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(54) Audio/video monitoring system

(57) An audio/video monitoring system comprises a video camera unit including a video camera adapted to generate video and audio signals, and wireless transmitter means for transmitting said video and audio signals to a remote location. The video camera and transmitter unit are suitably incorporated into a soft housing unit, preferably a soft toy.

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Description

[0001] The invention relates to an audio/video monitoring system, in particular a baby monitoring system which includes wireless transmission of audio and video signals which can be monitored at a remote location.

[0002] Audio baby monitoring systems are well known in the prior art but suffer to a lesser or greater degree from certain disadvantages; for example, a baby may cry but not be suffering any distress and by responding to an audio signal alone a person would needlessly disturb the baby. Another disadvantage is that a baby may be in distress but not make any audible sound.

[0003] The invention seeks to mitigate and/or obviate such disadvantages by providing a baby monitoring system which includes wireless transmission of audio and video signals from a video camera which can be monitored at a remote location. A dedicated monitoring unit is used to monitor the signals. The monitoring unit includes a receiver for receiving the transmitted signals and may include a display screen for displaying the transmitted video signals. Alternatively, the display screen may be provided by a conventional television set, to which the monitoring unit is connected, in use.

[0004] In accordance with a first aspect of the invention there is provided an audio/video monitoring system comprising a video camera unit including:

a video camera adapted to generate video and audio signals; and
wireless transmitter means for transmitting said video and audio signals to a remote location;
wherein said video camera and transmitter unit are incorporated into a soft housing.

[0005] Preferably, the soft housing is a toy.

[0006] Preferably, the toy has the form of an animal or human figure, the camera being located in the head of the figure and the transmitter means are located in the body of the figure.

[0007] The system preferably further includes a receiver unit having wireless receiver means for receiving signals transmitted from the camera unit, audio and video output terminals for outputting signals received by the receiver means, and audio loudspeaker means for providing direct audio output of audio signals received by the receiver means.

[0008] Optionally, the receiver unit further includes a miniature video display for providing direct video output of video signals received by the receiver means.

[0009] In accordance with a second aspect of the invention, there is provided an audio/video monitoring system comprising:

a video camera unit including a video camera adapted to generate video and audio signals and wireless transmitter means for transmitting said video and audio signals to a remote location; in combination with:
a receiver unit having wireless receiver means for receiving signals transmitted from the camera unit, audio and video output terminals for outputting signals received by the receiver means, and audio loudspeaker means for providing direct audio output of audio signals received by the receiver means.

[0010] Optionally, the receiver unit further includes a miniature video display for providing direct video output of video signals received by the receiver means.

[0011] Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic, sectional side view of a camera unit in accordance with the present invention; and

Figs. 2(a), 2(b) and 2(c) are, respectively, a front view and first and second side views of a receiver unit in accordance with the present invention.

[0012] Referring now to Fig. 1, and in accordance with the first aspect of the invention, there is shown a camera unit 1 comprising a soft housing, for example, a soft toy, such as a teddy bear or the like, most preferable representing some kind of animal or human figure. The soft housing may be flexible to enable adjustment of the camera position/angle, as discussed further below.

[0013] The camera unit 1 includes a miniature transmitter unit 2, for example a UHF transmitter, powered via a cable 3 by a suitable power supply. The power supply is typically the mains power supply or a 12 Volt DC supply, depending on the power required to transmit signals at the desired bandwidth. The transmitter 2 is housed within the camera unit 1, and the cable 3 extends from the base of the camera unit 1.

[0014] The camera unit 1 further includes a miniature video camera 5 incorporated in the soft housing. The video camera 5 includes an audio microphone (not shown) which, for example, is be built-in to the video camera 5. The video camera 5 is connected within the soft housing to the transmitter 2 via leads 4.

[0015] Leads 4 supply power to the video camera 5 and/or communicate audio and/or video signals generated by the video camera 5 to the transmitter unit 2. Transmitter unit 2 transmits the audio and video signals wirelessly to a remote location.

[0016] The system is intended particularly for monitoring a baby or young child. Typically, the camera unit 1 would be located in one room of a dwelling such as a bedroom or nursery and the signals would be monitored from another room within the dwelling.

[0017] The video camera 5 comprises a suitably miniature video camera; for example, of the miniature "single-chip" CMOS type, having a video sensor comprising

fully integrated VLSI CMOS sensor chip with automatic gain control and electronic shuttering, with a resolution of 265 lines and a minimum light level of 2 Lux. Other types of miniature camera of equivalent functionality could be used also. The associated optical lens is preferably a wide angle lens (e.g. 4.3 mm focal length for the sensor referred to above). The audio microphone can be of any suitable miniature type, built into the housing of the video camera 5, or alternatively located in a different region of the soft housing.

[0018] The video camera 5 is preferably located in the upper portion of the soft housing of the camera unit 1, for example, in the head of a soft toy. Suitably, the lens of the video camera 5 may be located at the nose or snout of the head of the soft toy. The transmitter unit 2 is preferably located in the body of the toy. The incorporation of the camera 5 and the transmitter 2 into the soft housing of the camera unit 1 makes the monitoring system discrete and unobtrusive. The soft housing of the camera unit 1 serves as a support for the video camera 5, allowing the camera lens to be located in a convenient position and angled to provide the required view. The soft housing might be further adapted for this purpose, having movable and/or bendable limbs or other body parts to facilitate its positioning. It may include an internal armature or framework for this purpose. A teddy bear of the type illustrated in a seated pose is particularly suitable, providing a stable, flexible base for the camera.

[0019] It is possible that signals from the camera unit 1 could be received by an existing receiver unit of known type, with the audio and video signals being monitored on a conventional television set or video monitor to which the receiver is connected. However, it is preferred that the monitoring system in accordance with the invention includes its own receiver unit as illustrated in Figs. 2(a) - (c).

[0020] The receiver unit comprises a housing 6 which is preferably configured to be plugged directly into a mains power socket, by means of pins 12 (e.g. live neutral and earth pins for a UK-style mains socket). Alternatively, suitable battery power means can be incorporated into the housing 6, or leads can extend from housing 6 to connect the receiver unit to the mains power supply.

[0021] The housing 6 encloses receiver means, for example UHF receiver means, for receiving and demodulating signals received from the camera unit 1 of Fig. 1. The housing 6 further includes audio and video output sockets 13 and 14; a loudspeaker 11; an on/off switch 8 for the receiver unit, a volume control 10 for the loudspeaker 11, and an antenna (not shown), of any suitable internal or external type as is well known in the art.

[0022] Alternatively, the receiving unit can include a miniature video display 7, such as an LCD display, which is housed within the housing 6 or connected by suitable means thereto. The housing 6 further includes an on/off switch 9 for the LCD display 7 (when included).

[0023] When the display 7 is included in the receiver unit, the camera unit 1 and receiver can be used to provide audio and video monitoring independently of any other video display device. However, it is particularly intended that the audio and video outputs of the receiver are connected to a conventional television set, or to a video cassette recorder connected to a television set. In this way, a person monitoring the activity of an infant can watch and listen to other material on the television, while monitoring the audio output from the loudspeaker 11 and/or the video output from the display 7, and change program on the television set to see and hear the output from the camera unit 1 more clearly whenever required. The audio output from the loudspeaker 11 may be sufficient for this monitoring function, in which case the display 7 can be omitted. This functionality of the receiver unit in combination with a camera/transmitter may also be useful independently of the configuration of the camera unit 1 as a soft housing, in accordance with the second aspect of the invention.

[0024] The audio/video signals may be encoded and transmitted in any suitable analogue or digital format. The video and audio sensors may be of types providing either analogue or digital output, in combination with digital/analogue conversion means if required.

[0025] The camera of the camera unit 1 and the transmitter and receiver means of the camera and receiver units, and other electrical and electronic components and circuits of the system, may all be of well known type and are not described in detail herein.

[0026] Improvements and modifications may be incorporated without departing from the scope of the invention.

Claims

1. An audio/video monitoring system comprising a video camera unit including:

   a video camera adapted to generate video and audio signals; and
   wireless transmitter means for transmitting said video and audio signals to a remote location;
   wherein said video camera and transmitter unit are incorporated into a soft housing.

2. An audio/video monitoring system as claimed in Claim 1, wherein the soft housing comprises a soft toy.

3. An audio/video monitoring system as claimed in Claim 2, wherein the soft toy has the form of an animal or human figure, the camera being located in the head of the figure and the transmitter means being located in the body of the figure.

4. An audio/video monitoring system as claimed in

any one preceding claim, wherein the system further includes a receiver unit having wireless receiver means for receiving signals transmitted from the camera unit, audio and video output terminals for outputting signals received by the receiver means, and audio loudspeaker means for providing direct audio output of audio signals received by the receiver means.

5. An audio/video monitoring system as claimed in Claim 4, wherein the receiver unit further includes a miniature video display for providing direct video output of video signals received by the receiver means.

6. An audio/video monitoring system comprising a video camera unit including:

a video camera adapted to generate video and audio signals; and
wireless transmitter means for transmitting said video and audio signals to a remote location; in combination with a receiver unit having:
wireless receiver means for receiving signals transmitted from the camera unit;
audio and video output terminals for outputting signals received by the receiver means;
and audio loudspeaker means for providing direct audio output of audio signals received by the receiver means.

7. An audio/video monitoring system as claimed in Claim 6, wherein the receiver unit further includes a miniature video display for providing direct video output of video signals received by the receiver means.

Figure 1

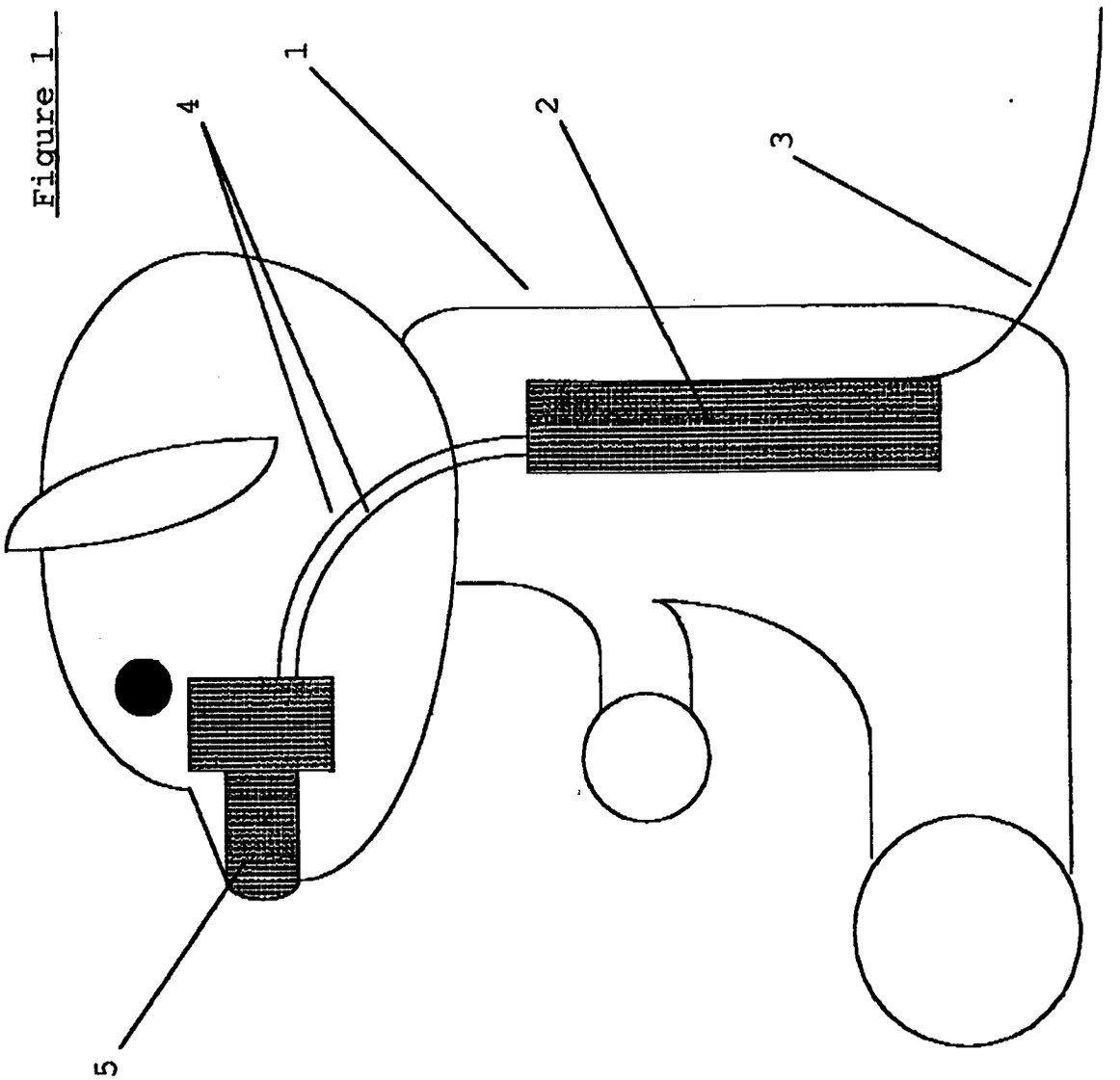

Figure 2

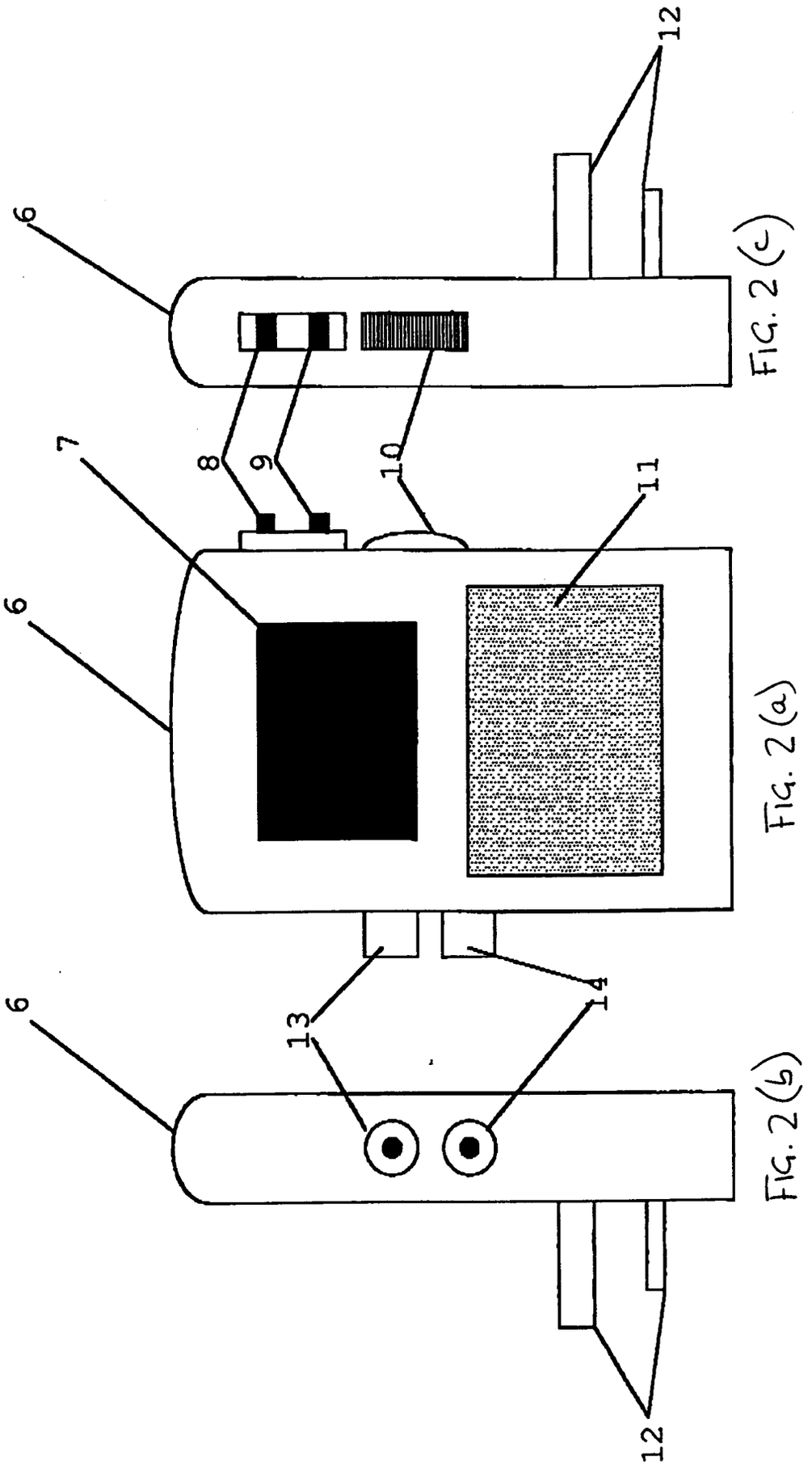

FIG. 2(c)

FIG. 2(a)

FIG. 2(b)