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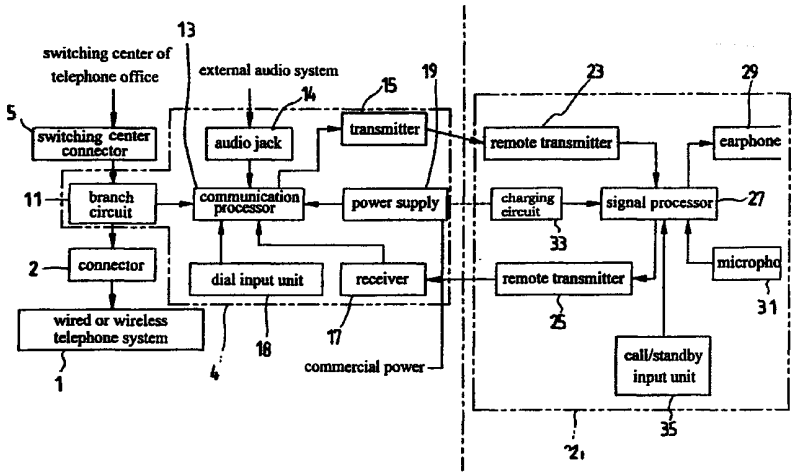
(54) Title: DETACHABLE WIRELESS EARPHONE/MICROPHONE DEVICE



(57) Abstract: A detachable wireless earphone/microphone device which is detachably installable in any of general wired and wireless telephones. The device comprises a switching center connector (5) for transmitting and receiving signals to/from a switching center of a telephone office, a communication processor (13) for processing an audio signal from the user and an audio signal from the switching center, a transmitter (15) for transmitting the audio signal from the switching center, processed by the communication processor, at a first frequency, an earphone/microphone unit (21) located remotely from the transmitter, a receiver (17) for receiving an audio signal of a second frequency transmitted from the earphone/microphone unit and transferring the received audio signal to the communication processor, and a branch circuit (11) for transferring the signals transmitted and received through the switching center connector to a wired or wireless telephone system (1).

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DETACHABLE WIRELESS EARPHONE/MICROPHONE DEVICE

Technical Field

The present invention relates in general to detachable wireless earphone/microphone devices, and more particularly to a detachable wireless earphone/microphone device which is detachably installable in any of general wired and wireless telephones.

Background Art

As well known to those skilled in the art, a calling party establishes a call connection from either a wired or wireless telephone to another telephone (wired or wireless) of a desired subscriber number via a switching center of a telephone office to conduct a telephone conversation with a called party.

However, a general wired telephone has a disadvantage in that a handset is connected to the telephone body by wire, thereby localizing the user's movements to within a limited range. A general wireless telephone has a disadvantage in that a handset is so large in volume that the user must hold it in either of his both hands to conduct a telephone conversation with a call-connected party. As a result, the user cannot help suspending the current work in progress to converse with the call-connected party over the telephone.

Disclosure of the Invention

Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a detachable wireless earphone/microphone device which is capable of being detachably installed in any of general wired and wireless telephones so that the user can converse with a desired telephone subscriber over the telephone while having his both hands free.

In accordance with the present invention, the above and other objects can

be accomplished by a provision of a detachable wireless earphone/microphone device equipped with a general wired or wireless telephone system which includes a connector provided at its predetermined portion for receiving an incoming call signal from a switching center of a telephone office and allows the user to make a call to a telephone of a desired party by personally dialing a subscriber telephone number of the desired party, the device comprising a switching center connector for transmitting and receiving signals to/from the switching center; a communication processor for processing an audio signal from the user, outputting the processed result to the switching center connector, detecting an audio signal from the switching center from the switching center connector and processing the detected audio signal to reproduce it; a transmitter for transmitting the audio signal from the switching center, processed by the communication processor, at a first frequency; an earphone/microphone unit located remotely from the transmitter and wirelessly connected thereto, the earphone/microphone unit receiving and demodulating the audio signal of the first frequency transmitted from the transmitter, aurally providing the demodulated audio signal to the user, modulating the user's voice into a predetermined audio signal and transmitting the modulated audio signal to the communication processor at a second frequency; a receiver for receiving the audio signal of the second frequency transmitted from the earphone/microphone unit and transferring the received audio signal to the communication processor; and a branch circuit connected between the switching center connector and the communication processor for transferring the signals transmitted and received through the switching center connector to the wired or wireless telephone system.

Preferably, the communication processor may be adapted to receive an audio signal from an external audio system, mix the received audio signal with the audio signal from the switching center and output the mixed result to the transmitter.

Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description

taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view illustrating a connection between a detachable wireless earphone/microphone device of the present invention and a general telephone; and

Fig. 2 is a block diagram showing the construction of the detachable wireless earphone/microphone device of the present invention.

Best Mode for Carrying Out the Invention

Fig. 1 is a perspective view illustrating a connection between a detachable wireless earphone/microphone device of the present invention and a general telephone and Fig. 2 is a block diagram showing the construction of the detachable wireless earphone/microphone device of the present invention.

In Fig. 1, the reference numeral 1 denotes a general wired or wireless telephone system which has a connector 2 provided at its predetermined portion for receiving an incoming call signal from a switching center of a telephone office. The user can make a call to a telephone of a desired party over the wired or wireless telephone system 1 by personally dialing a subscriber telephone number of the desired party.

The detachable wireless earphone/microphone device of the present invention comprises a detachable communication system body 4 connected to the connector 2. The detachable communication system body 4 is adapted to process the incoming call signal from the switching center of the telephone office, transmit the processed result through an antenna and receive an audio signal from the user. An audio connector 6 is provided at a predetermined side portion of the detachable communication system body 4 to receive an audio signal from an external audio system. A detachable earphone/microphone unit 21 is detachably installed in a predetermined top portion of the detachable communication system body 4 to receive a signal transmitted from the body 4, aurally provide the received signal to the user, convert the user's voice into an electrical audio signal and transmit the converted audio signal to the body 4. A power supply 19 is connected to the

detachable communication system body 4 to convert a commercial voltage of AC 220V or 110V into a predetermined DC voltage and supply the converted DC voltage to the body 4. An audio jack 14 is inserted into the audio connector 6 to transfer the audio signal from the external audio system to the detachable communication system body 4. A switching center connector 5 is further provided in the detachable communication system body 4 to transmit an outgoing call signal to the switching center and receive the incoming call signal therefrom.

With reference to Fig. 2, the detachable communication system body 4 includes the switching center connector 5 and a communication processor 13. As stated previously, the switching center connector 5 is adapted to transmit the outgoing call signal to the switching center and receive the incoming call signal therefrom. The communication processor 13 functions to process the audio signal from the user and output the processed result to the switching center connector 5. The communication processor 13 further functions to detect an audio signal from the switching center from the switching center connector 5 and process the detected audio signal to reproduce it. The detachable communication system body 4 further includes a transmitter 15 for transmitting the audio signal from the switching center, processed by the communication processor 13, at a first frequency. The earphone/microphone unit 21 is located remotely from the transmitter 15 and wirelessly connected thereto. The earphone/microphone unit 21 is adapted to receive and demodulate the audio signal of the first frequency transmitted from the transmitter 15 and aurally provide the demodulated audio signal to the user. The earphone/microphone unit 21 is further adapted to modulate the user's voice into a predetermined audio signal and transmit the modulated audio signal to the communication processor 13 at a second frequency. A receiver 17 is provided to receive the audio signal of the second frequency transmitted from the earphone/microphone unit 21 and transfer the received audio signal to the communication processor 13. A branch circuit 11 is located between the switching center connector 5 and the communication processor 13 to transfer signals transmitted and received through the switching center connector 5 to the wired or wireless telephone system 1. A dial input unit 18 is connected to the

communication processor 13 to transfer a desired subscriber telephone number dialed by the user to the communication processor 13. The audio jack 14 is also connected to the communication processor 13 to transfer an audio signal from an external audio system (not shown) to the communication processor 13.

The earphone/microphone unit 21 includes a remote receiver 23 for receiving the audio signal of the first frequency transmitted from the transmitter 15, a remote transmitter 25 for transmitting the audio signal of the second frequency to the communication processor 13, and a signal processor 27 for demodulating the audio signal of the first frequency received by the remote receiver 23, processing the demodulated audio signal, modulating the audio signal from the user at the second frequency and outputting the modulated audio signal to the remote transmitter 25. The earphone/microphone unit 21 further includes an earphone 29 for aurally providing the audio signal processed by the signal processor 27 to the user, a microphone 31 for converting the user's voice into the electrical audio signal and outputting the converted audio signal to the signal processor 27, and a charging circuit 33 charged with the DC voltage from the power supply 19 for supplying the charged voltage to the remote transmitter 25, remote receiver 23, signal processor 27, earphone 29 and microphone 31 if necessary. Also connected to the signal processor 27 is a call/standby input unit 35 which has keys for inputting call and standby commands selected by the user, respectively.

On the other hand, in the case where an incoming call signal from a communication system of a calling party is received via the switching center under the condition that the audio signal from the audio jack 14 is supplied to the earphone 29 within the user's ear sequentially through the communication processor 13, transmitter 15, remote receiver 23 and signal processor 27, then the communication processor 13 detects the received incoming call signal and mixes it with the audio signal from the audio jack 14 to aurally provide them together to the user. As a result, the mixed signal from the communication processor 13 is supplied to the earphone 29 within the user's ear sequentially through the transmitter 15, remote receiver 23 and signal processor 27.

Therefore, with the present detachable wireless earphone/microphone

device constructed as described above, the user can listen to desired music at normal times and meanwhile conduct a telephone conversation with a calling party in response to a suddenly incoming call signal from a communication system of the calling party.

Industrial Applicability

As apparent from the above description, the present invention provides a detachable wireless earphone/microphone device which is capable of being detachably installed in any of general wired and wireless telephones so that the user can converse with a desired telephone subscriber over the telephone while having his both hands free. Therefore, the detachable wireless earphone/microphone device allows the user to move freely while conducting a telephone conversation, resulting in a greater increase in convenience of use. Further, the user can listen to desired music at normal times and meanwhile conduct a telephone conversation with a calling party in response to a suddenly incoming call signal from a communication system of the calling party. This has the effect of maximizing the convenience of use.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims:

1. A detachable wireless earphone/microphone device equipped with a general wired or wireless telephone system which includes a connector provided at its predetermined portion for receiving an incoming call signal from a switching center of a telephone office and allows the user to make a call to a telephone of a desired party by personally dialing a subscriber telephone number of the desired party, said device comprising:

a switching center connector for transmitting and receiving signals to/from said switching center;

a communication processor for processing an audio signal from the user, outputting the processed result to said switching center connector, detecting an audio signal from said switching center from said switching center connector and processing the detected audio signal to reproduce it;

a transmitter for transmitting the audio signal from said switching center, processed by said communication processor, at a first frequency;

an earphone/microphone unit located remotely from said transmitter and wirelessly connected thereto, said earphone/microphone unit receiving and demodulating the audio signal of the first frequency transmitted from said transmitter, aurally providing the demodulated audio signal to the user, modulating the user's voice into a predetermined audio signal and transmitting the modulated audio signal to said communication processor at a second frequency;

a receiver for receiving the audio signal of the second frequency transmitted from said earphone/microphone unit and transferring the received audio signal to said communication processor; and

a branch circuit connected between said switching center connector and said communication processor for transferring the signals transmitted and received through said switching center connector to the wired or wireless telephone system.

2. A detachable wireless earphone/microphone device as set forth in Claim 1, wherein said communication processor is adapted to receive an audio signal

from an external audio system, mix the received audio signal with said audio signal from said switching center and output the mixed result to said transmitter.

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FIG. 1

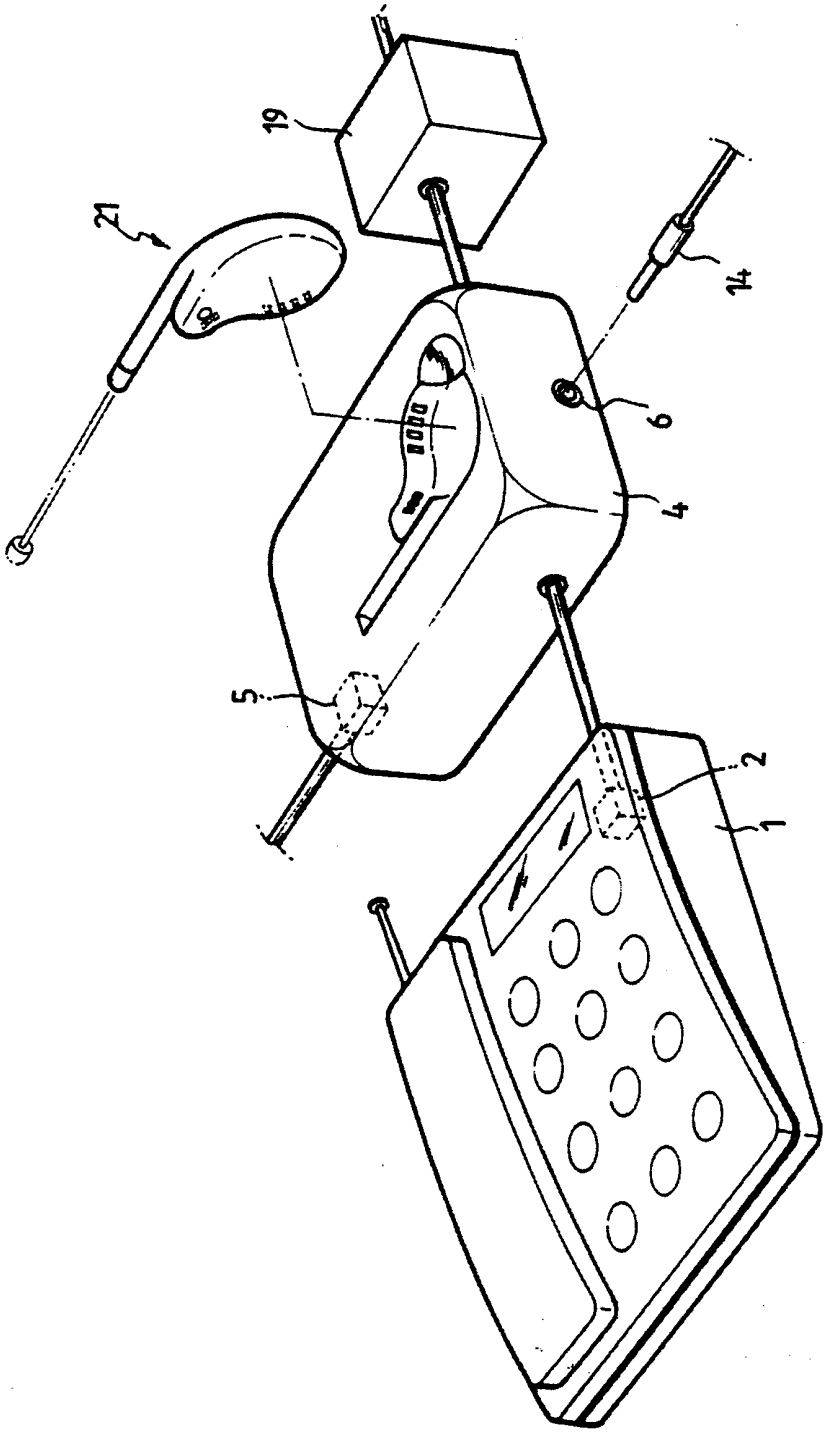

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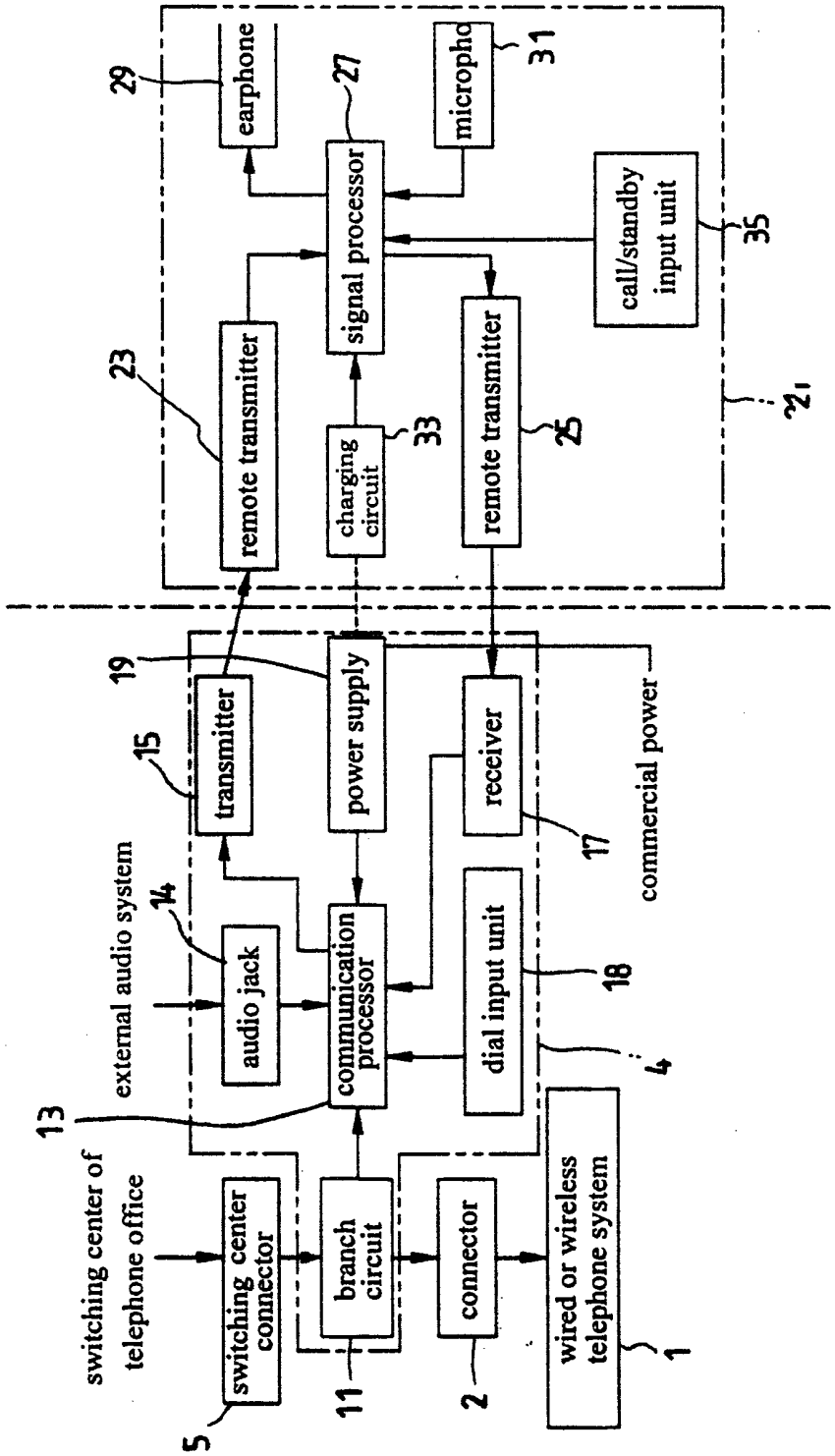
FIG.2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INTERNATIONAL SEARCH REPORT

international application No.
PCT/KR00/00783

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 H04B 1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimun documentation searched (classification system followed by classification symbols)

IPC 7 H04M 1/00, 1/02; H04R 1/00, 1/06,1/10; H04B 1/38, 7/26

Documentation searched other than minimun documentation to the extent that such documents are included in the fileds searched

Korean Patents and applications for inventions since 1975
Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the intertnational search (name of data base and, where practicable, search trerms used)

FPD, PAJ, PATROM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 9-252335 A (ANLITU CO.) 22. 09. 1997 See Abstract and Fig 1	1,2
Y	KR 99-24223 A (Lee jong-gak) 25. 03. 1999 See abstract and Fig 2. Fig 3	1.2
A	KR 98-72187 A (Jo nam-yu) 26. 10. 1998 See Abstract and Fig 1	1.2
A	US 4930156 A (Norcom Electronics Corporations) 29. 05. 1990 See Abstract	1.2
A	US 4669109 A (	

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search	Date of mailing of the international search report
27 SEPTEMBER 2000 (27.09.2000)	28 SEPTEMBER 2000 (28.09.2000)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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KR 98-72187 A	26.10.1998	none	
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