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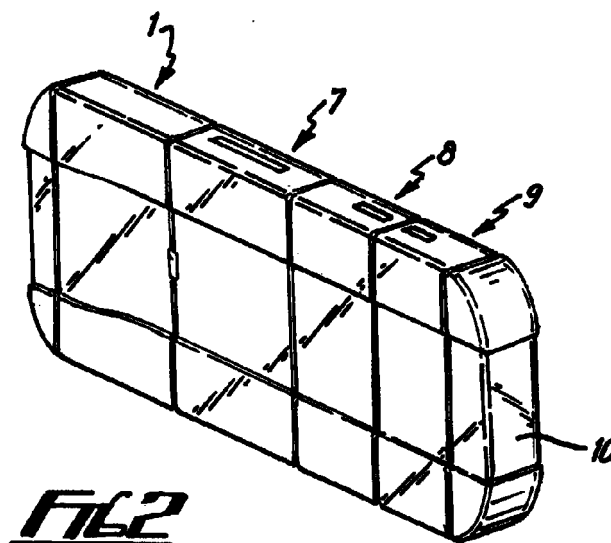
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(54) **Data handling system**

(57) A data handling system particularly for a coin-operated entertainment machine has a base module (1) mounted in the machine and a series of output interface modules (7-9) selectively connected to the base module (1). The output interface modules (7-9) act to supply data collected from the machine to external data reading equipment. By appropriate selection of the interface modules (7-9) different kinds of machines and systems can be accommodated.



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## Description

### DATA HANDLING SYSTEM

**[0001]** This invention relates to a data handling system for use with data-generating machines.

**[0002]** The invention is particularly concerned with entertainment machines, such as coin-operated amusement or gaming machines of the kind referred to as slot machines or fruit or poker machines, the term 'coin' being used to include means of credit or monetary value other than actual coins. However the invention is not intended to be restricted to this field of application and the data handling system may be used with other kinds of machines whether or not coin-operated and whether or not for entertainment purposes. Thus, the invention can be used with vending machines, coin-operated pool tables, EPOS systems and the like.

**[0003]** Amusement with Prizes (AWP) machines of the fruit machine kind generate operating data representative of normal and abnormal machine functions, such as data indicating money paid in and paid out, occurrence of different kinds of awards, incidence of faults, attempts at unauthorised entry or intervention, etc.

**[0004]** It is usual practice for this data to be monitored, stored within the machine, and then made available for collection and transfer to external reading and interpretative equipment located in the vicinity of the machine or at a remote control centre. Data can be collected from the machine with a hand held reader which is plugged into a data port of the machine or which is radiation-connected, e.g. via an infrared or optical link, to the machine. The hand held reader can then be taken to a remote control centre where collected data is downloaded into computer equipment.

**[0005]** It is also possible to transfer data from a machine to a remote control centre by means of a network link which may utilise telephone or similar line communications.

**[0006]** In order to avoid the cost and inconvenience of different dedicated systems for collection and transfer of data from different machines, it is known to use data transfer protocols and communication techniques which are standardised between different machines. Machines can be provided with standardised interfaces for connection to standardised data collection and transfer equipment.

**[0007]** However, inevitably there are different, and changing requirements for different machines which cannot all readily be accommodated with known standardised interfaces and systems.

**[0008]** An object of the present invention is to provide a data handling system with which the benefits of standardisation can be realised whilst being able readily to accommodate differing machine requirements.

**[0009]** According to the invention therefore there is provided a data handling system for use in the collection

and transfer of data from a data-generating machine, comprising a base module mountable relative to the machine to receive data therefrom, and at least one output interface module connected to the base module for communication with data reading equipment externally of the machine, characterised in that the (or each) interface module is removably connected to the base module so as to be interchangeable with one or more further different said interface modules.

**[0010]** With this arrangement, differing requirements, such as different processing or modification of collected data, and/or different output transfer protocols or connections, can be accommodated by appropriate selection of the (or each) interface module to be connected to the base module. Also, when requirements change these can be readily accommodated by updating the (or each) interface module.

**[0011]** Standardisation of data handling can therefore be achieved whilst allowing for different kinds of machines and systems.

**[0012]** Most preferably the connection between the base module and the (or each) interface module is such as to provide releasable mechanical retention therebetween additionally to data communication connection. A spring clip or other retention arrangement may be used together with male/female data connectors.

**[0013]** Preferably multiple interface modules are connectable together to the base module and this may be achievable in any suitable series and/or parallel arrangement with regard to mechanical and/or data connection.

**[0014]** In a particularly preferred embodiment multiple interface modules are releasably mechanically interconnected in series. Connection in different numbers or combinations may be possible.

**[0015]** Preferably also the base module and the (or each) connected interface module, or at least major parts of these are of the same or similar cross-section and have outer surfaces which are respectively flush or coplanar with each other. The cross-sections may be rectangular, or generally rectangular, and the flush or coplanar faces may be flat. In this way, a compact structure can be attained which easily and conveniently fits within the machine.

**[0016]** The (or each) interface module may perform one or more functions such as: conversion of data from the base module to a desired output transfer protocol, adaptation for communication with a desired output connection (ethernet, RF, RS 232, RS 485, optical, etc), conversion of data from machine data generating devices to a desired format to be fed to the base module, adaptation for communication with a desired data-input connection (from machine meters, etc), security coding/decoding of data, connection to mains supply, etc.

**[0017]** Preferably the base module and/or the (or each) interface module is self powered by an internal battery.

**[0018]** The data handling system of the invention may be used with fruit machines or any other suitable kind of coin-operated entertainment or other machines.

**[0019]** The invention will now be described further by way of example only and with reference to the accompanying drawings in which:

Figure 1 is a diagrammatic perspective view of a base module in accordance with one embodiment of the invention;

Figure 2 is a similar view showing a series of interface modules connected to the base module; and

Figure 3 is a block circuit diagram of the arrangement of Figure 2.

**[0020]** Figure 1 shows a base module 1 of a data handling system which can be used with a coin-operated AWP machine of the fruit machine kind.

**[0021]** The module 1 comprises a plastics housing of rectangular cross-section with flat side faces, namely two large flat faces 2 parallel to each other and two narrow flat faces 3 parallel to each other.

**[0022]** One end of the housing is provided with a convexly shaped end cap 4 having flat side faces coplanar with the large faces 2, and curved ends which merge with the smaller flat faces 3.

**[0023]** At the other end of the housing there is a generally flat end face with a male (or female) data connector 5, and also spring clip arms 6.

**[0024]** Figure 2 shows an interface module 7 mated with the base module 1 by interengagement of a female (or male) connector of the interface module 7 with the connector 5 of the base module, and by releasable retaining interengagement of the module 7 with the clip arms 6.

**[0025]** Figure 2 also shows two further interface modules 8, 9 connected with each other and with the interface module 7 by means of male/female data connectors. These data connectors preferably provide sole mechanical interconnection between the modules 7, 8, 9, although if desired spring clip arms of the kind described above or other clips may be also provided on each interface module 7-9.

**[0026]** The free end of the final interface module 9 has attached thereto an end cap 10, like the cap 4. These caps 4, 10 may be solely decorative or protective or may also be interface modules. In particular they may be interface modules which perform a checking function to establish that there is a completed, properly interconnected assembly before the power is switched on.

**[0027]** The interface modules 7-9 have rectangular cross-sections and flat faces, like the base module 1, whereby the assembly, as shown in Figure 2 has coplanar side faces and forms a compact, slim bar-shaped structure which can be easily and conveniently installed

within an AWP or other machine.

**[0028]** The base module 1 contains a battery back-up power source 11 and data storage components 12.

**[0029]** As shown, the interface modules 7-9 comprise, in sequence, an output module 7, an input module 8 and a security module 9.

**[0030]** The output module 7 is connected to the base module 1 to receive stored data therefrom. This module 7 has output connectors or leads 13 which link to appropriate data output connectors in the machine, such as a socket type data port or the like to supply data thereto with a desired standardised transfer protocol.

**[0031]** The input module 8 is connected to the base module 1, via the output module 7, to supply data from the machine to be stored in the module 1. This module 8 has connectors or leads 14 which link to appropriate data-generating machine elements such as meters, door switches etc. The base module 1 and output module 7 act to provide an output in a desired standardised transfer protocol by appropriate conversion of the input data.

**[0032]** The security module 9 is connected to the base module 1 via the input and output modules 7, 8 and provides local data and security control of access to the data through external interface.

**[0033]** The interface modules 7-9, as indeed also the base module 1, can be interchanged with replacement such components as and when required to accommodate differing requirements due to differences in machines and/or to allow for updating and changing of machines and operational systems.

**[0034]** Thus, for example, the output module may be changed to allow for changes in kind of output connection (e.g. data port, optical connection, etc). Modules may also be changed to ensure that a desired output transfer protocol is obtained from the particular input format of the machine.

**[0035]** Moreover, any number of additional modules may be introduced in series to provide additional functions. For example, a mains power supply module may be fitted so that the system can be powered from local mains supply.

**[0036]** Any suitable means of relay of data along the series of modules may be utilised. In one embodiment, shift registers may be used.

**[0037]** It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

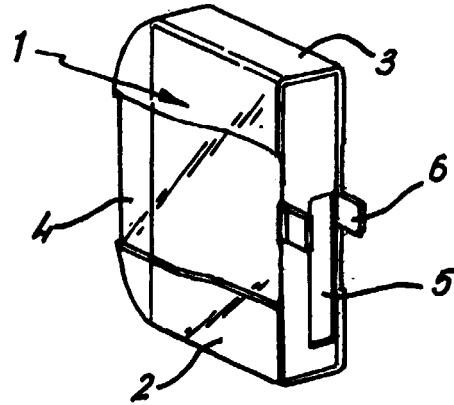
## Claims

1. A data handling system for use in the collection and transfer of data from a data-generating machine, comprising a base module mountable relative to the machine to receive data therefrom, and at least one output interface module connected to the base module for communication with data reading equip-

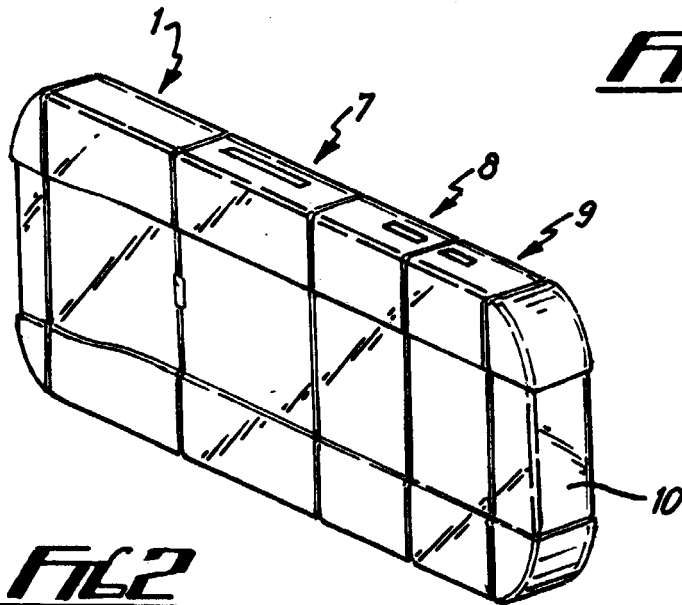
ment externally of the machine, characterised in that the (or each) interface module is removably connected to the base module so as to be interchangeable with one or more further different said interface modules.

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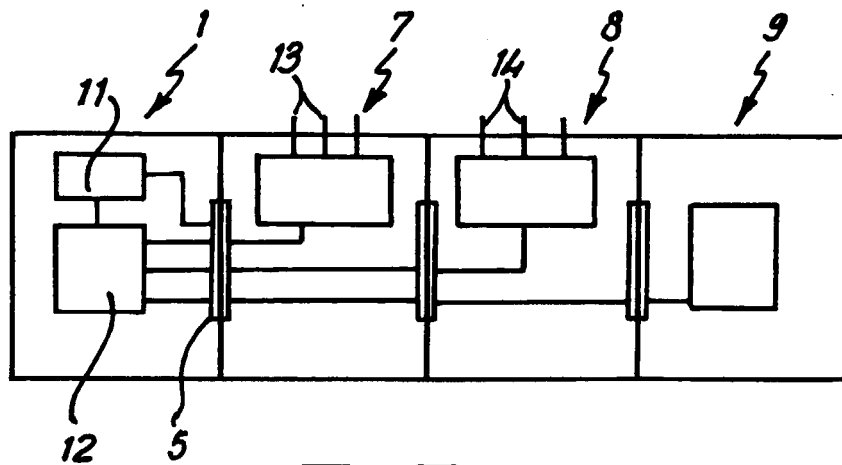
2. A system according to claim 1 characterised in that the connection between the base module and the (or each) interface module is such as to provide releasable mechanical retention therebetween additionally to data communication connection. 10
3. A system according to claim 2 characterised in that a spring clip is provided for releasable mechanical retention, and male/female data connectors are provided for data communication connection. 15
4. A system according to any one of claims 1 to 3 characterised in that multiple interface modules are connectable together to the base module. 20
5. A system according to claim 4 characterised in that the multiple interface modules are releasably mechanically interconnected in series. 25
6. A system according to any one of claims 1 to 5 characterised in that the base module and the (or each) connected interface module have at least major parts which are of the same or similar cross-section and have outer surfaces which are respectively flush or coplanar with each other. 30
7. A system according to claim 6 characterised in that the cross-sections are at least generally rectangular and the outer surfaces are flat. 35
8. A system according to any one of claims 1 to 7 characterised in that the (or each) interface module performs at least one function selected from: conversion of data from the base module to a desired output transfer protocol, adaptation for communication with a desired output connection, conversion of data from machine data generating devices to a desired format to be fed to the base module, adaptation for communication with a desired data-input connection, security coding/decoding of data, connection to mains supply. 40 45
9. A system according to any one of claims 1 to 8 characterised in that the base module is self powered by an internal battery. 50
10. A system according to any one of claims 1 to 9 when used with a coin-operated entertainment machine. 55



**Fig 1**



**Fig 2**



**Fig 3**



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# EUROPEAN SEARCH REPORT

Application Number  
EP 00 30 0549

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                           |                                                        |                                              |
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| Place of search<br><b>THE HAGUE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                           | Date of completion of the search<br><b>26 May 2000</b> | Examiner<br><b>David, J</b>                  |
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