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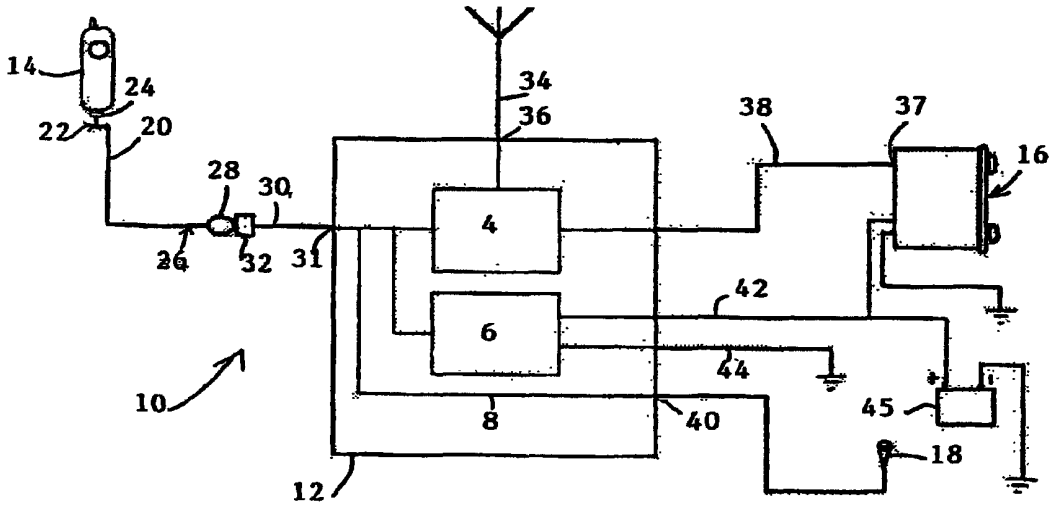
(54) Title: METHOD AND APPARATUS FOR USE OF A TRANSCEIVER




(57) Abstract: The invention provides a method and an apparatus for use of a transceiver, typically a mobile telephone or 2-may radio, within a motor vehicle. The apparatus includes an adaptor unit which is conenctable to a vehicle audio device, for example a radio or compact disc player, and a microphone which is connectable to the adaptor unit and which is installable within the vehicle. The adaptor unit is connectable to the mobile telephone by a connecting means such that the telephone may communicate with the audio device by way of wired communication thereby facilitating broadcasting of an incoming telephone call over at least one speaker of the audio device. When the apparatus is in use the microphone picks up a user's voice and feeds it to the telephone, where it will be transmitted to a receiving telephone in communication with the user's telephone. The connecting means is removable and may be adapted to permit use of different types of mobile phones with the apparatus.

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# METHOD AND APPARATUS FOR USE OF A TRANSCEIVER

## FIELD OF THE INVENTION

The present invention relates to a method for substantially hands-free use of a transceiver, and an apparatus for use in the method. More particularly, the invention relates to a method for substantially hands-free use of a mobile telephone in a motor vehicle.

In the specification and claims which follow, the term "transceiver" is to be understood to refer to any mobile or cellular telephone, satellite telephone or any other voice communication device which permits reception and transmission of communications. The term "hands-free" is also to be understood to refer to the ability to receive and/or make a telephone call and have a conversation over a mobile telephone without requiring a user to hold the telephone in his or her hand. This term, however, is not intended to imply that the user is not required to hold or touch the telephone at all, as the user may still be required to use a keypad of the telephone to dial numbers or select functions and to connect and disconnect telephone calls.

## BACKGROUND OF THE INVENTION

Mobile (or cellular) telephones have many advantages, the most important of which are that they allow a user to make use of a telephone when the user is away from an office or home and cannot use a conventional land telephone. This same advantage, however, poses a danger when the user is simultaneously driving a motor vehicle and using the mobile telephone, as the user is required to hold the mobile telephone in one hand, leaving only one hand with which to drive the vehicle.

The inventor is aware of mobile car kits which are installable in vehicles, the kits having speakers through which the user can hear incoming communications and a strategically placed microphone which inputs the user's voice into the mobile telephone. These kits are expensive, and require several parts to be installed, for example a telephone connector, one or more speakers, and the microphone, making it difficult for an average user to install the kit himself. The kits are also limited to use for one type of telephone, and thus if the user changes his telephone type, or sells the vehicle and the new owner has a different type of telephone, then the installed kit cannot be used and a new kit is required.

The inventor is also aware of mobile car kits which allow incoming communication to be broadcast over speakers of a motor vehicle radio. However, these mobile car kits facilitate broadcasting of radio frequency wireless interfacing between the mobile telephone and the radio which may

allow a third party to listen in on the conversation, using a standard radio frequency receiver, without authorisation to do so.

Therefore a need exists to provide a means for simply and cost-efficiently permitting hands-free use of a mobile telephone. A further need exists to provide an apparatus which can be used for a variety of mobile telephone types with minimal adaption and few extra costs being incurred. A need also exists to permit hands-free use of a mobile telephone using wired communication to facilitate interfacing between the mobile telephone and the radio.

In the specification and claims which follow, the term "wired communication" is to be understood to refer to any communication made by propagating an information bearing signal by means of a path defined by a substantially solid material connecting a sender of the signal with a receiver of the signal in which the path defined by a material includes, but is not limited to, an electric cable, an electromagnetic cable, a microwave cable, a fibre-optic cable, a wire, a contact, a terminal, and/or the like.

## SUMMARY OF THE INVENTION

According to a first embodiment of the invention, there is provided a method for use of a transceiver, the method including the following steps, in any order:

connecting the transceiver to an audio device such that the transceiver communicates with the audio device by way of wired communication; and

connecting a sound to electromagnetic wave conversion means to the transceiver.

The method may include the step of modulating an incoming communication from the transceiver into a modulated communication receivable by the audio device. The modulated communication may be communicated to the audio device by way of wired communication. The incoming communication may be modulated into a radio frequency communication.

The transceiver may be selected from a group comprising a cellular or mobile telephone, a satellite telephone, a two-way radio or any other communication device permitting two-way voice communication.

The audio device may be selected from a group comprising a radio, a compact disc player and/or an audio cassette player.

The method may facilitate substantially hands-free use of the transceiver.

The audio device may be tuned to a frequency wherein the audio device is able to receive an incoming communication from the transceiver.

The sound to electromagnetic wave conversion means may be a microphone.

The incoming communication may be broadcast over the audio device through at least one speaker, and a user may speak into the microphone to transmit an outgoing communication through the transceiver.

The audio device is typically a motor vehicle radio.

The transceiver is connected to a signal receiving means, for example, a radio antenna.

According to another embodiment of the invention there is provided an apparatus for a transceiver, the apparatus including:

first connecting means for connecting the transceiver to an audio device such that the transceiver communicates with the audio device by way of wired communication; and

a sound to electromagnetic wave conversion means.

The apparatus may include a modulator which modulates an incoming communication from the transceiver into a modulated communication receivable by the audio device. The first connecting means communicates the modulated communication to the audio device by way of wired communication. The modulator may be a radio frequency modulator which modulates the incoming communication into a radio frequency communication. The audio device then demodulates the modulated communication such that the incoming communication is broadcast over the audio device.

The first connecting means may include wired communication means facilitating wired communication between the transceiver and the audio device. The wired communication means may include an electric cable, an electromagnetic cable, a microwave cable, a fibre-optic cable, a wire, a contact, a terminal, and/or the like.

The apparatus may include activation means for activating the audio device if the audio device is not activated when an incoming communication is received by the transceiver.

The apparatus may include switching means for switching the audio device to a preselected frequency to receive the modulated communication when the incoming communication is received by the by the transceiver. The apparatus may include storing means for storing the frequency of the audio device before the switching means switches the audio device to the preselected frequency such that the audio device is switched back to the stored frequency by the switching means when the incoming communication is no longer received by the by the transceiver.

The apparatus may include RDS (Radio Data System) means for communicating with a RDS compatible audio device such that a display of the audio device displays information indicating that an incoming communication is being received by the transceiver. The RDS means may supply the RDS compatible audio device with an RDS-type signal which has been modulated

by the modulator to facilitate the communication and to facilitate recognition by the audio device that the RDS-type signal is indeed a typical RDS signal. The communication may be by way of wired communication via the first connecting means. The communication may be by way of wireless communication via a transmitter. The information on the display may read "CELLPHONE" or "PHONE" indicating that an incoming communication is being received by the transceiver.

The transceiver may be selected from a group comprising a cellular or mobile telephone, a satellite telephone, a two-way radio or any other communication device permitting two-way voice communication.

The audio device may be selected from a group comprising a radio, a compact disc player and/or an audio cassette player.

The apparatus may facilitate substantially hands-free use of the transceiver.

The sound to electromagnetic wave conversion means may be a microphone.

The audio device to which the transceiver is connectable is typically a motor vehicle radio.

The first connecting means may have means to which a signal receiving means, for example a radio antenna, is connectable. The first connecting means may also include means to which the microphone is connectable, and additionally means to which a power source is connectable. The power source may be a motor vehicle power source, typically a motor vehicle battery.

The apparatus may include a second connecting means to connect the transceiver to the first connecting means. The second connecting means may have a mating portion which is sized and configured to mate with a specific type of transceiver.

The apparatus may also include a battery charging circuit for charging a battery of the transceiver. The apparatus may include voltage regulation means to ensure that the transceiver receives the recommended battery charging voltage from the battery charging circuit. The voltage regulation means may be included in the second connecting means. The apparatus may include a variety of second connecting means each being adapted to correspond to a variety of preselected recommended battery charging voltages for different transceivers such that each type of transceiver may receive its particular recommended battery charging voltage when connected via the corresponding second connecting means. The voltage regulation means may include a resistor which regulates the voltage.

The apparatus may further include a microphone input means.

The apparatus may also include a transceiver and/or a motor vehicle audio device.

According to a further embodiment of the invention, there is provided a connecting device for an apparatus substantially as described above, the connecting device including first connecting means for connecting to a transceiver and second connecting means for connecting to the apparatus.

According to yet a further embodiment of the invention there is provided a connecting device for connecting a transceiver to an audio device, such that the transceiver communicates with the audio device by way of wired communication, and for connecting the transceiver to a sound to electromagnetic wave conversion means, typically a microphone.

According to yet a further embodiment of the invention, there is provided an apparatus for facilitating use of a transceiver within a motor vehicle, the apparatus including:

a first connecting means having means for connecting to a radio antenna, an audio device, and a microphone;

a second connecting means having connecting means for connecting the transceiver to the first connecting means such that the transceiver communicates with the audio device by way of wired communication; and

a microphone.

The apparatus may facilitate substantially hands-free use of the transceiver.

The apparatus may also include a modulator/transmitter circuit, a battery charging circuit and/or a microphone input means.

According to another embodiment of the invention, there is provided a signal generating means for generating a RDS signal for an apparatus for a transceiver wherein the apparatus is for facilitating substantially hands-free use of the transceiver by communicating an incoming communication of the transceiver to a RDS compatible audio device.

The RDS signal may be modulated so that it is receivable by the audio device and recognisable by the audio device as a RDS-type signal. The RDS signal may be transmitted to the audio device by means of wireless transmission. The RDS signal may be transmitted to the audio device by means of wired transmission. The RDS signal may include information such that when received by the audio device a display of the audio device displays display information indicating that an incoming communication is being received by the transceiver.

## DETAILED DESCRIPTION OF THE INVENTION

The invention will now be described further with reference to the following examples and accompanying diagrams.

In the diagrams,

Figure 1 shows a schematic diagram of an apparatus according to the invention;

Figure 2 shows a schematic diagram of an alternative embodiment of the apparatus of Figure 1; and

Figure 3 shows a schematic diagram of a mobile telephone ring detector circuit for the apparatus of Figure 2.

Referring to the drawings, reference numeral 10 generally indicates an apparatus for hands-free use of a transceiver in accordance with the invention.

The apparatus 10 includes a first connecting means in the form of an adaptor unit 12 and a sound to electromagnetic wave conversion means in the form of a microphone 18.

The apparatus 10 further includes a second connecting means in the form of an adaptor cable 20 which is connectable at one end 22 to a transceiver, typically a mobile telephone 14. End 22 of the adaptor cable 20 has a mating means in the form of a plug 24 which connects to a complementary telephone socket (not shown). The other end 26 of the cable 20 has a multi-terminal connecter 28 which is connectable to the adaptor unit 12.

The adaptor unit 12 has a cable 30 extending from a telephone interface portion 31, the cable 30 having a mating connector 32 for connecting to connector 28 of the adaptor cable 20.

Within the adaptor unit 12 the telephone interface portion 31 is connected to a modulator/transmitter electronic circuit 4, a battery charging circuit 6 and a microphone input 8. The battery charging circuit 6 is a simple ni-cad battery charger circuit and the modulator/transmitter circuit 4 is similar to circuits used in FM broadcasting. Circuits 4 and 6 are standard circuits which have been adapted slightly in that the transmitting power of the transmitter is very low.

The apparatus 10 is easily installable within a motor vehicle (not shown).

The adaptor unit 12 is preferably mounted out of sight beneath a dashboard of the vehicle, in close proximity to both a vehicle FM antenna cable 34 and a vehicle audio device, typically a radio 16. The connector 32 of cable 30 can either be fixed to the dashboard or alternatively can be in the form of an in-line connector (not shown) that is storable in a vehicle compartment when not in use.

Antenna cable 34 is plugged into an antenna socket 36 on the adaptor unit 12 and a screened cable 38 from the adaptor unit 12 is in turn plugged into the antenna socket 37 at the rear of the vehicle radio 16.

The microphone 18 is plugged into a socket 40 on the adaptor unit 12 and is mounted inside the vehicle in a position where speech by a driver of the vehicle can be picked up. This arrangement permits easy replacement of the microphone 18 should it become faulty.

Wires 42 and 44 are connected to a power source, typically an accessory power source of the vehicle, for example a battery 45. Power will only be supplied to the apparatus 10 when the vehicle ignition is on.

When the adapter unit 12 has been installed in the motor vehicle, the radio 16 is tuned into a frequency of the adaptor unit 12 and this is then stored by the radio 16 as if the frequency corresponded to a radio station. A tone generator (not shown) is connected to the adaptor unit to emit an audible tone when the radio 16 has been tuned to the required frequency.

When a user wishes to make use of the apparatus 10, end 26 of the adaptor cable 20 is connected to the adaptor unit 12, and end 22 is connected to the mobile telephone 14.

The telephone 14 is automatically charged by battery charging circuit 6 when the vehicle is switched on. The apparatus 10 includes voltage regulation means (not shown) to ensure that the telephone 14 receives the recommended battery charging voltage from the battery charging circuit 6. The voltage regulation means is included in the adaptor cable 20. A number

of different adaptor cables 20 will be made available each being adapted to correspond to a variety of preselected recommended battery charging voltages for different types of telephones 14 such that each type of telephone 14 may receive its particular recommended battery charging voltage when connected via the corresponding adaptor cable 20. The voltage regulation means includes a resistor which regulates the voltage.

Each different adaptor cables 20 will also be configured to include a mating plug configured to fit the corresponding type of mobile telephone 14. Thus if the user wishes to use a different type of telephone with the apparatus, he or she need only change the cable 20 to a cable which has a plug 24 fitting the specific type of telephone 14 and which has voltage regulation means corresponding to the specific type of telephone 14.

The radio 16 does not need to be on for the telephone 14 to ring as the ringing tone is generated within the telephone 14 itself. The radio 16 does, however, need to be on in order for incoming communications to be broadcast over the radio 16 or for outgoing communications to be picked up by the microphone 18 and fed to the telephone 14.

In order to answer an incoming telephone call, the radio 16 should first be switched on if it is switched off, and the stored station number corresponding to the unit frequency should be selected. The call can now be answered, although it may be necessary to first adjust the radio volume. The volume of the radio 16 should not be too loud in order to avoid feedback.

The speaker output from the mobile telephone 14 is fed into the modulator/transmitter circuit 4 which combines the telephone signal with a FM carrier signal which is then demodulated by the vehicle's radio receiver (not shown).

The voice of the incoming caller will be broadcast over the radio 16 through radio speakers (not shown), and speech of the user will be picked up by the microphone 18. This will then be fed to the mobile telephone 14, where it will in turn be transmitted to the incoming caller.

Similarly, in order to make an outgoing telephone call, the user should ensure that the radio 16 is switched on and that the correct frequency has been selected. The user can then dial the desired number, and incoming and outgoing speech will be transmitted and received in substantially the same manner as for an incoming call. When the user has terminated a call, the radio 16 can be switched off or another radio station, audio cassette or compact disc can be selected.

The apparatus 10 includes RDS (Radio Data System) means (not shown) for communicating with the radio 16, which is a RDS compatible, such that a display (not shown) of the radio 16 displays information indicating that a telephone signal is being received by the mobile telephone 14. The RDS means supplies the radio 16 with an RDS-type signal which has been modulated by the modulator 4 to facilitate the communication and to facilitate recognition by the radio 16 that the RDS-type signal is indeed a typical RDS signal. The communication is by way of wired communication via the adaptor

unit 12 in the same manner that the telephone signal is communicated to the radio 16. The information on the display then reads "CELLPHONE" to indicate that a telephone signal is being received by the mobile telephone 14.

Figures 2 and 3 show a second embodiment of the invention. Referring to Figure 2, the apparatus 50 is connected to an audio device 52 or RF modulator which includes a CD (compact disc) shuttle 54. The audio device 52 has line inputs for connection to the CD shuttle 54. Audio leads 56 are connected to an adaptor unit 58 to which a feed 60 from a mobile telephone 62 is also connected. An audio output 64 is then fed into audio output sockets 66 in the audio device 52.

When the mobile telephone 62 rings, a signal path in the audio device 52 is automatically switched from the CD shuttle 54 to the mobile telephone 62. Figure 3 shows a schematic diagram for detector circuit 70 which controls this procedure. Operational amplifiers 72 are used in the physical switching so as to eliminate switch bounce noise which occurs in relays and switches as a result of minor arching between contacts when they are switched.

Using adaptor unit 58 requires only the line in/cd 56 to be selected to broadcast a telephone call using the audio device speakers. Unlike the apparatus 10 described in the first embodiment above, the apparatus 50 of the second embodiment does not require a radio receiver to be tuned into a specific frequency because the signal is fed directly into a line level input.

Example

An apparatus as described in the first embodiment of the invention was tested using a Nokia 5110 GSM Cellular Telephone and a National E101 radio installed within a vehicle. The radio had a standard digital tuner. The adaptor cable was fitted with a Nokia 5110/6110 connector at one end and a RJ11 multi-contact connector at the other. The circuit boards were housed in an aluminium box (adaptor unit) with sockets fitted to allow all of the required connections. The adaptor unit was housed behind the dashboard under the radio, which provided easy access for all cable requirements. A standard cellular telephone car microphone was used. With the radio receiver set to the adaptor frequency and stored, a different station was selected on the radio.

When the telephone rang, the preset station for the adaptor unit was selected and the volume level was checked. The call was then answered and a conversation was had with the incoming caller. On termination of the call, the radio station selected at the beginning of the test was once again selected.

To initiate a call, the preset station on the radio for the adaptor unit was selected, the desired number was called up on the cellular telephone and the dial button pressed. The volume level on the radio was checked and the volume was then adjusted for the conversation. On termination of the telephone call, the tape player was selected. While a tape was playing, an

incoming call was received and all that was required in order to answer the call was for the user to eject the tape and set the volume level. The incoming and outgoing voices were clear to each cellular telephone user during every call tested.

The invention is not limited to the precise constructional details as herein described. For example, the apparatus could be used for two-way radio communications instead of mobile telephones.

The applicant believes that the invention is advantageous in that it provides a method of substantially hands-free use of a mobile telephone in a motor vehicle which does not require additional speakers to be installed, and which permits different types of mobile telephones to be used without requiring major changes or adaptations and without incurring major expenses. The apparatus is furthermore relatively easy to install as little wiring is required during the installation procedure. The apparatus also facilitates interfacing between the mobile telephone and the car radio which is not of a broadcasted radio frequency nature such that the third parties cannot receive this broadcasted radio frequency over their radio.

## CLAIMS

1. A method for use of a transceiver, the method including the following steps, in any order:

connecting the transceiver to an audio device such that the transceiver communicates with the audio device by way of wired communication; and

connecting a sound to electromagnetic wave conversion means to the transceiver.

2. A method as claimed in claim 1, which includes the step of modulating an incoming communication from the transceiver into a modulated communication receivable by the audio device.

3. A method as claimed in claim 2, in which the modulated communication is communicated to the audio device by way of wired communication.

4. A method as claimed in any one of claims 1 to 3, wherein the transceiver is selected from a group comprising a cellular or mobile telephone, a satellite telephone, a two-way radio or any other communication device permitting two-way voice communication.

5. A method as claimed in any one of claims 1 to 4, wherein the audio device is selected from a group comprising a radio, a compact disc player and/or an audio cassette player.

6. A method as claimed in any one of claims 1 to 5, wherein the audio device is a motor vehicle audio device.

7. A method as claimed in any one of claims 1 to 6, which facilitates substantially hands-free use of the transceiver.

8. A method as claimed in any one of claims 1 to 7, which includes the step of tuning the audio device to a frequency wherein the audio device is able to receive an incoming communication from the transceiver.

9. A method as claimed in any one of claims 1 to 8, wherein the sound to electromagnetic wave conversion means is a microphone.

10. A method as claimed in any one of claims 1 to 9, which includes the step of broadcasting the incoming communication over the audio device through at least one speaker.

11. A method as claimed in any one of claims 1 to 10, which further includes the step of speaking into the sound to electromagnetic wave conversion means to transmit an outgoing communication through the transceiver.

12. A method as claimed in any one of claims 1 to 11, wherein the transceiver is connected to a signal receiving means.

13. A method as claimed in claim 12, wherein the signal receiving means is a radio antenna.

14. An apparatus for a transceiver, the apparatus including:

first connecting means for connecting the transceiver to an audio device such that the transceiver communicates with the audio device by way of wired communication; and

a sound to electromagnetic wave conversion means.

15. An apparatus as claimed in claim 14, which includes a modulator which modulates an incoming communication from the transceiver into a modulated communication receivable by the audio device.

16. An apparatus as claimed in either of claims 14 or 15, in which the first connecting means communicates the modulated communication to the audio device by way of wired communication.

17. An apparatus as claimed in any one of claims 14 to 16, in which the first connecting means includes wired communication means facilitating wired communication between the transceiver and the audio device.

18. An apparatus as claimed in any one of claims 14 to 17, in which the apparatus includes RDS (Radio Data System) means for communicating with a RDS compatible audio device such that a display of the audio device displays information indicating that an incoming communication is being received by the transceiver.

19. An apparatus as claimed in any one of claims 14 to 18, in which the RDS means supplies the RDS compatible audio device with an RDS-type signal which has been modulated by the modulator to facilitate the communication and to facilitate recognition by the audio device that the RDS-type signal is indeed a typical RDS signal.

20. An apparatus as claimed in claim 19, in which the communication is by way of wired communication via the first connecting means.

21. An apparatus as claimed in claim 19, in which the communication is by way of wireless communication via a transmitter.

22. An apparatus as claimed in any one of claims 14 to 21, wherein the transceiver is selected from a group comprising a cellular or mobile telephone, a satellite telephone, a two-way radio or any communication device permitting two-way voice communication.

23. An apparatus as claimed in any one of claims 14 to 22, wherein the audio device is selected from a group comprising a radio, a compact disc player and/or an audio tape player.

24. An apparatus as claimed in any one of claims 14 to 23, wherein the audio device is a motor vehicle audio device.

25. An apparatus as claimed in any one of claims 14 to 24, which facilitates substantially hands-free use of the transceiver.

26. An apparatus as claimed in any one of claims 14 to 25, wherein the sound to electromagnetic wave conversion means is a microphone.

27. An apparatus as claimed in any one of claims 14 to 26, wherein the first connecting means has means to which a signal receiving means is connectable.

28. An apparatus as claimed in claim 27, wherein the signal receiving means is a radio antenna.

29. An apparatus as claimed in any one of claims 14 to 28, wherein the first connecting means has means to which the sound to electromagnetic wave conversion means is connectable.

30. An apparatus as claimed in any one of claims 14 to 29, wherein the first connecting means has means to which a power source is connectable.

31. An apparatus as claimed in claim 30, wherein the power source is a motor vehicle power source.

32. An apparatus as claimed in either of claims 30 or 31, wherein the power source is a motor vehicle battery.

33. An apparatus as claimed in any one of claims 14 to 32, wherein a second connecting means is provided to connect the transceiver to the first connecting means.

34. An apparatus as claimed in claim 33, wherein the second connecting means has a mating portion which is sized and configured to mate with a specific type of transceiver.

35. An apparatus as claimed in any one of claims 14 to 34, which includes a battery charging circuit for charging a battery of the transceiver.

36. An apparatus as claimed in claim 35, which includes voltage regulation means to ensure that the transceiver receives the recommended battery charging voltage from the battery charging circuit.

37. An apparatus as claimed in claim 36, in which the voltage regulation means is included in the second connecting means.

38. An apparatus as claimed in any one of claims 14 to 37, which includes a microphone input.

39. An apparatus as claimed in any one of claims 14 to 38, which includes a transceiver.

40. An apparatus as claimed in any one of claims 14 to 39, which includes a motor vehicle audio device.

41. A connecting means for an apparatus as claimed in any one of claims 14 to 40, the connecting means including first connecting means at one end for connecting to a transceiver and second connecting means at another end for connecting to the apparatus.

42. A connecting means for connecting a transceiver to an audio device, such that the transceiver communicates with the audio device by way of wired communication, and for connecting the transceiver the transceiver to a sound to electromagnetic wave conversion means.

43. A connecting means as claimed in claim 42, wherein the audio device is a vehicle radio.

44. A connecting means as claimed in either of claims 42 or 43, wherein the sound to electromagnetic wave conversion means is a microphone.

45. An apparatus for facilitating use of a transceiver within a motor vehicle, the apparatus including:

a first connecting means having means for connecting to a radio antenna, an audio device, and a microphone;

a second connecting means having connecting means for connecting the transceiver to the first connecting means such that the transceiver communicates with the audio device by way of wired communication; and a microphone.

46. An apparatus as claimed in claim 45, which includes a modulator and/or transmitter electronic circuit.

47. An apparatus as claimed in either of claims 45 or 46, which includes a battery charging electronic circuit.

48. An apparatus as claimed in any one of claims 45 to 47, which includes a microphone input.

49. An apparatus as claimed in any one of claims 45 to 48, which facilitates substantially hands-free use of the transceiver.

50. A signal generating means for generating a RDS signal for an apparatus for a transceiver wherein the apparatus is for facilitating substantially hands-free use of the transceiver by communicating an incoming communication of the transceiver to a RDS compatible audio device.

51. A signal generating means as claimed in claim 50, in which the RDS signal is modulated so that it is receivable by the audio device and recognisable by the audio device as a RDS-type signal.

52. A signal generating means as claimed in either of claims 50 or 51, in which the RDS signal is transmitted to the audio device by means of wireless transmission.

53. A signal generating means as claimed in either of claims 50 or 51, in which the RDS signal is transmitted to the audio device by means of wired transmission.

54. A signal generating means as claimed in any one of claims 50 to 53, in which the RDS signal includes information such that when the information is received by the audio device a display of the audio device displays display information indicating that an incoming communication is being received by the transceiver.

55. A method according to the invention for use of a transceiver, substantially as hereinbefore described and exemplified.

56. An apparatus according to the invention, as hereinbefore generally described.

57. An apparatus as specifically described with reference to or as illustrated in the accompanying drawings.

58. A connecting means according to the invention, as hereinbefore generally described.

59. A connecting means as specifically described with reference to or as illustrated in the accompanying drawings.

60. A signal generating means according to the invention, as hereinbefore generally described.

61. A signal generating means as specifically described with reference to or as illustrated in the accompanying drawings.

62. A method for substantially hands-free use of a transceiver, an apparatus, a connecting means, or a signal generating means including any new and inventive integer or combination of integers as herein described.

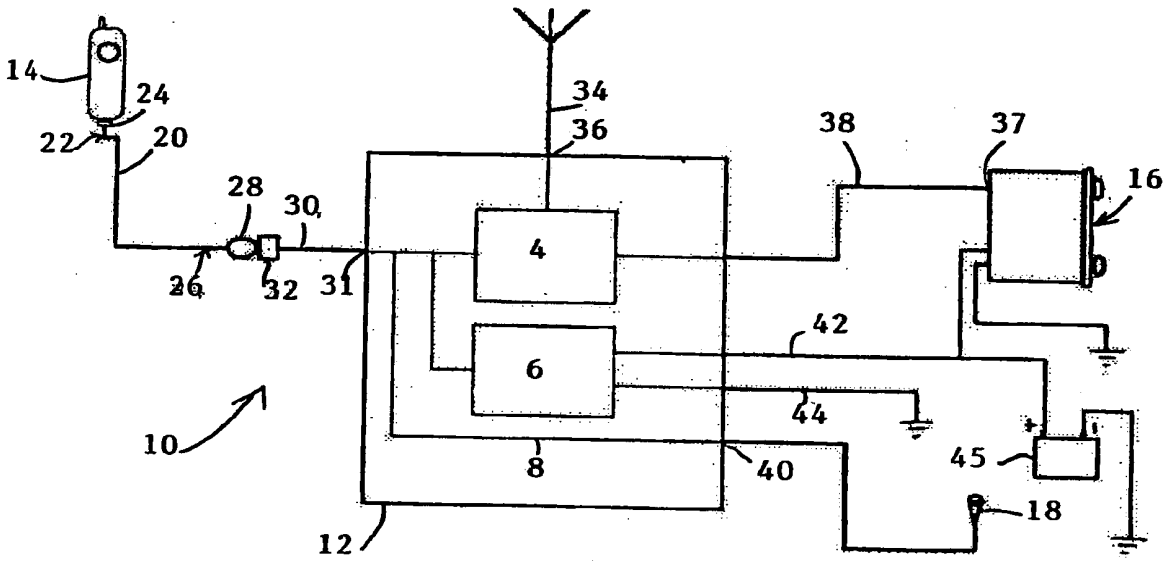


FIGURE 1

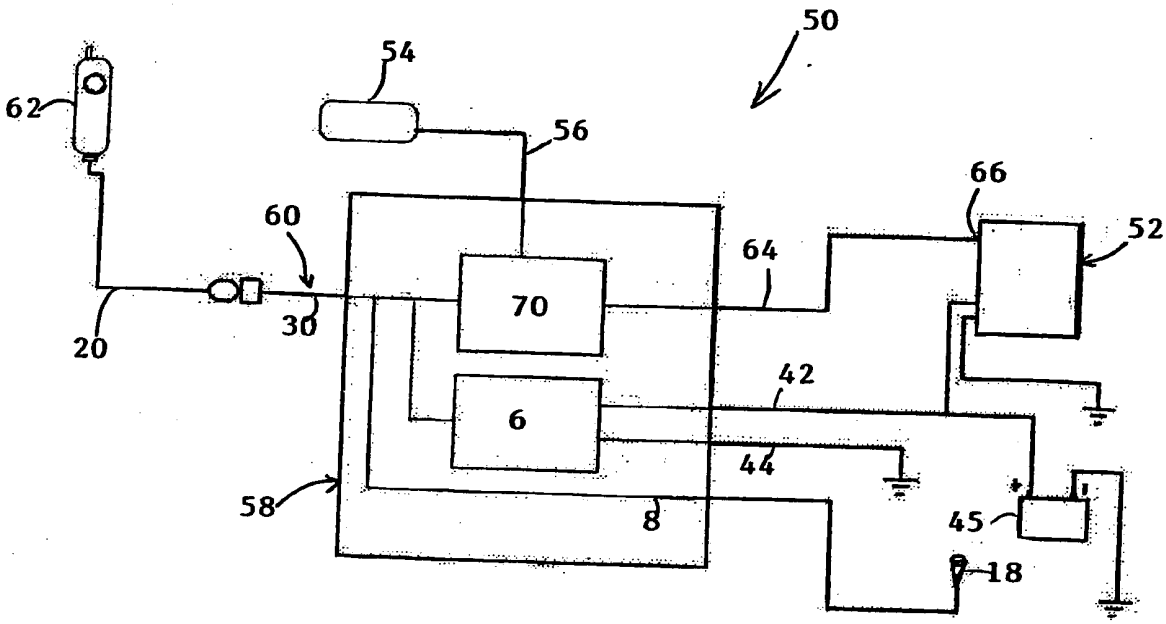


FIGURE 2

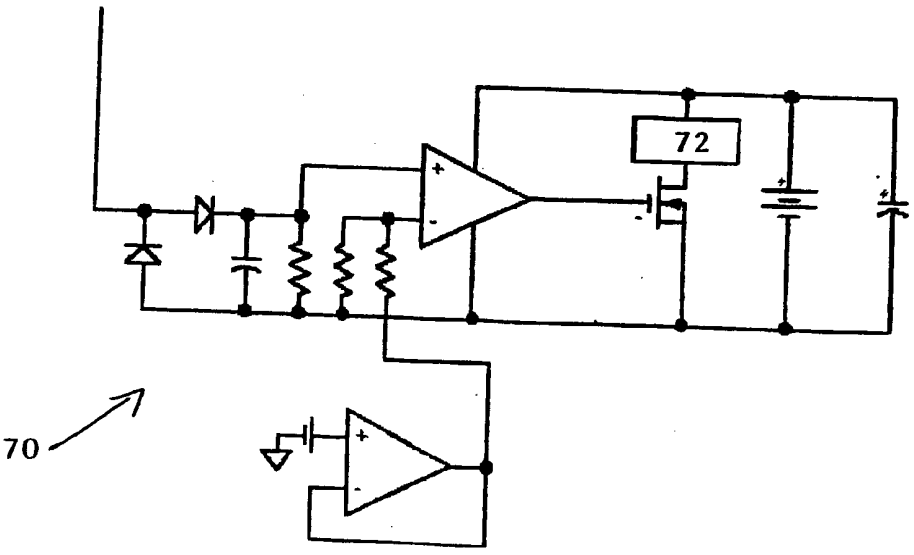


FIGURE 3