



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**23.02.2005 Bulletin 2005/08**

(51) Int Cl.7: **H04R 1/10**

(21) Application number: **04300143.7**

(22) Date of filing: **15.03.2004**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR**  
**HU IE IT LI LU MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL HR LT LV MK**

- **Ng, Inez**  
**Hong Kong (CN)**
- **Chan, Michael**  
**Ma On Shan, N.T. Hong Kong (CN)**

(71) Applicant: **Thomson Licensing S.A.**  
**92100 Boulogne-Billancourt (FR)**

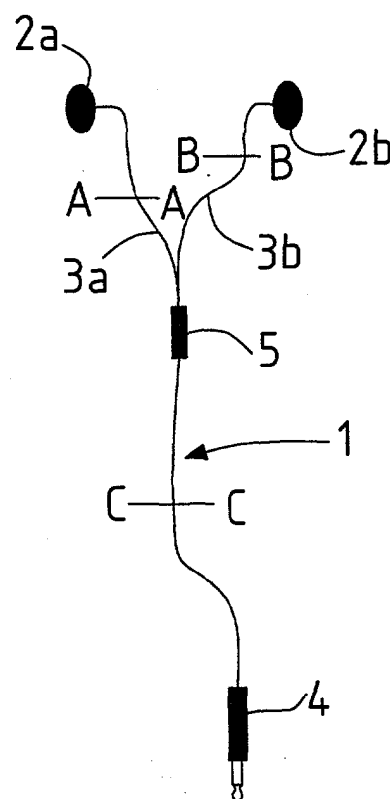
(74) Representative: **Rossmann, Manfred, Dr.**  
**Deutsche Thomson-Brandt GmbH**  
**European Patent Operations**  
**Karl-Wiechert-Allee 74**  
**30625 Hannover (DE)**

(72) Inventors:  

- **Fung, Kam Keung**  
**Hong Kong (CN)**

(54) **Headphones with zipper**

(57) Headphone apparatus having two earphones (2a, 2b) each connected to an audio device by two cords (3a, 3b). The first ends of the cords (3a, 3b) are each connected to one of the two earphones (2a, 2b). The second ends of the cords (3a, 3b) are connected to connector means (4) apt for connecting the earphones (2a, 2b) to the audio device. The headphone apparatus comprises a slider (5) slideable along the cords (3a, 3b) and thereby engaging or disengaging the two cords to each other or from each other, respectively.



**Fig.1a**

## Description

**[0001]** The present invention relates to a headphone apparatus and in particular to a headphone apparatus according to the preamble of claim 1.

**[0002]** The majority of portable audio devices are provided with small headphones that can be attached to the ears of a user. Portable audio devices are commonly used to listen to music when the user is travelling on a bus or a train. When the user arrives at his destination or when he has to change the bus, very frequently the portable audio device including the headphones are just put into a bag or a pocket. In this situation it is very likely that the two cords connecting the earphones entangle with each other so that the user has to detangle the cords before he can use the earphones with the portable audio device again. This situation is inconvenient for the user.

**[0003]** The problem of entanglement of wires or other elongated members is known in the art. In US 6,639,153 B2 a patient lead wire detangler is disclosed. The detangler comprises a collar which is slideable along the wires or cords. In this way the collar prevents entanglements and/or supports the user to detangle the cords or wires. The wires or other elongated members are not engaged with each other.

**[0004]** Taking this as a starting point it is desirable to suggest an improved headphone apparatus, which is at least less susceptible to entanglements of the cords connecting the earphones.

**[0005]** The invention proposes a headphone apparatus having two earphones each connected to an audio device by two cords. The first ends of the cords are each connected to one of the two earphones. The second ends of the cords are connected to a connector apt for connecting the earphones to the audio device. The headphone apparatus comprises a slider slideable along the cords and thereby engaging or disengaging the two cords to each other or from each other, respectively. The advantage of the inventive headphone is that the two cords of the earphones can be engaged with each other to form a single elongated member, which is much less susceptible to entanglements than two separate cables.

**[0006]** In one embodiment of the invention the slider engages the two cords in a positive connection. In this case it is preferred to provide the one cord with a recess and the other cord with a protrusion that can be engaged into the recess by the action by the slider. The advantage of this embodiment is that the engagement means can readily be moulded together with the insulation layer of the cords.

**[0007]** In another embodiment of the present invention the slider and the two cords form a zipper like arrangement.

**[0008]** Finally, it is also possible that the slider connects the two cables by a hook and loop fastener like a Velcro ® fastener.

**[0009]** In the drawing, an exemplary embodiment of present invention is illustrated. It shows

- |    |                 |                                                                                |
|----|-----------------|--------------------------------------------------------------------------------|
| 5  | Fig. 1a         | a schematic top view of the inventive headphone apparatus with separate cords; |
| 10 | Fig. 1b         | the headphone apparatus of Fig. 1a with engaged cords;                         |
| 15 | Figs. 2a and 2b | a sectional view of the separate cords of Fig. 1a on a larger scale; and       |
| 20 | Fig. 2c         | a sectional view of the engaged cords of Fig. 1a on a larger scale.            |

**[0010]** Fig. 1a displays a headphone apparatus according to the present invention in a schematic top view. The headphone apparatus 1 comprises two earphones 2a, 2b connected via cords 3a, 3b with a connector 4. The connector 4 comprises a plurality of electrical contacts. In use of the headphone apparatus 1, the connector 4 is introduced in an audio device, which is not shown in the drawing. The arrangement allows to reproduce stereo signals for a user in the earphones 2a, 2b. A slider 5 is arranged on the cords 3a, 3b to slide along the cords between the connector 4 and the earphones 2a, 2b. When moving from the connector in the direction to the earphones the slider 5 engages the two separate cords 3a, 3b with each other. In Fig. 1a the slider 5 is in a position leaving a portion of the cords 3a, 3b disengaged from each other to allow a user to put the earphones 2a, 2b into his left and right ear, respectively.

**[0011]** In Fig. 1b the slider 5 is in a position very close to the earphones 2a, 2b and thereby engaging the cords 3a, 3b substantially along their entire length. In this position of the slider 5 it is impossible that the individual cords 3a, 3b entangle with each other.

**[0012]** Figs. 2a and 2b show sectional views of the cords 3a, 3b along the lines A-A and B-B in Fig. 1a, respectively.

**[0013]** As can be seen in Fig. 2a, cord 3a comprises an insulation mantle 6 formed with a ledge 7 extending in the longitudinal direction of cord 3a. The ledge 7 is provided with a groove 8 having undercuts 9a, 9b.

**[0014]** Similarly, the cord 3b shown in Fig. 2b is provided with an insulation mantle 11 formed with a protrusion 12. The protrusion 12 has complementary undercuts 13a, 13b engageable with the undercuts 9a, 9b of the groove 8.

**[0015]** When sliding along the cords 3a, 3b in the direction towards the earphones 2a, 2b the slider is effective to widen the groove 8, approach the cords until the protrusion 12 is accommodated inside the groove 8 and, finally, to release the groove 8. In this way the slider creates a positive or form locking connection between the cords 3a, 3b.

[0016] To disengage the cords 3a, 3b from each other the slider is moved in the reverse direction towards the connector 4. During this travel the slider 5 widens the groove 8, moves the cords 3a, 3b away from each other until the protrusion 12 gets clear from the groove 8 and releases the groove 8. 5

[0017] It is also possible that the user simply pulls the earphones 2a, 2b apart to disengage the cords 3a, 3b. As the cords 3a, 3b depart from each other, beginning at the end adjacent to the earphones 2a, 2b, the slider 10 5 is simultaneously moved towards the connector 4.

[0018] Fig. 2c shows a sectional view of the engaged cords 3a, 3b along the line C-C shown in Fig. 1a.

[0019] A person skilled in the art will recognize that the positive engagement between the cords 3a, 3b can be replaced e.g. by a zipper like arrangement, by a hook and loop fastener (Velcro ®) or by any other engagement means allowing a simple and quick engagement and disengagement of the cords 3a, 3b. 15 20

## Claims

1. Headphone apparatus having two earphones (2a, 2b) each connected to an audio device by two cords (3a, 3b), wherein the first ends of the cords (3a, 3b) are each connected to one of the two earphones (2a, 2b) and wherein the second ends of the cords (3a, 3b) are connected to connector means (4) apt for connecting the earphones (2a, 2b) to the audio device, **characterized in that** the headphone apparatus comprises a slider (5) slideable along the cords (3a, 3b) and thereby engaging or disengaging the two cords to each other or from each other, respectively. 25 30 35
2. Headphone apparatus according to claim 1, **characterized in that** the slider (5) engages the two cords (3a, 3b) in a positive connection. 40
3. Headphone apparatus according to claim 2, **characterized in that** the one cord is provided with a groove (8) and the other cord (3b) is provided with a protrusion (12) that can be engaged the groove (8) by the action by the slider (5). 45
4. Headphone apparatus according to claim 2, **characterized in that** the slider (5) and the two cords (3a, 3b) form a zipper like arrangement. 50
5. Headphone apparatus according to claim 2, **characterized in that** the slider (5) connects the two cords (3a, 3b) by a hook and loop fastener. 55

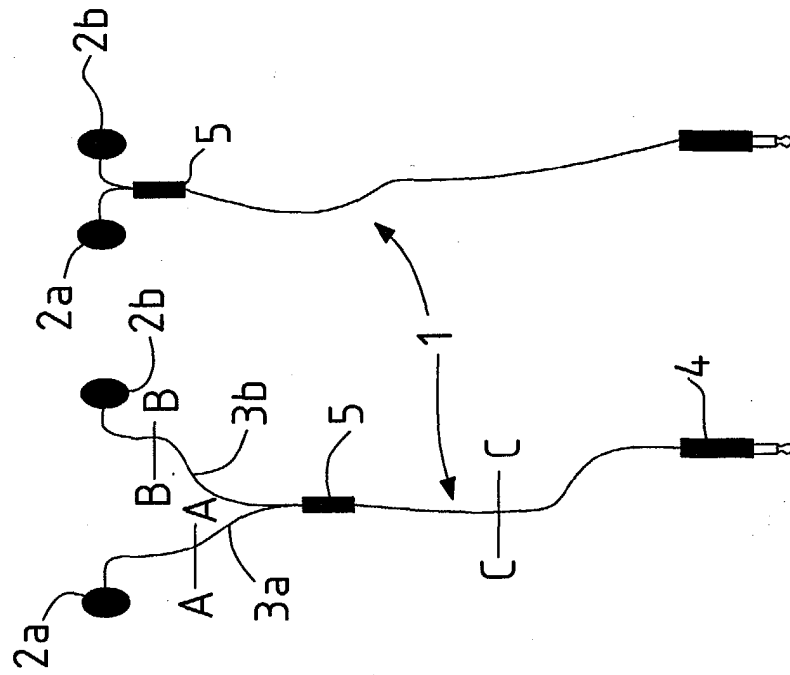


Fig. 1a

Fig. 1b

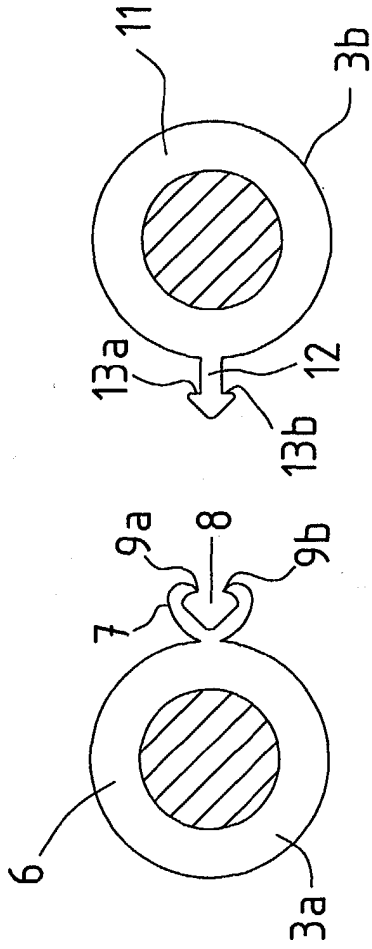


Fig. 2a

Fig. 2b

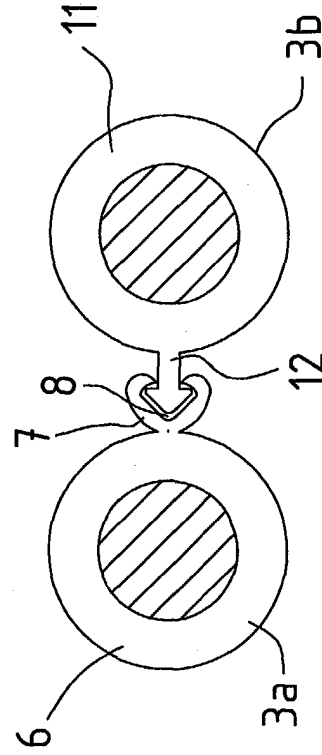


Fig. 2c



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 04 30 0143

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 5 December 2003 (2003-12-05) -& JP 2004 056636 A (WADA KIHACHIRO), 19 February 2004 (2004-02-19)	1,2,4,5	H04R1/10
Y	* the whole document * For the evaluation of this document the examiner has used the the automated translation available at the IPDL website of the JPO.	3	
Y	EP 1 220 398 A (GATEWAY INC) 3 July 2002 (2002-07-03) * the whole document *	3	
D,A	US 6 639 153 B2 (HAUGE PATRICK L) 28 October 2003 (2003-10-28) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A44B H04R H02G
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>13 September 2004</b>	Examiner <b>Fachado Romano, A</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 30 0143

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-09-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2004056636 A	19-02-2004	NONE	
EP 1220398 A	03-07-2002	US 2002085828 A1	04-07-2002
		EP 1220398 A2	03-07-2002
		JP 2002295421 A	09-10-2002
US 6639153 B2	29-08-2002	US 2002117326 A1	29-08-2002