

[0039] The crossfader 60 has an on/off switch 61, a left crossfader switch 62 having settings corresponding to each audio track on the disc jockey mixing console, a right crossfader switch 64 having settings corresponding to each audio track on the disc jockey mixing console (e.g. a three-way switch if there are three audio tracks) and a crossfader slider 65 between the left crossfader switch 62 and the right crossfader switch 64. Manual placement of the crossfader slider 65 on a left end 60a triggers the audio track that corresponds to the setting on the left crossfader switch 62 to be audible on the main speaker output 40. Likewise, manual placement of the crossfader slider 65 on a right end 60b triggers the audio track that corresponds to the setting on the right crossfader switch 64 to be audible on the main speaker output 40. Placement of the crossfader slider 65 in a middle area 60c triggers both the audio track that corresponds to the setting on the left crossfader switch 62 and the audio track that corresponds to the setting on the right crossfader switch 64 to be simultaneously audible on the main speaker output 40.

[0040] In an alternative embodiment the device 10 is the same except that the actual mixing is done in analog format rather than in digital format. Instead of a final mix digital output being generated by the software, after the software decodes each audio track from compressed digital audio data format to digital format and applies special effects to each audio track in the same way as the preferred embodiment, the software then sends each audio track 22, 24, 26 in digital format to the digital to analog convertors associated with that audio track for conversion into analog format. Then the output of the digital to analog convertors for each audio track is connected by an analog audio mixing circuit to well known analog mixing controls in order to carry out mixing of analog format sound recordings. The alternative embodiment necessitates one or two additional digital to analog converters but requires thirteen fewer analog to digital convertors. It should be noted in this regard that the crossfader slider 65, the main output volume knob 32 for each audio track and the three equalizing knobs 33 for each audio track 22, 24, 26 add up to thirteen digital to analog converters that are unnecessary with the alternative embodiment whereas in the main embodiment there is an analog to digital convertor for each of these thirteen knobs, in the alternative embodiment these thirteen knobs are connected to the analog mixing circuitry rather than to the converters that provide the parameters for the digital mixing program. The main advantage of the alternative embodiment is that it is not necessary to be concerned about synchronizing the timing in which the sound recordings are heard in the main output and the headphone since there is no case of software sending the same signal to different outputs; rather the mixing is done in analog.

[0041] It should be noted that the user uses the analog controls in exactly the same way whether the mixing is done in digital format as in the main embodiment or in analog format as in the alternative embodiment.

[0042] The following is an example of how a user of the device 10 of the present invention might mix two sound recordings. In this example, the user is beginning with the first song and does not have any song playing already. The user selects a song (which is a kind of sound recording) on the touch screen LCD panel corresponding to a particular audio track, for example the first audio track 22. The user

presses the play button on the touch screen 50 for that song. Using the main output volume knob 32 the user brings the volume up on the main output 40.

[0043] The user now wants to bring in a second song but first wants to listen to it on the headphone 40 without the audience hearing it. The user turns on the headphone output 42 with the button on the mixing console 20 corresponding to that same audio track 22. Using the buttons on the section 55 of the touch screen 50 corresponding to the second audio track 24, the user then selects and queues a second song to reach the point in the song that is desired and hits the play button on the touch screen for the second audio track 24 for the second song. The user adjusts the speed of the second song using the analog slider 31b for audio track two 24. The user brings up the volume of the second song on the main output 40 by turning the main output volume knob 32 for audio track two 24. The second song still remains audible on the headphone output 42. The user then brings down the volume of the first song on the main output 40 by turning the main output volume knob 32 for audio track one 22. Using this procedure, the user can repeat the process whenever the user desires to bring a new song into the performance heard by the audience. The only difference is that the above process describes a situation that begins with no songs being played so that to mix a third song with the second song the user merely picks up the point in the process at which it was being described how the user mixes the second song with the first song, i.e. the beginning of this paragraph.

[0044] FIG. 3 is a flowchart showing how sound recordings in compressed format are mixed by the device 10 of the present invention. After a song is selected on a particular audio track 22 using touch screen 50, compressed digital audio data from the song is decompressed and converted into digital audio data by a decoding algorithm in software 16. The speed of the digital audio data is adjusted based on the parameters of the speed control slider 31a by software 16. Equalizing knobs 33 provide tone parameters to the speed adjusted audio data and the software 16 adjusts the tone accordingly. It should be noted that the adjustments of speed, tone and other special effects can occur in any order and that the term "special effects" includes speed and tone. Other well known special effects, such as "reverb", "chorus", "delay", "flange" and "echo" are applied using the touch screen 50 and software 16 adjusts the digital audio data accordingly. This procedure is followed for one or for more than one audio tracks. Then the resulting adjusted digital data from each of the audio tracks 22, 24, 26 is outputted both to main speaker output 40 and headphone output 42. The adjusted digital data is then mixed on the audio tracks heard on the main speaker output 40 using volume parameters provided by the analog controls to generate a final mix digital output. Similarly, the adjusted digital data is mixed on the audio tracks heard on the headphone output 42 using the preview button 37 to generate a headphone mix digital output. The final mix digital output is sent to the digital to analog convertor of the main speaker output 40 to be converted into final mix analog audio. The headphone mix digital output is sent to the analog to digital convertor of the headphone output 42 to be converted to headphone mix analog audio.

[0045] It should be noted that the use in this patent application of the term "button" refers to any digital control in any shape or form and is not limited to a control