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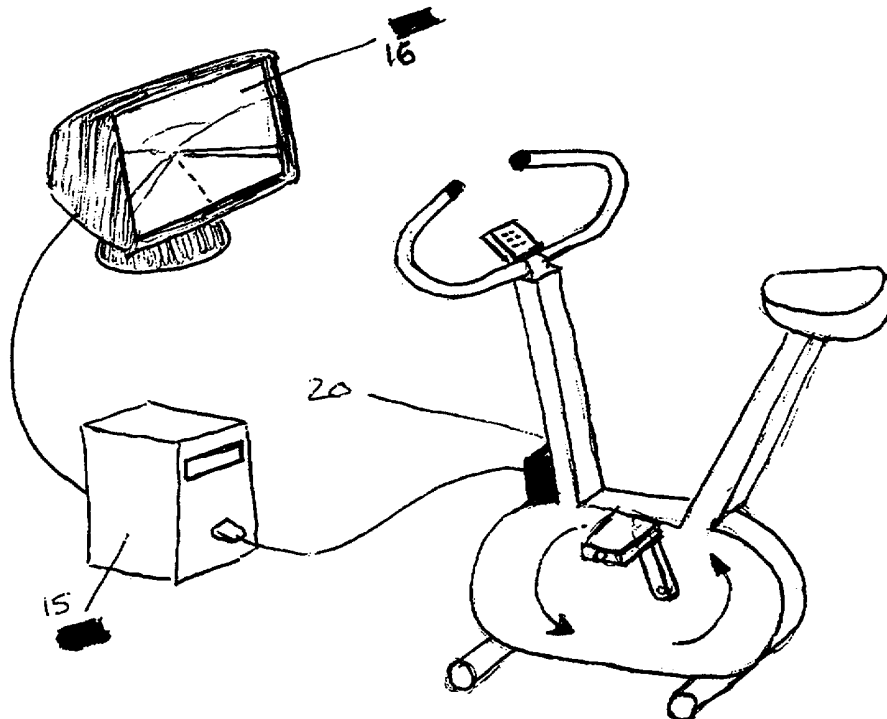**United Kingdom**

(51) INT CL$^7$
**A63F 13/06 , A63B 22/08**

(52) UK CL (Edition S )
**A6M MAB**

(56) Documents Cited
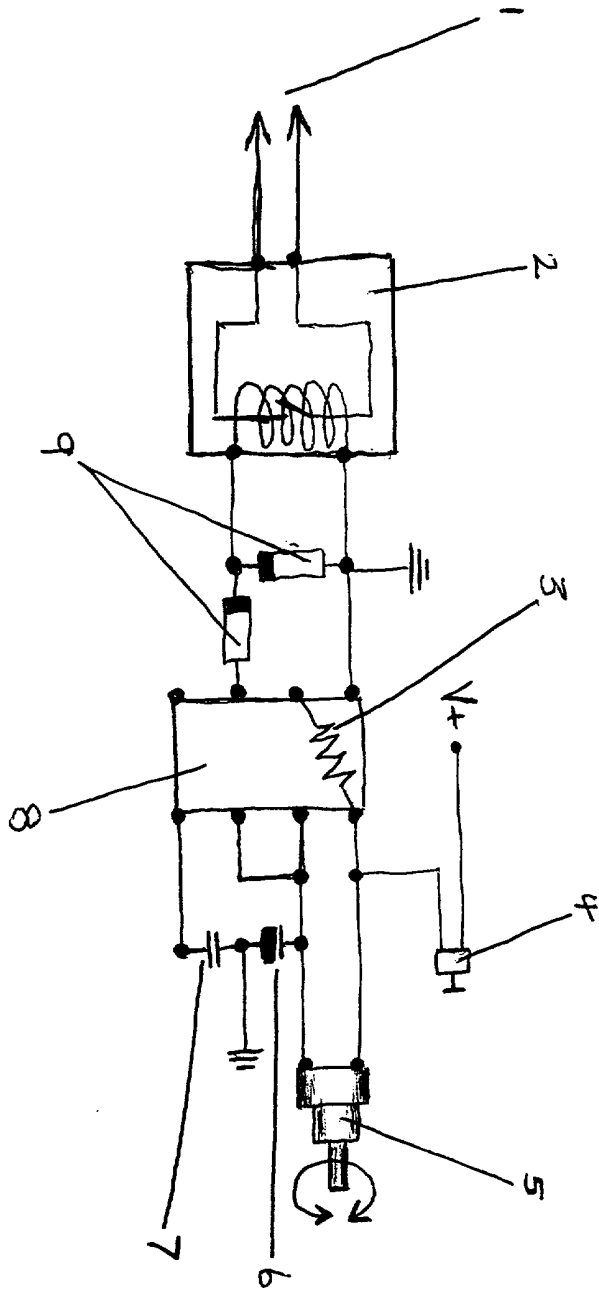| | | |
|---|---|---|
| US 5888172 A | US 5839990 A | US 4976435 A |
| US 4709917 A | US 4637605 A | US 4512567 A |

(58) Field of Search
UK CL (Edition S ) **A6H HLM , A6M MAB**
INT CL$^7$ **A63B 22/06 22/08 23/04 69/16 , A63F 13/06 ,**
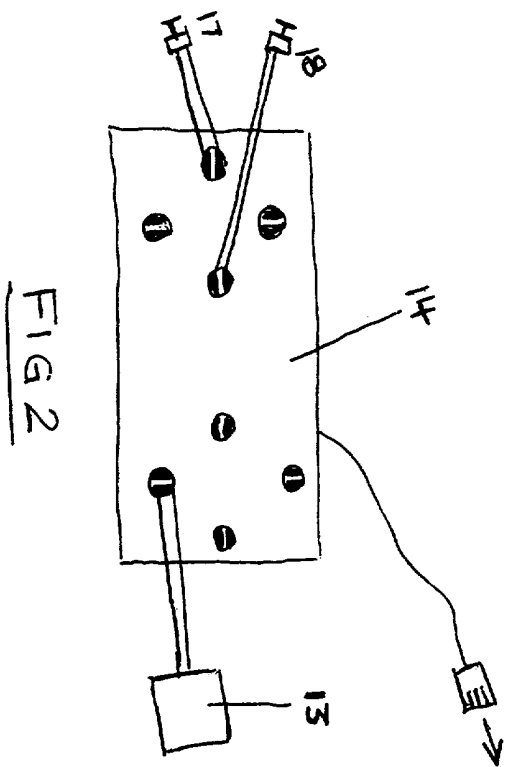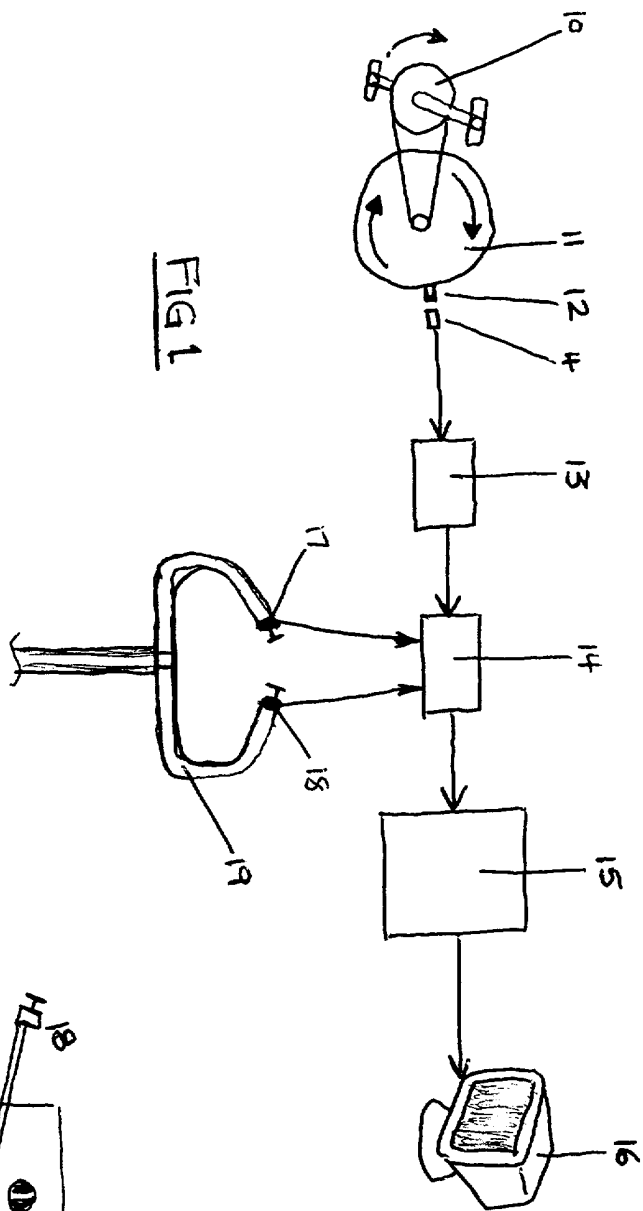**G09B 9/058**
**Online : WPI, EPODOC, JAPIO**

(54) Abstract Title
**Interface linking exercise equipment to game equipment**

(57) An interface device 15 enables exercise equipment, for example exercise bikes, to be linked to games consoles and computers such that the user can control the speed and direction of a virtual vehicle in a video game. With an exercise bike the pedalling speed of the user controls the speed of the virtual bicycle in the game and steering controls allow the user to control the direction of the bicycle in the game. The device 15 may include a potentiometer allowing adjustment to suit the computer vehicles speed relative to the bicycle's pedalling speed. The device may also be adjusted to suit differing speed and acceleration characteristics of the vehicles in different software programs.
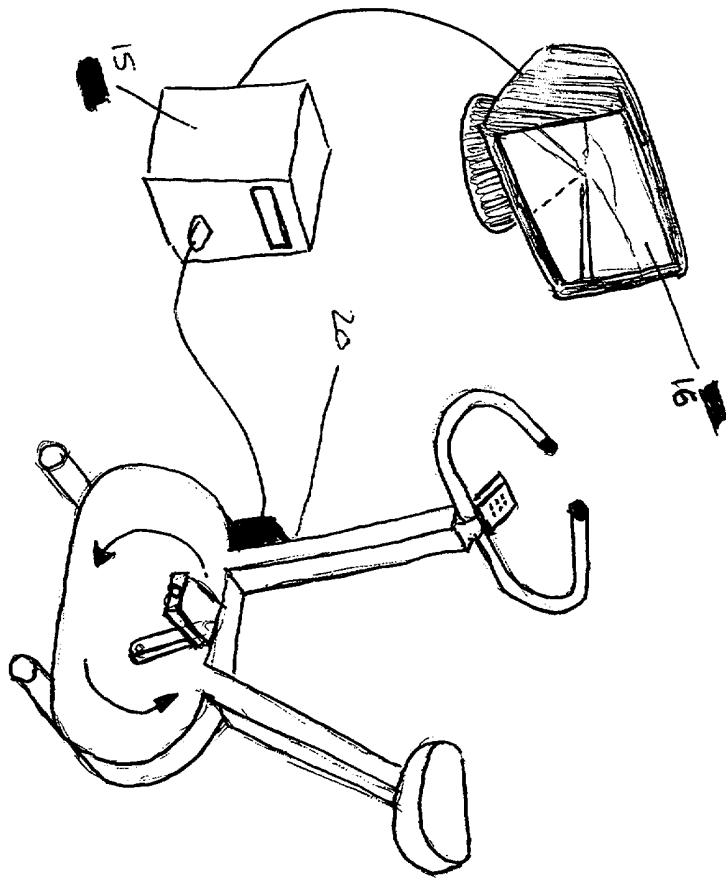


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Fig 1

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Fig 2

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# DEVICE TO CONTROL COMPUTERS USING EXERCISE EQUIPMENT

This invention relates to a device which enables exercise equipment (exercise bikes, for example) to control computers and games consoles.

The problem with exercise bikes is they can quickly become tedious to use. It's difficult to stay motivated when you are pedalling without actually moving anywhere.

The object of my invention is to provide an exciting, interactive and motivating experience to users of exercise bike (for example), enables its rider to connect the bike to a computer or games console and control (with their pedalling speed). The accelleration and speed of 'virtual' vehicles in software programs such as driving games and simulators. Because the rider is also able to control the direction of the 'virtual' vehicle, using handlebar mounted switches or pivoting handlebars, they become totally interactive - able to ride and steer along roads, controlling the speed and direction they are travelling. My invention requires no software to be written - it utilises readily available driving and simulation games software. As many of these software programs allow multi-layer participation, two or more riders are able to race each other or go for 'virtual' rides together - and are able to do this via the internet with some programs.

A preferred embodiment of my invention will now be described with reference to the accompanying drawings in which:

1/3     This shows the circuit board diagram of my invention. The component list is as follows:

2)      Reed relay (500 )
3)      10k miniature resistor
4)      Normally closed switch (magnetic or microswitch)
5)      Potentiometer/variable registor (470k linear)
6)      1nf radial electrolytic capacitor
7)      0-01nf capacitor
8)      Timer semi conductor (icm 7555 IPA)
9)      Diodes (1n-914)

Also shown are the relay outputs (1). These are connected to the switch which controls accelleration on a computer input device (such as a keyboard or game control pad/joystick)

2/3 Fig1     This shows how my invention works (13). As the exercise bike (for example) is pedalled (10), the normally closed switch (4) is momentarily opened by a switch actuator (12) which is fitted to the flywheel or inertia device fitted to the bike (11), causing the circuit to be broken. When the switch (4) closes again, it causes the relay in my invention to activate, thus closing the accellerator switch circuit to which its output is connected on the computer input device (14). Because the timer circuit in my invention controls the length of time that the relay is activated, the time it remains de-activated is controlled by the pedalling speed of the

exercise bike - the slower it is pedalled, the longer the relay remains deactivated. As the pedalling speed is increased, the 'on' time of the relay remains constant, but the 'off' time is decreased. Thus the accelleration and speed characteristics of the computer vehicle are controlled. The length of time the relay remains activated is controlled by the potentiometer/variable resistor, allowing my invention to be adjusted to suit the computer vehicles speed relative to the bikes pedalling speed. It also allows for adjustment to suit differing speed and accelleration characteristics of the vehicles in different software programs.

Also shown are the direction control switches (17 and 18) which are fitted to the exercise bike. These are connected to the corresponding left and right direction buttons on the computer input device.

Also shown is a computer/games console (15) television/monitor (16) and the bikes handlebars (19).

Fig 2   This shows the layout of a typical gamepad which can be used as the computer input device (14) and the relevant connections. It shows the steering control switches (17 and 18), and the relay output connections of my insertion (13).

3/3   This shows an exercise bike fitted with my invention, where a computer input device and my invention have been incorporated into a single housing (20). Also shown are a computer/games console (15), and a television/monitor (16).

## Claims

1) A device which links exercise equipment to computers and games consoles, and controls the speed and accelleration of 'virtual' vehicles in games and simulation software programs.

2) A device which links exercise equipment to computers and games consoles as claimed in claim 1 wherein controls are provided on the exercise equipment to control the left and right direction of 'virtual' vehicles in games and simulation software programs.

**Application No:** GB 0000612.2      **Examiner:** Paul Makin

**Claims searched:** 1 & 2     **Date of search:** 18 June 2001

## Patents Act 1977
## Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

    UK Cl (Ed.S): A6M (MAB) ; A6H (HLM)

    Int Cl (Ed.7): A63B 22/06, 22/08, 23/04, 69/16 ; A63F 13/06 ; G09B 9/058

Other:    Online : WPI, EPODOC, JAPIO

### Documents considered to be relevant:

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| X | US 5839990 | (VIRKKALA) whole document | 1,2 |
| X | US 5888172 | (ANDRUS) whole document | 1,2 |
| X | US 4976435 | (SHATFORD) whole document | 1,2 |
| X | US 4709917 | (YANG) whole document | 1,2 |
| X | US 4637605 | (RITCHIE) whole document | 1,2 |
| X | US 4512567 | (PHILLIPS) whole document | 1,2 |

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|---|---|---|---|
| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
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