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[54] **DUAL DYNAMIC PRIORITY CONTROL IN A SELCTIVE CALL SYSTEM**

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[51] **Int. Cl.**[5] **H04B 7/00**; H04M 11/00

[52] **U.S. Cl.** **340/825.44**; 340/825.51; 379/57

[58] **Field of Search** 379/57, 58, 59, 105; 340/825.44, 825.47, 825.48, 825.51, 311.1; 455/166

[56] **References Cited**

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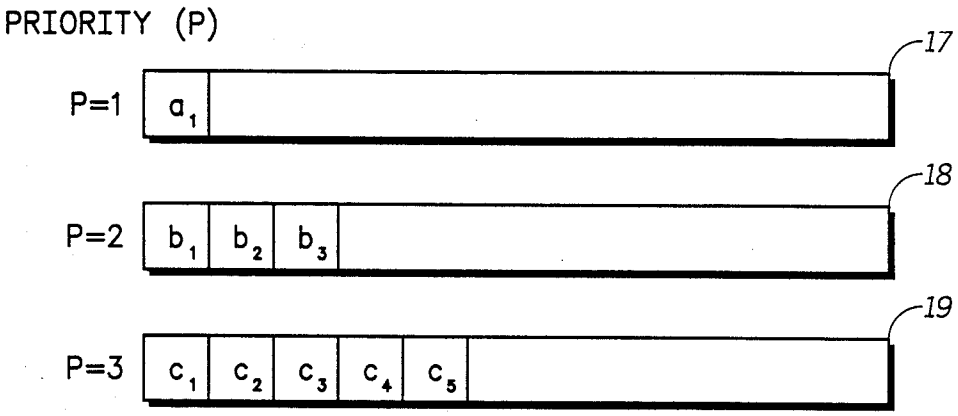
[57] **ABSTRACT**

A selective call control center is provided for transmission of calls to selective call receivers, such as paging receivers. In a first aspect, priorities are assigned to call sources and to call receivers and the order of transmission of calls is determined by the control center as a function of the priorities of the source and the receiver for each call. In a second aspect, at least one call receiver is provided having at least two addresses and the address to be selected from the at least two addresses for calling that receiver is determined dependent on the priority of the source of the call.

11 Claims, 3 Drawing Sheets



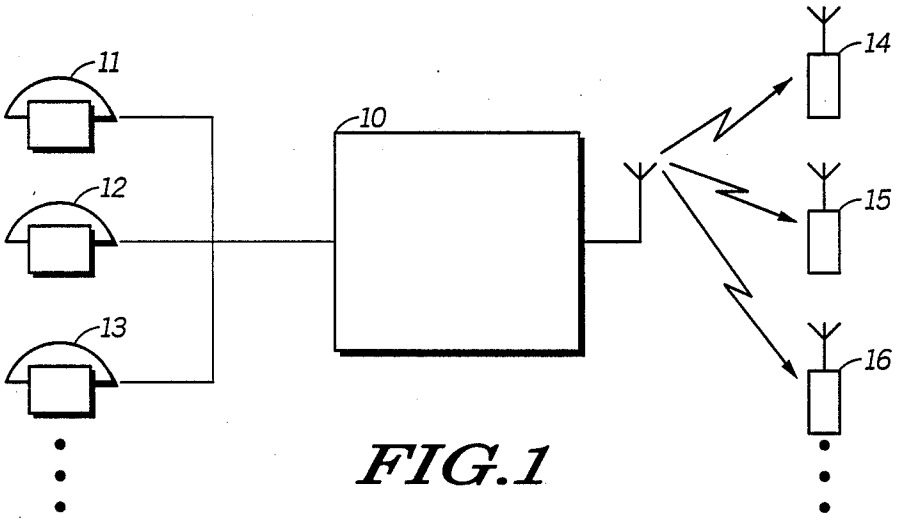


FIG.1

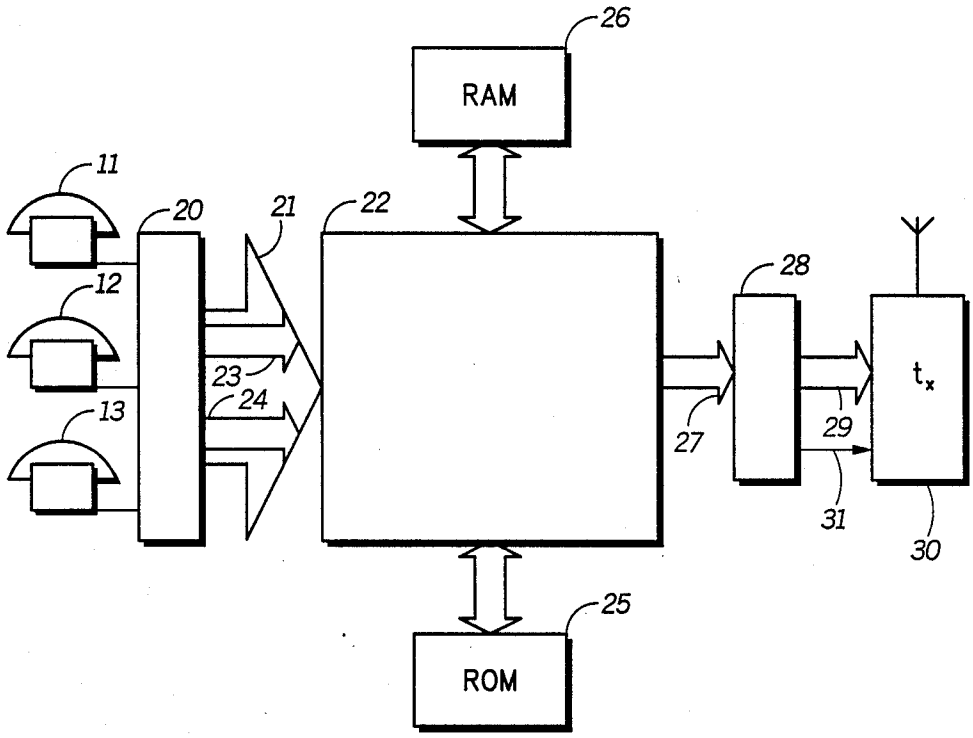


FIG.2

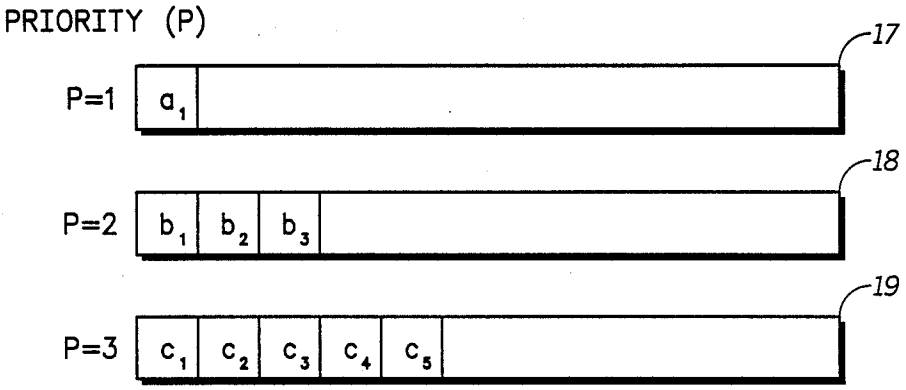


FIG.3

INPUT	PAGERS	P_r	OUTPUT
			PAGING ADDRESS
CARDIAC ARREST GROUP	14	1	ADDRESS 14A
	15	1	ADDRESS 15A

FIG.4A

INPUT	OUTPUT	
	P_r	PAGING ADDRESS
14	2	ADDRESS 14B
15	2	ADDRESS 15B
16	3	ADDRESS 16B

FIG.4B

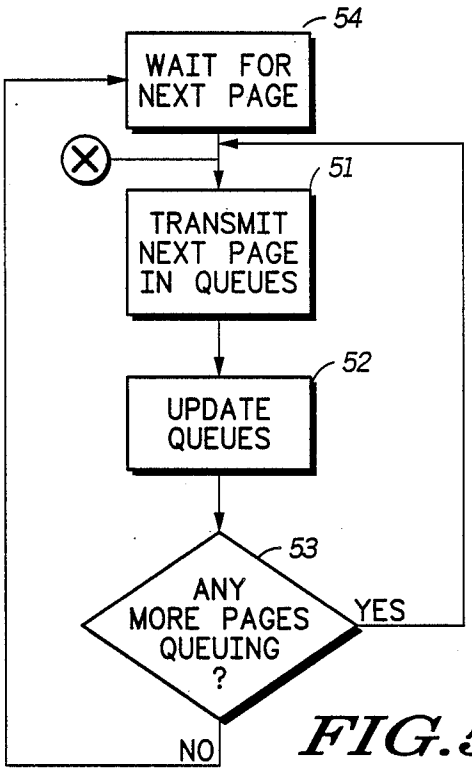


FIG.5

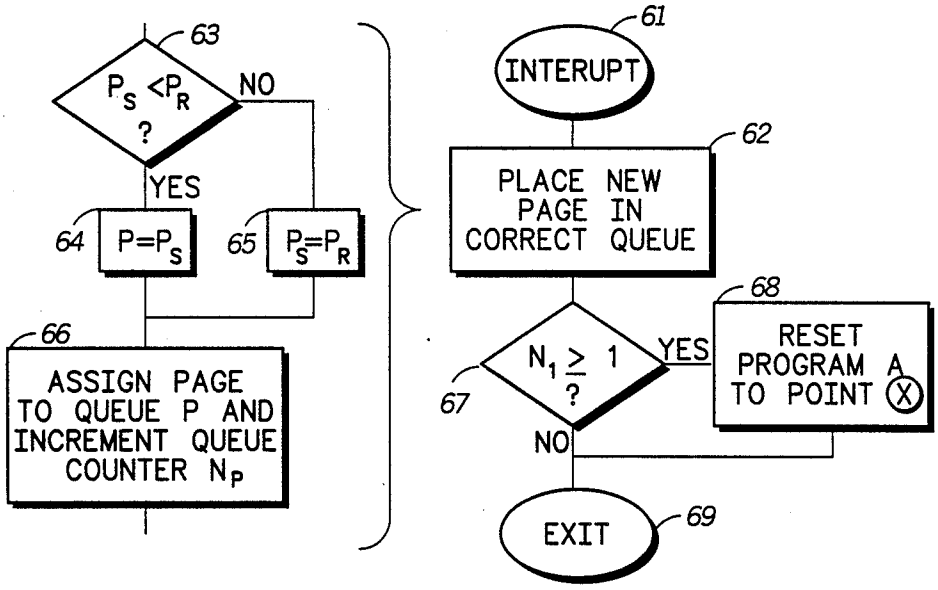


FIG.6

DUAL DYNAMIC PRIORITY CONTROL IN A SELCTIVE CALL SYSTEM

BACKGROUND OF THE INVENTION

This invention relates generally to the field of selective call control centers for transmission of calls to selective call receivers, such as paging receivers and more particularly to determining the order of transmission of calls to the receivers and/or determining which address within a receiver is to be called.

As the use of pagers becomes more and more established, the stage is already being reached where the control center of a paging system is becoming saturated at busy times, in the sense that more paging calls are being placed than the system is capable of transmitting to the destination paging receivers on the allocated radio frequency channels. To overcome this problem, control centers of paging systems administer a queue of calls for transmission, by storing each call in memory, and transmitting the calls, often on a first-in, first-out basis.

"Priority" is a concept used in paging control centers, or terminals, to alter the processing of selected calls, primarily in regard to their insertion into an output queue. Specifically, calls assigned a priority higher than that of other calls waiting for output are given advanced placement in the output queue, so that they will be transmitted sooner than calls assigned lower priority.

DESCRIPTION OF THE PRIOR ART

Currently produced paging terminals generally treat priority in one of two manners:

(1) Semipermanent individual assignment of call priority level by means of a parameter in the pager data base (i.e. stored in the paging terminal memory), or

(2) The use of a special "priority" input to momentarily raise the priority level of a call placed via that input.

These two manners of treating priority will be explained by reference to the generalized paging system shown in FIG. **1**.

In this figure there is shown a paging control center **10**, three paging inputs in the form of telephones **11**, **12** and **13**, and three pagers **14**, **15** and **16**.

In the first prior art system, each of the pagers **14**, **15** and **16** is assigned a priority level, and these levels are stored in a memory in the paging control center **10**. Each time a call is placed to the address of a particular pager, the control center **10** is aware of the priority of that address, and determines the order of transmission of calls accordingly.

In the second prior art system, one of the telephones **11**, **12** and **13** is designated as a "code blue" telephone, i.e. if a call is placed via that telephone (e.g. telephone **11**), such a call is immediately given pre-emptive status, whereby any existing call in progress is interrupted and the code blue call is immediately transmitted. This system is useful where the code blue telephone is assigned for emergency use.

Neither of the above prior art systems is sufficiently flexible to meet present day requirements of paging systems.

SUMMARY OF THE INVENTION

In a first aspect of this invention, the invention provides a method and apparatus for assigning priorities to calls received by a selective call control center. Call sources are provided having different assigned priorities, and call receivers are provided having different assigned priorities. The order of transmission of calls from the call sources to be transmitted to the call receivers is determined as a function of the priorities of both the source and the receiver for each call. It is preferred that the greater of the priorities of the source and receiver determines the order of transmission of a call relative to other calls having higher or lower priorities.

In a second aspect of the invention, a method and apparatus are provided for operation of a selective call system, in which call sources are provided having different assigned priorities and at least one call receiver is provided having at least two addresses. The particular address to be called is determined dependent on the priority of the source of the call. It should be understood, and will be explained hereinafter, that the addresses may take a number of forms. Dependant on which address is called, the call receiver may perform different functions, or operate in different manners.

It is an advantage of the second aspect of the invention that a pager may perform different functions or operate in different manners dependent upon the source of a particular call, but without the need for the operator placing the call to specify the particular function or manner of operation.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIG. **1** shows a general paging system;

FIG. **2** shows three priority levels, with calls assigned thereto;

FIG. **3** shows a functional block diagram of a control center in accordance with the present invention;

FIGS. **4A** and **4B** are look-up tables stored in memory **25** of the control center of FIG. **3**;

FIG. **5** is a flow diagram of the page transmission operation; and

FIG. **6** is a flow diagram of the priority determination operation.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the invention may be described in general terms with reference to FIG. **1**, the elements of which have already been described with reference to the prior art.

When a call is placed, that call is assigned a priority and an identification code identifying the call is placed in a queue corresponding to that priority. This is illustrated in FIG. **2**.

Referring to that figure, three queues established by a microprocessor in the control center **10** are shown as blocks **17**, **18** and **19**. The blocks represent locations in memory (described below) within the control center, in which identification codes of different calls may be stored on a first-in, first-out basis. Sufficient memory is set aside for each block so as to ensure that each block is notationally endless. Identification codes for different calls are represented as a_1, b_1, c_1, etc., queue **17** has top priority (priority P=1), queue **18** has second priority (P=2) and queue **19** has the lowest priority (P=3). In the figure it is shown that there is one call (a_1) in queue **17**, three calls (b_1, b_2, b_3,) in queue **18**, and five calls (c_1–c_5) in queue **19**. In this situation, call a_1 has been

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