

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 August 2003 (28.08.2003)

PCT

(10) International Publication Number
WO 03/071408 A1

(51) International Patent Classification⁷: G06F 1/32,
12/14, 13/14

(21) International Application Number: PCT/US02/04857

(22) International Filing Date: 19 February 2002 (19.02.2002)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant and

(72) Inventor: KOUROPOULOS, Peter [US/US]; 461 West
Estudillo, San Leandro, CA 94577 (US).

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN,
YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

Published:

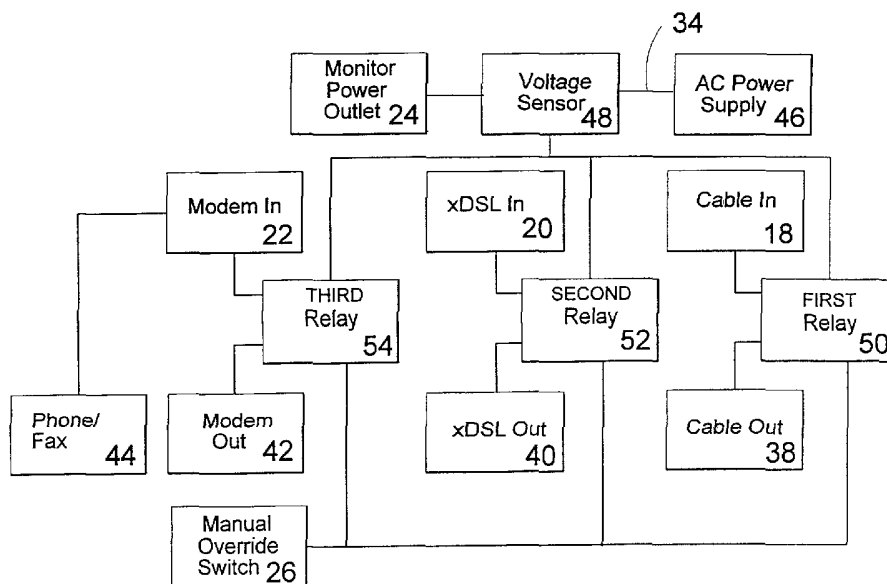
— with international search report

(74) Agent: KROLL, Michael, I.; 171 Stillwell Lane, Syosset,
NY 11791 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PERSONAL COMPUTER FAILSAFE PROTECTION DEVICE



(57) Abstract: A personal computer failsafe protection device for disconnecting a computer system from a communications channel during power down periods. The personal computer failsafe protection device includes a voltage sensor (48) for sensing a voltage drawn by the computer system, input ports (18, 20, 22) for connecting to a communications channel, output ports (38, 40, 42) for connecting the communication channels to the computer systems and relays (50, 52, 54) connected between input ports and output ports. The relays selective disconnects the input port and the output port when the sensor senses the voltage drawn is below a threshold value thereby indicating the computer system is in a powered down or sleep state.



WO 03/071408 A1

PERSONAL COMPUTER FAILSAFE PROTECTION DEVICE**Description****Technical Field**

The present invention relates generally to computers and, more specifically, to a device able to block access to communications lines connected to a personal computer at times of inactivity thus preventing others from accessing the computer without authorization.

Disclosure of the Invention

The present invention relates generally to computers and, more specifically, to a device able to block access to communications lines connected to a personal computer at times of inactivity thus preventing others from accessing the computer without authorization.

A personal computer failsafe protection device for disconnecting a computer system from a communications channel during power down periods is described by the present invention. The personal computer failsafe protection device includes a voltage sensor for sensing a voltage drawn by the computer system, an input port for connecting to a communications channel, an output for connecting the input port to

a communications channel input of the computer system and a relay connected between the input port and output port. The relay selectively disconnects the input port and output port when the sensor senses the voltage drawn is below a threshold value thereby indicating the computer system is in a powered down or sleep state. The device preferably includes first, second and third input ports, first, second and third corresponding output ports and first second and third relays, each relay being connected between a respective pair of input and output ports. The first input and first output are preferably cable connectors, the second input and second output are preferably xDSL connectors and the third input and third output ports are preferably telephone connectors. The device also includes a telephone/facsimile which is powered on at all times. A manual override switch is provided for manually triggering the relay. The sensor also triggers the relay to connect said input and output port during a predetermined period during a day thereby allowing a user to contact the computer system through the communications channel during the predetermined time of day.

To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

Brief Description of the Drawing Figures

Various other objects, features and attendant advantages of the present invention will become more fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views.

FIGURE 1 is a top perspective view of the personal computer failsafe protection device of the present invention;

FIGURE 2 is a front view of the personal computer failsafe protection device of the present invention;

FIGURE 3 is a top view of the personal computer failsafe protection device of the present invention;

FIGURE 4 is a bottom view of the personal computer failsafe protection device of the present invention;

FIGURE 5 is a block diagram illustrating the elements forming the personal computer failsafe protection device of the present invention for sensing the voltage of a monitor; and

FIGURE 6 is a block diagram showing the elements of the personal computer failsafe protection device of the present invention for connection to a one piece computer system including processor and monitor in a single unit.

The reference numbers utilized in the drawing figures are defined as follows:

- 10 personal computer failsafe protection device of the present invention
- 12 housing
- 14 top side
- 16 front side
- 18 cable connector
- 20 xDSL connector
- 22 modem line connector
- 24 AC input

- 26 line power override switch
- 28 AC power switch
- 30 indicator light
- 32 another side of the housing
- 34 power cord
- 36 second side of the housing
- 38 cable output connector
- 40 xDSL output connector
- 42 modem line connector
- 44 phone/fax connector
- 46 AC power supply
- 48 voltage sensor

50 first relay

52 second relay

54 third relay

56 computer system

58 microprocessor of computer system

60 memory

Detailed Description of the Preferred Embodiment

Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, Figures 1 through 6 illustrate the personal computer failsafe protection device of the present invention indicated generally by the numeral **10**.

The personal computer failsafe protection device **10** is shown in Figure 1 and includes a housing **12**. From this view, a first side **14** and top side **16** of the housing **12** are clearly visible. The first side **14** includes a cable input connector **18** for connection

with a cable line, a xDSL input connector **20** for connection with a high speed DSL line and a modem line connector **22** for connection with a telephone line.

On the top side **16** are an AC input **24** for a computer monitor, a line power override switch **26** and an AC power switch **28**. The AC input **24** is provided for connection to a monitor of a computer (not shown) for supplying power to the monitor and sensing the amount of voltage being drawn by the monitor. The line power switch **26** is provided for manually disconnecting the cable connector **18**, xDSL connector **20** and modem line connector **22** from an output thereof. The AC power switch **28** switches the personal computer failsafe protection device **10** between the on and off modes. An indicator light **30** provides a visual indication to a user that the personal computer failsafe protection device **10** is in the on mode when illuminated.

Extending from another side **32** of the housing **12** is a power cord **34** for connection to an AC power source. Shown in phantom on a second side **36** of the housing are a cable output connector **38** for connection with a cable input port of a computer, a xDSL output connector **40** for connection with a DSL input connector of a computer and a modem line connector **42** for connection with a modem line input of a computer. A telephone/fax connector **44** is also provided on the second side **36**.

A top view of the personal computer failsafe protection device **10** is shown in Figure 2. From this view, the top side is clearly shown. On the top side are provided the AC input **24** for connection with and providing power to a computer monitor, a line

power override switch **26** and an AC power switch **28**. The line power override switch **26** disconnects the cable input **18** from the cable output **38**, the XDSL input **20** from the xDSL output **40** and the modem input **22** from the modem output **42**. The AC power switch is movable between an on position supplying power to the monitor and an off position disconnecting the supply of power to the monitor. The indicator light **30** provides a visual signal indicating the mode of operation of the personal computer failsafe protection device **10**. On the first side **14** are provided the cable input connector **18**, xDSL input connector **20** and modem line connector **22**. On the second side **36** are the cable output connector **38**, xDSL output connector **40**, a modem line connector **42** and the telephone/fax connection **44** for connection with an external phone or fax machine. The AC power cord is shown extending from one side **32** for supplying power to the personal computer failsafe protection device **10** and all components connected thereto.

The first side **14** of the housing **12** of the personal computer failsafe protection device **10** is shown in Figure 3. This view shows the cable input connector **18**, xDSL input connector **20** and modem line connector **22**. On the top side **16**, the AC input **24** for connection to the monitor and the indicator light **30** are shown extending therefrom. The AC power cord **34** is shown extending from the side of the housing **12**.

The second side **36** of the housing **12** of the personal computer failsafe protection device **10** is shown in Figure 4. This view shows the cable output connector **38**, xDSL output connector **40**, modem line output connector **42** and the telephone/fax

connector **44**. On the top side **16**, the AC input **24** for connection to the monitor and the indicator light **30** are shown extending therefrom. The AC power cord **34** is shown extending from the side of the housing **12**.

A block diagram of the personal computer failsafe protection device **10** used to sense the power usage of a monitor is shown in Figure 5. As can be seen from this figure, The AC input for the monitor is connected to a power supply **46** via a voltage sensor **48**. The voltage sensor **48** senses the amount of voltage being drawn by a monitor connected to receive power from the AC power supply **46**. The voltage sensor **48** is connected to a first relay **50**, a second relay **52** and a third relay **54**. The first relay **50** is connected between the cable input connector **18** and the cable output connector **38**. The second relay **52** is connected between the xDSL input **20** and the xDSL output **40**. The third relay is connected between the modem input port **22** and the modem output port **42**. The manual override switch **26** is also coupled to the first, second and third relays **50**, **52** and **54**, respectively. The first relay **50** is triggered by the voltage sensor **48** to disconnect the cable input connector **18** and the cable output connector **38** upon sensing the monitor is drawing a voltage below a predetermined threshold voltage. The second relay **52** is triggered by the voltage sensor **48** to disconnect the xDSL input **20** and the xDSL output **40** upon sensing the monitor is drawing a voltage below a predetermined threshold voltage. The third relay **54** is triggered by the voltage sensor **48** to disconnect the modem input port **22** and the modem output port **42** upon sensing the monitor is drawing a voltage below a predetermined threshold voltage. The manual override switch **26** causes the first,

second and third relays **50**, **52** and **54**, respectively, to be triggered upon activation to disconnect the input ports from the output ports. The telephone/fax port **44** is connected to the telephone line via the modem input port **22** and is operational at all times. The operation of the telephone/fax port is not controlled by triggering of the third relay switch **54**.

A block diagram of the personal computer failsafe protection device **10** used to monitor the voltage drawn by a one piece computer system **56** is illustrated in Figure 6. As can be seen from this figure, the AC power supply **46** is connected to supply power to the personal computer failsafe protection device **10** through the power cable **34**. The voltage sensor **48** is connected between the power cable **34** and the AC power outlet **24**. A processor **58** of the one piece computer system **56** is connected to receive power through the AC power outlet **24**. The microprocessor **58** is connected to a memory **60** and to the other operational elements of the one piece computer system **56**. The voltage sensor **48** senses the amount of voltage being drawn by the one piece computer system **56**. The voltage sensor **48** is connected to the first relay **50**, second relay **52** and third relay **54**. The first relay **50** is connected between the cable input connector **18** and the cable output connector **38**. The second relay **52** is connected between the xDSL input **20** and the xDSL output **40**. The third relay **54** is connected between the modem input port **22** and the modem output port **42**. The manual override switch **26** is also coupled to the first, second and third relays **50**, **52** and **54**, respectively. The first relay **50** is triggered by the voltage sensor **48** to disconnect the cable input connector **18** and the cable output connector **38** upon sensing the one piece computer system **56** is drawing a

voltage below a predetermined threshold voltage. The second relay **52** is triggered by the voltage sensor **48** to disconnect the xDSL input **20** and the xDSL output **40** upon sensing the one piece computer system **56** is drawing a voltage below a predetermined threshold voltage. The third relay **54** is triggered by the voltage sensor **48** to disconnect the modem input port **22** and the modem output port **42** upon sensing the one piece computer system **56** is drawing a voltage below a predetermined threshold voltage. The manual override switch **26** causes the first, second and third relays **50**, **52** and **54**, respectively, to be triggered upon activation to disconnect the input ports from the output ports. The telephone/fax port **44** is connected to the telephone line via the modem input port **22** and is operational at all times. The operation of the telephone/fax port is not controlled by triggering of the third relay switch **54**.

The operation of the personal computer failsafe protection device **10** will now be described with reference to the figures. In operation, the personal computer failsafe protection device **10** is connected to a monitor of a computer system or to a one piece computer system **56** for measuring the amount of power being drawn thereby. The personal computer failsafe protection device **10** receives the power cord from either the monitor or the one piece computer system **56** at the AC power outlet **24**. Any desired communication channel, cable, xDSL, modem, etc. is then connected to its respective input port in the personal computer failsafe protection device **10**. A cable is then connected to the output port corresponding to the desired form of communications channel to be used. The other end of the cable is connected to the corresponding communications port of the computer system or one piece computer system **56**. The

power cord **34** is then connected to a power supply **46** and the personal computer failsafe protection device **10** is ready for operation.

In operation, the power switch **28** is turned to the on position placing the personal computer failsafe protection device **10** in an operating mode. The computer system and monitor or one piece computer system **56** are also placed in an on mode. The voltage sensor **48** continually senses the voltage being supplied to the monitor or one piece computer system **56** to determine when the voltage being drawn by the computer system and monitor or one piece computer system **56** is less than a predetermined value.

When the monitor remains inactive for a predetermined period of time, the monitor will enter a sleep mode. In the sleep mode, the voltage required to power the monitor decreases to a minimal amount thus saving energy when the monitor is not in use. Furthermore, when the power to the monitor or one piece computer system **56** is turned off, the voltage used thereby is minimal. During each of these instances, the lines of communication, e.g. cable line, xDSL line and modem lines, are still powered up due to power present on the communications channel. At this time, a hacker is able to break into the computer system through these communications channel due to the power present on the communications channel. In order to prevent the possibility of hackers breaking into the computer system when the monitor or computer are powered down or in an idle/sleep state, the input ports to the computer system must be isolated from the system.

When the voltage sensor **48** senses the voltage drawn by the monitor or one piece computer system **56** has dropped below a threshold level such as during a sleep state or power down of the system, the voltage sensor will activate the first, second and third relays **50**, **52** and **54**, respectively, to be triggered. Triggering of the first relay causes the cable input connector **18** to be disconnected from the cable output connector **38** thereby isolating the computer system from the cable line. Triggering of the second relay **52** causes the xDSL input connector **20** to be disconnected from the xDSL output connector **40** thereby isolating the computer system from the xDSL line. Triggering of the third relay **54** causes the modem input port **22** to be disconnected from the modem output port **42** thereby isolating the computer system from the modem line. The telephone/fax line **44** will remain connected to the telephone line at all times.

Alternatively, the user is able to manually disconnect the computer system from the communications channels by activating the manual override switch **26**. The manual override switch **26** is connected to the first, second and third relays and triggers each upon activation. Upon triggering by the manual activation switch **48**, the first relay causes the cable input connector **18** to be disconnected from the cable output connector **38** thereby isolating the computer system from the cable line, the second relay **52** causes the xDSL input connector **20** to be disconnected from the xDSL output connector **40** thereby isolating the computer system from the xDSL line and the third relay **54** causes the modem input port **22** to be disconnected from the modem output port **42** thereby isolating the computer system from the modem line.

When the voltage sensor **48** senses the voltage being drawn by the monitor or the one piece computer system **56** moves above the threshold level, the first, second and third relays **50**, **52** and **54**, respectively, are triggered again. When triggered, the first relay will reconnect the cable input connector **18** and the cable output connector **38** thereby reconnecting the computer system and the cable line, the second relay **52** causes the xDSL input connector **20** to be reconnected to the xDSL output connector **40** thereby reconnecting the computer system and the xDSL line and the third relay **54** causes the modem input port **22** to be reconnected to the modem output port **42** thereby reconnecting the computer system and the modem line.

The voltage sensor **48** is able to trigger the first, second and third relays **50**, **52** and **54**, respectively, to connect the cable, xDSL and/or modem lines to the computer system or one piece processor monitor system during a predetermined time period during the day to allow a user access to the computer system or one piece processor monitor system. Thus, a user is able to connect with his computer system at a predetermined time which is unknown to others to retrieve data stored in the computer system. Upon expiration of the time period, the voltage sensor **48** retriggers the first, second and third relays **50**, **52** and **54**, respectively, to disconnect the cable, xDSL and/or modem lines from the computer system or one piece processor monitor system.

From the above description it can be seen that the personal computer failsafe protection device of the present invention is able to overcome the shortcomings of prior

art devices by providing a personal computer failsafe protection device which is able to disconnect a personal computer or a one piece processor monitor system from cable, DSL and regular modem/phone lines when the computer has been turned off by sensing the voltage at a monitor to determine if the monitor has entered a sleep mode or has been turned off and disconnecting the personal computer from the cable, DSL and regular modem/phone lines upon detecting the monitor has entered a sleep mode or has been turned off. The personal computer failsafe protection device includes input and output ports for cable, DSL and regular modem/phone lines and an additional output port for connection to a telephone or facsimile machine which is operable even when the ports for the cable, DSL and regular modem/phone lines have been disconnected by the device. The personal computer device allows access to the computer for a specific preset period during the day thereby allowing the user to connect with the computer during the predetermined interval. Furthermore, the personal computer failsafe protection device of the present invention is simple and easy to use and economical in cost to manufacture.

It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

While certain novel features of this invention have been shown and described and are pointed out in the annexed claims, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions

and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

CLAIMS

1. A personal computer failsafe protection device for disconnecting a computer system from a communications channel during power down periods, said personal computer failsafe protection device comprising:

- a) means for sensing a voltage drawn by the computer system;
- b) an input port for connecting to a communications channel;
- c) an output for connecting said input port to a communications channel input of the computer system; and
- d) a relay connected between said input port and output port for selectively disconnecting said input port and output port upon said sensing means sensing the voltage drawn is below a threshold value indicating the computer system is in a powered down or sleep state.

2. The personal computer failsafe protection device as recited in Claim 1, wherein said input and output ports are cable connectors, said input port being connectable to a cable line.

3. The personal computer failsafe protection device as recited in Claim 1, wherein said input and output ports are xDSL, said input port being connectable to a xDSL line.

4. The personal computer failsafe protection device as recited in Claim 1, wherein said input and output ports are telephone connectors, said input port being connectable to a telephone line.

5. The personal computer failsafe protection device as recited in Claim 1, wherein said device includes first, second and third input ports, first, second and third corresponding output ports and first second and third relays, each relay being connected between a respective pair of input and output ports.

6. The personal computer failsafe protection device as recited in Claim 5, wherein said first input and first output ports are cable connectors, said second input and second output ports are xDSL connectors and said third input and third output ports are telephone connectors.

7. The personal computer failsafe protection device as recited in Claim 6, further comprising a telephone/facsimile connector, said telephone/facsimile connector being powered on at all times said device is in the on mode.

8. The personal computer failsafe protection device as recited in Claim 1, further comprising a manual override switch for manually triggering said relay to disconnect said input and output ports.

9. The personal computer failsafe protection device as recited in Claim 5, further comprising a manual override switch for manually triggering said relay to disconnect said first, second and third input ports from said first, second and third output ports, respectively.

10. The personal computer failsafe protection device as recited in Claim 9, wherein said means for sensing senses a voltage drawn by a monitor of the computer system.

11. The personal computer failsafe protection device as recited in Claim 1, wherein said means for sensing triggers said relay to connect said input and output port during a predetermined period during a day thereby allowing a user to contact the computer system through the communications channel during the predetermined time of day.

12. The personal computer failsafe protection device as recited in Claim 1, wherein said device is connected to a power source and includes a power outlet for connection with an supplying power to the computer system, said means for sensing the amount of voltage used by the computer system.

13. The personal computer failsafe protection device as recited in Claim 11, wherein said device is connected to a power source and includes a power outlet for connection with and supplying power to a monitor of the computer system, said means for sensing the amount of voltage used by the monitor.

14. The personal computer failsafe protection device as recited in Claim 1, wherein the monitor decreases an amount of voltage needed upon entering a sleep mode after a predetermined period of inactivity, the decreased amount of voltage needed being of a value able to cause said sensing means to trigger said relay to disconnect said input and output ports.

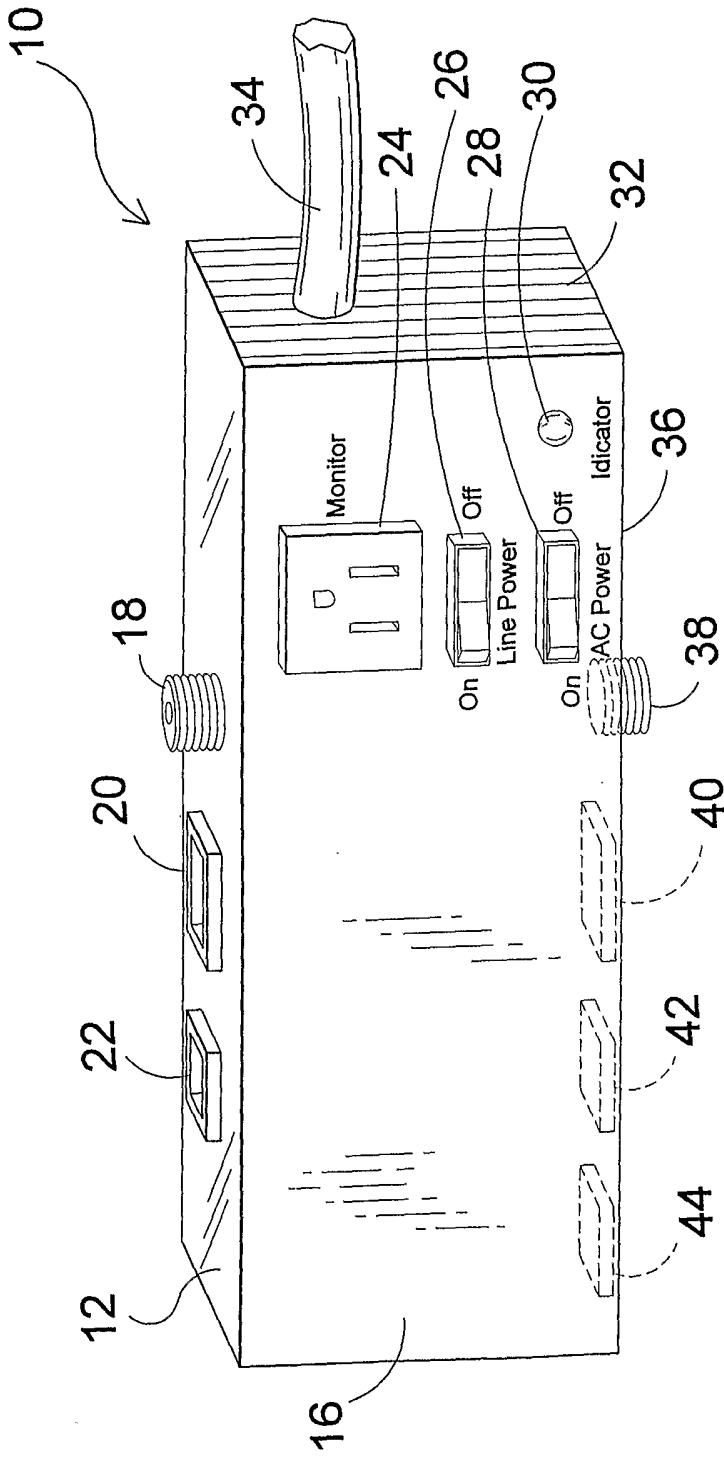


FIG 1

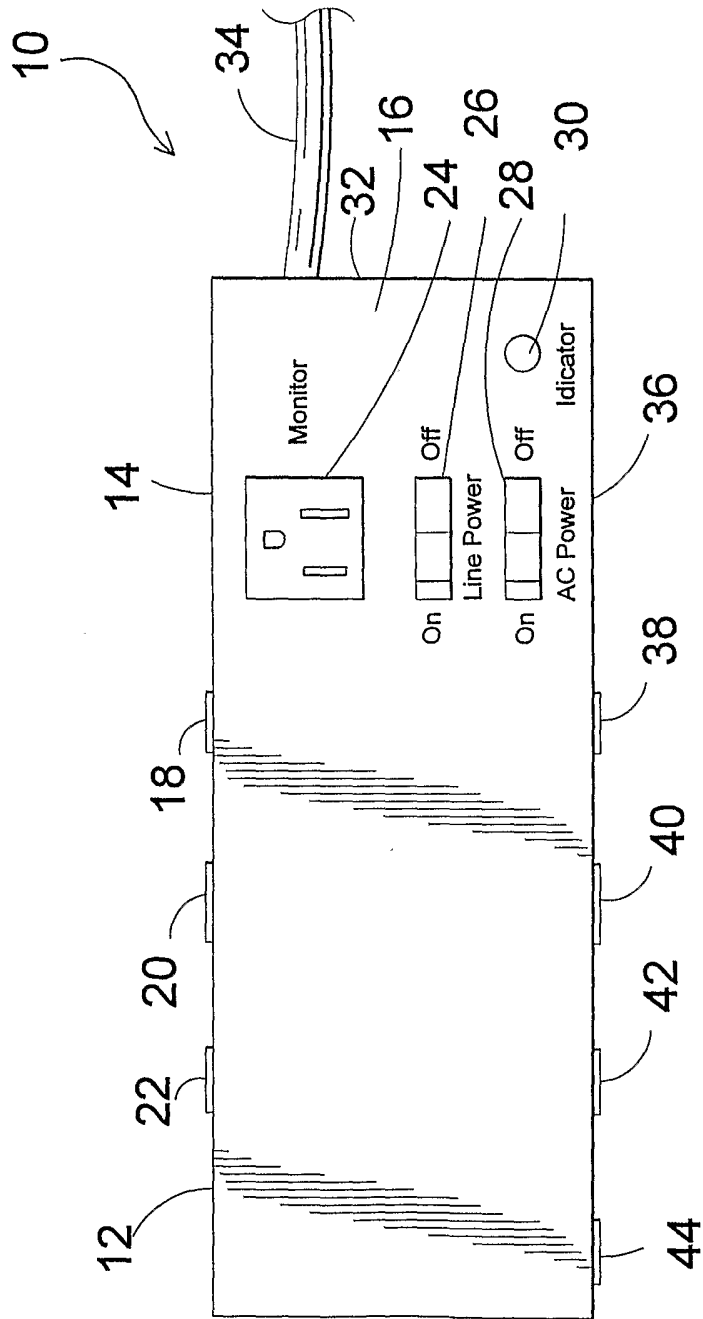


FIG 2

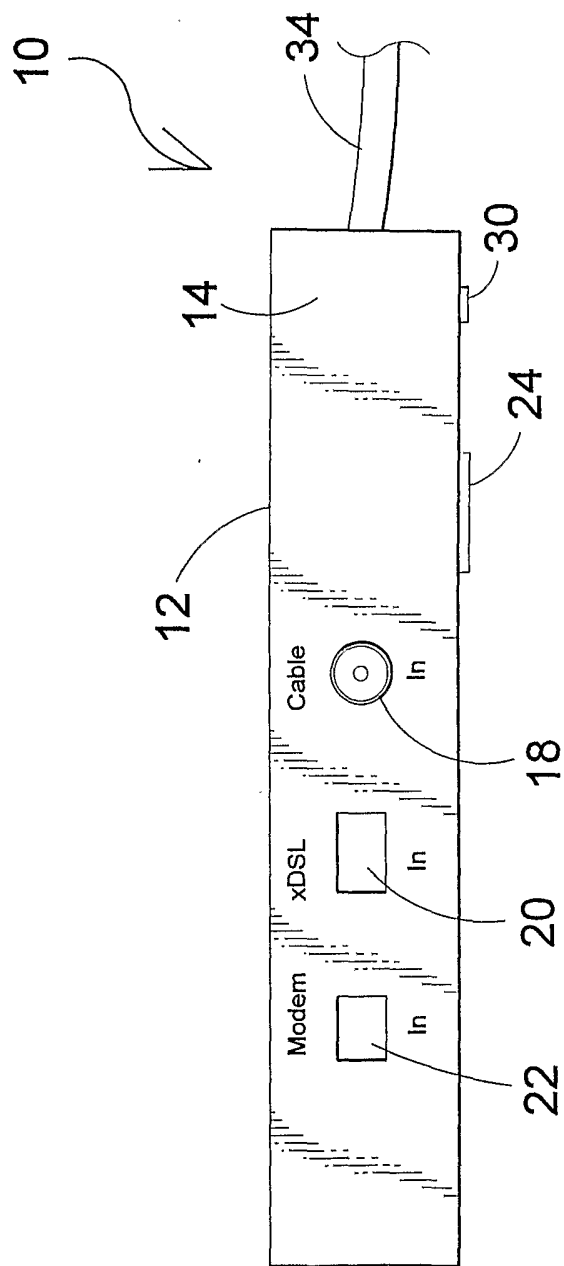


FIG 3

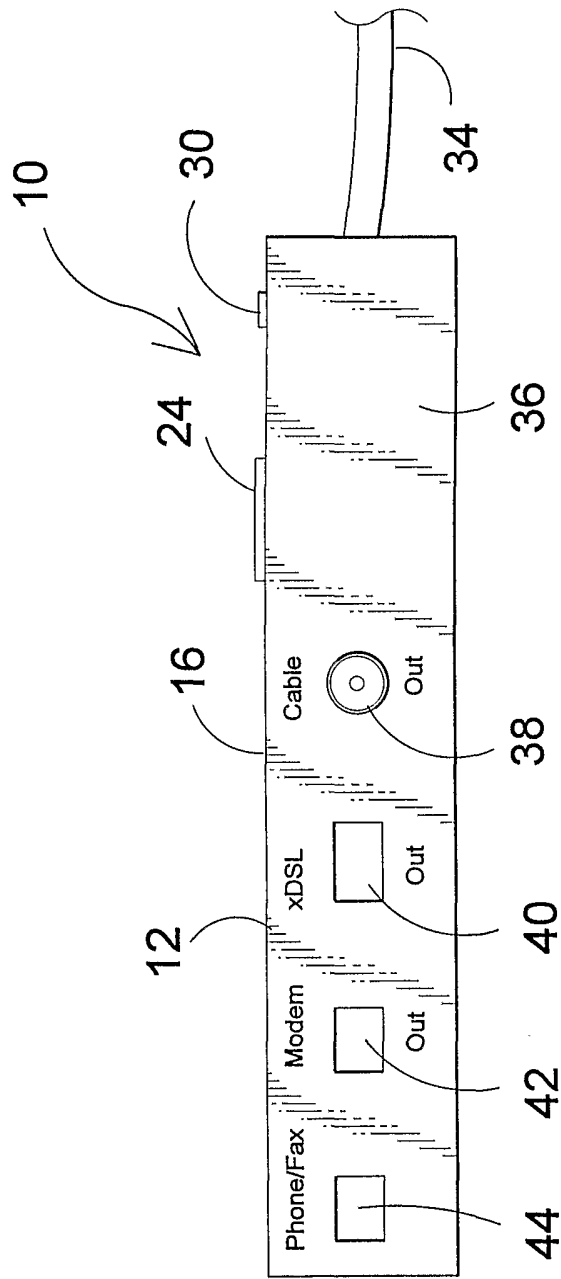


FIG 4

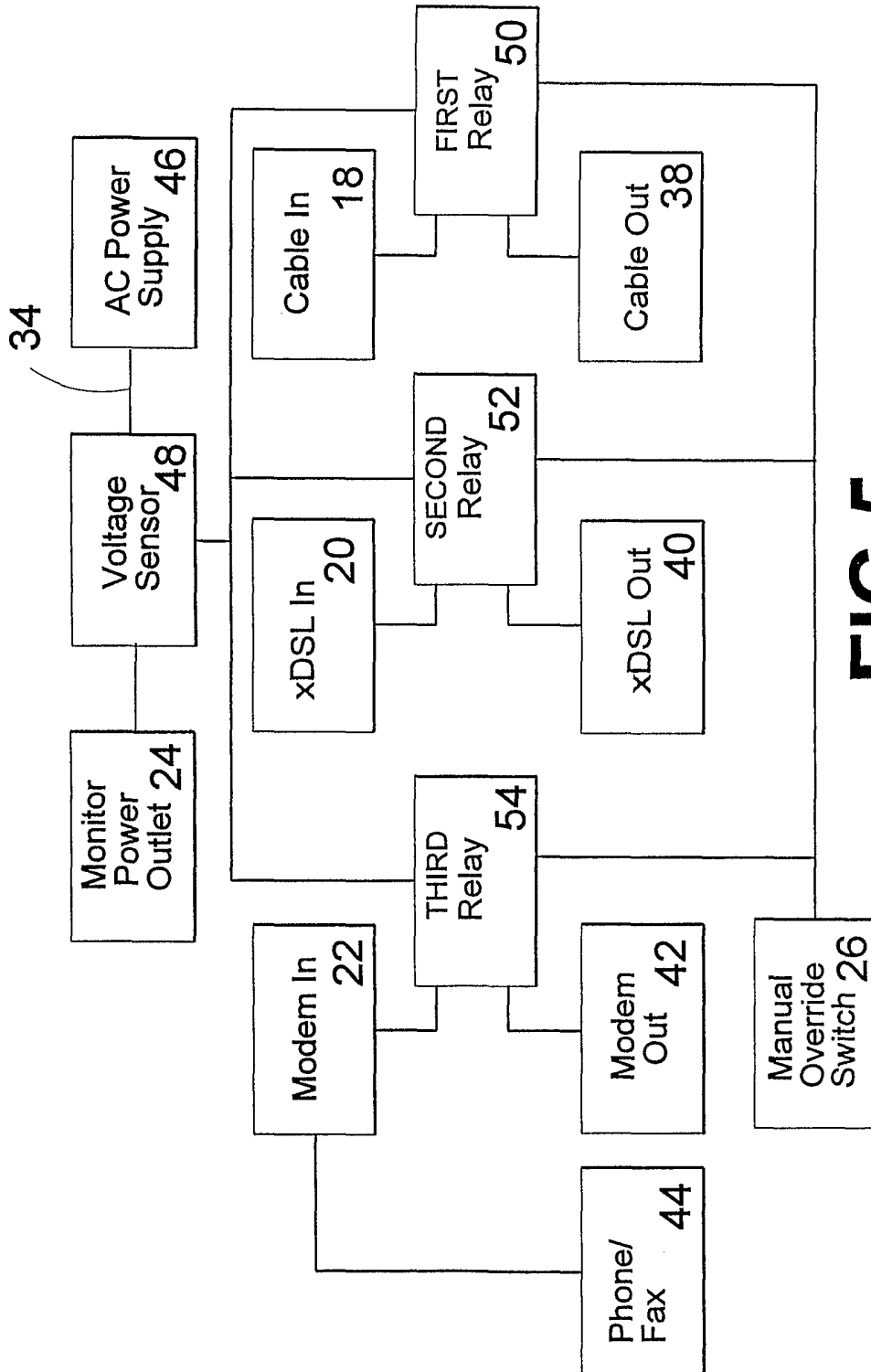


FIG 5

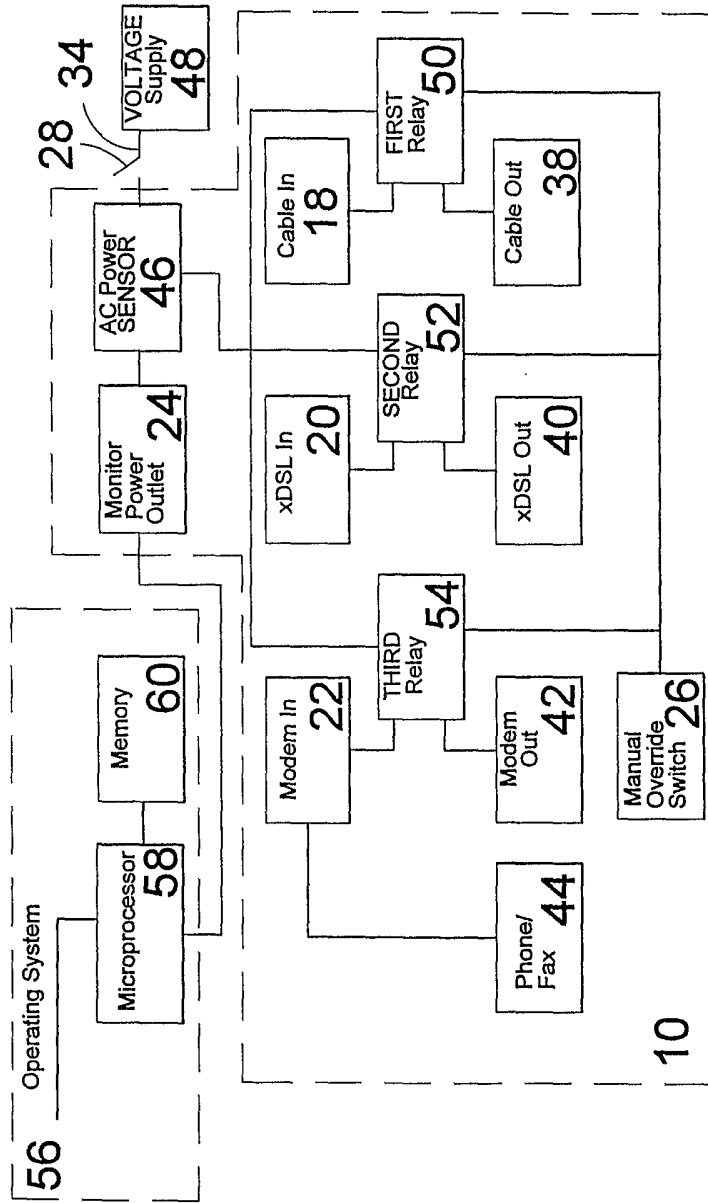


FIG 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/04857

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 1/32, 12/14, 13/14
 US CL : 713/201, 320

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)
 U.S. : 713/201, 320; 709/200

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 practicable, search terms used)
 EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,301,339 B1 (STAPLES et al) 9 October 2001 (9.10.2001), column 37 line 50 through column 38 line 40.	1-14
Y	US 6,304,823 B1 (SMIT et al) 16 October 2001 (16.10.2001), entire document.	1-14
Y	US 5,630,144 A (WOOG et al) 13 May 1997 (13.05.1997), entire document, especially column 5 lines 13-66.	1-14
Y	US 5,987,613 A (BUSCH et al) 16 November 1999 (16.11.1999), column 4 lines 1-64	8
Y	US 6,079,025 A (FUNG) 20 June 2000 (20.06.2000), column 5 line 62 through col. 6 line 13.	1-14
Y	US 5,959,662 A (SHAFFER et al) 28 September 1999 (28.09.1999), entire document	1-14
Y	US 4,993,062 A (DULA et al) 12 February 1991 (12.02.1991), column 5 lines 3-28.	11

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

29 April 2002 (29.04.2002)

Date of mailing of the international search report

31 MAY 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
 Box PCT
 Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Thomas Lee

Telephone No. (703) 305-9717