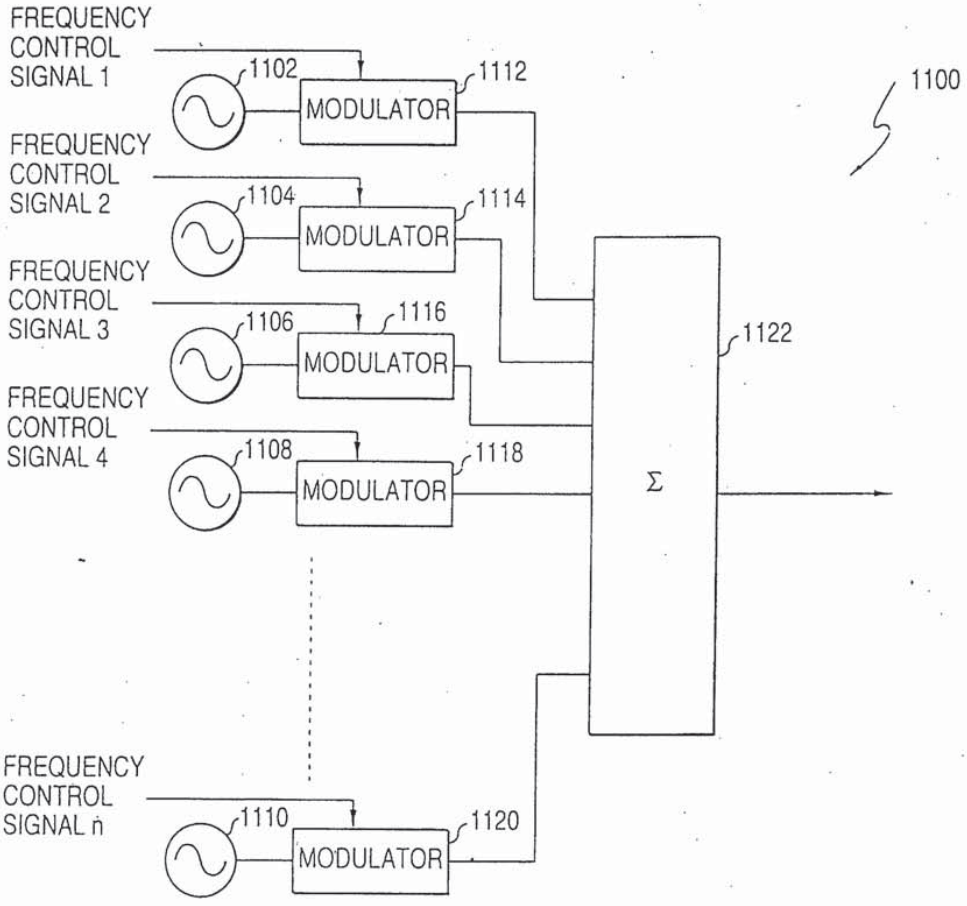
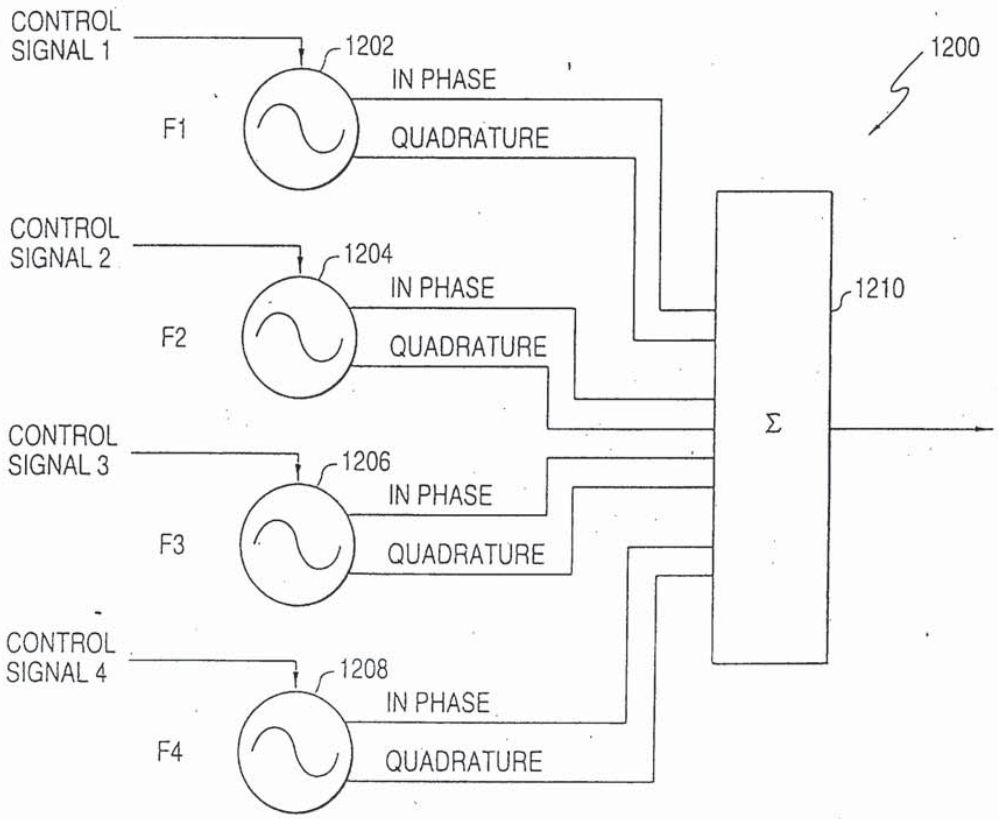

FREQUENCY CONTROL SIGNAL 1
FREQUENCY CONTROL SIGNAL 2
FREQUENCY CONTROL SIGNAL 3
FREQUENCY CONTROL SIGNAL 4
FREQUENCY CONTROL SIGNAL n
1102
1104
1106
1108
1110
MODULATOR
1112
1114
1116
1118
1120
1100
1122
Σ

FIG. 12



FOUR CARRIER QUADRATURE MODULATOR

FIG. 13

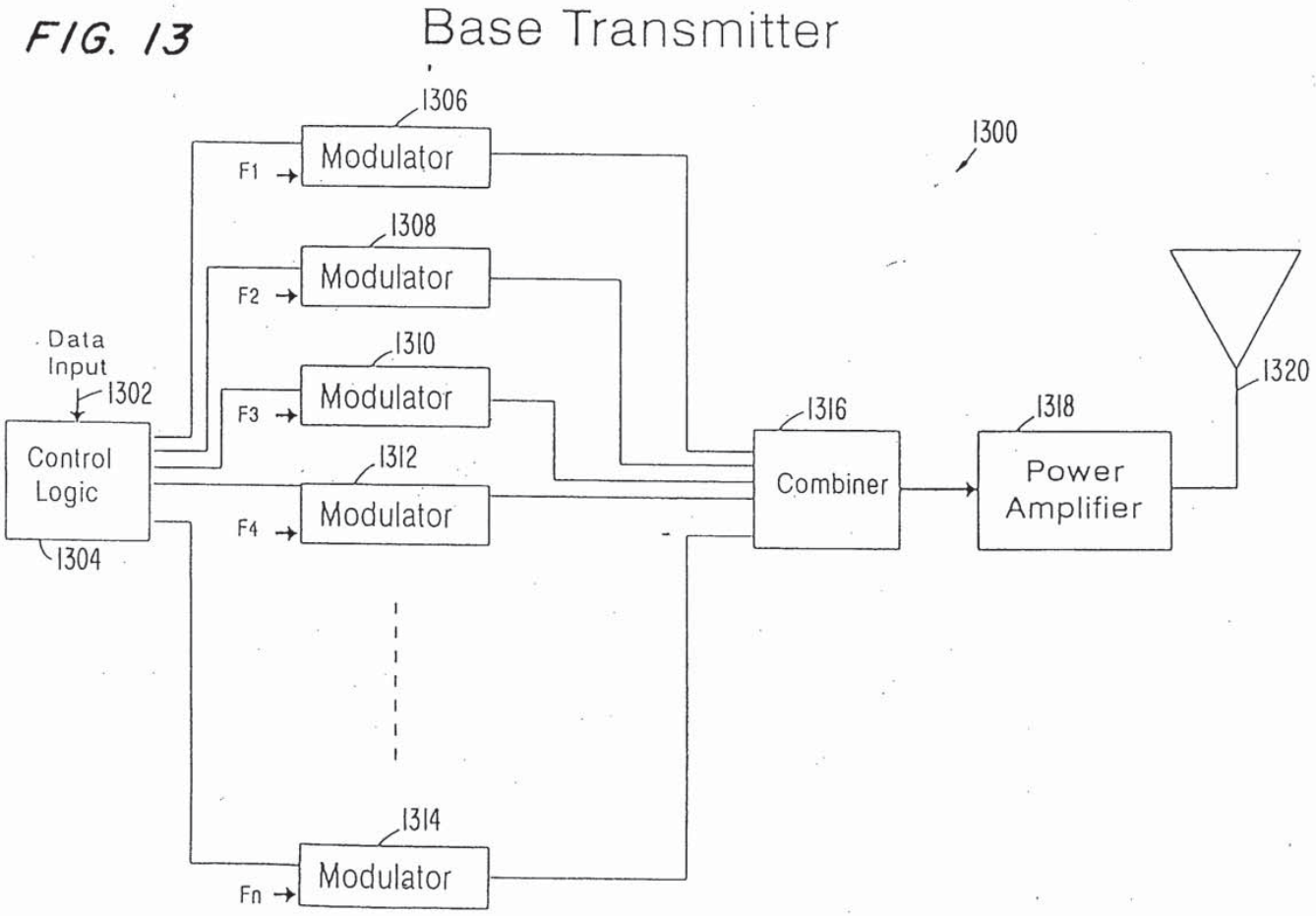

Base Transmitter
1300
1306
Modulator
F1
1308
Modulator
F2
Data
Input
1302
1310
Modulator
F3
Control
Logic
1312
Modulator
F4
1304
1314
Modulator
Fn
1316
Combiner
1318
Power
Amplifier
1320

FIG. 14

Base Transmitter

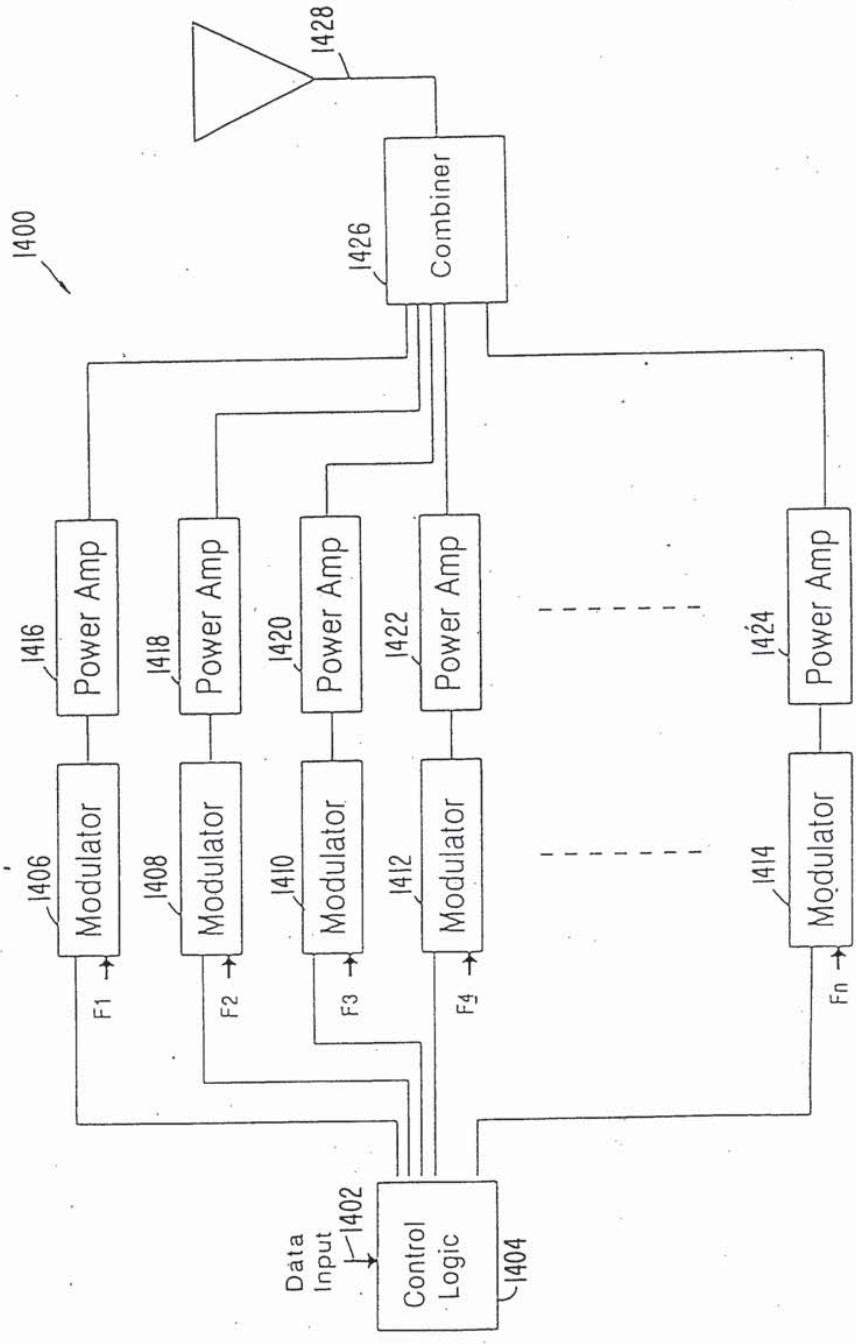


FIG. 15

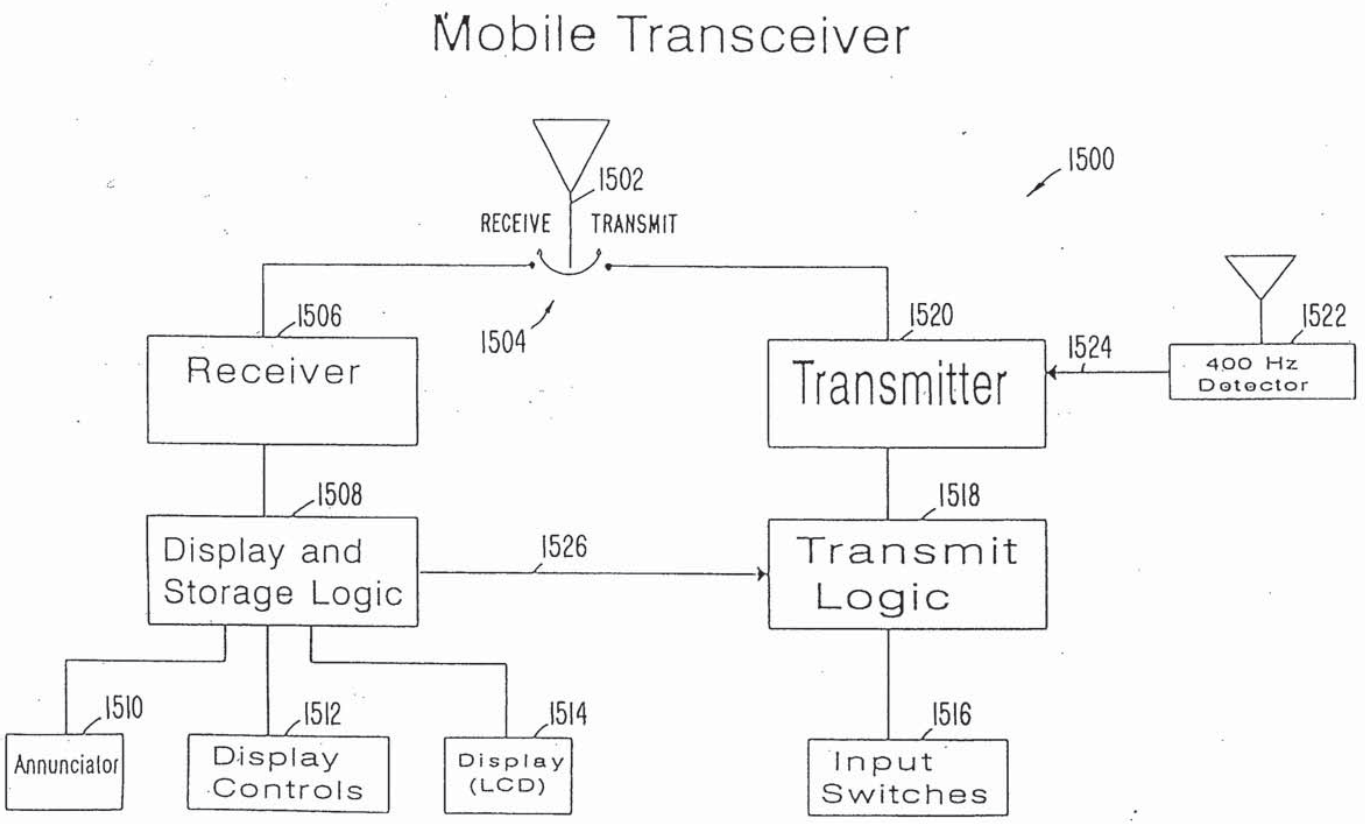
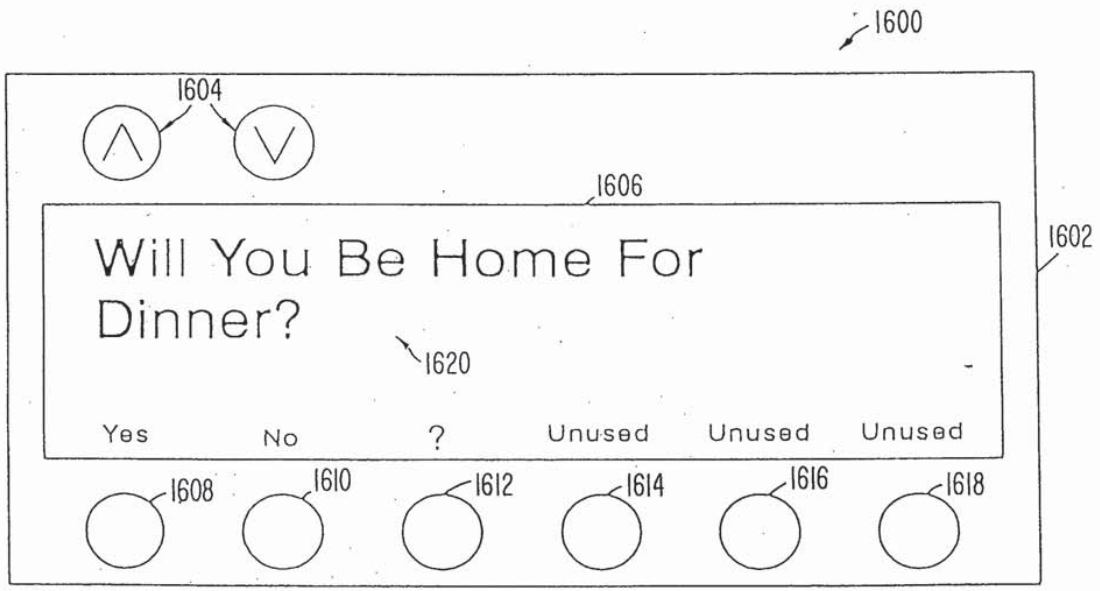

Mobile Transceiver
1500
1502
RECEIVE
TRANSMIT
1504
1506
Receiver
1508
Display and Storage Logic
1510
Annunciator
1512
Display Controls
1514
Display (LCD)
1520
Transmitter
1522
400 Hz Detector
1524
1526
1518
Transmit Logic
1516
Input Switches

FIG. 16



Mobile Transceiver

FIG. 17

Mobile Receiver

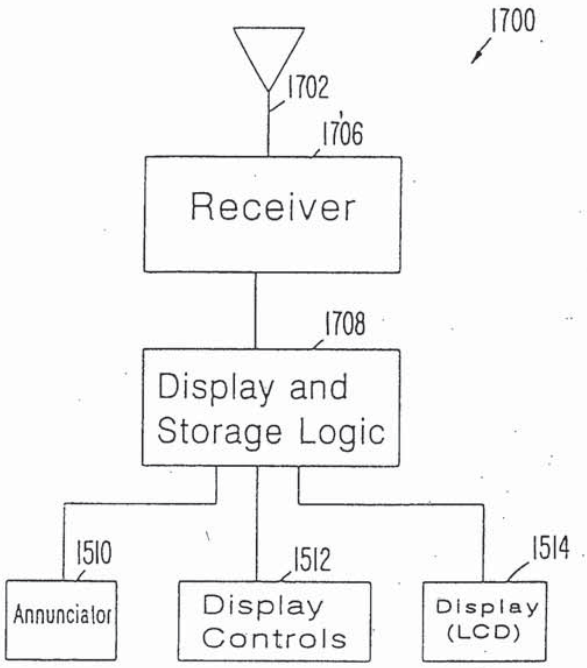


FIG. 18(A)

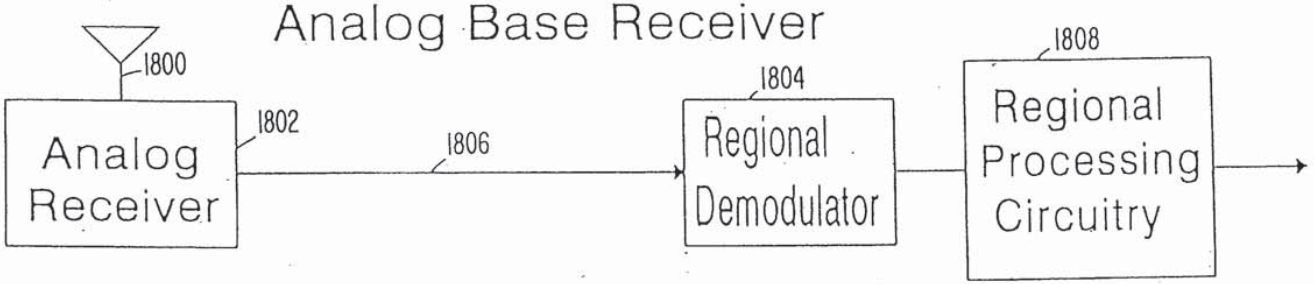


FIG. 18(B)

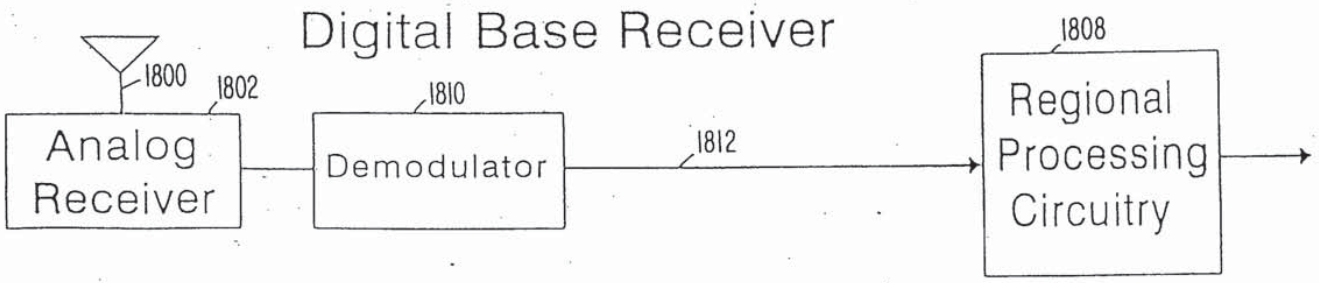


FIG. 19

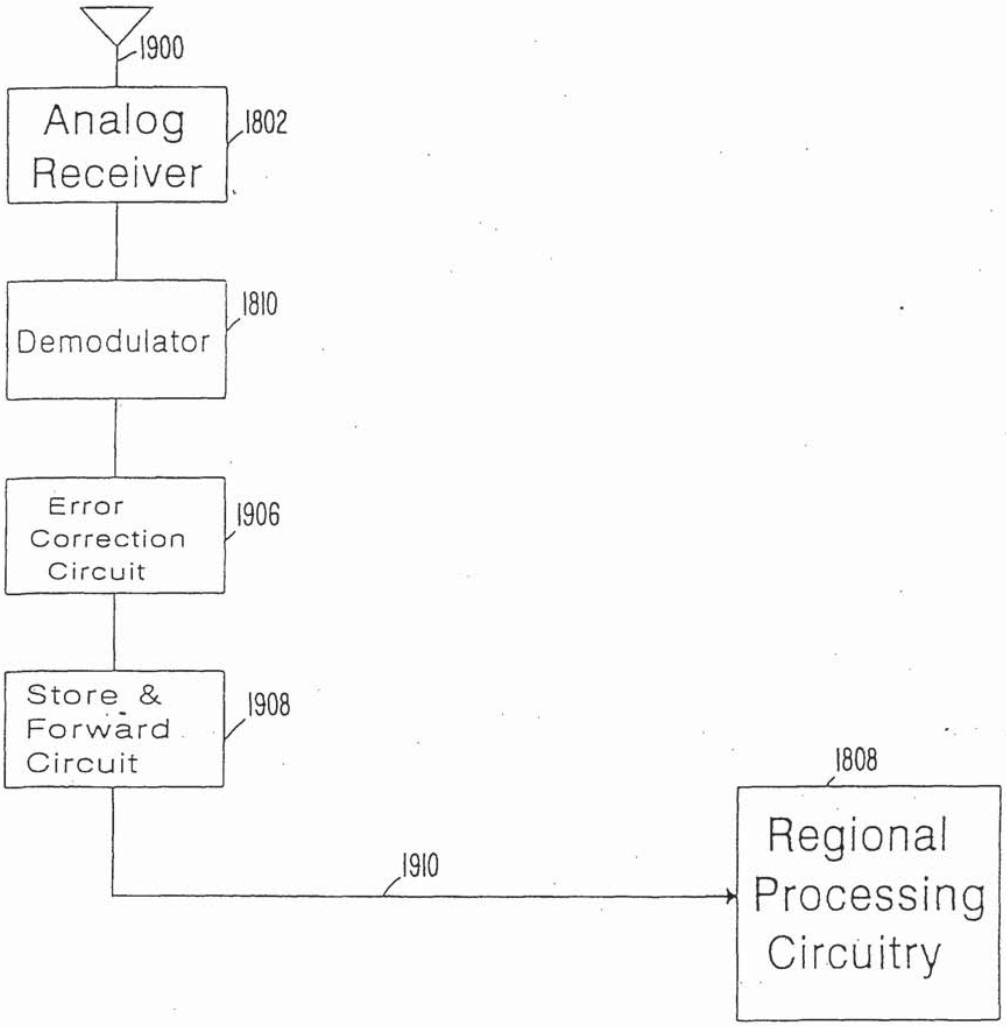

1900
Analog Receiver
1802
Demodulator
1810
Error Correction Circuit
1906
Store & Forward Circuit
1908
1910
1808
Regional Processing Circuitry

FIG. 20

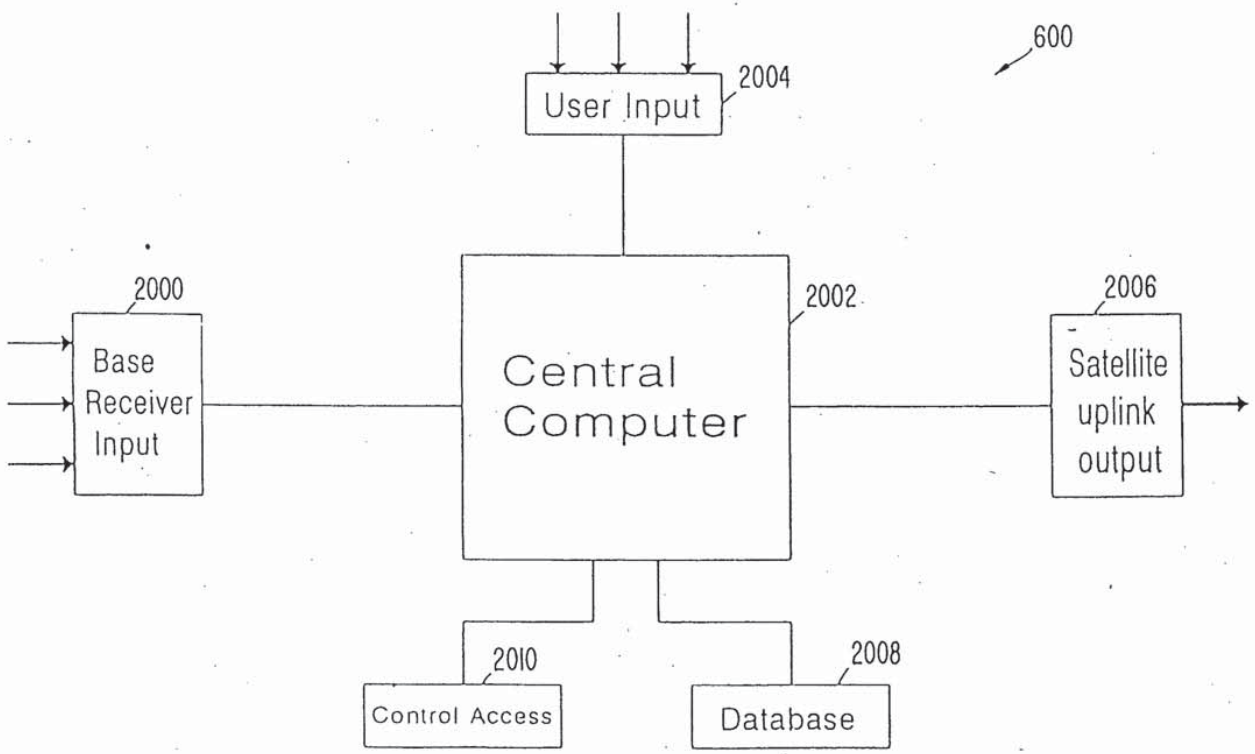
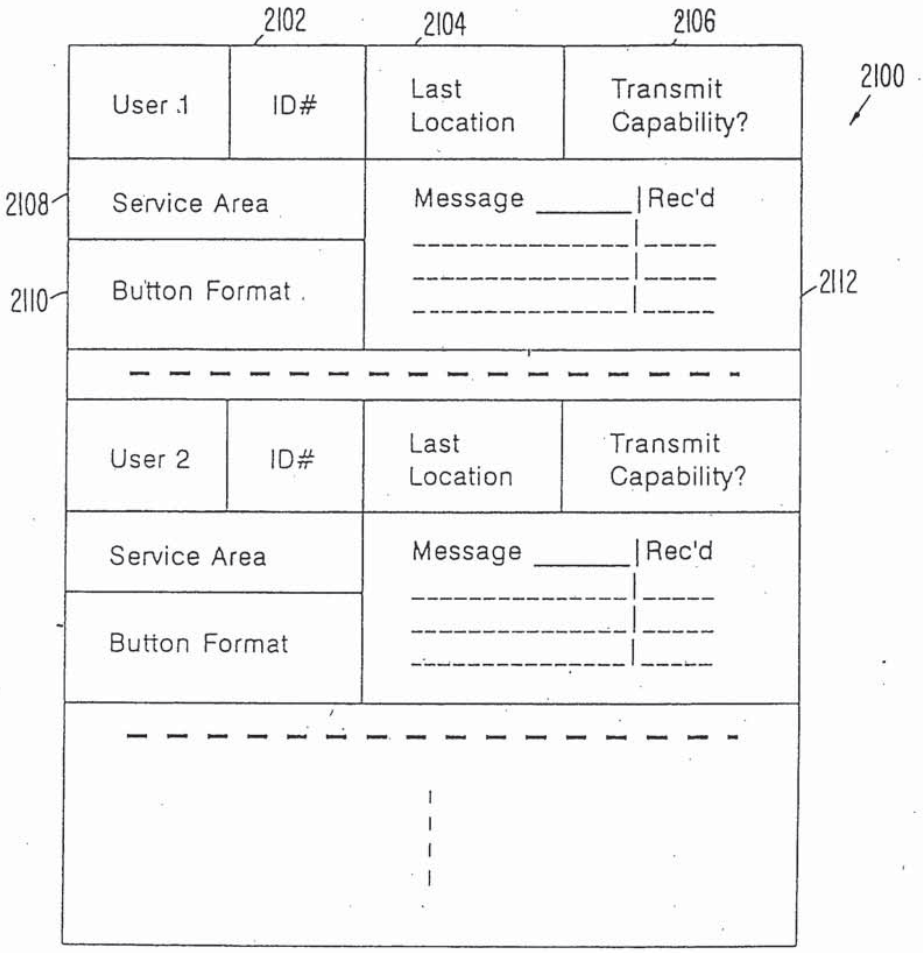

Network Operations Center
600
User Input
2004
2000
Base Receiver Input
Central Computer
2002
2006
Satellite uplink output
2010
Control Access
2008
Database

FIG. 21



User Database

FIG. 22

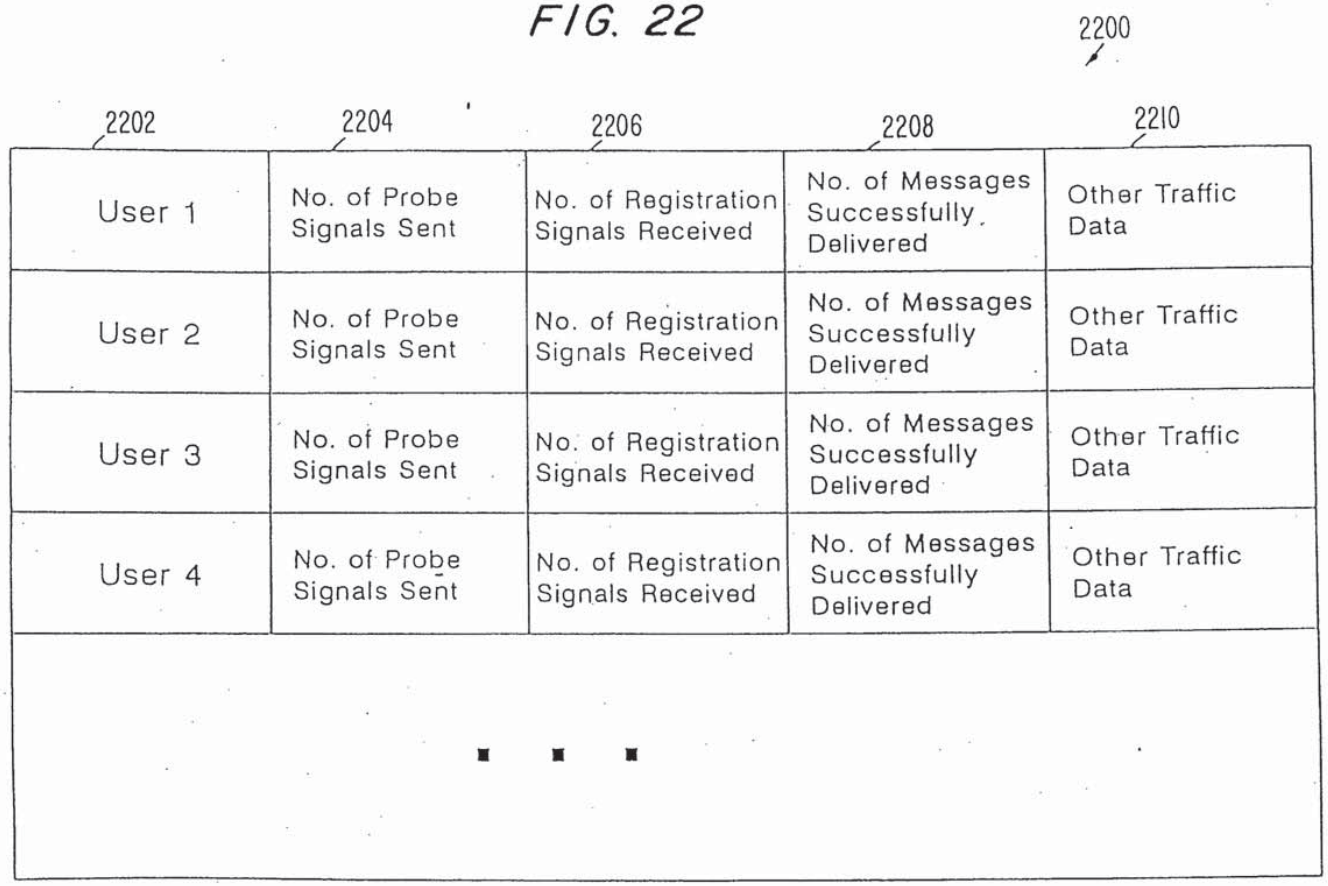

2200
2202
2204
2206
2208
2210
User 1
No. of Probe Signals Sent
No. of Registration Signals Received
No. of Messages Successfully Delivered
Other Traffic Data
User 2
No. of Probe Signals Sent
No. of Registration Signals Received
No. of Messages Successfully Delivered
Other Traffic Data
User 3
No. of Probe Signals Sent
No. of Registration Signals Received
No. of Messages Successfully Delivered
Other Traffic Data
User 4
No. of Probe Signals Sent
No. of Registration Signals Received
No. of Messages Successfully Delivered
Other Traffic Data
Traffic Database

FIG. 23

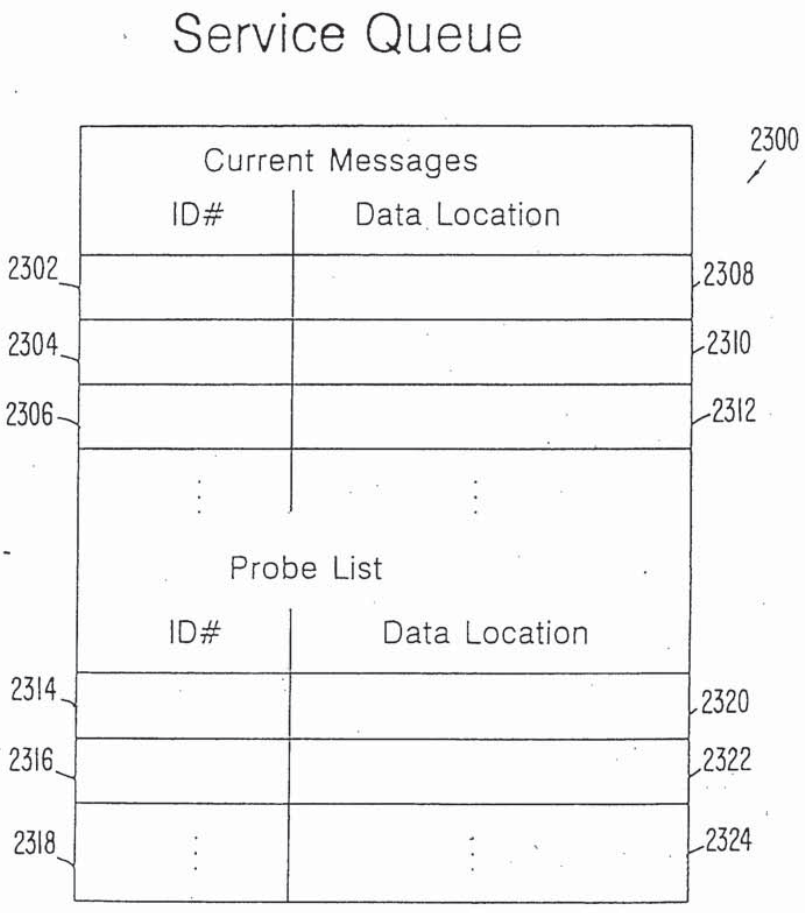
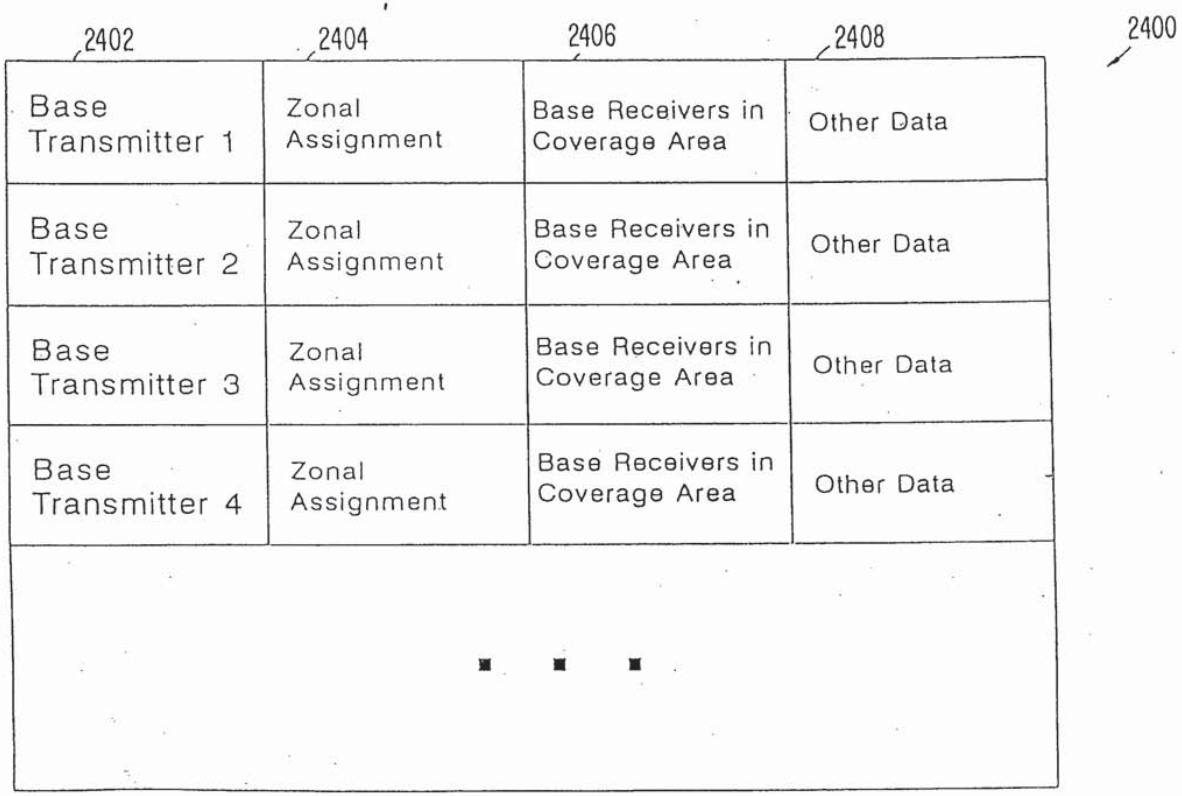

Service Queue
2300
Current Messages
ID#
Data Location
2302
2304
2306
2308
2310
2312
Probe List
ID#
Data Location
2314
2316
2318
2320
2322
2324

FIG. 24



Base Transmitter Database

FIG. 25

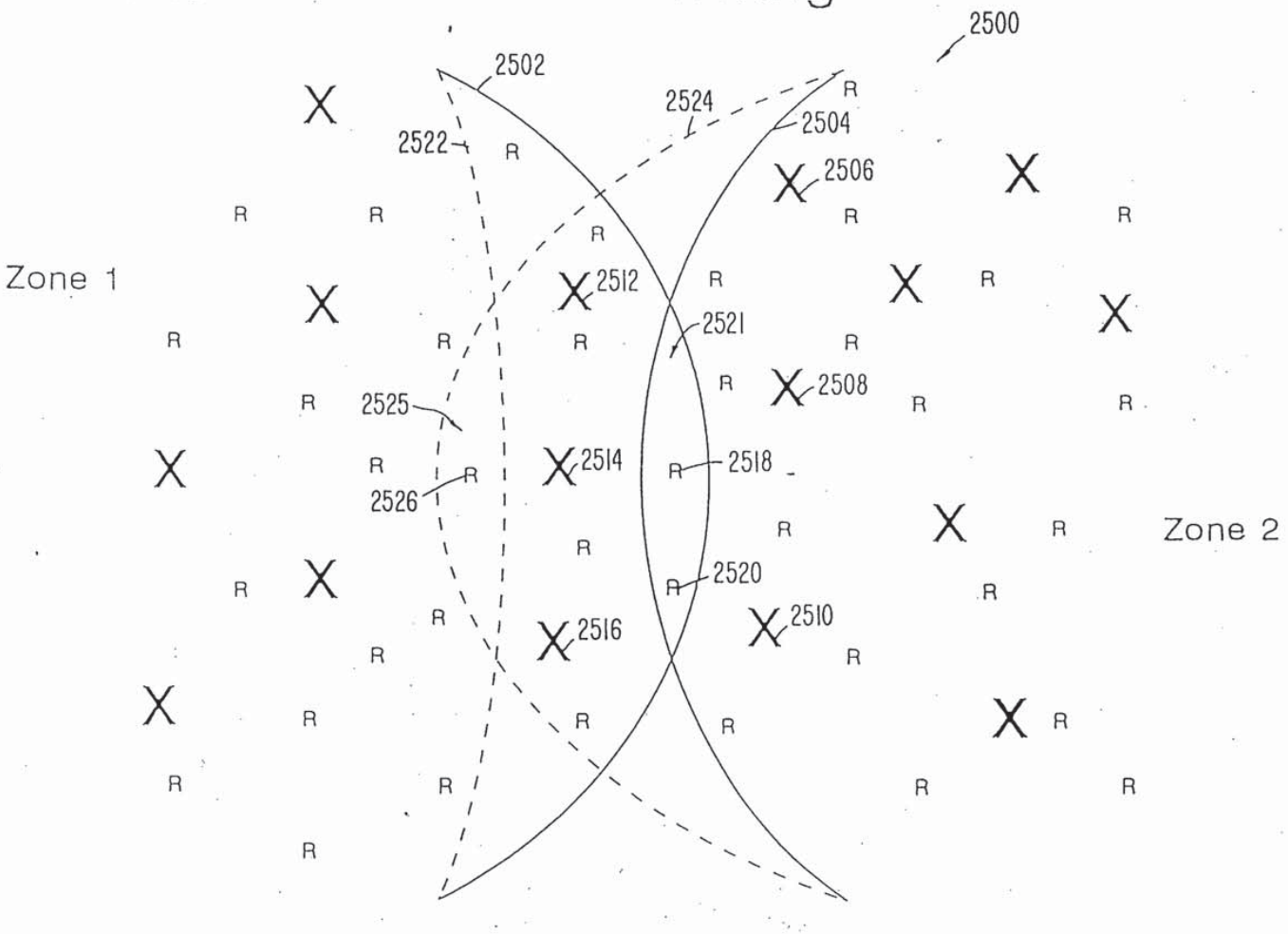

Zone Dithering
2500
2502
2524
2504
2522
2506
2512
2521
2508
2525
2514
2518
2526
2520
2510
2516
Zone 1
Zone 2

FIG. 26

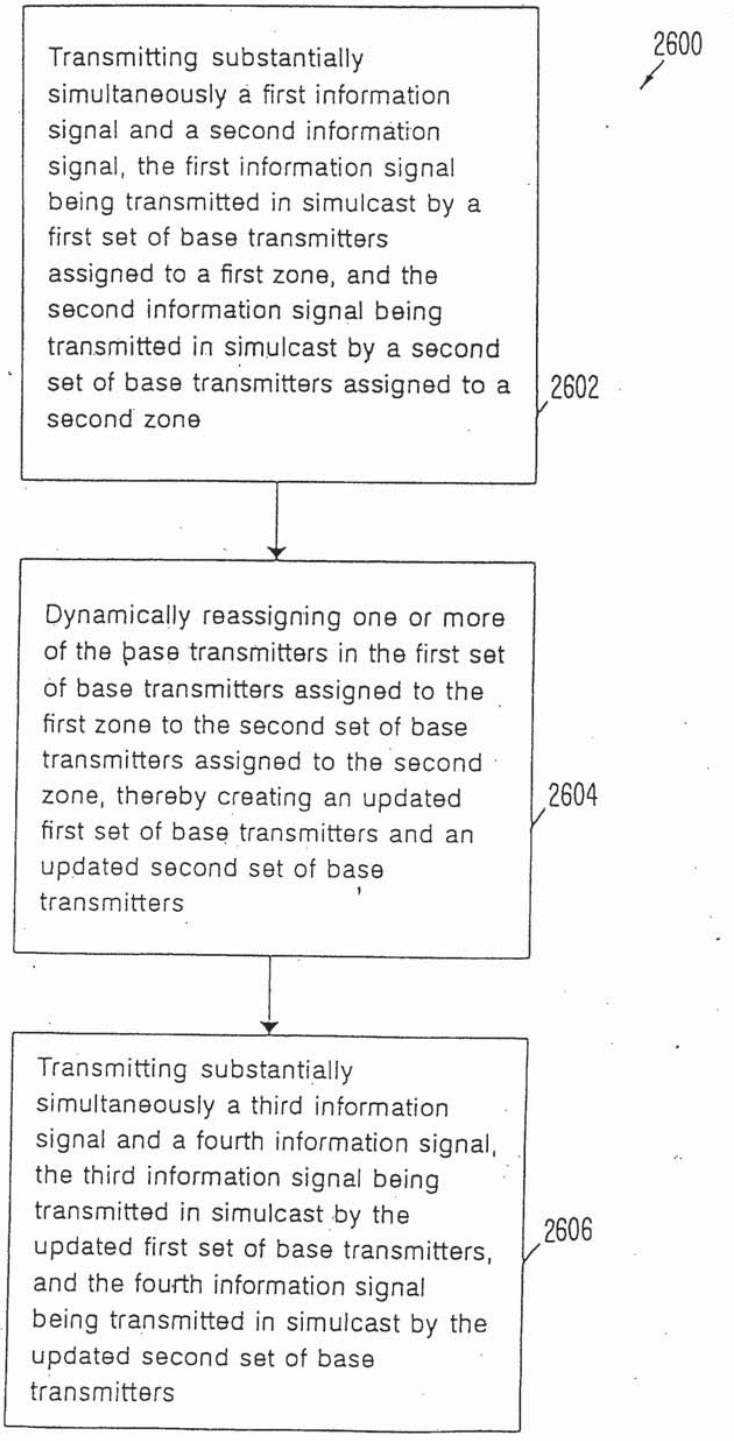

2600
Transmitting substantially simultaneously a first information signal and a second information signal, the first information signal being transmitted in simulcast by a first set of base transmitters assigned to a first zone, and the second information signal being transmitted in simulcast by a second set of base transmitters assigned to a second zone
2602
Dynamically reassigning one or more of the base transmitters in the first set of base transmitters assigned to the first zone to the second set of base transmitters assigned to the second zone, thereby creating an updated first set of base transmitters and an updated second set of base transmitters
2604
Transmitting substantially simultaneously a third information signal and a fourth information signal, the third information signal being transmitted in simulcast by the updated first set of base transmitters, and the fourth information signal being transmitted in simulcast by the updated second set of base transmitters
2606

FIG. 27(A)

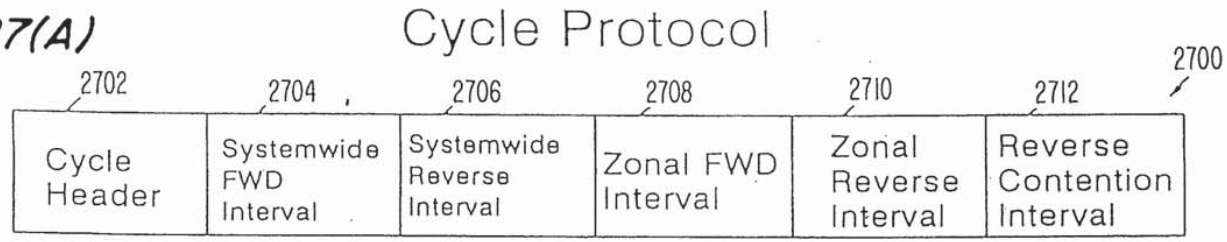


FIG. 27(B)

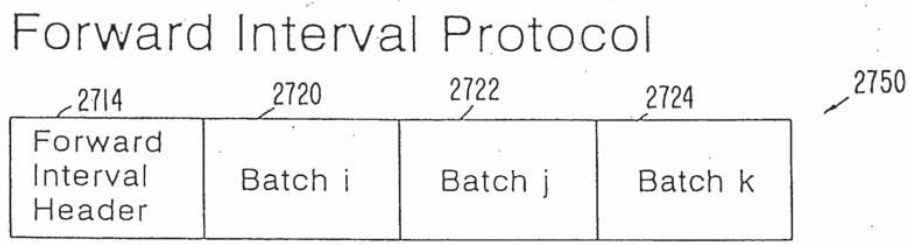


FIG. 27(C)

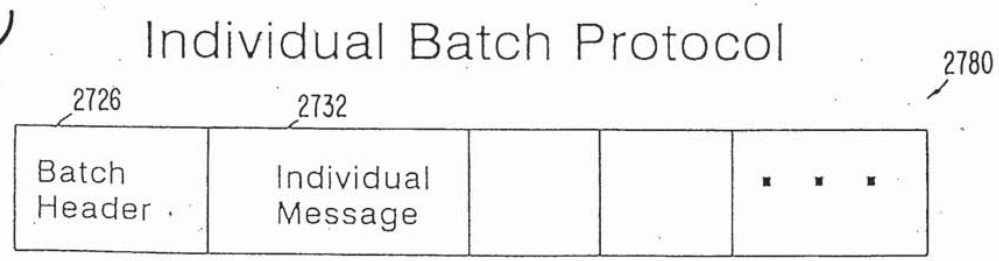


FIG. 28(A)

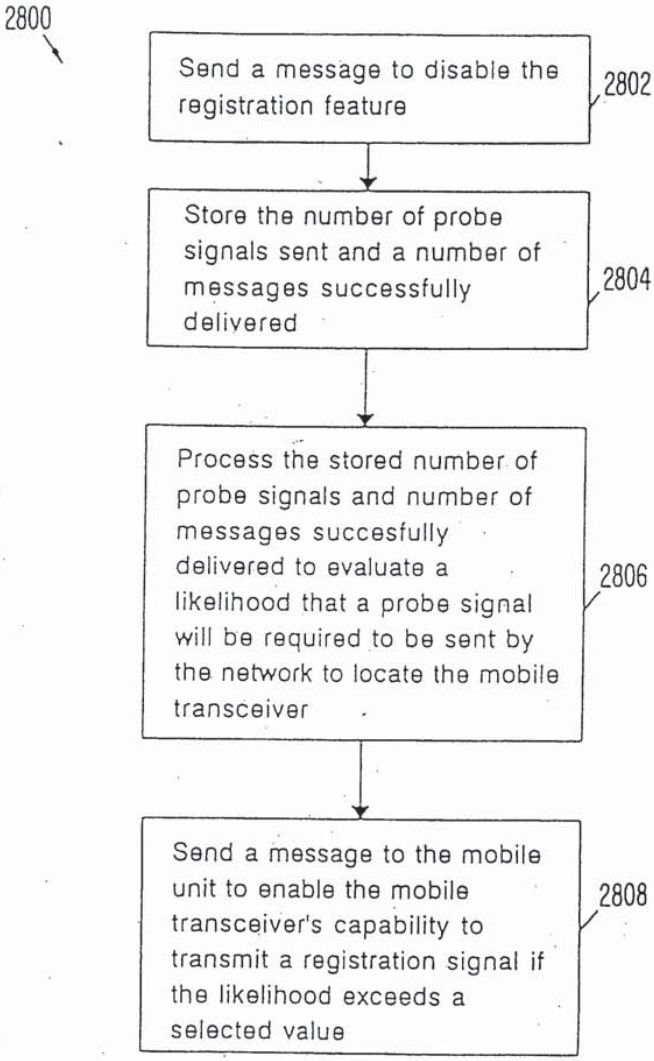

2800
Send a message to disable the registration feature
2802
Store the number of probe signals sent and a number of messages successfully delivered
2804
Process the stored number of probe signals and number of messages succesfully delivered to evaluate a likelihood that a probe signal will be required to be sent by the network to locate the mobile transceiver
2806
Send a message to the mobile unit to enable the mobile transceiver's capability to transmit a registration signal if the likelihood exceeds a selected value
2808

FIG. 28(B)

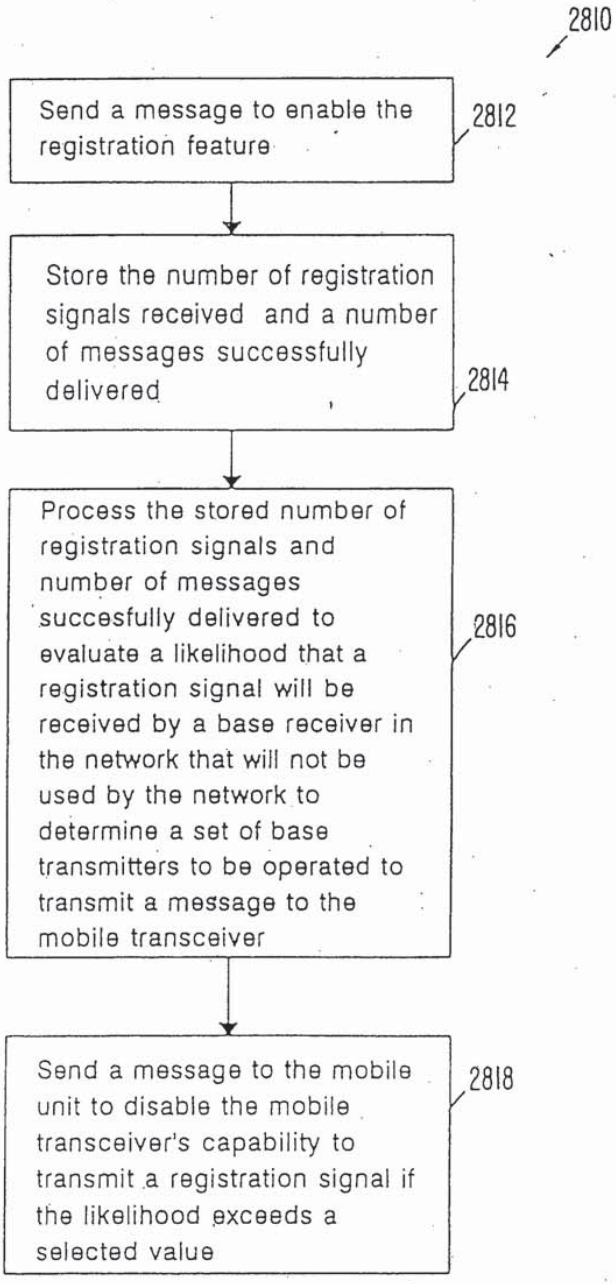

2810
Send a message to enable the registration feature
2812
Store the number of registration signals received and a number of messages successfully delivered
2814
Process the stored number of registration signals and number of messages succesfully delivered to evaluate a likelihood that a registration signal will be received by a base receiver in the network that will not be used by the network to determine a set of base transmitters to be operated to transmit a message to the mobile transceiver
2816
Send a message to the mobile unit to disable the mobile transceiver's capability to transmit a registration signal if the likelihood exceeds a selected value
2818

FIG. 29(A)

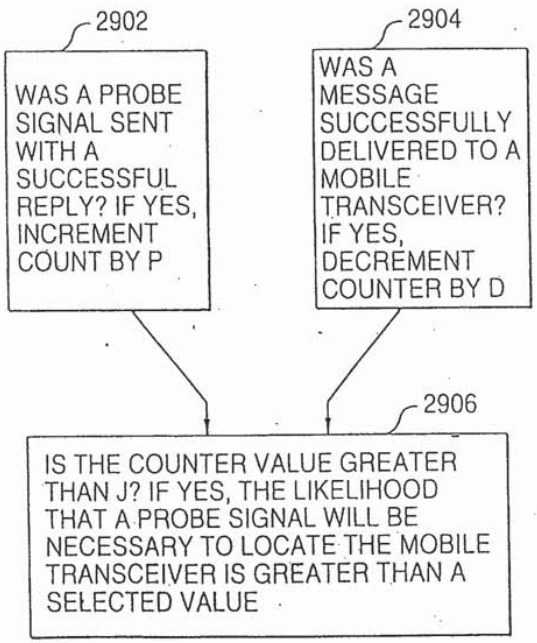
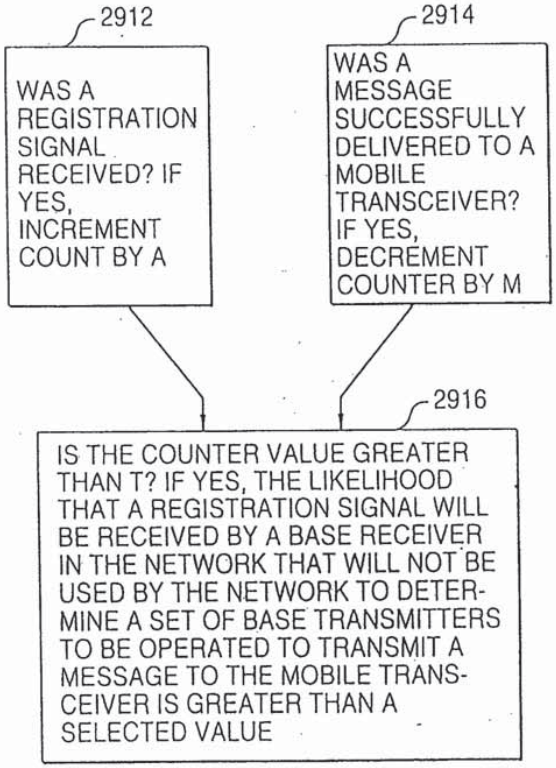


FIG. 29(B)



#3/B
TLR
3/7/97

PATENT
Attorney Docket No. 03680.0083-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Dennis CAMERON et al.	)	
	)	
Continuation Application of Serial No.: 07/973,918	)	Group Art Unit: Unassigned
	)	
Filed: December 6, 1996	)	Examiner: Unassigned
	)	
For: A Nationwide Communication System	)	

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above application, please amend this application as follows:

INVENTORSHIP:

[Please delete "RADE PETROVIC" as a named coinventor in this application.]

IN THE TITLE:

Kindly change the title to -- METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION--.

IN THE DRAWINGS:

Subject to the approval of the Examiner and as indicated in the concurrently-filed Request For Approval Of Drawing Change, please amend the drawings as follows:

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202-408-4000

Fig. 1, add reference character "F" in the overlap area between transmitters 102 and 104;

Figs. 1-5, add the label "Prior Art"; and

Fig. 6, add base transmitters 613 and 615.

IN THE SPECIFICATION:

Please amend the specification as follows:

In the title page, change "Baggat" to --Bhagat-- and change "Massood" to --Masood--.

Page 19, line 3, replace "Although not shown in Fig. 6, each" with --Each--; and line 4, after "stations" insert --, shown as, for example, base transmitters 613 and 615 in Fig. 6,--.

IN THE CLAIMS:

Please cancel claims 1 and 3-7 without prejudice or disclaimer of the subject matter thereof, and amend claim 2 and add new claims 8-24 as follows:

2. (Amended) A multi-carrier simulcast transmission system for transmitting in a desired frequency band a message contained in an information signal, the system comprising:

a first transmitter [means for transmitting an information signal by generating] configured to transmit a first plurality of carrier signals within the desired frequency band [and by modulating the first plurality of carrier signals to convey the information signal], each of the first plurality of carrier signals representing a portion of the information signal not represented by others of the plurality of carrier signals; and

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a second transmitter [means], spatially separated from the first transmitter, [for transmitting the information signal] configured to transmit a second plurality of carrier signals in simulcast with the first plurality of carrier signals, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals [transmitter by generating a second plurality of carrier signals at substantially the same frequencies as the first plurality of carrier signals and by modulating the second plurality of carrier signals to convey this information signal].

8. The multi-carrier simulcast transmission system of claim 2, wherein the first transmitter comprises a plurality of transmitters located in a first area, and the second transmitter comprises a plurality of transmitters located in a second area.

9. The multi-carrier simulcast transmission system of claim 2, wherein the first and second pluralities of carrier signals are evenly spaced within the desired frequency band.

10. The multi-carrier simulcast transmission system of claim 9, wherein the first and second pluralities of carrier signals are spaced approximately every 3 KHz, and wherein the desired frequency band is approximately 50 KHz wide.

11. The multi-carrier simulcast transmission system of claim 2, wherein each of the first and second pluralities of carrier signals comprise eight carrier signals.

12. The multi-carrier simulcast transmission system of claim 2, wherein the first and second pluralities of carrier signals include an identical number of carrier signals, and wherein each carrier signal in the first plurality corresponds to and is

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slightly frequency shifted 10-20 Hz from the respective carrier signal in the second plurality.

13. The multi-carrier simulcast transmission system of claim 12, wherein the first transmitter comprises means for modulating the first plurality of carrier signals using a modulation scheme, and the second transmitter comprises means for modulating the second plurality of carrier signals using the modulation scheme.

14. The multi-carrier simulcast transmission system of claim 13, wherein the modulation scheme is selected from the group including: modulated on/off keying, binary frequency shift keying, M'ary frequency shift keying, and quadrature amplitude modulation.

15. The multi-carrier simulcast transmission system of claim 12, further comprising:

a network operations center configured to generate the information signal, the network operations center including a receiver for receiving data input to the network operations center, a database for storing data, a central computer connected to the receiver and the database for processing the input data and the database data to generate the information signal, and a satellite uplink connected to the central computer for broadcasting the information signal; and

a satellite for receiving the information signal from the network operations center and for retransmitting the information signal to the first and second transmitters,

wherein each of the first and second transmitters comprises satellite downlink means and base transmitter means.

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16. In a multi-carrier simulcast transmission system, a method for transmitting in a desired frequency band a message contained in an information signal, the method comprising the steps of:

generating a first plurality of carrier signals within the desired frequency band, each of the first plurality of carrier signals representing a portion of the information signal not represented by others of the first pluarlity of carrier signals;

generating a second plurality of carrier signals within the desired frequency band, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals;

transmitting the first plurality of carrier signals from a first transmitter;

transmitting the second plurality of carrier signals from a second transmitter in simulcast with transmission of the first plurality of carrier signals from the first transmitter.

17. The method of claim 16, wherein the first and second pluralities of carrier signals are evenly spaced within the desired frequency band.

18. The method of claim 16, wherein the first and second pluralities of carrier signals are spaced approximately every 3 KHz, and wherein the desired frequency band is approximately 50 KHz wide.

19. The method of claim 16, wherein the first and second pluralities of carrier signals each comprise eight carrier signals.

20. The method of claim 16, wherein the first and second pluralities of carrier signals include an identical number of carrier signals, and wherein each carrier signal in

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the first plurality corresponds to and is slightly frequency shifted 10-20 Hz from the respective carrier signal in the second plurality.

21. The method of claim 16, wherein at least one of the first and second pluralities of carrier signals is modulated according to a modulation scheme selected from the group including: modulated on/off keying, binary frequency shift keying, M'ary frequency shift keying, and quadrature amplitude modulation.

22. The method of claim 16, wherein the step of generating the first plurality of carrier signals comprises the substep of modulating the first plurality of carrier signals using a modulation scheme.

23. The method of claim 16, wherein the step of generating a second plurality of carrier signals comprises the substep of modulating the second plurality of carrier signals using a modulation scheme.

24. The method of claim 16, wherein the step of generating a second plurality of carrier signals comprises the substep of generating the second plurality of carrier signals at frequencies slightly offset from the first plurality of carrier signals.--

REMARKS

Prior to examination, applicants have amended this application. Specifically, applicants amended the title, drawings, and specification to address issues raised in previous Office Actions of the parent application. In addition, applicants canceled claims 1 and 3-7, which were considered in related applications, and amended claim 2 and added new claims 8-24.

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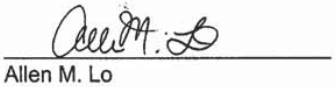
Applicants submit that the invention, as claimed in pending claims 2 and 8-24, is not disclosed or suggested by the prior art of record in the parent application or any other related applications. Accordingly, applicants request favorable consideration of this application and allowance of the pending claims.

If an extension of time required to timely file this Amendment under 37 C.F.R. § 1.136 is not accounted for above, such extension is hereby requested and the fee for the extension should be charged to our Deposit Account No. 06-0916. If there are any other fees due in connection with the filing of this Amendment not accounted for above, such fees should also be charged to our Deposit Account.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: 

Allen M. Lo
Reg. No. 37,059

Dated: December 6, 1996

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FARABOW, GARRETT
& DUNNER, L.L.P.
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202-408-4000

08/760457

#4

PATENT TLR

Attorney Docket No. 03680.0083-04 3/7/97

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Dennis CAMERON et al.	)	
	)	
Continuation application of	)	
Serial No.: 07/973,918	)	Group Art Unit: Unassigned
	)	
Filed: December 6, 1996	)	Examiner: Unassigned
	)	
For: A Nationwide Communication System	)	

Assistant Commissioner of Patents
Washington, D.C. 20231
Sir:

REQUEST FOR APPROVAL OF DRAWING CHANGE

The Examiner is requested to approve the proposed drawing changes, which are indicated in red in the attached drawings, as follows:

Fig. 1, add reference character "F" in the overlap area between transmitters 102 and 104;

Figs. 1-5, add the label "Prior Art"; and

Fig. 6, add base transmitters 613 and 615.

If there is any fee due in connection with the filing of this proposed drawing change, please charge such fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER

Dated: December 6, 1996

By: _____
Allen M. Lo
Reg. No. 37,059

LAW OFFICES
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Approved
3/10/97
R

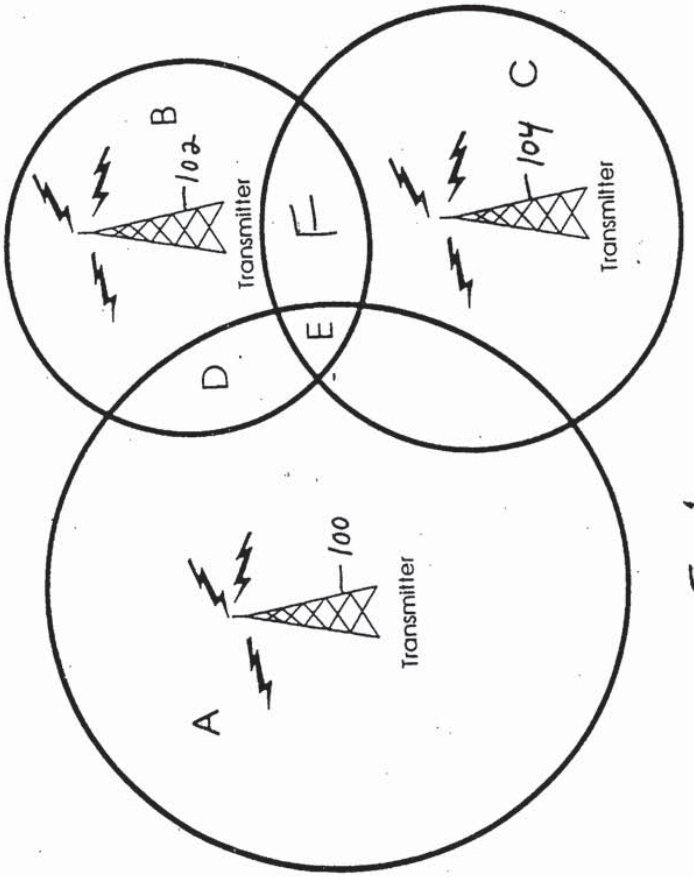

Fig. 1
Prior Art

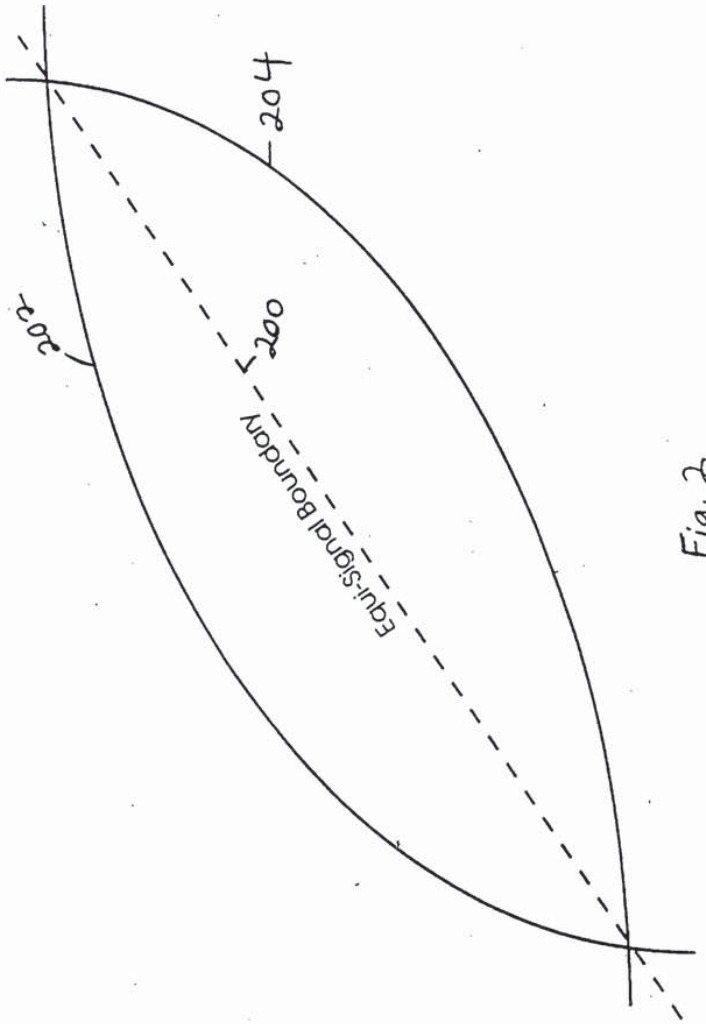

Fig. 2
Prior Art

Fig. 3
Prior Art

Fig. 4(A)

Fig. 4(B)

Fig. 4(C)

Fig. 4
Prior Art

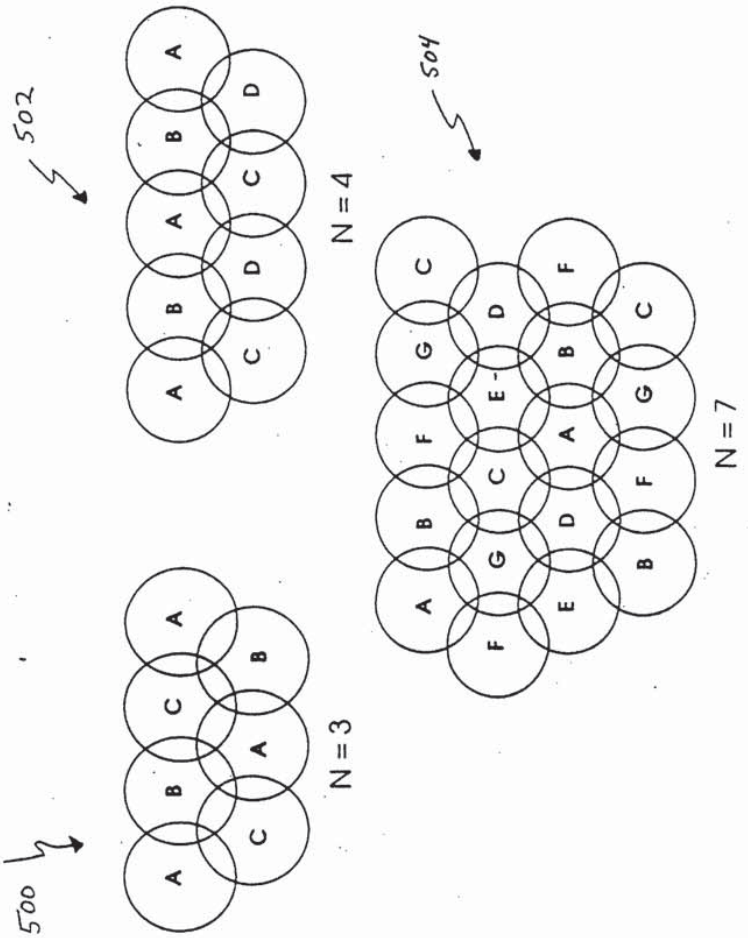

Fig. 5
Prior Art

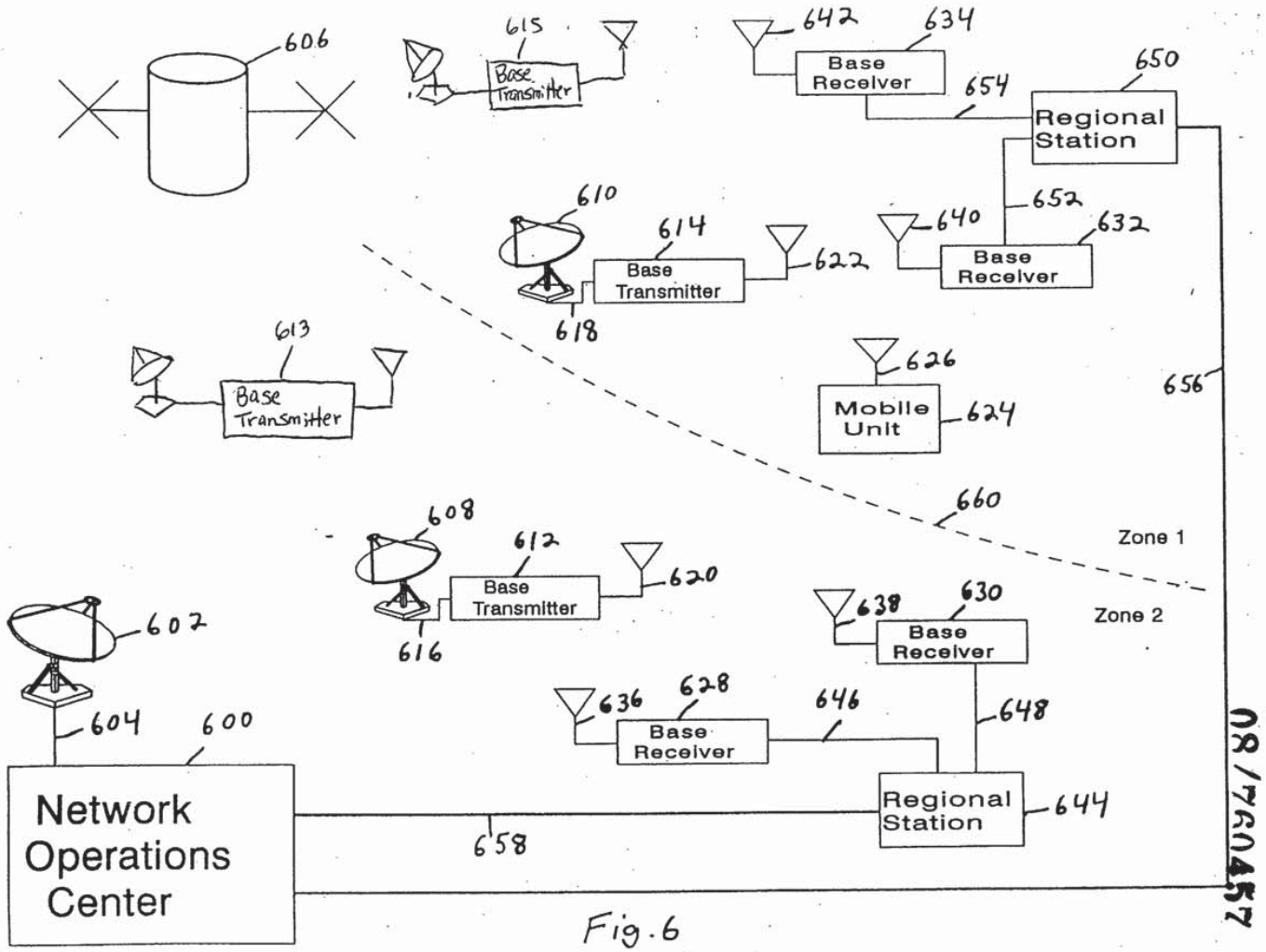

Fig. 6

08/760457

130 '22

08/76045

PATENT

Attorney Docket No. 03680.0083-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Dennis W. Cameron et al.

Continuation application of Serial No.: 07/973,918

Group Art Unit: Unassigned

Filed: December 6, 1996

Examiner: Unassigned

For: A NATIONWIDE COMMUNICATIONS SYSTEM

Assistant Commissioner for Patents
Washington, D.C. 20231

PETITION UNDER 37 C.F.R. § 1.48(b)

Pursuant to 37 C.F.R. § 1.48(b), applicants petition the Commissioner to correct the inventorship of this application by deleting Mr. Rade Petrovic as an inventor. Applicants acknowledge that the subject matter to which Mr. Petrovic is an inventor is no longer claimed in this application, which is a continuation application of Serial No. 07/973,918.

A check in the amount of $130.00 is attached as payment of the fee set forth in 37 C.F.R. §1.17(h). If there are any other fees due in connection with the filing of this petition, please charge the fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: Allen M. Lo

Allen M. Lo
Reg. No. 37,059

130 ER 01/06/97 07973918
1 122 130.00 CK

Date: December 6, 1996

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WASHINGTON, DC 20005
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Transaction History Date 1997-04-25
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

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UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
[illegible]	[illegible]	CAMERON D	[illegible]

26M1/0425

FINNEGAN HENDERSON FARABOW
GARRETT AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

EXAMINER	
LE, T	
ART UNIT	PAPER NUMBER
26[illegible]	5

04/25/97

DATE MAILED:

NOTICE OF ALLOWABILITY

PART I.

1. ☑ This communication is responsive to application filed 12/6/96.
2. ☑ All the claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☑ The allowed claims are 2 and 8-24, renumbered 1-18.
4. ☐ The drawings filed on ______ are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [_] been received. [_] not been received. [_] been filed in parent application Serial No. ______, filed on ______.
6. ☐ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☑ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☑ Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☑ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
   a. ☑ Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto or to Paper No. 5. ~~CORRECTION IS REQUIRED.~~
   b. ☑ The proposed drawing ~~correction~~ filed on 12/6/96 has been approved by the examiner. CORRECTION IS REQUIRED.
   c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
   d. ☑ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

Attachments:

- _ Examiner's Amendment
- _ Examiner Interview Summary Record, PTOL-413
- ✓ Reasons for Allowance
- ✓ Notice of References Cited, PTO-892
- _ Information Disclosure Citation, PTO-1449
- _ Notice of Informal Application, PTO-152
- ✓ Notice re Patent Drawings, PTO-948
- _ Listing of Bonded Draftsmen
- _ Other

T. LE
(703) 305-4819

PTOL-37 (REV. 4-89)

1. The petition under 37 CFR 1.48(b) regarding the deletion of "Mr. Rade Petrovic" as an inventor has been entered and the inventorship of this application has been corrected.

2. The following is an Examiner's Statement of Reasons for Allowance:

As to claims 2 and 16, the prior art of record fails to show a multi-carrier simulcast transmission system comprising the first and second transmitters for simultaneously transmitting the same information signals. The system comprises a plurality of carrier signals in each of the transmitters wherein each of the carrier signals represent a portion of the information signal not represented by others of the plurality carrier signals.

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tomisato et al. and Wei both teach a diversity transmitter system with plural modulator for transmitting information via plural carrier frequencies.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Le whose telephone number is (703) 305-4819.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Thanh C. Le
Mar 10, 1997

Reinhard J. Eisenzopf 3-13-97
Supervisory Patent Examiner
Group 2600

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED	08/760,457	2611	5
	APPLICANT(S) CAMERON et al.		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
*	A	4,490,830	12/84	Kai et al.	455	59	
*	B	4,223,405	9/80	Hattori et al.	455	59	
*	C	4,392,242	7/83	Kai	455	34.1	
*	D	4,968,966	11/90	Jasinski	455	51.2	
*	E	4,570,265	2/86	Thro	455	59	
*	F	5,504,783	4/96	Tomisato et al	455	101	
*	G	5,243,629	9/93	Wei	375	299	
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT PP. SPEC.
*	L	WO91/18458	11/28/91	US	Wilkinson	455	101		
*	M	WO/92/11707	07/09/92	US	Fennel et al.	455	33.1		
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER	DATE
THANH LE	3/10/97

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

Form PTO 948 (Rev. 10-94) U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office Application No. 760457

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

PTO Draftpersons review all originally filed drawings regardless of whether they are designated as formal or informal. Additionally, patent Examiners will review the drawings for compliance with the regulations. Direct telephone inquiries concerning this review to the Drawing Review Branch, 703-305-8404.

The drawings filed (insert date) 12/6/96, are
A. ___ not objected to by the Draftsperson under 37 CFR 1.84 or 1.152.
B. X objected to by the Draftsperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawings must be submitted according to the instructions on the back of this Notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink. Color.
   - ___ Not black solid lines. Fig(s)___
   - ___ Color drawings are not acceptable until petition is granted. Fig(s) ___
2. PHOTOGRAPHS. 37 CFR 1.84(b)
   - ___ Photographs are not acceptable until petition is granted. Fig(s) ___
   - ___ Photographs not properly mounted (must use brystol board or photographic double-weight paper). Fig(s)___
   - ___ Poor quality (half-tone). Fig(s)___
3. GRAPHIC FORMS. 37 CFR 1.84 (d)
   - ___ Chemical or mathematical formula not labeled as separate figure. Fig(s)___
   - ___ Group of waveforms not presented as a single figure, using common vertical axis with time extending along horizontal axis. Fig(s)___
   - ___ Individuals waveform not identified with a separate letter designation adjacent to the vertical axis. Fig(s)___
4. TYPE OF PAPER. 37 CFR 1.84(c)
   - ___ Paper not flexible, strong, white, smooth, nonshiny, and durable. Sheet(s)___
   - ___ Erasures, alterations, overwritings, interlineations, cracks, creases, and folds copy machine marks not accepted. Fig(s) ___
   - ___ Mylar, velum paper is not acceptable (too thin). Fig(s) ___
5. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:
   - 21.6 cm. by 35.6 cm. (8 1/2 by 14 inches)
   - 21.6 cm. by 33.1 cm. (8 1/2 by 13 inches)
   - 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches)
   - 21.0 cm. by 29.7 cm. (DIN size A4)
   - ___ All drawing sheets not the same size. Sheet(s)___
   - ___ Drawing sheet not an acceptable size. Sheet(s) ___
6. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Paper size

21.6 cm. X 35.6 cm. (8 1/2 X 14 inches)	21.6 cm X 33.1 cm. (8 1/2 X 13 inches)	21.6 cm. X 27.9 cm. (8 1/2 X 11 inches)	21.0 cm. X 29.7 cm. (DIN Size A4)
T 2.1 cm. (2")	2.5 cm. (1")	2.5 cm. (1")	2.5cm.
L .64 cm. (1/4")	.64 cm. (1/4")	1.2 cm. (1/4")	2.5 cm.
R .64 cm. (1/4")	.64 cm. (1/4")	1.2 cm. (1/4")	1.5 cm.
B .64 cm. (1/4")	.64 cm. (1/4")	1.2 cm. (1/4")	1.0 cm.

Margins do not conform to chart above.
Sheet(s)___
X Top (T) X Left (L) X Right (R) X Bottom (B)

7. VIEWS. 37 CFR 1.84(h)
   REMINDER: Specification may require revision to correspond to drawing changes.
   - ___ All views not grouped together. Fig(s)___
   - ___ Views connected by projection lines or lead lines. Fig(s)___

   Partial views. 37 CFR 1.84(h) 2
   - ___ View and enlarged view not labled separatly or properly. Fig(s)___

   Sectional views. 37 CFR 1.84 (h) 3
   - ___ Hatching not indicated for sectional portions of an object. Fig(s)___
   - ___ Cross section not drawn same as view with parts in cross section with regularly spaced parallel oblique strokes. Fig(s)___
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
   - ___ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s)___
9. SCALE. 37 CFR 1.84(k)
   - ___ Scale not large enough to show mechanism with crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s)___
   - ___ Indication such as "actual size" or scale 1/2" not permitted. Fig(s)___
10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)
   - X Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (except for color drawings). Fig(s) 1-8&9
11. SHADING. 37 CFR 1.84(m)
   - ___ Solid black shading areas not permitted. Fig(s)___
   - ___ Shade lines, pale, rough and blurred. Fig(s)___
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)
   - ___ Numbers and reference characters not plain and legible. 37 CFR 1.84(p)(l) Fig(s)___
   - ___ Numbers and reference characters not oriented in same direction as the view. 37 CFR 1.84(p)(l) Fig(s)___
   - ___ English alphabet not used. 37 CFR 1.84(p)(2) Fig(s)___
   - ___ Numbers, letters, and reference characters do not measure at least .32 cm. (1/8 inch) in height. 37 CFR(p)(3) Fig(s)___
13. LEAD LINES. 37 CFR 1.84(q)
   - ___ Lead lines cross each other. Fig(s)___
   - ___ Lead lines missing. Fig(s)___
14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)
   - ___ Sheets not numbered consecutively, and in Arabic numerals, beginning with number 1. Sheet(s)___
15. NUMBER OF VIEWS. 37 CFR 1.84(u)
   - ___ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s)___
   - ___ View numbers not preceded by the abbreviation Fig. Fig(s)___
16. CORRECTIONS. 37 CFR 1.84(w)
   - ___ Corrections not made from prior PTO-948. Fig(s)___
17. DESIGN DRAWING. 37 CFR 1.152
   - ___ Surface shading shown not appropriate. Fig(s)___
   - ___ Solid black shading not used for color contrast. Fig(s)___

COMMENTS:

ATTACHMENT TO PAPER NO. 5 REVIEWER A. Doan DATE 2/19/97

PTO Copy

#16

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: Box ISSUE FEE
ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

26M1/0425

FINNEGAN HENDERSON FARABOW
GARRETT AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT		DATE MAILED
08/760,457	12/06/96	018	LE, T	2611	04/25/97

First Named Applicant: CAMERON, DENNIS W.

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION (AS AMENDED)

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 03680.0083-0	455-052.000	M25	UTILITY	NO	$1290.00	07/25/97

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as yes, verify your current SMALL ENTITY status:

A. If the status is changed, pay twice the amount of the FEE DUE shown and notify the Patent and Trademark Office of the change in status, or
B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay FEE DUE shown above, or

B. File verified statementof Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "6b" of Part B should be completed.

III. All communications regarding this application must give application number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (REV. 05-96)(0651-0033) 3. PATENT AND TRADEMARK OFFICE COPY *U.S. GPO: 1997-422-197/60032

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/760,457	12/06/96	CAMERON	~~03380.0083-0~~

~~4102/0325~~

FINNEGAN HENDERSON FARABOW
GARRETT AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

EXAMINER	
LE, I	
ART UNIT	PAPER NUMBER
~~2611~~	6
DATE MAILED:	~~03/25/98~~

NOTICE OF ABANDONMENT

This application is abandoned in view of:

1. ☐ Applicant's failure to respond to the Office letter, mailed _____.
2. ☐ Applicant's letter of express abandonment which is in compliance with 37 C.F.R. 1.138.
3. ☐ Applicant's failure to timely file the response received _____ within the period set in the Office letter.
4. ☐ Applicant's failure to pay the required issue fee within the statutory period of 3 months from the mailing date of _____ of the Notice of Allowance.
   - ☐ The issue fee was received on _____.
   - ☐ The issue fee has not been received in Allowed Files Branch as of _____.

   In accordance with 35 U.S.C. 151, and under the provisions of 37 C.F.R. 1.316(b), applicant(s) may petition the Commissioner to accept the delayed payment of the issue fee if the delay in payment was unavoidable. The petition must be accompanied by the issue fee, unless it has been previously submitted, in the amount specified by 37 C.F.R. 1.17(l), and a verified showing as to the causes of the delay.

   If applicant(s) never received the Notice of Allowance, a petition for a new Notice of Allowance and withdrawal of the holding of abandonment may be appropriate in view of Delgar Inc. v. Schuyler, 172 U.S.P.Q. 513.
5. ☒ Applicant's failure to timely correct the drawings and/or submit new or substitute formal drawings by 7/25/97 as required in the last Office action.
   - ☐ The corrected and/or substitute drawings were received on _____.
6. ☐ The reason(s) below.

(703) 305-8478
Drawing Processing Branch

PTO-1432 (Rev. 4/93)

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 1996

Application or Docket Number: 08/760,457

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
BASIC FEE				385.00	OR		770.00
TOTAL CLAIMS	/ minus 20 =	*	x$11=		OR	x$22=	
INDEPENDENT CLAIMS	/ minus 3 =	*	x40=		OR	x80=	
MULTIPLE DEPENDENT CLAIM PRESENT			+130=		OR	+260=	
			TOTAL		OR	TOTAL	770

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
AMENDMENT A	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=		OR	x$22=	
x40=		OR	x80=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
AMENDMENT B	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=		OR	x$22=	
x40=		OR	x80=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
AMENDMENT C	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=		OR	x$22=	
x40=		OR	x80=	
+130=		OR	+260=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

FORM PTO-875 (Rev. 10/96)
*U.S. Government Printing Office: 1996 - 413-288/49191
Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

1; 3-7

Form PTO 1130
(REV 2/94)

PACE DATA ENTRY CODING SHEET

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

1ST EXAMINER	Arot	DATE 2-10-97
2ND EXAMINER		DATE

APPLICATION NUMBER	TYPE APPL	FILING DATE MONTH	DAY	YEAR	SPECIAL HANDLING	GROUP ART UNIT	CLASS	SHEETS OF DRAWING
08/760457	1	12	06	96	2	2611	455	29

TOTAL CLAIMS	INDEPENDENT CLAIMS	SMALL ENTITY?	FILING FEE	FOREIGN LICENSE	ATTORNEY DOCKET NUMBER
11	7	Ø	770	Y	Ø368Ø.ØØ83-Ø

CONTINUITY DATA

CONT CODE	STATUS CODE	PARENT APPLICATION SERIAL NUMBER	PCT APPLICATION SERIAL NUMBER	PARENT PATENT NUMBER	PARENT FILING DATE MONTH	DAY	YEAR
Ø2	2	Ø79739118	PCT/		11	12	92
			PCT/				
			PCT/				
			PCT/				
			PCT/				

PCT/FOREIGN APPLICATION DATA

FOREIGN PRIORITY CLAIMED	COUNTRY CODE	PCT/FOREIGN APPLICATION SERIAL NUMBER	FOREIGN FILING DATE MONTH	DAY	YEAR

☆ U.S. GPO: 1995-401-429

60245 U.S. PTO
08/899476
07/24/97

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/22/1997 MREOPLES 00000101 08899476
01 FC:101 770.00 OP

PTO-1556
(5/87)

08/~~740,457~~
899,476

ABSTRACT OF THE DISCLOSURE

A two-way communication system for communication between a system network and a mobile unit. The system network includes a plurality of base transmitters and base receivers included in the network. The base transmitters are divided into zonal assignments and broadcast in simulcast using multi-carrier modulation techniques. The system network controls the base transmitters to broadcast in simulcast during both systemwide and zonal time intervals. The system network dynamically alters zone boundaries to maximize information throughput. The preferred mobile unit includes a noise detector circuit to prevent unwanted transmissions. The system network further provides an adaptive registration feature for mobile units which controls the registration operations by the mobile units to maximize information throughput.

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64477 U.S. PTO
07/24/97

AIFWC

#7/C
TLR
4/9/98

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ASSISTANT COMMISSIONER FOR PATENTS
BOX FWC
Washington, D.C. 20231

Attorney's Docket Number: 3680.0083-05

Prior Application: 08/760,457

Art Unit: 2611

Examiner: T. Le

SIR: This is a request for filing a

[X] Continuation [ ] Continuation-in-part [ ] Divisional application under 37 C.F.R. § 1.62 of pending prior application Serial No. 08/760,457, filed December 6, 1996, which is a Rule 1.60 continuation of prior application Serial No. 07/973,918, filed November 12, 1992, now patent No. 5,590,403, for METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION
(Title of Invention)

by the following named inventor(s).

Full Name of Inventor	Family Name: CAMERON	First Given Name: Dennis	Second Given Name: Wayne
Residence & Citizenship	City: Jackson,	State or Foreign Country: Mississippi	Country of Citizenship: U.S.A.
Post Office Address	Post Office Address: 29 Polo Drive, Jackson, Mississippi 39211	City	State & Zip Code/Country
Full Name of Inventor	Family Name: ROEHR JR.	First Given Name: Walter	Second Given Name: Charles
Residence & Citizenship	City: Reston,	State or Foreign Country: Virginia	Country of Citizenship: U.S.A.
Post Office Address	Post Office Address: 11317 South Shore Road, Reston, Virginia 22090	City	State & Zip Code/Country

Full Name of Inventor	Family Name	First Given Name	Second Given Name
	BHAGAT	Jai	P.
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	Jackson,	Mississippi	U.S.A.
Post Office Address	Post Office Address	City	State & Zip Code/Country
	155 Rolling Meadows Drive, Jackson, Mississippi 39211		

Full Name of Inventor	Family Name	First Given Name	Second Given Name
	GARAHI	Masood	
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	Madison,	Mississippi	U.S.A.
Post Office Address	Post Office Address	City	State & Zip Code/Country
	454 Morning Forest Lane, Madison, Mississippi 39110		

Full Name of Inventor	Family Name	First Given Name	Second Given Name
	HAYS	William	D.
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Post Office Address	Post Office Address	City	State & Zip Code/Country
	2345 Twin Lake Circle, Jackson, Mississippi 39211		

Full Name of Inventor	Family Name	First Given Name	Second Given Name
	ACKERMAN	David	W.
Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
	Washington, D.C.		U.S.A.
Post Office Address	Post Office Address	City	State & Zip Code/Country
	3730 W Street, N.W., Washington, D.C. 20007		

The above-identified prior application in which no payment of the issue fee, abandonment of, or termination of proceedings has occurred, is hereby expressly abandoned as of the filing date of this new application. Please use all the contents of the prior application file wrapper, including the drawings, as the basic papers for the new application.

1. [ ] Enter the amendment previously filed on _____ under 37 C.F.R. § 1.116 but unentered, in the prior application.

2. [ ] A Preliminary Amendment is enclosed.

3. [X] The filing fee is calculated on the basis of the claims existing in the prior application as amended at 1 and 2 above.

For	Number Filed	Number Extra	Rate	Basic Fee $770.00
Total Claims	18 -20=	-0-	x$ 22.00=	$ -0-
Independent Claims	2 -3=	-0-	x$ 80.00=	-0-
Multiple Dependent Claim(s) (if applicable)			+$260.00=	
			Total =	$770.00
			Reduction by ½ for filing by small entity	-
			TOTAL FILING FEE =	$770.00

4. [XX] A check in the amount of $ 770.00 to cover the filing fee is enclosed.

5. [XX] The Commissioner is hereby authorized to charge any fees including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, or credit any overpayment to Deposit Account No. 06-0916.

6. [ ] A new declaration is included since this application is a continuation-in-part which discloses and claims additional matter.

7. [XX] Amend the specification by inserting before the first line, the sentence:

A This application is a [ ] continuation-in-part, [X] continuation, [ ] division, of application Serial No. 08/760,457, filed December 6, 1996, now abandoned, which is a Rule 60 continuation of prior application Serial No. 07/973,918, filed November 12, 1992, now patent No. 5,590,403. A

8. [ ] A verified statement claiming small entity status

[ ] is enclosed or [ ] is on file in the prior application.

9. [ ] Priority of application Serial No. ____ filed on _____ (country) is claimed under 35 U.S.C. § 119. A certified copy

[ ] is enclosed or [ ] is on file in the prior application.

10. [X] The prior application is assigned of record to: Destineer Corporation

11. [X] The power of attorney in the prior application is to at least one of the following: FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P., Reg. No. 22,540, Douglas B. Henderson, Reg. No. 20,291; Ford F. Farabow, Jr., Reg. No. 20,630; Arthur S. Garrett, Reg. No. 20,338; Donald R. Dunner, Reg. No. 19,073; Brian G. Brunsvold, Reg. No. 22,593; Tipton D. Jennings, IV, Reg. No. 20,645; Jerry D. Voight, Reg. No. 23,020; Laurence R. Hefter, Reg. No. 20,827; Kenneth E. Payne, Reg. No. 23,098; Herbert H. Mintz, Reg. No. 26,691; C. Larry O'Rourke, Reg. No. 26,014; Albert J. Santorelli, Reg. No. 22,610; Michael C. Elmer, Reg. No. 25,857; Richard H. Smith, Reg. No. 20,609; Stephen L. Peterson, Reg. No. 26,325; John M. Romary, Reg. No. 26,331; Bruce C. Zotter, Reg. No. 27,680; Dennis P. O'Reilley, Reg. No. 27,932; Allen M. Sokal, Reg. No. 26,695; Robert D. Bajefsky, Reg. No. 25,387; Richard L. Stroup, Reg. No. 28,478; David W. Hill, Reg. No. 28,220; Thomas L. Irving, Reg. No. 28,619; Charles E. Lipsey, Reg. No. 28,165; Thomas W. Winland, Reg. No. 27,605; Basil J. Lewris, Reg. No. 28,818; Martin I. Fuchs, Reg. No. 28,508; E. Robert Yoches, Reg. No. 30,120; Barry W. Graham, Reg. No. 29,924; Susan Haberman Griffen, Reg. No. 30,907; Richard B. Racine, Reg. No. 30,415; Thomas H. Jenkins, Reg. No. 30,857; Robert E. Converse, Jr., Reg. No. 27,432; Clair X. Mullen, Jr., Reg. No. 20,348; Christopher P. Foley, Reg. No. 31,354; John C. Paul, Reg. No. 30,413; David M. Kelly, Reg. No. 30,953; Kenneth J. Meyers, Reg. No. 25,146; Carol P. Einaudi, Reg. No. 32,220; Walter Y. Boyd, Jr., Reg. No. 31,738; Steven M. Anzalone, Reg. No. 32,095; Jean B. Fordis, Reg. No. 32,984; Barbara C. McCurdy, Reg. No. 32,120; James K. Hammond, Reg. No. 31,964; Richard V. Burgujian, Reg. No. 31,744; J. Michael Jakes, Reg. No. 32,824; Dirk D. Thomas, Reg. No. 32,600; Thomas W. Banks, Reg. No. 32,719; Christopher P. Isaac, Reg. No. 32,616; Bryan C. Diner, Reg. No. 32,409; M. Paul Barker, Reg. No. 32,013; Andrew Chanho Sonu, Reg. No. 33,457; David S. Forman, Reg. No. 33,694; Vincent P. Kovalick, Reg. No. 32,867; and Allen M. Lo, Reg. No. 37,059.

12. [XX] Please address all correspondence to FINNEGAN, HENDERSON, FARABOW, GARRETT and DUNNER, L.L.P., 1300 I Street, N.W., Washington, D.C. 20005-3315.

13. [ ] Recognize as associate attorney

(name, address & Reg. No.)

14. [ ] Also enclosed is

PETITION FOR EXTENSION. If any extension of time is necessary for the filing of this application, including any extension in the parent application, serial no. 08/760,457, filed December 6, 1996, for the purpose of maintaining copendency between the parent application and this application, and such extension has not otherwise been requested, such an extension is hereby requested, and the Commissioner is authorized to charge necessary fees for such an extension to our Deposit Account No. 06-0916. A duplicate copy of this paper is enclosed for use in charging the deposit account.

It is understood that secrecy under 35 U.S.C. § 122 is hereby waived to the extent that if information or access is available to any one of the applications in the file wrapper of a 37 C.F.R. § 1.62 application, be it either this application or a prior application in the same file wrapper, the U.S. Patent and Trademark Office may provide similar information or access to all the other applications in the same file wrapper.

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: ____________________
Allen M. Lo
Reg. No. 37,059

Date: July 24, 1997

2611
0220

J-2
#13/D

PATENT LR
Attorney Docket No. 3680.0083-05
9/15/98 (NE) entered 9/21/98

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Dennis CAMERON et al.

Serial No.: 08/899,476 — Group Art Unit: 2611 ~~Unassigned~~

Filed: July 24, 1997 — Examiner: Unassigned

For: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

please enter 9/21/98 JR

Prior to the examination of the above application, please amend this application as follows:

IN THE CLAIMS:

Please amend claims 2 and 16 and add new claim 25 as follows:

D1 Cont.

2. (Twice Amended) A multi-carrier simulcast transmission system for transmitting in a desired frequency band [a] at least one message contained in an information signal, the system comprising:

a first transmitter configured to transmit a first plurality of carrier signals within the desired frequency band, each of the first plurality of carrier signals representing a portion of the information signal substantially not represented by others of the first plurality of carrier signals; and

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202-408-4000

a second transmitter, spatially separated from the first transmitter, configured to transmit a second plurality of carrier signals in simulcast with the first plurality of carrier signals, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals.

D1 cancel

10. ~~16.~~ (Amended) In a multi-carrier simulcast transmission system, a method for transmitting in a desired frequency band [a] at least one message contained in an information signal, the method comprising the steps of:

generating a first plurality of carrier signals within the desired frequency band, each of the first plurality of carrier signals representing a portion of the information signal substantially not represented by others of the first pluarlity of carrier signals;

D2 cancel

generating a second plurality of carrier signals within the desired frequency band, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals;

transmitting the first plurality of carrier signals from a first transmitter;

transmitting the second plurality of carrier signals from a second transmitter in simulcast with transmission of the first plurality of carrier signals from the first transmitter.

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--25. A multi-carrier simulcast transmission system for transmitting in a desired frequency band at least one message contained in an information signal, the system comprising:

means for transmitting a first plurality of carrier signals within the desired frequency band, each of the first plurality of carrier signals representing a portion of the information signal substantially not represented by others of the first plurality of carrier signals; and

means for transmitting a second plurality of carrier signals in simulcast with the first plurality of carrier signals, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals.--

REMARKS

Prior to examination, applicants have amended independent claims 2 and 16 and added new claim 25. New claim 25 defines a multi-carrier simulcast system using means-plus-function recitations, rather than structural recitations as contained in independent claim 2.

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202-408-4000

If an extension of time required to timely file this Preliminary Amendment under 37 C.F.R. § 1.136 is not accounted for above, such extension is hereby requested and the fee for the extension should be charged to our Deposit Account No. 06-0916. If there are any other fees due in connection with the filing of this Preliminary Amendment not accounted for above, such fees should also be charged to our Deposit Account.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: _____
Allen M. Lo
Reg. No. 37,059

Dated: September 12, 1997

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202-408-4000

#11
TLR
9/15/98

PATENT
Attorney Docket No. 3680.0083-05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Dennis Cameron et al.
Serial No.: 08/899,476 . Group Art Unit: Unassigned
Filed: July 24, 1997 Examiner: Unassigned

For: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), applicants bring to the attention of the Examiner the documents listed on the attached PTO 1449. This Information Disclosure Statement is being filed within three months of the filing date of the above-referenced application.

Copies of the listed documents are attached.

Applicants respectfully requests that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the

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202-408-4000

documents as prior art against any claim in the application and applicants determine that the cited documents do not constitute "prior art" under United States law, applicants reserve the right to present to the office the relevant facts and law regarding the appropriate status of such documents.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: Allen M. Lo

Allen M. Lo
Reg. No. 37,059

Date: September 12, 1997

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1300 I STREET, N. W.
WASHINGTON, D. C. 20005
202-408-4000

OMB No. 0651-0011

INFORMATION DISCLOSURE CITATION	Atty. Docket No. 3680.0083-05	Serial No. 08/899,476
	Applicant Dennis Cameron et al.	
	Filing Date July 24, 1997	Group ~~2611~~ 2745

U.S. PATENT DOCUMENTS

*Examiner Initial	Document Number	Date	Name	Class	Sub Class	Filing Date If Appropriate
TV	3,488,445	01/06/70	Chang	—	—	
	3,914,554	10/21/75	Seidel	—	—	
	4,244,047	01/06/81	Perkins	—	—	
	4,506,384	03/19/85	Lucas	—	—	
	4,701,758	10/20/87	Dunkerton et al.	—	—	
	4,850,032	07/18/89	Freeburg	—	—	
	5,128,934	07/07/92	Jasinski	—	—	
	5,163,181	11/10/92	Koontz	—	—	
	5,343,499	08/30/94	Jasper et al.	—	—	
TV	5,392,452	02/21/95	Davis	—	—	

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Sub Class	Translation Yes	Translation No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

~~—~~	~~Search Report for International Application No. PCT/US93/10713~~

Examiner THANH LE | Date Considered 9/17/98

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 Patent and Trademark Office - U.S. DEPARTMENT OF COMMERCE

2611

#12

PATENT

Attorney Docket No. 3680.0083-05

TLR 9/15/98

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Dennis W. CAMERON et al.

Serial No.: 08/899,476 — Group Art Unit: Unassigned

Filed: July 24, 1997 — Examiner: Unassigned

For: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION

Assistant Commissioner for Patents
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Sir:

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), Applicants bring to the attention of the Examiner the document listed on the attached PTO 1449. This Information Disclosure Statement is being filed, insofar as the undersigned is aware, before the mailing date of a first Office Action on the merits for the above-referenced application.

The document listed in this Information Disclosure Statement was cited in a communication from the European Patent Office in a counterpart foreign application, and this Information Disclosure Statement is being filed within three months of the mailing date of that communication.

A copy of the listed document is attached.

Applicants respectfully request that the Examiner consider the listed document and

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT
& DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, DC 20005
202-408-4000

indicate that it was considered by making the appropriate notation on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that the listed document is material or constitutes "prior art." If the Examiner applies the document as prior art against any claim in the application and Applicants determine that the cited document does not constitute "prior art" under United States law, Applicants reserve the right to present to the Office the relevant facts and law regarding the appropriate status of such document.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed document, should the listed document be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

By: Robert A. Cahill

Robert A. Cahill
Reg. No. 20,557

Dated: December 19, 1997

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1300 I STREET, N.W.
WASHINGTON, DC 20005
202-408-4000

OMB No. 0651-0011

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Atty. Docket No.	03680.0083-05	Serial No.	08/899,476
Applicant	Dennis W. CAMERON et al		
Filing Date	July 24, 1997	Group	287 Unassigned 2745

U.S. PATENT DOCUMENTS

Examiner Initial*		Document Number	Date	Name	Class	Sub Class	Filing Date If Appropriate

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub Class	Translation Yes or No
TC		WO 90/04314	19.04.90	EPO	—	—	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner -	THANH LE	Date Considered	9/17/98

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form PTO 1449 — Patent and Trademark Office - U.S. Department of Commerce

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/899,476	07/24/97	CAMERON D	3680.0083-05

LM61/0416
FINNEGAN HENDERSON FARABOW GARRETT
AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

EXAMINER	
LE, T	
ART UNIT	**PAPER NUMBER**
2745	8

DATE MAILED: 04/16/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

NOTICE OF ALLOWABILITY

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

☑ This communication is responsive to Pre-amendment filed 7/24/97.

☑ The allowed claim(s) is/are 2 and 8-24, renumbered 1-18.

☐ The drawings filed on _____ are acceptable.

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☑ Applicant MUST submit NEW FORMAL DRAWINGS

☐ because the originally filed drawings were declared by applicant to be informal.

☑ including changes required by the Notice of Draftperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 5.

☑ including changes required by the proposed drawing correction filed on 12/6/96, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☐ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☑ Examiner's Statement of Reasons for Allowance

T. LE (703) 305-4819

PTOL-37 (Rev. 10/95)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1997—429-299

1. The following is an Examiner's Statement of Reasons for Allowance:

As to claims 2 and 16, the prior art of record fails to show a multi-carrier simulcast transmission system comprising the first and second transmitters for simultaneously transmitting the same information signals. The system comprises a plurality of carrier signals in each of the transmitters wherein each of the carrier signals represents a portion of the information signal not represented by others of the plurality carrier signals.

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Le whose telephone number is (703) 305-4819.

Thanh C. Le
Apr 10, 1998

4-10-98
THANH CONG LE
PRIMARY EXAMINER
GROUP 2700

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

LM61/0416

FINNEGAN HENDERSON FARABOW GARRETT
AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT		DATE MAILED
08/899,478	07/24/97	018	LE, T	2745	04/16/98

First Named Applicant: CAMERON, DENNIS WAYNE

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 3680.0083-05	455-059.000	D05	UTILITY	NO	$1320.00	07/16/98

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay FEE DUE shown above, or

B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY

PTOL-85 (REV. 10-96) Approved for use through 06/30/99. (0651-0033)

U.S. GPO: 1998-437-639/80023

142-1320-CO

PART B—ISSUE FEE TRANSMITTAL

Complete and mail this form, together with applicable fees, to: **Box ISSUE FEE**
Assistant Commissioner for Patents
Washington, D.C. 20231

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

LM61/0416
FINNEGAN HENDERSON FARABOW GARRETT
AND DUNNER
1300 I STREET NW
WASHINGTON DC 20005-3315

OIPE
JUN 16 1998
PATENT & TRADEMARK OFFICE

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT		DATE MAILED
08/899,476	07/24/97	018	LE, T	2745	04/16/98

First Named Applicant: CAMERON, DENNIS WAYNE

TITLE OF INVENTION: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 3680.0083-05	455-059.000	D05	UTILITY	NO	$1320.00	07/16/98

1. Change of correspondence address or indication of " Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Finnegan, Henderson, Farabow, Garrett & Dunner
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropiate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a subsititue for filing an assignment.

(A) NAME OF ASSIGNEE
DESTINEER CORPORATION
(B) RESIDENCE: (CITY & STATE OR COUNTRY)
Jackson, Mississippi

Please check the appropriate assignee category indicated below (will not be printed on the patent)
☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):
☒ Issue Fee
☐ Advance Order - # of Copies

4b. The following fees or deficiency in these fees should be charged to:
DEPOSIT ACCOUNT NUMBER
(ENCLOSE AN EXTRA COPY OF THIS FORM)
☒ Issue Fee
☐ Advance Order - # of Copies

The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

(Authorized Signature) John M. Romary, Reg. No. 26,331 (Date) 6/16/98

NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

06/22/1998 SHARRELL 00000092 08899476
01 FC:142 1320.00 OP

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND FEES AND THIS FORM TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

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TRANSMIT THIS FORM WITH FEE

2702 D TR

#9

Attorney Docket No. 3680.0083-05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Dennis W. CAMERON et al.	)	Group Art Unit: 2745
	)	
Serial No.: 08/899,476	)	Examiner: T. Le
	)	
Filed: July 24, 1997	)	**Allowed: April 16, 1998**
	)	
For: METHOD AND SYSTEM FOR PROVIDING MULTICARRIER SIMULCAST TRANSMISSION	)	**Batch No. D05**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

SUBMISSION OF FORMAL DRAWINGS

Subject to the approval of the Examiner, please replace the informal drawings with the thirty (30) sheets of formal drawings filed herewith. If the formal drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned. If any fees are necessary for the submission of these formal drawings, please charge our Deposit Account No. 06-0916.

Respectfully submitted,

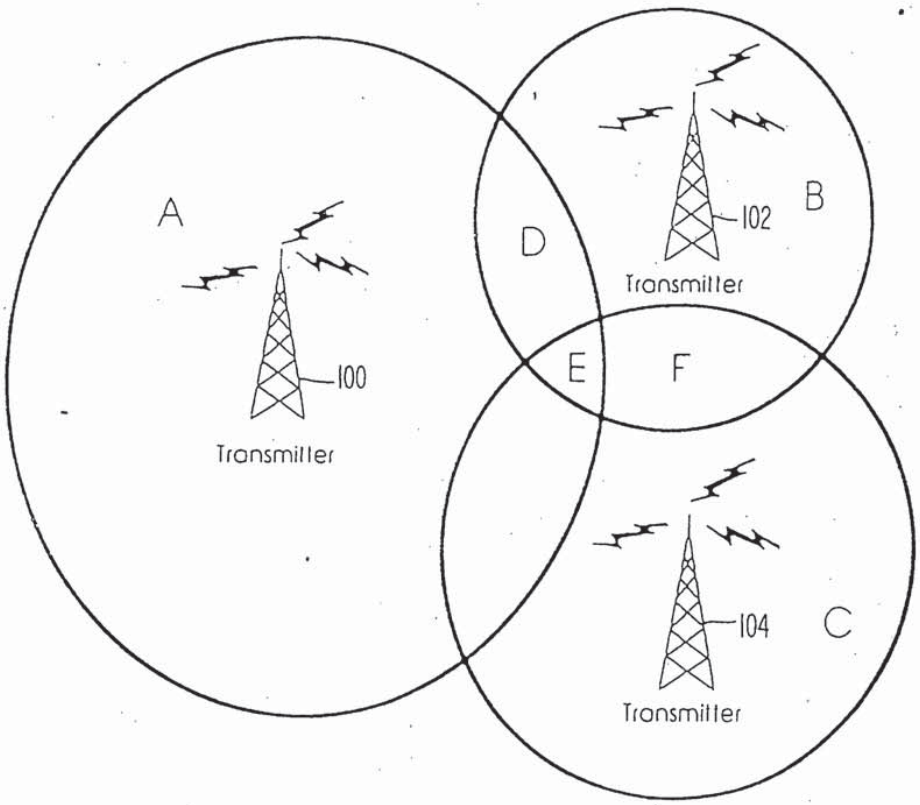
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: _____
John M. Romary
Reg. No. 26,331

Dated: June 16, 1998

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

FIG. 1
PRIOR ART



APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

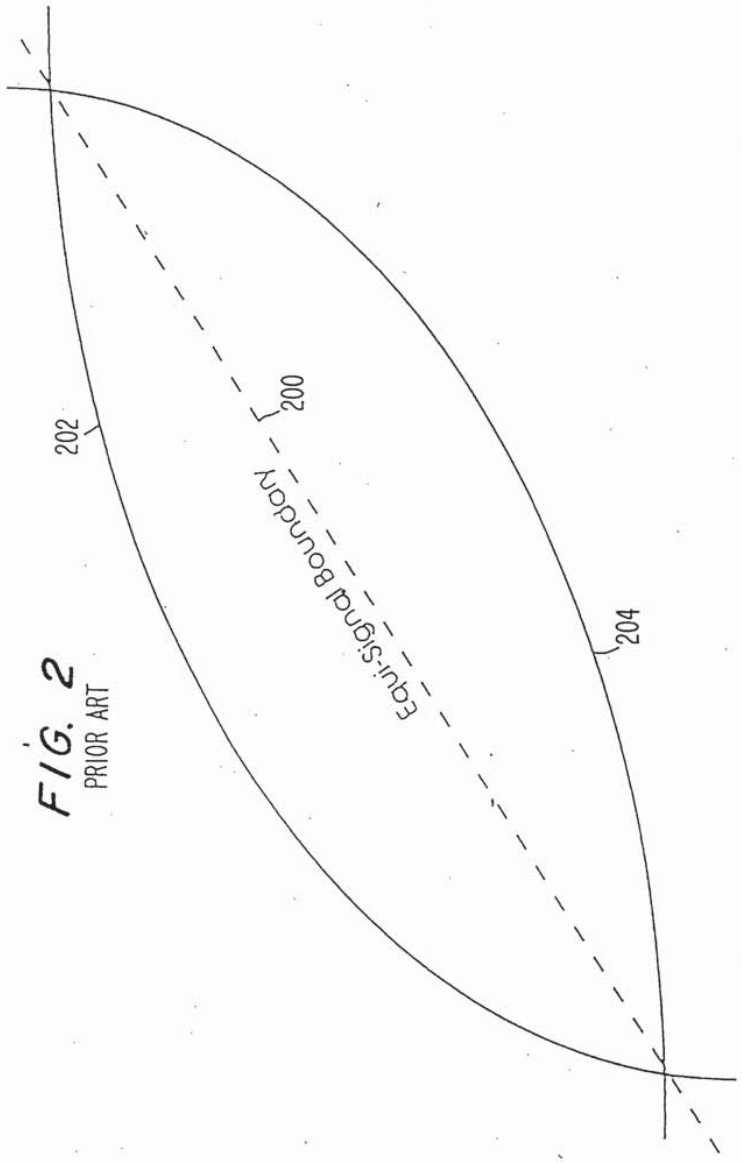


FIG. 2
PRIOR ART

APPROVED
BY
DRAFTSMAN
O.G. FIG.
CLASS
SUBCLASS
FREQUENCY
SIGNAL FROM TRANSMITTER 1
TIME
300
306
FIG. 3(A)
PRIOR ART
FREQUENCY
SIGNAL FROM TRANSMITTER 2
TIME
308
FIG. 3(B)
PRIOR ART
FREQUENCY
TIME
310
FIG. 3(C)
PRIOR ART
PHASE 1 RELATIVE TO 2 DUE TO PHASE DRIFT
-180°
0°
+180°
312
TIME
FIG. 3(D)
PRIOR ART
SUMMATION OF SIGNALS FROM TRANSMITTERS 1 AND 2
AMPLITUDE LIMITER OUTPUT
314
304
THRE
TIME
BAUD INTERVAL
ANTI-PHASE CONDITIONS
302
FIG. 3(E)
PRIOR ART

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

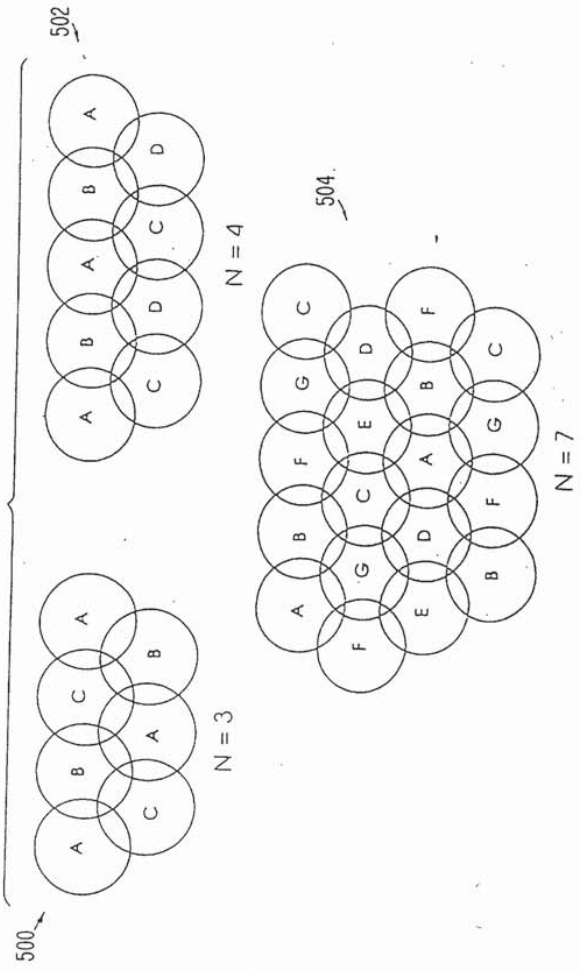


FIG. 5 PRIOR ART

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

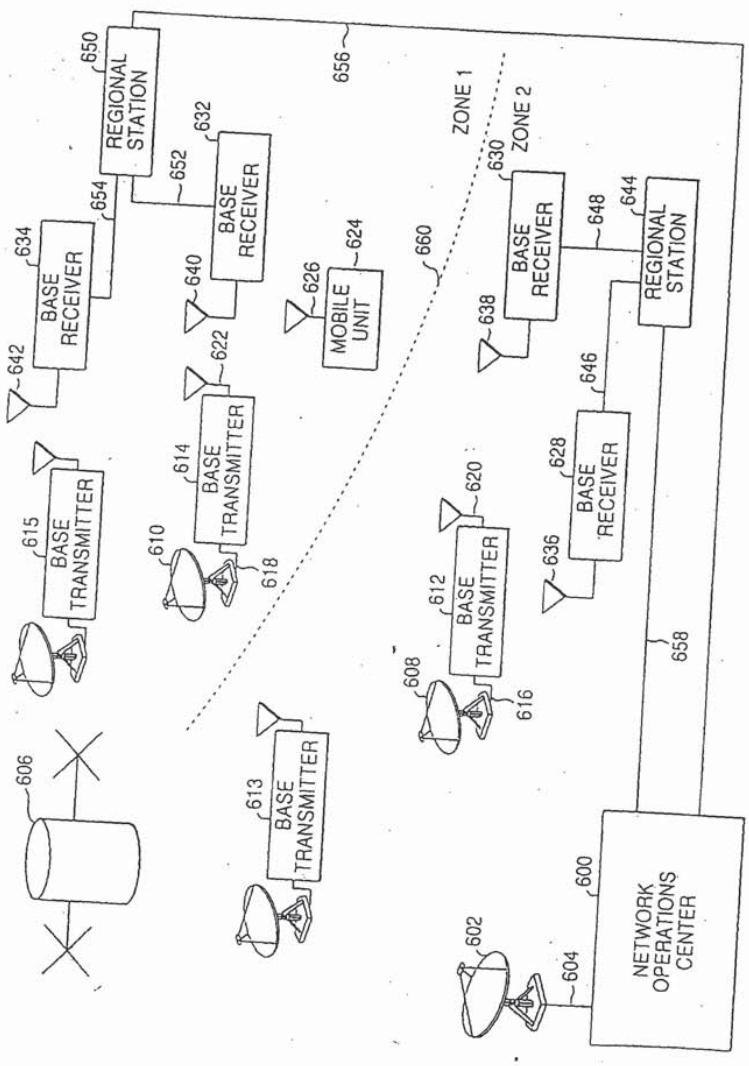
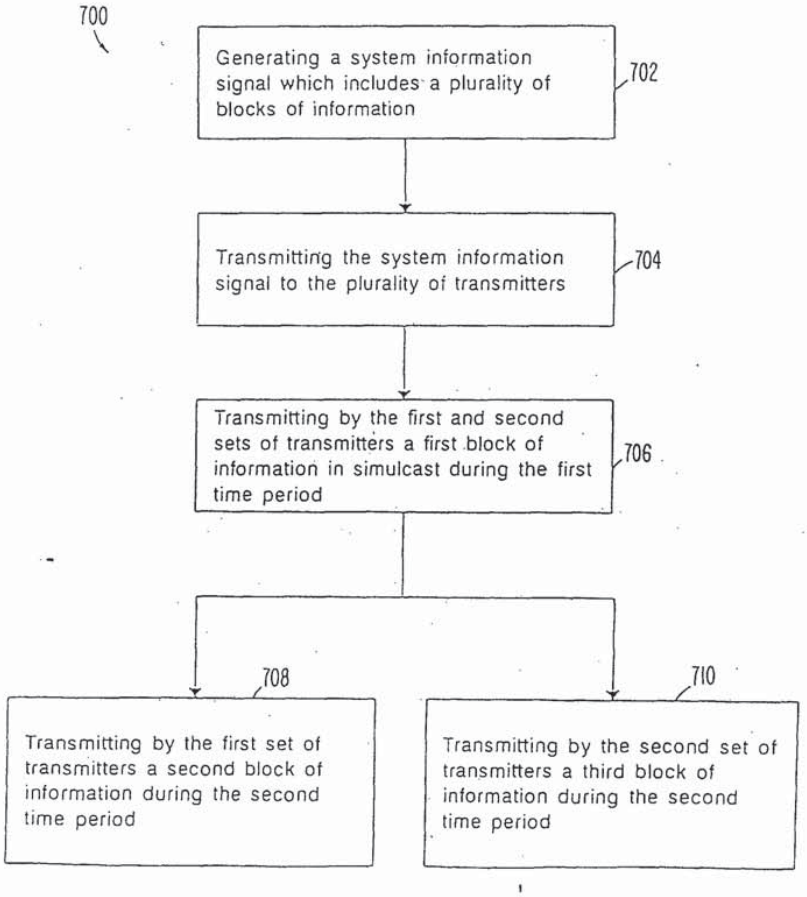


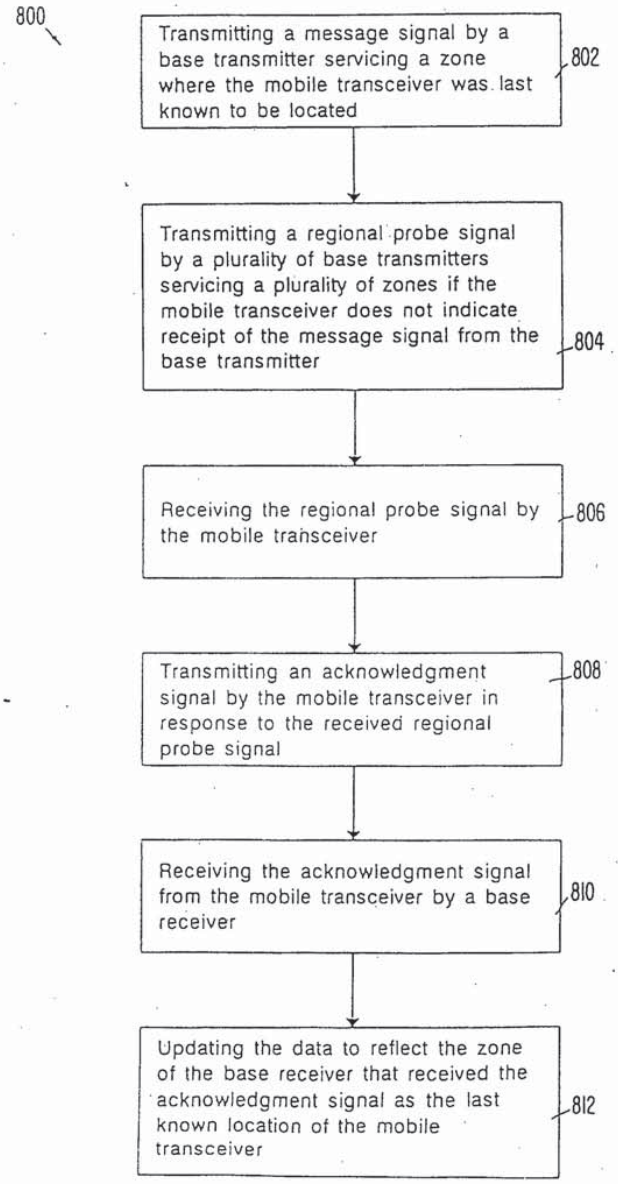
FIG. 6

FIG. 7



APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 8



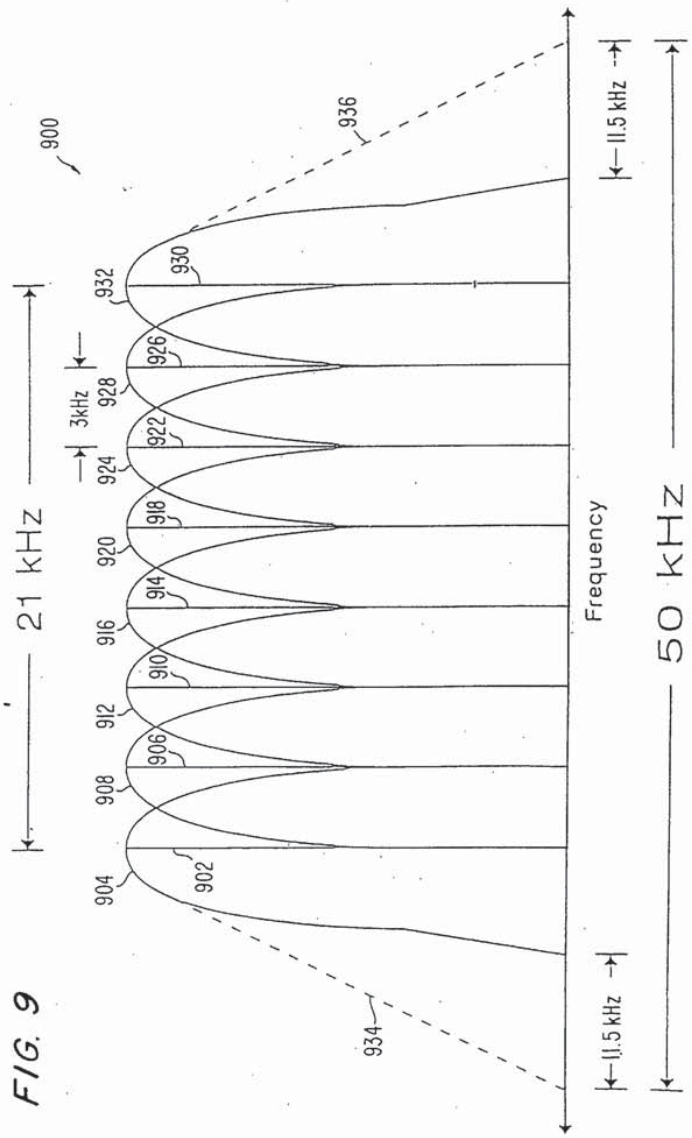
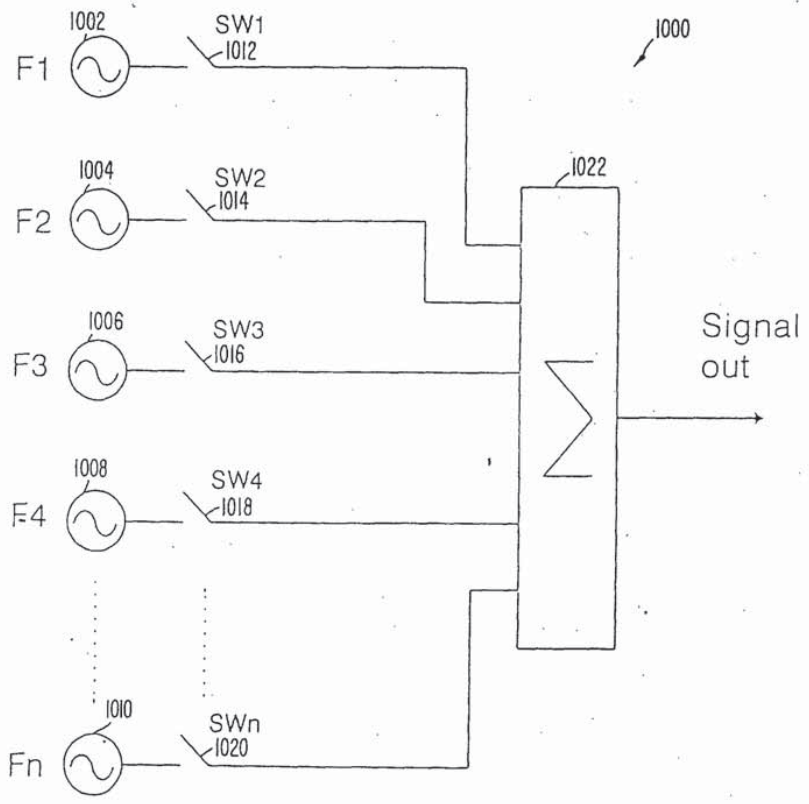


FIG. 9

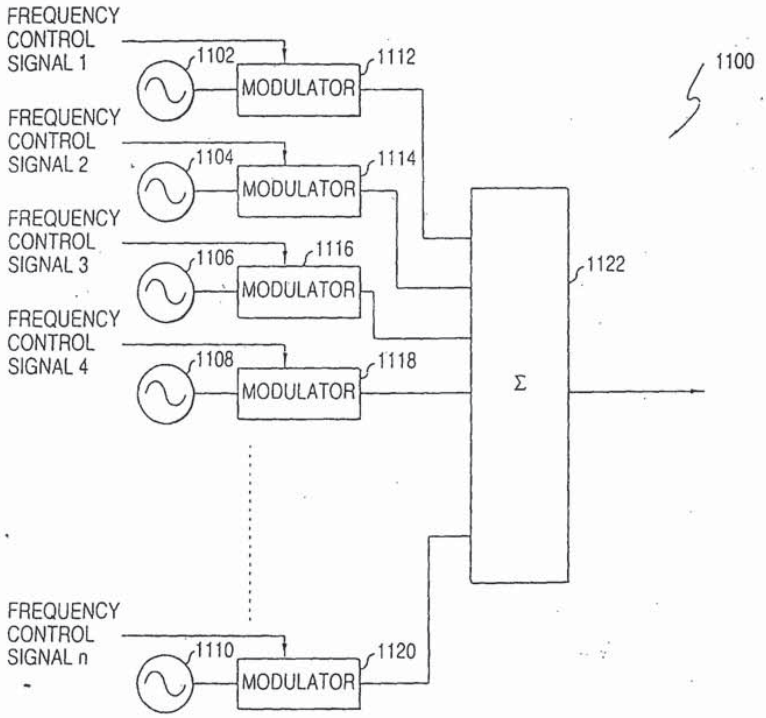
APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 10



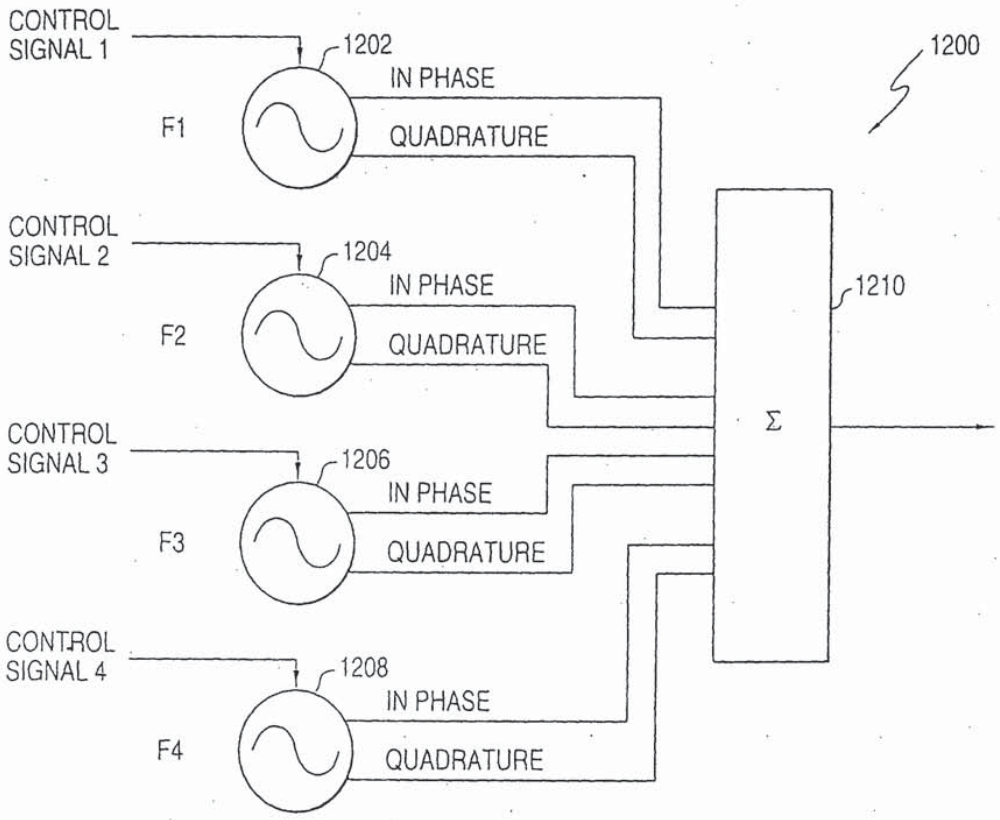
APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 11



APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 12



FOUR CARRIER QUADRATURE MODULATOR

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 13

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 14

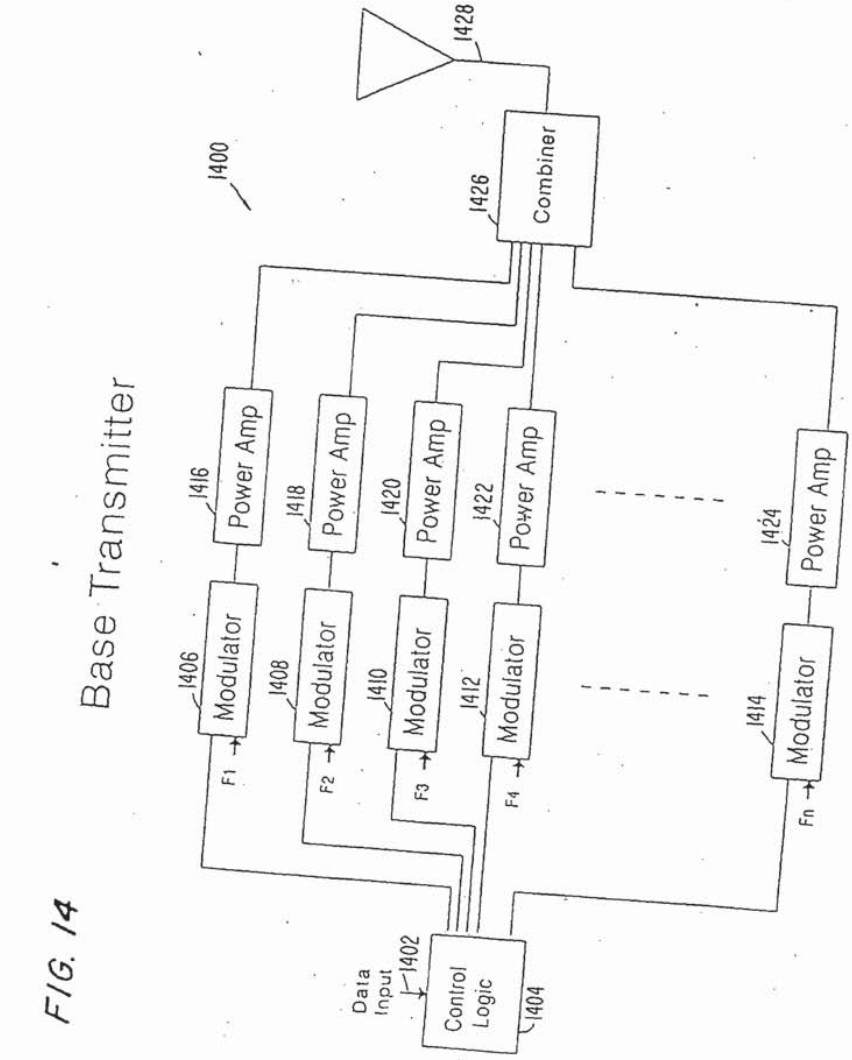


FIG. 15

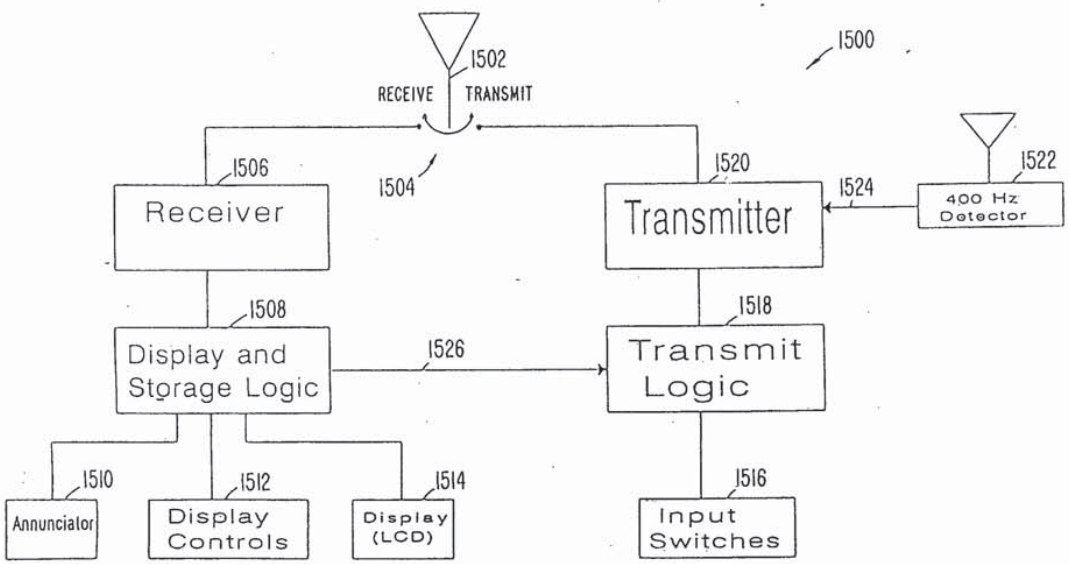
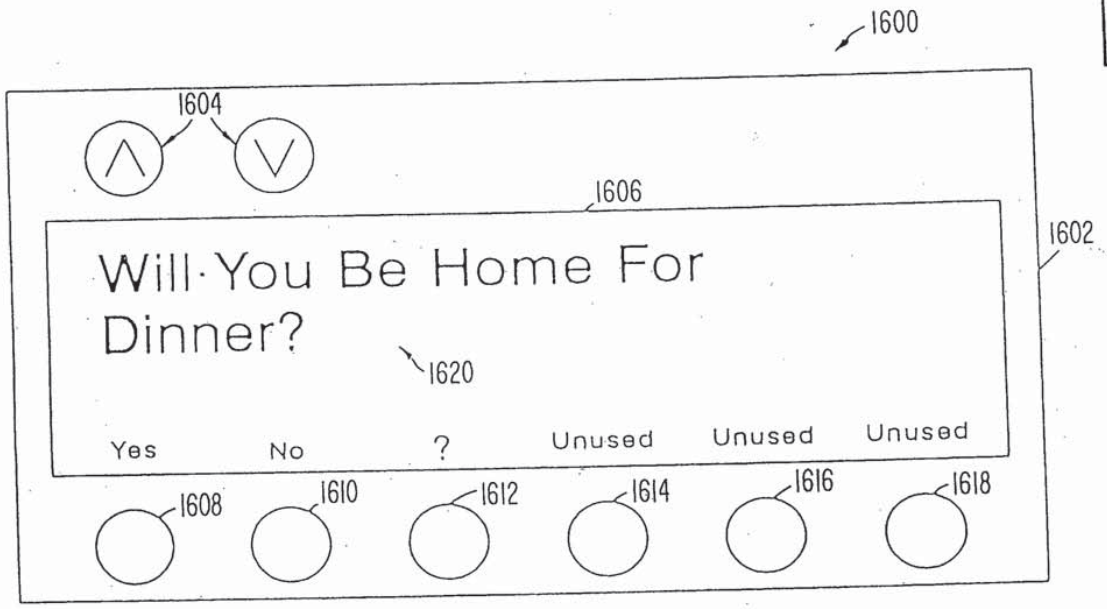


FIG. 16

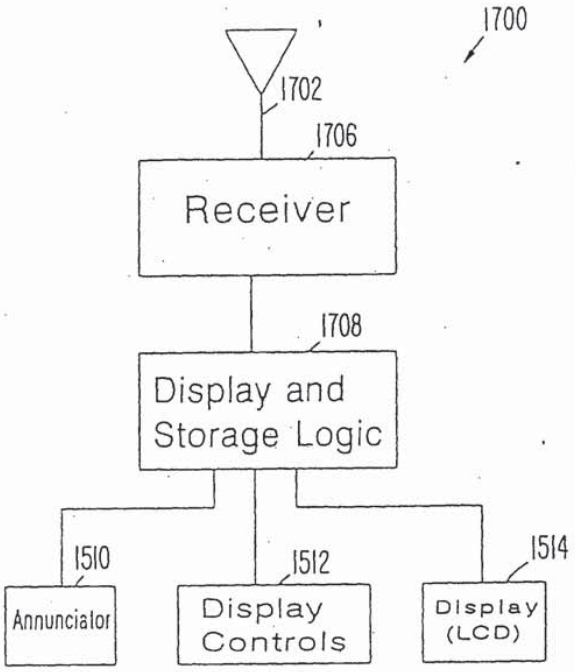


Mobile Transceiver

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 17

Mobile Receiver



APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 18(A)

FIG. 18(B)

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 19

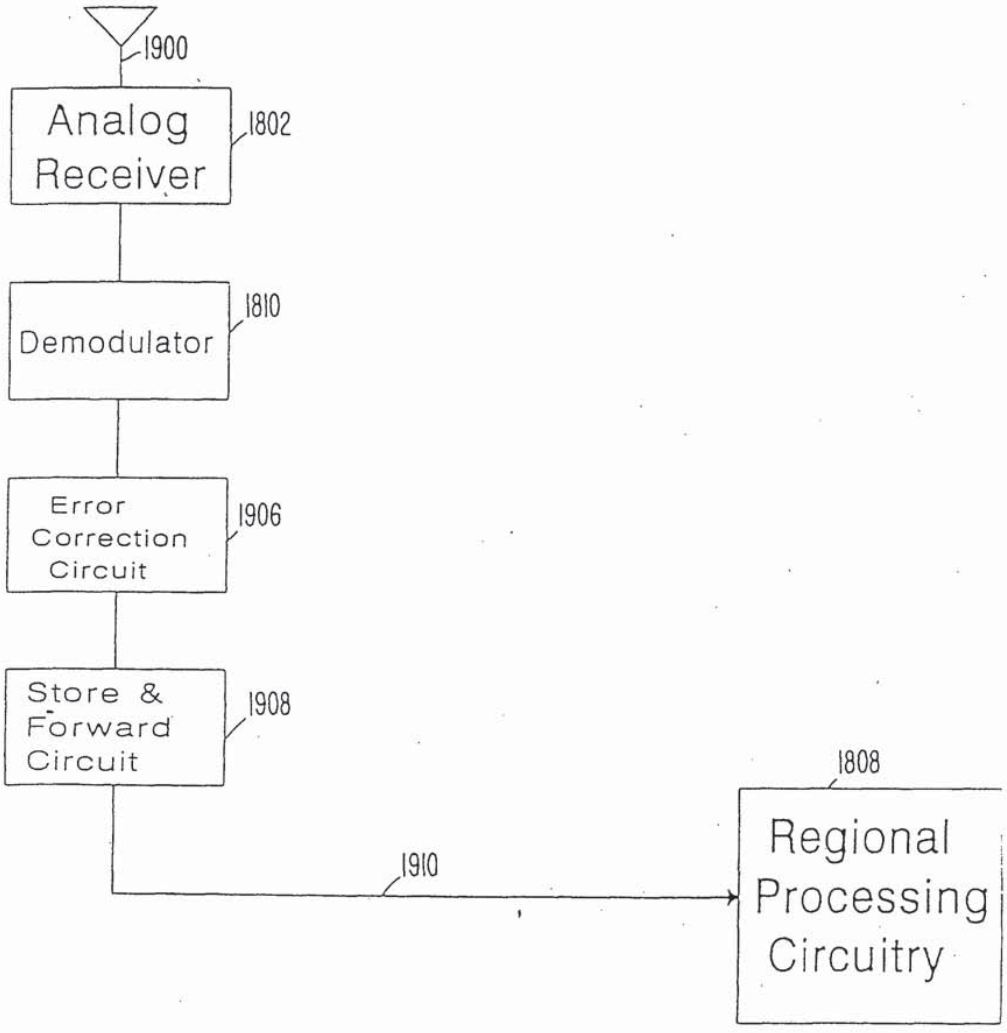
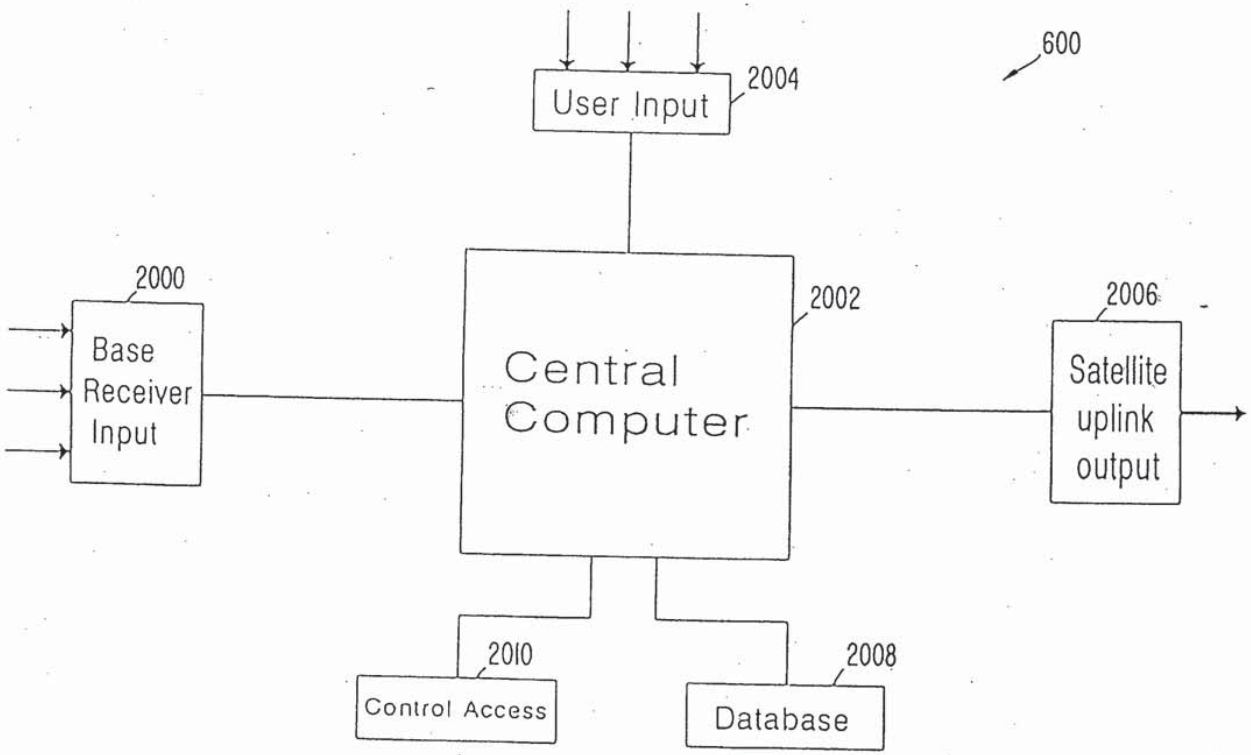


FIG. 20

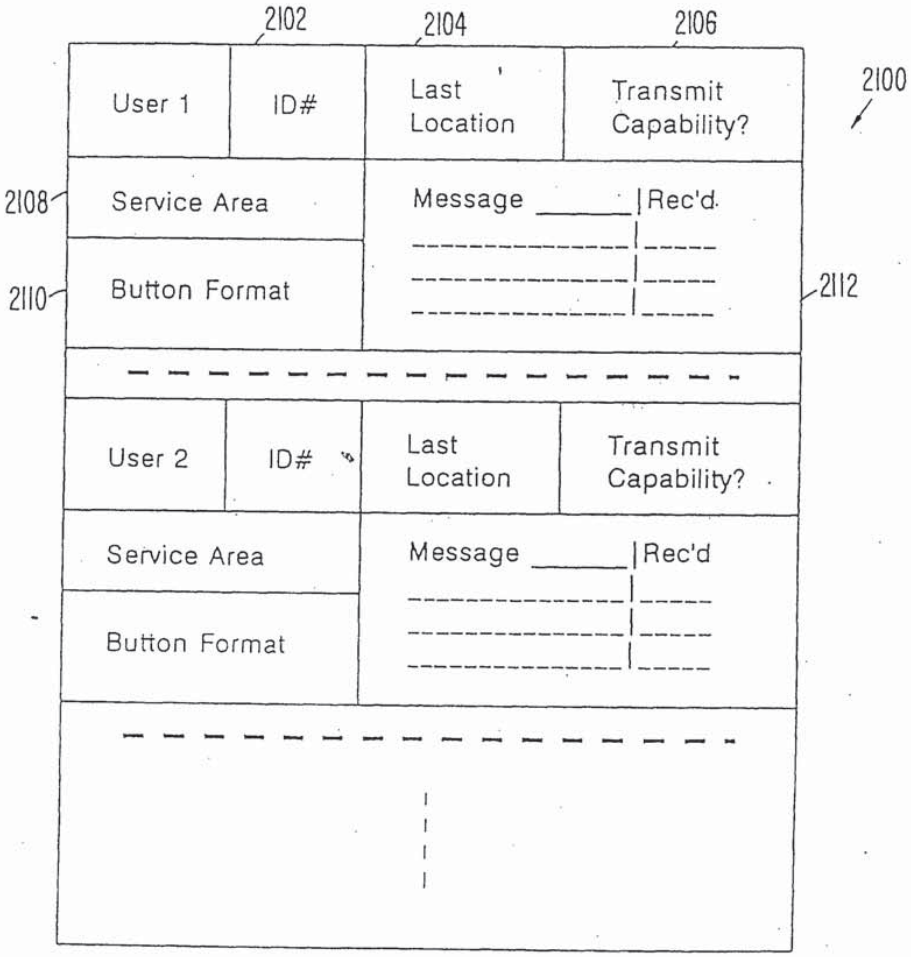
Network Operations Center

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	



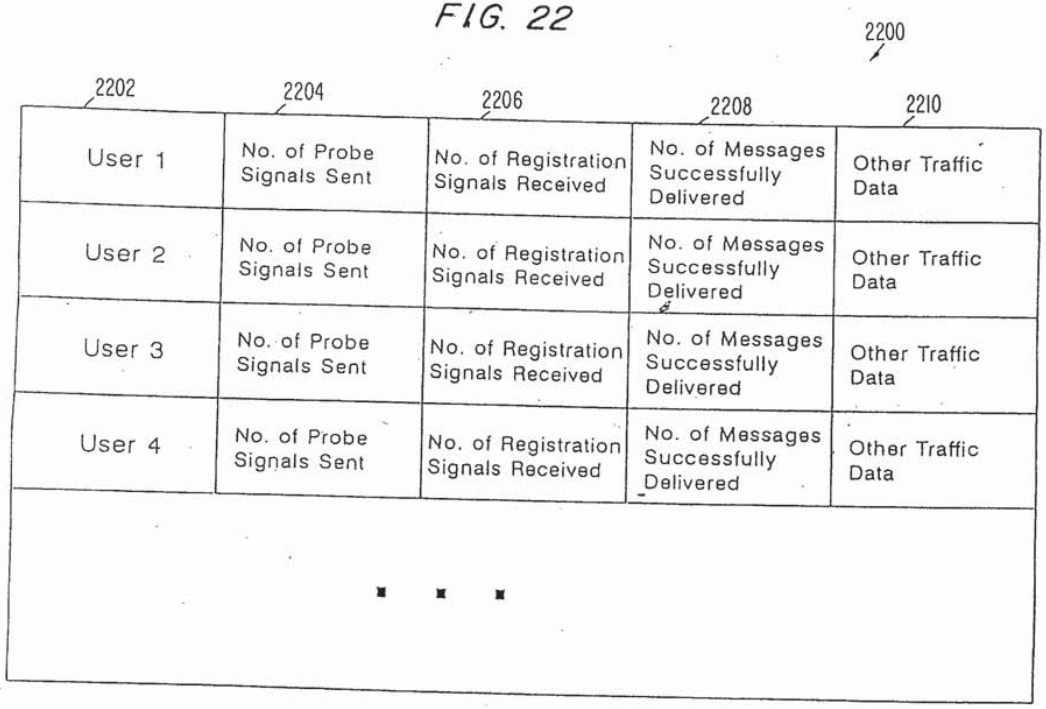
APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 21



User Database

FIG. 22



APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 23

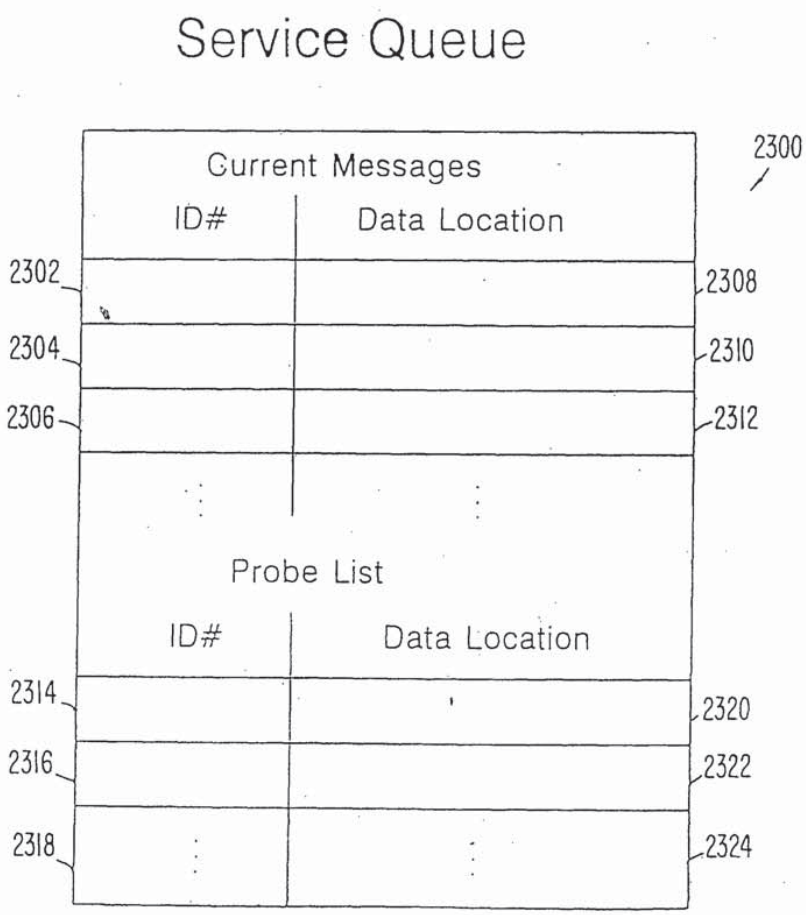
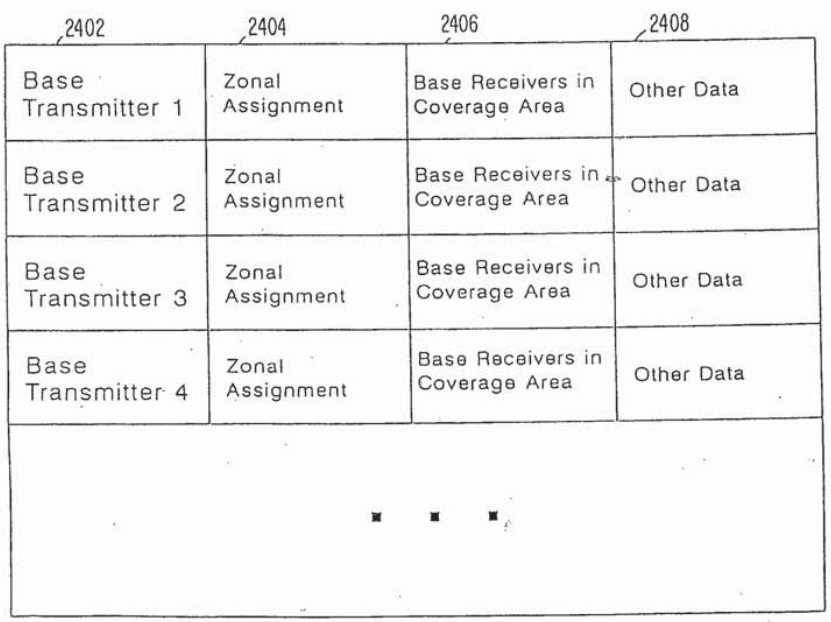


FIG. 24

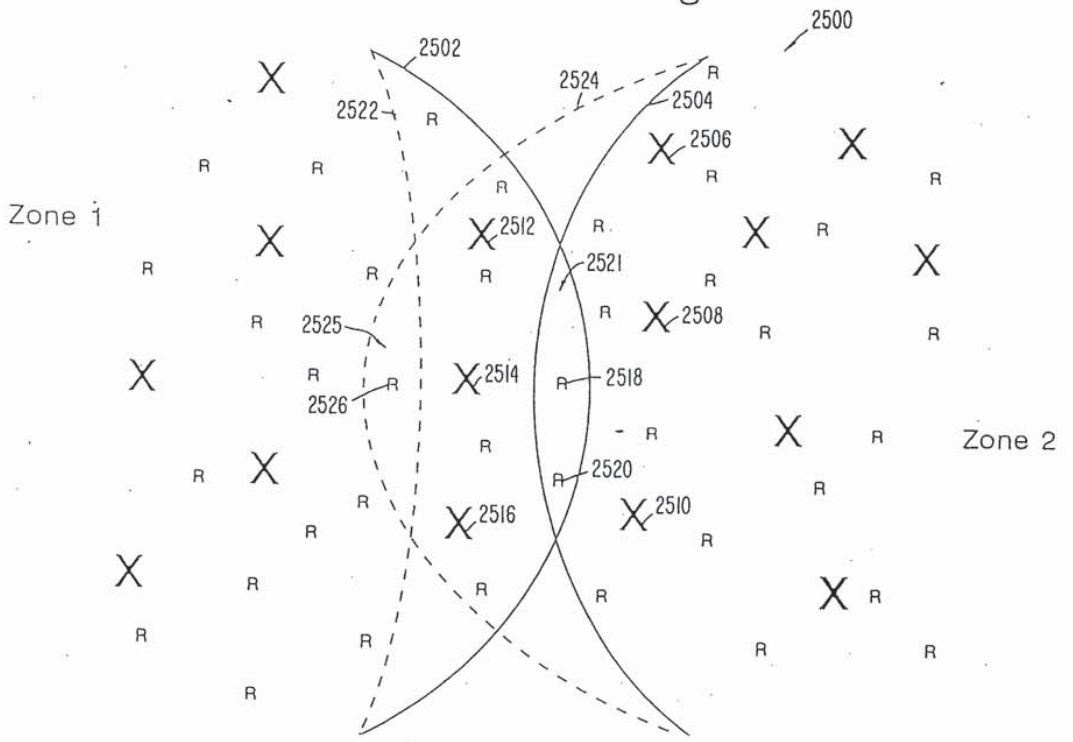


Base Transmitter Database

APPROVED BY
DRAFTSMAN
O.G. FIG.
CLASS
SUBCLASS

FIG. 25

Zone Dithering



APPROVED BY	O.G. FIG.
DRAFTSMAN	CLASS SUBCLASS

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 26

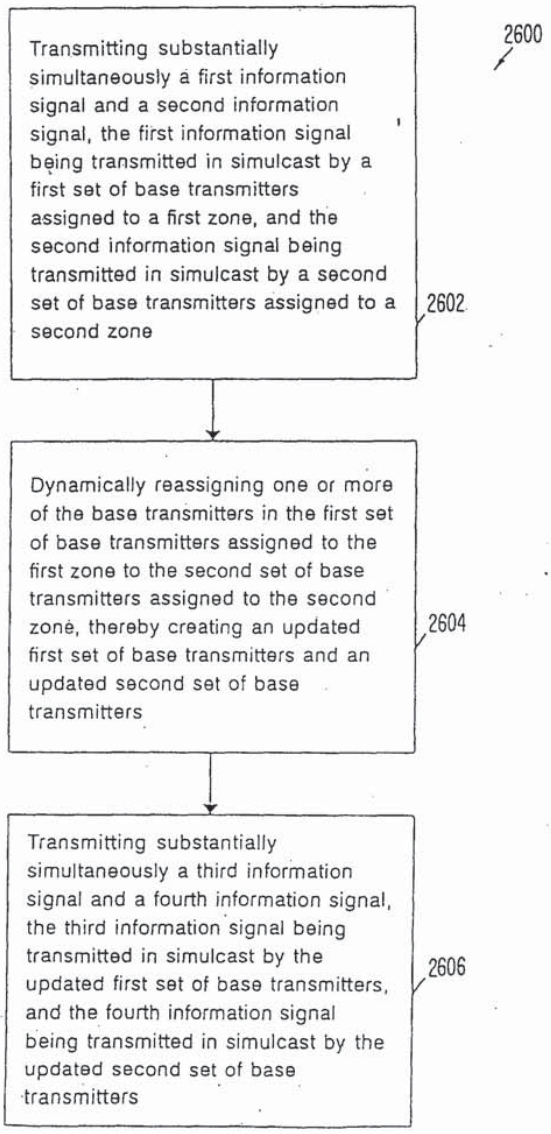


FIG. 27(A)

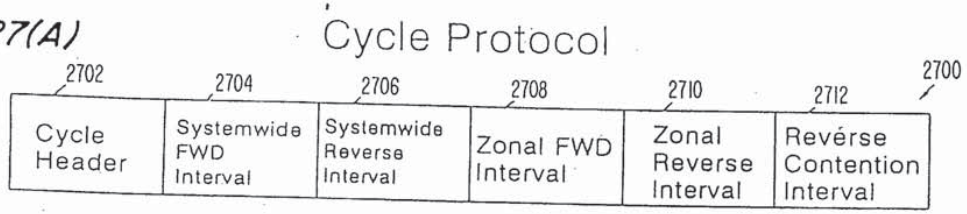


FIG. 27(B)

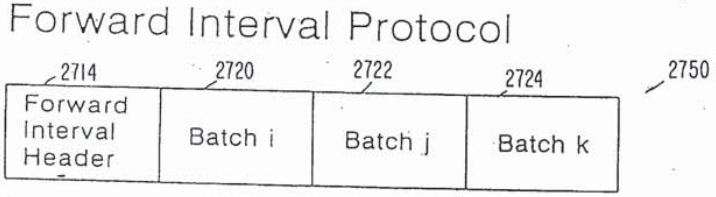
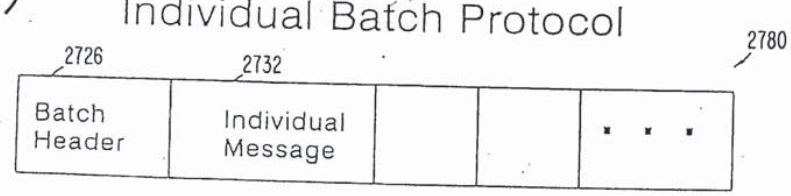


FIG. 27(C)



APPROVED BY DRAFTSMAN | O.G. FIG. CLASS SUBCLASS

APPROVED BY DRAFTSMAN	O.G. FIG.	
	CLASS	SUBCLASS

FIG. 28(A)

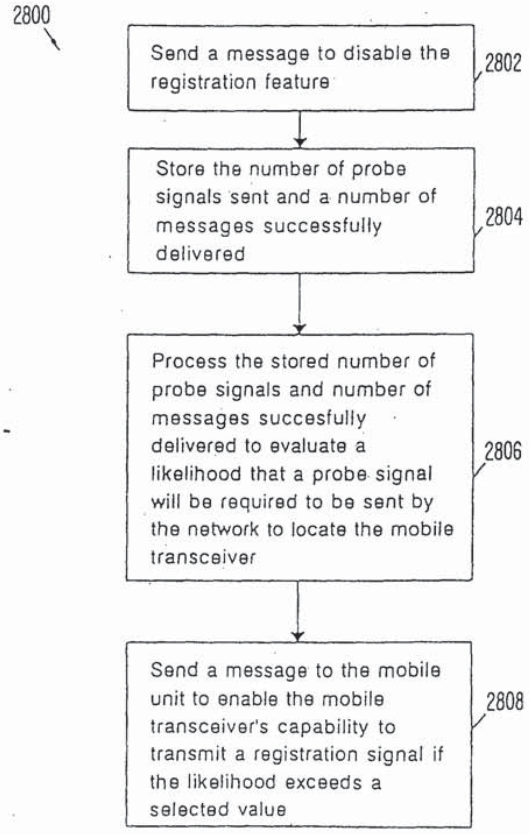


FIG. 28(B)

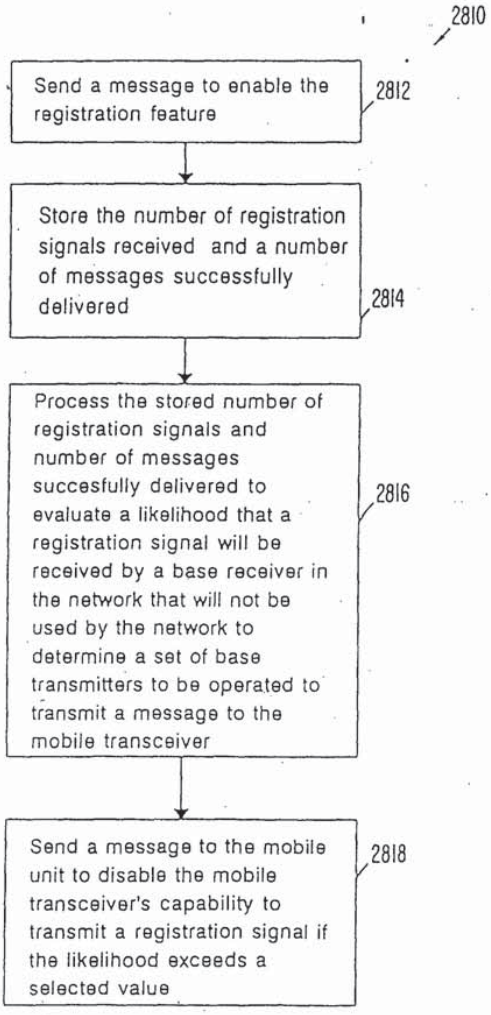


FIG. 29(A)

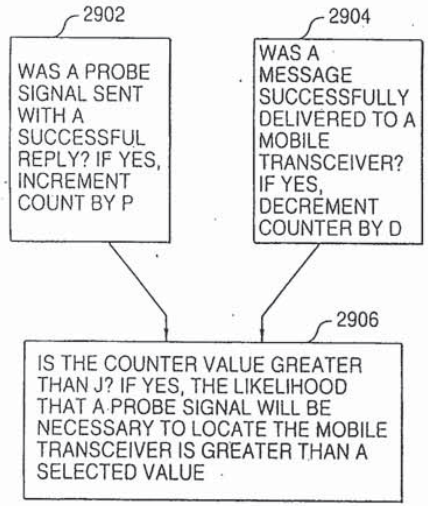
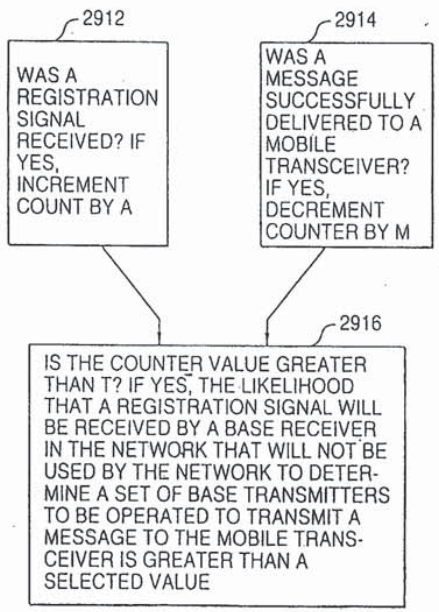


FIG. 29(B)



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WASHINGTON DC 20005-3315

EXAMINER	
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ART UNIT	PAPER NUMBER
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DATE MAILED: 07/23/98

NOTICE OF DRAWING REQUIREMENTS

☑ Corrected/substituted drawings for the above-identified application, received in the PTO on 6/16/98, are still considered informal for the reason(s) identified on the attached Form PTO-948.

☐ Applicant has the time remaining in the response period set in the Notice of Allowability or Notice of Drawing Requirements mailed _____ to overcome the objections raised in the attached Form PTO-948. This response period may be extended under the provisions of 37 CFR 1.136 (a) by filing the appropriate request and fee before the end of the six month statutory period for response.

☐ The PTO delayed in reviewing the corrected drawings. Applicant is given ONE month time limit from the date of this letter to provide corrected drawings. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) or (b). See MPEP 714.03. However, the response period set in the Notice of Allowability or Notice of Drawing Requirements mailed _____ may be extended under the provisions of 37 CFR 1.136(a) by filing the appropriate request and fee before the end of the six month statutory period for response.

☑ The PTO delayed in reviewing the corrected drawings. Applicant is given ONE month time limit from the date of this letter to provide corrected drawings. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) or (b). See MPEP 714.03

☑ ATTACHMENT: PTO-948

T. Logan
PATENT AND TRADEMARK OFFICE

6/29/98
DATE

FORM PTOL-455 (REV. 8-95)

FORM PTO 948 (REV. 11-97) U.S. DEPARTMENT OF COMMERCE-Patent and Trademark Office Application No. 899976

NOTICE OF DRAFTPERSON'S PATENT DRAWING REVIEW

The drawing filied (insert date) 6/16/98 are:

A. _____ not objected to by the Draftperson under 37 CFR 1.84 or 1.152.

B. X objected to by the Draftperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings whe necessary. Corrected drawings must be submitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink. Color.
   - _____ Color drawing are not acceptable until petition is granted. Fig.(s) _____
   - _____ Pencil and non black ink is not permitted. Fig(s)_____
2. PHOTOGRAPHS. 37 CFR 1.84(b)
   - _____ Photographs are not acceptable until petition is granted,
   - _____ 3 full-tone sets are required. Fig(s)_____
   - _____ Photographs not properly mounted (must brystol board or photographic double-weight paper). Fig(s)_____
   - _____ Poor quailty (half-tone). Fig(s)_____
3. TYPE OF PAPER. 37 CFR 1.84(e)
   - _____ Paper not flexible, strong, white and durable. Fig.(s)_____
   - _____ Erasures, alterations, overwritings, interlineations, folds, copy machine marks not acceptable. (too thin)
   - _____ Mylar, vellum paper is not acceptable (too thin). Fig(s)_____
4. SIZE OF PAPER. 37 CFR 1.84(F): Acceptable sizes:
   - X 21.0 cm by 29.7 cm (DIN size A4)
   - X 21.6 cm by 27.9 cm (8 1/2 x 11 inches)
   - _____ All drawings sheets not the same size. Sheet(s)_____
5. MARGINS. 37 CFR 18.4(g): Acceptable margins:
   - Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm SIZE: A4 Size
   - Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm SIZE: 8 1/2 x 11
   - _____ Margins not acceptable. Fig(s)_____
   - _____ Top (T) _____ Left (L)
   - _____ Right (R) _____ Bottom (B)
6. VIEWS. CFR 1.84(h)
   REMINDER: Specification may require revision to correspond to drawing changes.
   - _____ Views connected by projection lines or lead lines. Fig.(s)_____

   Partial views. 37 CFR 1.84(h)(2)
   - _____ Brackets needed to show figure as one entity. Fig.(s)_____
   - _____ Views not labeled separately or properly. Fig.(s)_____
   - _____ Enlarged view not labeled separately or properly. Fig.(s)_____
7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)
   - _____ Hatching not indicated for sectional portions of an object. Fig.(s)_____
   - _____ Sectional designation should be noted with Arabic or Roman numbers. Fig.(s)_____
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
   - _____ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned, so that the top becomes the right side, except for graphs. Fig.(s)_____
   - _____ Views not on the same plane on drawing sheet. Fig.(s)_____
9. SCALE. 37 CFR 1.84(k)
   - _____ Scale not large enough to show mechansim without crowding when drawing is reduced in size to two-thirds in reproduction. Fig.(s)_____
10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)
    - _____ Lines, numbers & letters not uniformly thick and well defined, clean, durable and black (poor line quality). Fig.(s)_____
11. SHADING. 37 CFR 1.84(m)
    - _____ Solid black areas pale. Fig.(s)_____
    - _____ Solid black shading not permitted. Fig.(s)_____
    - _____ Shade lines, pale, rough and blurred. Fig.(s)
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.48(p)
    - _____ Numbers and reference characters not plain and legible. Fig.(s)_____
    - _____ Figure legends are poor. Fig.(s)_____
    - _____ Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(3) Fig.(s)_____
    - _____ Engligh alphabet not used. 37 CFR 1.84(p)(3) Fig.(s)_____
    - _____ Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Fig.(s)_____
13. LEAD LINES. 37 CFR 1.84(q)
    - _____ Lead lines cross each other. Fig.(s)_____
    - _____ Lead lines missing. Fig.(s)_____
14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.48(t)
    - _____ Sheets not numbered consecutively, and in Ababic numerals beginning with number 1. Fig.(s)_____
15. NUMBERING OF VIEWS. 37 CFR 1.84(u)
    - _____ Views not numbered consecutively, and in Abrabic numerals, beginning with number 1. Fig.(s)_____
16. CORRECTIONS. 37 CFR 1.84(w)
    - _____ Corrections not made from PTO-948 dated _____
17. DESIGN DRAWINGS. 37 CFR 1.152
    - _____ Surface shading shown not appropriate. Fig.(s)_____
    - _____ Solid black shading not used for color contrast. Fig.(s)_____

COMMENTS
- DWG. SHEETS NOT ACCEPTABLE SIZE (SEE ITEM 4)

REVIEWER T. Rogers DATE 6/29/98 TELEPHONE NO. 305 8335

ATTACHMENT TO PAPER NO. 10

PTO COPY