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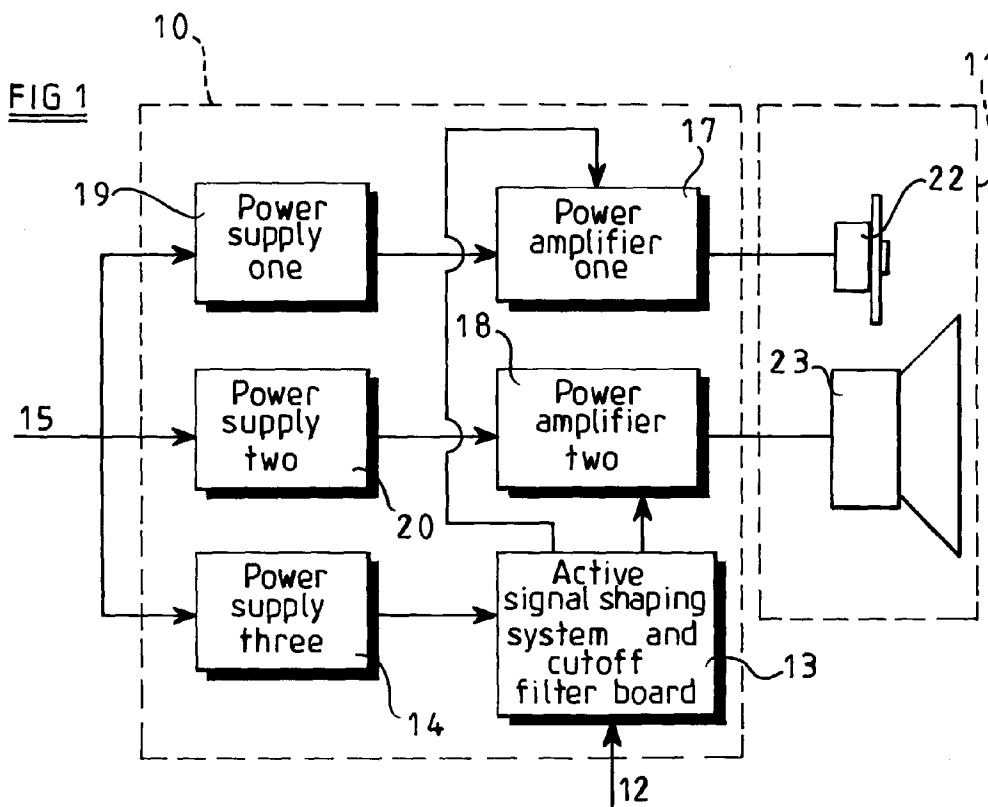
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Coventry CV1 2EL (GB)****(54) Audio system**

(57) An audio system includes a source 12 of audio signals, such as a CD or tape player, which provides a source of audio signal output. The output is filtered to provide at least two audio frequencies and a loudspeaker is provided for each frequency. There is amplifying means 17, 18 for each loudspeaker 22, 23 and a separate

power supply 19, 20 for each amplifying means. The filtering means 13 and the amplifying means 17, 18 are located in a support 10 and the loudspeakers are in a separate loudspeaker housing 11. The support and loudspeaker housing are electrically connected to feed signals to the respective loudspeaker 22, 23.



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Description

[0001] This invention relates to audio systems and in particular to audio systems playing prerecorded music or other sounds.

[0002] Conventionally audio systems often include sets of loudspeakers in which low frequency sound is emitted from a different loudspeaker to high frequency sound. This is because speakers are not always able to produce both high and low frequency sound without distortion or total loss of sound. However in order to have a loudspeaker in which the audio signal is split into low and high frequencies it is necessary to split the audio signal. This is usually done by using a cross-over network and this is usually provided in the loudspeaker box which is powered from the power amplifier, the output from the cross-over network being split between low and high frequencies and one such frequency passing to one loudspeaker and the other frequency to the other loudspeaker. The cross-over network is powered from the signal from the amplifier and such power is used to operate the network and to power each loudspeaker and this is termed a passive system.

[0003] There has also been proposed an "active cross-over network" which is powered so that the incoming signal is fed directly from a preamplifier and not from an amplifier. Such arrangements are incorporated into the loudspeaker housing so that the cross-over network and its power supply are connected directly to such housing. They also require extra amplifiers, one for each speaker feed, from the cross-over and these amplifiers are also incorporated into the loudspeaker box.

[0004] This arrangement is relatively expensive and means that if a user of an audio system wishes to upgrade his system, he must purchase a new loudspeaker system incorporating these improvements.

[0005] An object of the invention is to provide an improved audio system without incurring the expense of replacement.

[0006] According to the invention an audio system comprises a source of audio signals providing an audio signal output, filter means for splitting the audio output between at least two audio frequencies, at least two loudspeakers one for each audio frequency, amplifying means associated with each loudspeaker and a power supply for each amplifying means, the respective audio frequency from the filter means being transmitted to the respective powered amplifying means which generates an amplified signal for transmission to the associated loudspeaker, the filter means and the amplifying means being located in a support member, and the loudspeakers being housed in a separate loudspeaker housing, whereby electrical connections are provided between the support member, its associated amplifying means and the loudspeakers in the loudspeaker housing to feed audio signals from the amplifying means to the respective loudspeakers.

[0007] Conveniently the support member is in the

form of a stand, on which the loudspeaker housing is mounted, and an electrical supply is connected to the stand and its associated amplifying means. Preferably the filter means is also provided with a power supply common to that of the amplifying means.

[0008] It will be seen that the source of audio signals is connected to the support member so that the output signal is fed to the filter means which operates under power from the associated power supply. The filter means then transmits signals of at least two frequencies to respective amplifiers for each frequency. These amplifiers are powered to transmit an amplified signal to a respective loudspeaker in said loudspeaker housing.

[0009] In practice the source of audio signals may feed two or more support members with an audio signal output for each when stereophonic or other sound is required.

[0010] By this arrangement the loudspeakers are a self-contained unit supplied with appropriate signals from the support member or stand and the loudspeakers may be connected to any appropriate support member from which the signals for the loudspeakers are transmitted.

[0011] Both analog and digital filter means may be provided in this manner without compromising the loudspeakers which may have previously been used in a "passive" cross-over network not having a powered amplifier or a powered filter means. Moreover the means supplying signals to the loudspeakers may be changed or upgraded without the need to renew the loudspeakers, or vice versa. The loudspeakers may also be housed without the need for much in the way of associated electronic equipment.

[0012] Further features of the invention will appear from the following description of an embodiment of the invention given by way of example only and with reference to the drawings, in which:

Fig 1 is a block diagram showing the basic circuitry for the loudspeakers,

Fig 2 is a front elevation of a loudspeaker housing mounted on a stand in accordance with the invention,

Fig 3 shows a rear and front view of the stand of the invention,

Fig 4 shows a rear view of the stand with a diagrammatic view of the components contained in the stand, and

Fig 5 shows a disassembled stand.

[0013] Referring to the drawings and firstly to Fig 1, there is shown, diagrammatically, components to be located within a stand 10 and within a loudspeaker housing 11. In this arrangement the components within the

stand 10 are supplied from a source of audio signals (not shown) with a preamplifier, which may be a tape player, CD player, radio or other source of audio signals. This source supplies an audio signal output which is fed to the housing 10, the signal entering at position 12.

[0014] The input 12 is transmitted to a filter 13, termed an active filter which has its own power supply 14 supplied from a mains power input 15. The active filter splits the power input between high frequency signals and low frequency signals and such signals are fed to associated amplifiers 17 and 18. Each of the amplifiers 17 and 18 is powered from its associated power supply 19 and 20 respectively fed from the mains input 15.

[0015] The resulting amplified signal from each of the amplifiers 17 and 18 is transmitted from the stand 10 to the loudspeaker housing 11 in which are located loudspeakers 22 and 23, the loudspeaker 22 being fed from the amplifier 17 and this loudspeaker may be a "tweeter" of a two-way loudspeaker. The loudspeaker 23 is fed from the amplifier 18 and may be the "woofer" of the two-way loudspeaker.

[0016] By this arrangement there is provided an "active" filter for supplying the respective amplifiers and the amplifiers are themselves each independently powered. Hence the loudspeakers can be termed "active" loudspeakers as opposed to "passive" loudspeakers, because the filter is powered not from an output of an amplifier but by its own power supply 14 and the incoming signal from input 12 is filtered electronically.

[0017] Referring now particularly to Figs 2-5 the stand 10, housing the filter 13 and powered amplifiers 17 and 18, is intended to be used to mount the loudspeaker housing 11 at the upper end of the stand 10, there being connections 35 to supply the signals from the amplifiers to the loudspeakers which connections are capable of disconnection for replacement of the loudspeakers, for transportation or otherwise.

[0018] The stand 10 may be fixed to a ground surface or floor for stability and the housing 11 may rest on the upper end of the stand 10 or be connected thereto.

[0019] Externally the stand 10 may be provided with a switch for operating power supply to the components therein at the front of the stand 25. To the rear of the stand is a mains connection 15 and a connection 12 from the source of audio signals. Towards the upper end of the stand may be provided means 26 and 27 for controlling the filter (providing the cut off point signal shaping and sound output levels to the amplifiers 17 and 18) for the respective loudspeakers 22 and 23.

[0020] The components referred to in relation to Fig 1 may be mounted on a plate 28 forming part of the stand and fixed to the body of the stand by fasteners 29. The plate 28 carries the power supply units 14, 19 and 20, the filter 13 and the amplifiers 17 and 18. The stand is, in this case, completed by upper and lower plates 31 and 32 and side members 33 and 34 which define the sides of a box-shaped rectangular unit. However the stand may take other forms than that illustrated.

[0021] It will be appreciated that the stand 10 houses most of the components of the loudspeaker system for generating the signals for the loudspeakers but that the loudspeakers are housed in a separate housing releasably mounted thereon. Thus it is a simple matter to upgrade or change the stand without affecting the loudspeaker housing which can be connected to a different stand with different componentry.

[0022] This is of particular benefit to users of high quality audio systems or hi-fi who may spend considerable sums on loudspeakers which otherwise may have to be discarded during an upgrade of their system.

15 Claims

1. An audio system which comprises a source of audio signals providing an audio signal output, filter means for splitting the audio output between at least two audio frequencies, at least two loudspeakers one for each audio frequency, amplifying means associated with each loudspeaker and a power supply for each amplifying means, the respective audio frequency from the filter means being transmitted to the respective powered amplifying means which generates an amplified signal for transmission to the associated loudspeaker, the filter means and the amplifying means being located in a support member, and the loudspeakers being housed in a separate loudspeaker housing, whereby electrical connections are provided between the support member, its associated amplifying means and the loudspeakers in the loudspeaker housing to feed audio signals from the amplifying means to the respective loudspeakers.
2. An audio system according to claim 1 wherein the support member is in the form of a stand, on which the loudspeaker housing is mounted, and an electrical supply is connected to the stand and its associated amplifying means.
3. An audio system according to claim 1 or 2 wherein, filter means is also provided with a power supply common to that of the amplifying means.
4. An audio system according to any one of the preceding claims wherein the filter means also provides a filter filtering function for cut off point and/or sound output level.

