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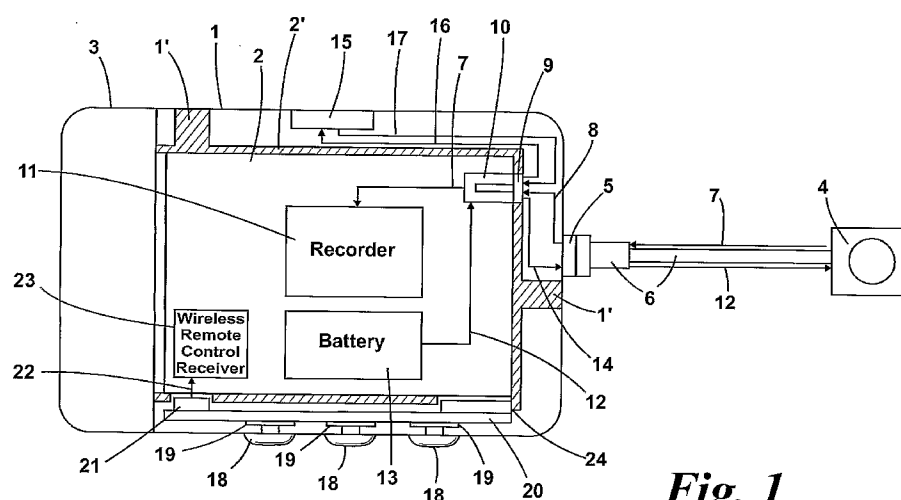
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(54) Title: PROTECTIVE CASE FOR A PERSONAL VIDEO RECORDING DEVICE

**Fig. 1**

(57) **Abstract:** A case (1), that provides environmental and physical protection for a personal video recorder PVR (2). The PVR (2) can be inserted or removed from the case (1) by way of a securable lid (3). When enclosed, the case (1) allows the PVR (2) to receive external audio and video signals (7) by way of an external connector (5) routed to the audio and video-in (A/V-in) socket (10) on the PVR (2) by way of one or more electrical connections (8). The case provides a method of controlling the PVR (2) by way of integrated, wireless remote control electronics (19, 20, 21) and (24) activated by external buttons (18) on the case (1). The case (1) may also have an integrated microphone (15) to provide an audio signal (17) that passes to the A/V-in socket (10) on the PVR (2). If the PVR (2) is able to provide external power (12), the external connector (5) can route it for use to power a connected external device (4). The case (1) may also include a viewing window (28) through which the PVR (2) screen can be observed. The case (1) has at least one structure (27) to allow the passage of a strap (26) that is used to secure the case (1) to a part of the body or equipment.

PROTECTIVE CASE FOR A PERSONAL VIDEO RECORDING DEVICE

This invention relates to a protective case for a personal video recording (PVR) device.

- 5 This invention relates particularly, but not exclusively, to a protective, wearable case suitable for carrying and operating a commercially available PVR whilst the wearer is participating in sports and activities.

While taking part in sports and activities it is often difficult for the participant to operate video and audio recording equipment to record
10 their experiences, due to the physical demands of the activity being at odds with the physical requirements of carrying the equipment.

The activity may also preclude the use of standard electronic video and audio recording equipment due to physical and environmental conditions during participation such as excess moisture, presence of small particles
15 or increased likelihood of impact that would normally damage video recording equipment.

A seemingly practical solution to this problem is to enclose the PVR and associated electronics in a commercially available, generic, protective case. But this solution offers little or no control over the enclosed
20 equipment once the case is closed. There is usually no in-built method of carrying the case for hands-free portability either.

The invention stems from some work aimed at meeting the foregoing requirements.

According to one aspect of the invention we provide a protective case for a personal video recording (PVR) device, the case mounting a finger-operable control means exposed to the outside of the case, a wireless remote control device mounted within the interior of the case, and a
5 control circuit for the remote control device responsive to operation of the control means, the remote control device being configured to send control signals to a receiver of a PVR device housed inside the case in response to operation of the control means by a user.

The receiver may be an infra-red receiver, for example.

10 The case can be made sufficiently water-tight and robust to suit the intended use of the PVR.

The case can be structured to offer physical and environmental protection for the PVR, allowing the device to be used in adverse conditions without the PVR's performance being affected by those conditions.

15 A securable lid preferably forms part of the case structure, a lid seal preferably being provided to prevent ingress of water when the lid is secured closed. This enables the PVR to be accessed by the user for tasks such as recharging, maintenance or replacement of recording media.

20 Employing integrally mounted within the case a wireless control for the PVR ensures that the PVR functions can be controlled without compromising the protection offered by the case.

The control buttons located on the case's external surfaces are easily accessible to the user.

The case preferably provides an audio/video in (A/V-in) connection that routes audio and video signals from an external device such as a video camera or microphone, through to the enclosed PVR for recording purposes by means of one or more electrical connections.

- 5 Preferably a connector is provided internally of the case for connection to a complementary connector on the PVR device, and a lead extends from said connector sealably through the casing to the exterior of the casing for conveying an audio and/or video signal.

- Should the PVR have the ability to provide external power, the external
10 connector on the case can route that power from the PVR to a connected external device.

Optionally the case can also include a built in microphone that can provide an audio signal to the PVR.

- Preferably the case also provides an attachment for a belt or strap thus
15 allowing the case and contents to be worn about the user's body or attached to the user's equipment.

- The case may also have a windowed area, providing the user with a view of the PVR's screen. This can allow the user to review footage, manage PVR settings or adjust the field of view of a connected external device
20 such as a video camera. 2

Embodiments of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is schematic vertical cross-sectional view of a case illustrating the main features of the case in relation to the enclosed PVR;

Figure 2 shows substantially how the case of **Figure 1** and a connected external device can be carried by the user 3; and

Figures 3, 4 and 5 are respectively a side view, perspective view, and underside view of a second case in accordance with the invention.

In **Figure 1** the case 1 provides a protective housing for a PVR 2. Physical access to the PVR 2 for maintenance, insertion or removal is by way of a securable lid 3. The PVR 2 is slidably received in a tray 2' secured with respect to the case walls by a plurality of lugs 1'.

An external device 4 such as a video camera or microphone can be attached to the connector 5 by way of a suitable cable and corresponding connector 6. The audio or video signal 7 generated by the external device 4 is routed through an internal connection 8 to an internal jack 9 via one or more electrical connections. The internal jack 9 delivers the audio or video signal to the PVR's audio video in (A/V-in) socket 10 and on to the PVR's audio and video recording electronics 11. The audio or video signal can be recorded by the PVR.

If the PVR 2 is able to supply power 12 externally from its internal power supply 13 via the A/V-in socket 10, the internal jack 9 can route this power to the external connector 5 via one or more electrical connections 14. The external supply 12 is then available to power a connected external device 4 using a suitable cable and corresponding connector 6.

The case 1 is shown with an optional, integrated microphone 15 that may operate using power 16 from the PVR battery 13 via the internal jack 9 and delivers an audio signal 17 to the PVR 2.

5 In Figure 1 a number of control buttons 18 are positioned on the external wall of the case 1. Each button activates a corresponding switch 19 when depressed. The switches are located inside the case 1 on a circuit board 20 that is pre-programmed to generate a range of command signals that control the PVR's functions wirelessly. Each switch 19 can activate a different command signal. When a specific button 18 is depressed, it
10 activates the corresponding switch 19 and activates a wireless command signal 22 generated by the sending unit 21. The wireless signal 22 is detected by the PVR's wireless remote control receiver 23 which activates the desired function within the PVR 2. The wireless remote control electronics may be powered by a battery 24 external to the PVR.

15 Figure 2 is an illustration of one of the ways the protective case 1 can be carried or worn by the user 25 by attaching the device to the upper arm using a strap 26. The case has one or more structures 27 that allow the strap to pass through and effect a secure attachment. The case may also have a transparent windowed area 28 allowing the user to view the screen
20 on the enclosed PVR 2, the tray 2' being provided with a corresponding aperture.

Figure 2 also shows an external device 4, which is, in this particular illustration worn on the head of the user. The cable and connector 6 are shown running between the protective case 1 and the external device 4.

25 Figures 3, 4 and 5 show a practical construction in accordance with the invention. Parts corresponding to those in Figure 1 have been given corresponding reference numerals.

The moulded plastics housing shell 1 is formed at its open end with a mounting flange 30, and the lid 3 hinged thereto at 33 has a complementary flange 31, a resilient seal being mounted in a recess in one of the flanges to provide a water-tight seal when the lid 3 is held closed by a releasable clip 32.

The control buttons 18 are provided integrally on a resilient membrane 34 that is sealed around its margin to the margin of a switch aperture in the shell 1. The opposite wall of the shell is also provided with further control buttons 18' that can be used to perform editing procedures on recorded material.

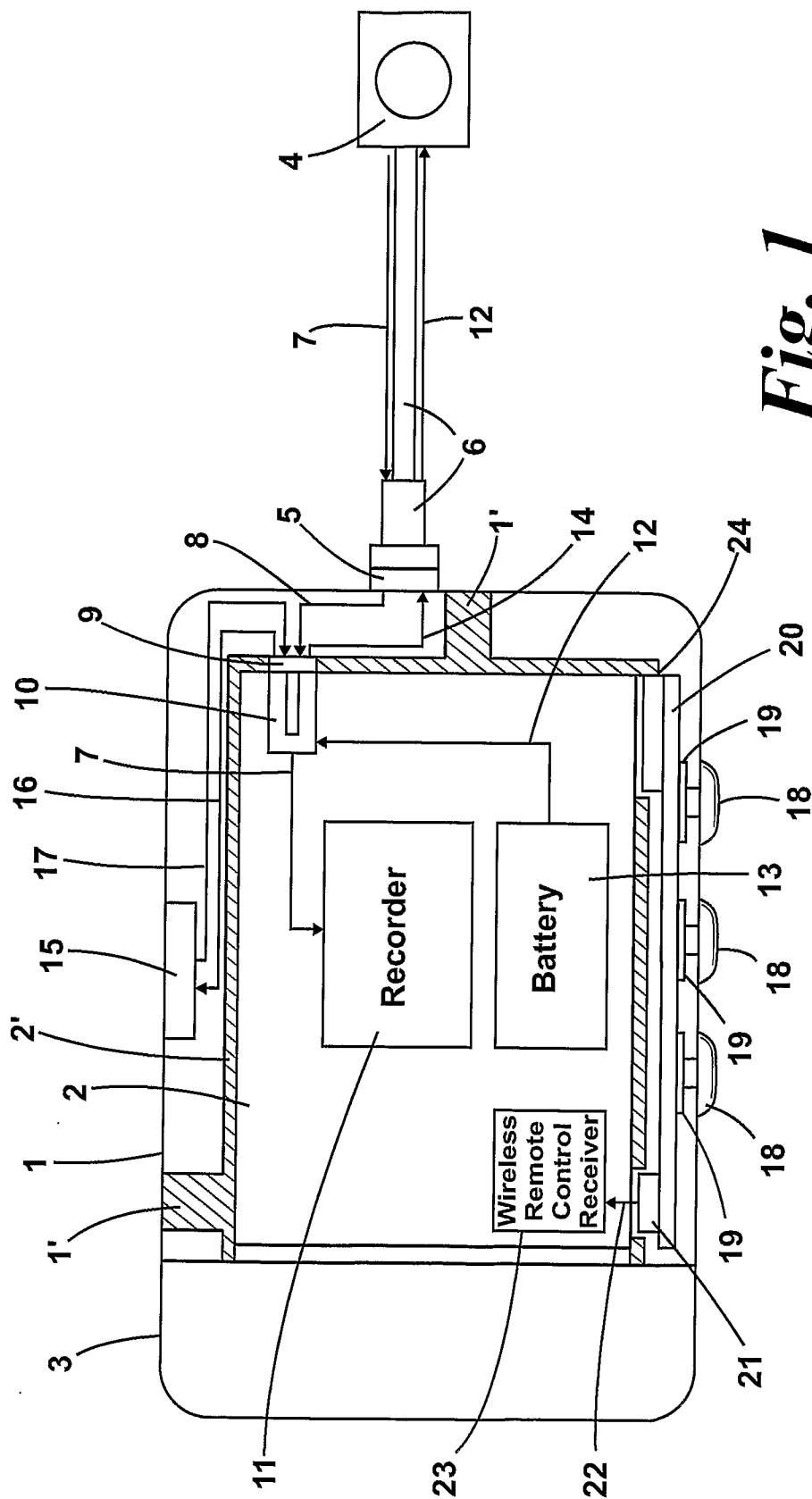
The microphone 15 is mounted in the wall of the lid 3 in this construction.

CLAIMS

1. A protective case (1) for a personal video recording (PVR) device (2), the case mounting a finger-operable control means (18) exposed to the outside of the case, a wireless remote control device (21)
5 mounted within the interior of the case, and a control circuit (20) for the remote control device responsive to operation of the control means (18), the remote control device (21) being configured to send control signals to a receiver (23) of a PVR device housed inside the case in response to operation of the control means (18) by a user.
- 10 2. A protective case as claimed in claim 1 in which a connector (9) is provided internally of the case for connection to a complementary connector (10) on the PVR device, and a lead (8, 14) extends from said connector (9) sealably through the casing to the exterior of the casing for conveying an audio and/or video signal.
- 15 3. A protective case as claimed in claim 1 or claim 2 in which the case is provided externally with a strap attachment (27).
4. A protective case as claimed in any one of the preceding claims in which one wall of the case comprises a transparent window which permits viewing of the screen of the PVR.
- 20 5. A protective case as claimed in any one of the preceding claims in which a power outlet (5) is provided on the exterior of the case, the power outlet being connected, in use, to a power outlet of the PVR device, to enable a device (4) external of the case to receive power from the PVR device.

6. A protective case as claimed in any one of the preceding claims in which one end of the case (1) is formed as a securable lid, a lid seal being provided to prevent ingress of water when the lid is secured closed.

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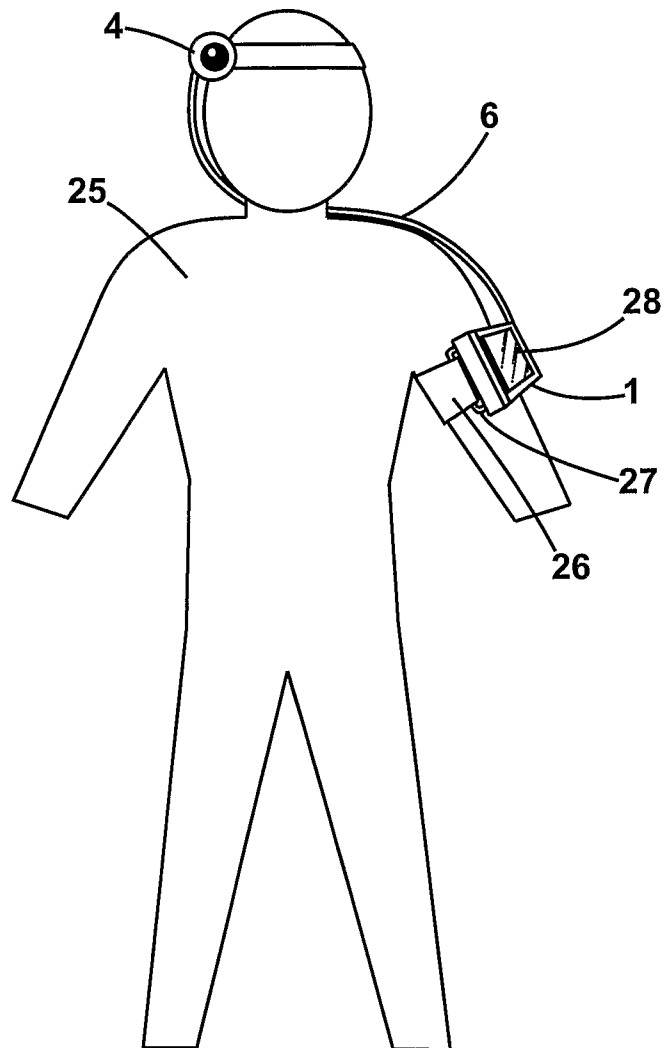


Fig. 2

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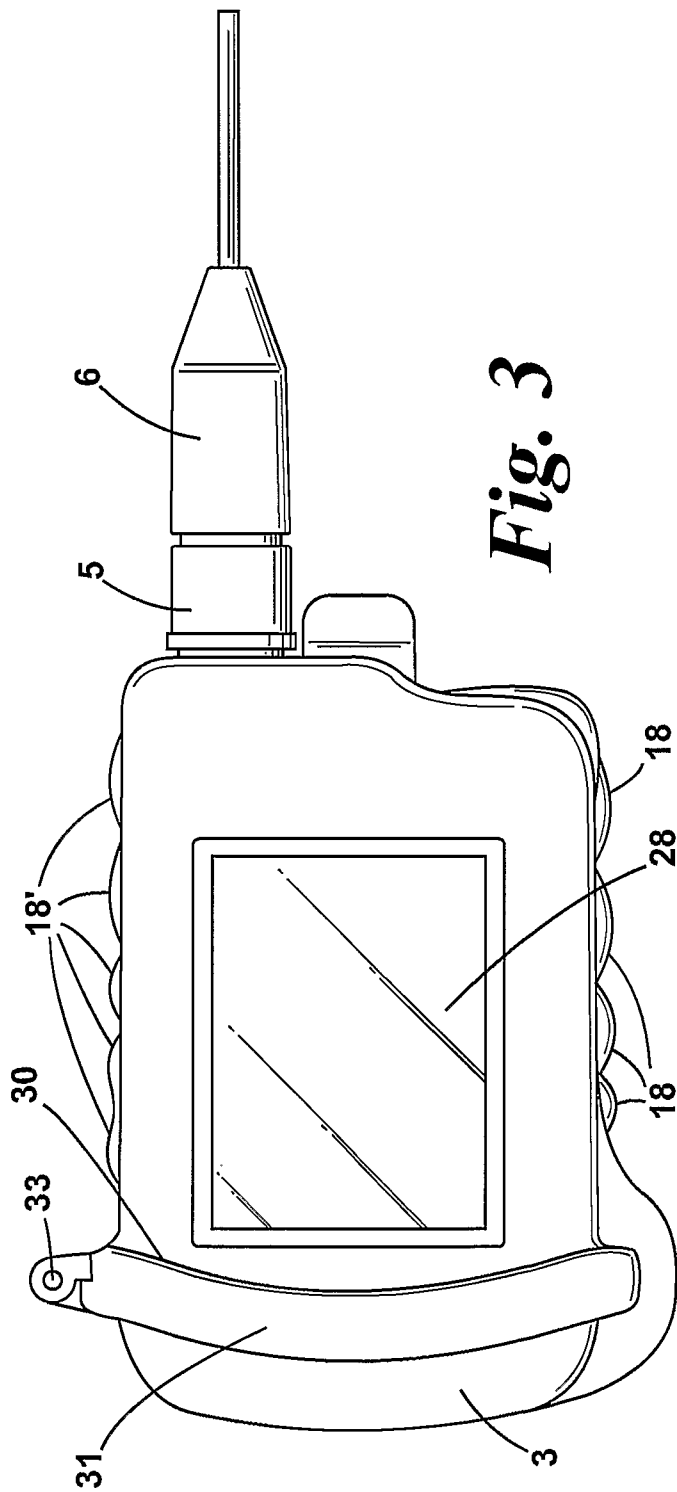


Fig. 3

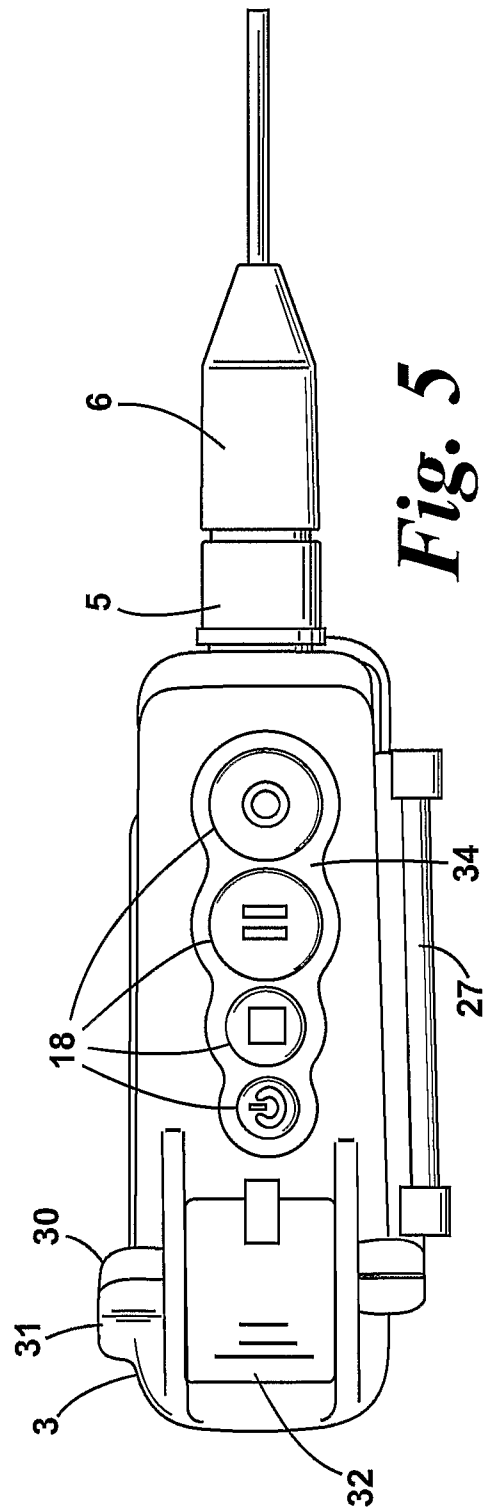


Fig. 5

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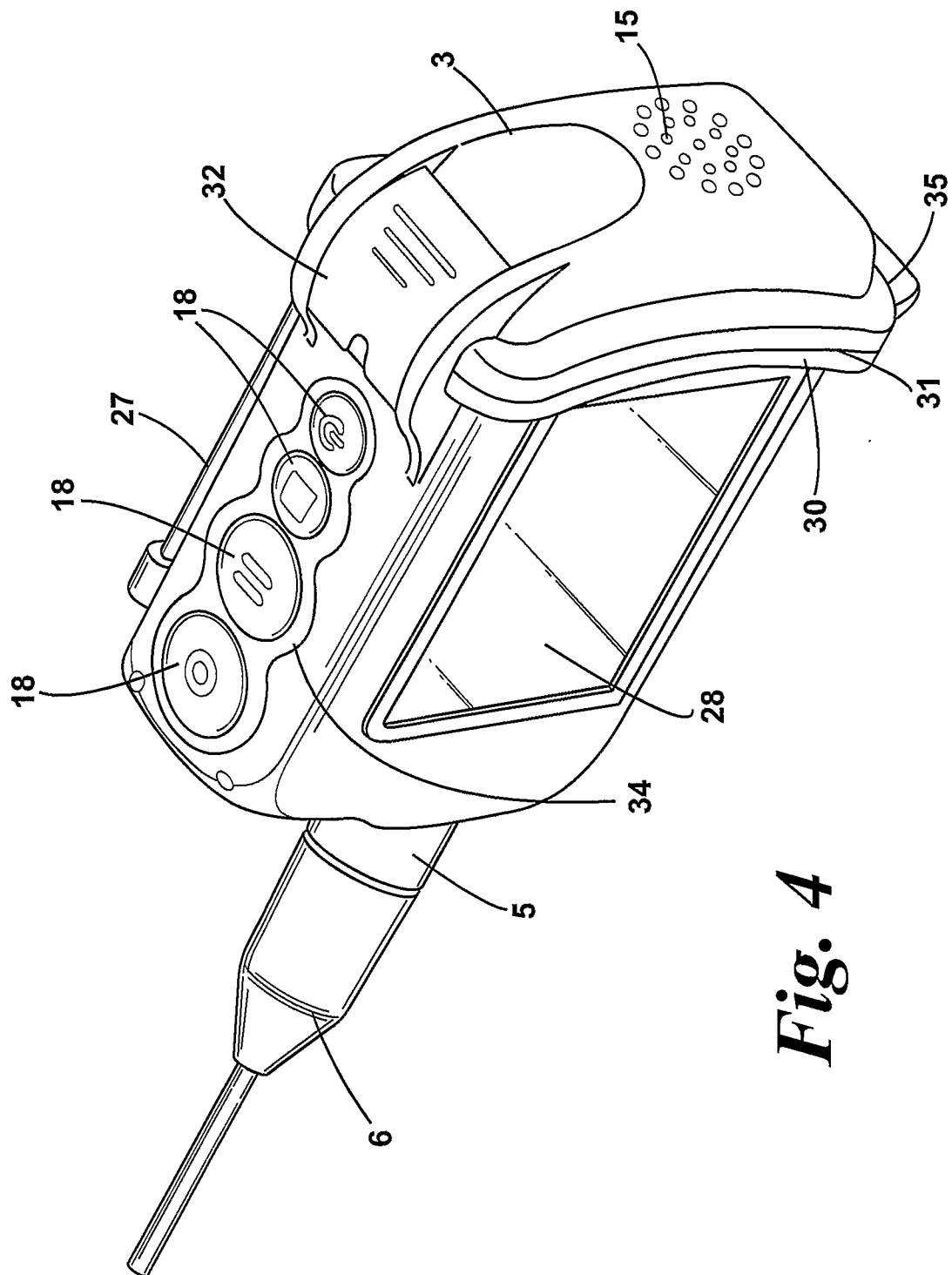


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. G11B33/02 G11B33/14

ADD. G03B17/08 A45C11/22 G06F1/16 H04N5/225

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G11B G03B A45C G06F H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/071146 A (UNDERWATER SYSTEMS & TECHNOLOG [AU]; DA SILVA ROBERT JAMES [AU]) 12 September 2002 (2002-09-12)	1, 3, 4, 6
Y	page 5, line 1 - page 12, line 5; figures 1-3	2, 5
X	US 6 128 441 A (KAMATA SHIGEYUKI [JP] ET AL) 3 October 2000 (2000-10-03)	1, 3, 4
Y	column 2, line 50 - column 4, line 43; figures 1-3	2, 5
Y	WO. 2005/012112 A (ROCH VON ROCHSBURG ERIC TODD [US]) 10 February 2005 (2005-02-10) paragraph [0027] - paragraph [0036]; figures 1-8	2, 5
	-/--	

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/174727 A1 (THOMAS BRIAN P [US] ET AL) 11 August 2005 (2005-08-11) paragraph [0004] - paragraph [0013] paragraph [0119] - paragraph [0127]; figures 19-21 -----	2,5
A	US 6 292 213 B1 (JONES MICHAEL J [US]) 18 September 2001 (2001-09-18) the whole document -----	1-6
A	US 6 522 531 B1 (QUINTANA W VINCENT [US] ET AL) 18 February 2003 (2003-02-18) the whole document -----	1-6
A	US 6 717 737 B1 (HAGLUND KYLE [US]) 6 April 2004 (2004-04-06) the whole document -----	1-6

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2008/001978

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 02071146	A	12-09-2002	CA 2448480 A1	12-09-2002
			EP 1377874 A1	07-01-2004
			NZ 528562 A	24-06-2005
			US 2004076415 A1	22-04-2004
US 6128441	A	03-10-2000	NONE	
WO 2005012112	A	10-02-2005	NONE	
US 2005174727	A1	11-08-2005	US 2006274493 A1	07-12-2006
US 6292213	B1	18-09-2001	NONE	
US 6522531	B1	18-02-2003	NONE	
US 6717737	B1	06-04-2004	NONE	