

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** SHIGERU YUZAWA and SATOSHI KARUBE

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Appeal No. 1999-0260  
Application No. 08/571,064

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ON BRIEF

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Before FLEMING, GROSS, and BLANKENSHIP, **Administrative Patent Judges**.

FLEMING, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is a decision on appeal from the final rejection of claims 1-18, all of the claims pending in the present application.

The invention relates generally to an electrical overload protection mechanism for a computer which employs PC cards as potential peripheral devices (specification, page 28, lines 14-21). In particular, the present invention protects the computer and the PC cards from damage induced by the PC card peripheral

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devices which have developed short circuits or otherwise consume unexpected large amounts of power.

Appellants' primary embodiment (figure 1) provides a PC card (60) connected to two separate voltages ( $V_{cc}$  and  $V_{pp}$ ) through two power lines (35 and 36) and PC card slot (50). These power lines are each separately monitored by resistors (41 and 42) and differential amplifiers (43 and 44). The outputs of the amplifiers are supplied to a disjunctive circuit (OR-gate 39) which outputs a logical sum of the two inputs as an over current signal (OCS) to ON/OFF switch controllers (37 and 38). Each controller operates upon a separate switch (31 and 32) so that power to both power lines is terminated upon detection of an over-current condition in either resistor (41 or 42).

In addition, the output of the disjunctive circuit is forwarded to a register (23) and a driver (25). In response to a high OCS signal that is accompanied by the over-current detection, the driver is placed into a high impedance state and the transmission of bus signals to the PC card is halted.

Independent claim 1 is reproduced as follows:

1. A power enabling mechanism, which controls supply of operating power from an information processing apparatus to a detachable input/output device, said mechanism comprising:

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a first power line for supplying power at a first voltage level to said input/output device;

a second power line for supplying power at a second voltage level to said input/output device;

a first detector for detecting an over-current in said first power line;

a second detector for detecting an over-current in said second power line;

disjunctive circuit means for logically adding the outputs of said first and second detectors;

a first switch that is employed for connection and disconnection of said first power line in response to an output of said disjunctive circuit means; and

a second switch that is employed for connection and disconnection of said second power line in response to an output of said disjunctive circuit means.

The Examiner relies on the following references:

Price	5,532,898	Jul. 2, 1996
		(filed Apr. 1, 1994)

Appellants' admitted prior art, including pages 1-7 of the specification and figure 11 of Appellants' drawings

Claims 1-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Appellants' admitted prior art in view of Price.

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Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Brief,<sup>1</sup> Reply Brief,<sup>2</sup> Final Rejection<sup>3</sup> and the Examiner's Answer<sup>4</sup> for the respective details thereof.

**OPINION**

We will not sustain the rejection of claims 1-9 and 13-18 under 35 U.S.C. § 103.

The Examiner has failed to set forth a **prima facie** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. **In re Sernaker**, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). The Federal Circuit states that

"[t]he mere fact that the prior art may be modified in the manner suggested by Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification."

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<sup>1</sup> The Brief was received April 6, 1998

<sup>2</sup> The Reply Brief was received July 22, 1998

<sup>3</sup> The Final Rejection was mailed October 15, 1997

<sup>4</sup> The Examiner's Answer was mailed May 19, 1998

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*In re Fritch*, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n. 14 (Fed. Cir. 1992), *citing In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). However, "[o]bviousness may not be established using hindsight or in view of the teachings or suggestions of the invention." *Para-Ordnance Mfg. v. SGS Importers Int'l*, 73 F.3d at 1087, 37 USPQ2d at 1239, *citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.* 721 F.2d at 1553, 220 USPQ at 312-13.

As regards claims 1-5, 13, 14 and 18, Appellants argue<sup>5</sup> that the prior art relied upon by the Examiner does not disclose or suggest a disjunctive circuit means as recited in these claims. In particular, Appellants assert that the PCMCIA Standard<sup>6</sup> does not show such circuit, nor is there any description, need or function recited in the patent to Price which teaches, discloses, or even remotely suggests the need for an OR-gate or its equivalent.

In addition, Appellants argue<sup>7</sup> that Price is not directed to the protection of a mobile computing device, but to a modem card.

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<sup>5</sup> Brief, page 7

<sup>6</sup> Appellants' drawings, figure 11

<sup>7</sup> Brief, page 8

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Appellants assert that the protection mechanisms for these two devices are different as the problems encountered are different. Furthermore, Appellants argue<sup>8</sup> that Price does not appreciate the problems associated with the protection of mobile computer devices against defects which exist in PC card devices. Price's sole motivation, as asserted by Appellants, is the protection of the PC card against the presence of power surges on what are otherwise signal level lines.

Furthermore, Appellants point out<sup>9</sup> that Price is concerned with a surge of power only on a single line and not on two lines as in Appellants' claimed invention. Appellants also argue<sup>10</sup> that neither the PCMCIA Standard nor Price teaches that the two power supply lines to a PC card should be controlled in a coordinated fashion.

In regard to claims 6-9 and 15-17, Appellants point out<sup>11</sup> that these claims require "means for turning off said driver." Claims 6-9 recite "means for turning off said driver in response to said detection result obtained from said detection means,"

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<sup>8</sup> Brief, page 9

<sup>9</sup> Brief, page 9

<sup>10</sup> Brief, pages 10-11

<sup>11</sup> Brief, page 12

while claims 15-17 recite "means for turning off said driver in response to output from said holding means." Appellants assert that "what applicants are claiming is the turning off of a driver which supplies a signal line to the PC Card," and not turning off either of the power lines which supply the PC card. Appellants then argue<sup>12</sup> that the problem solved by turning off the driver is not shown in prior art figure 11 or Price, and one of ordinary skill in the art would not have been led to appreciate any desire for the disconnection of the driver which transmits signals to the PC card in response to the detection of an over-current condition in separate power lines.

In regard to claims 10-12, Appellants first reiterate<sup>13</sup> the arguments presented for claims 6-9 and 15-17. Appellants then note that each of these claims recites "halting transmission of a signal to said input/output device in response to said power supply abnormality that is detected." Appellants assert<sup>14</sup> that neither the prior art circuit of figure 11 nor Price teaches that as a result of an over-current condition any signal transmission on another line should be halted.

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<sup>12</sup> Brief, page 13

<sup>13</sup> Brief, pages 14-15

<sup>14</sup> Brief, page 15

At pages 4-5 of the Reply Brief, Appellants argue that one of ordinary skill in the art would in fact be precluded from replacing the fusible elements 31 and 32 with other mechanisms, and therefore the combination of teachings as alleged by the Examiner is not proper. This argument is based upon the premise that figure 11 describes the PCMCIA Standard, and as such describes what must be done in order to comply with the Standard. Thus, one skilled in the art would not have a choice, and as a matter of necessity would be required to include the fusible elements shown in figure 11. As stated by Appellants "the teachings of the standard are essentially 'thou shalt not replace what we have shown with other things or, otherwise, thou shalt be in breach of this standard'."

The Examiner asserts<sup>15</sup> that Appellants' figure 11 discloses a power enabling mechanism with first and second power lines and dual switches. The Examiner admits that Appellants do not disclose as prior art a first and second detector, a disjunctive circuit, and control of the switches in response to the disjunctive circuit. The Examiner then points to Price's disclosing a current detector which is used to control a switch and notify the computer.

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<sup>15</sup> Final rejection, pages 2-3

The Examiner then makes four findings.<sup>16</sup> The first is that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have used a current detector because this would avoid damaging the circuitry. Second, the Examiner finds that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have used disjunctive circuitry in the prior art, because the prior art uses two power lines and thus both would need to be monitored for over-current.

Third, the Examiner finds that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have notified the processor of the over-current because this would keep the processor informed of problems which would keep the user informed. Finally, the Examiner finds that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have used the same protection circuit of the Price invention on operating power because this would protect the device/circuit card from damage due to over-current situations.

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<sup>16</sup> Final rejection, page 3

In regard to claim 4 the Examiner adds<sup>17</sup> "The Applicant also detects that the fuses are inherently first and second detection means which are set ON by blowing them."

In regard to claims 6 and 7 the Examiner points out<sup>18</sup> that Appellants' figure 11 discloses an interface for data exchange, a register, a driver, and a power enabler. The Examiner admits that Appellants' prior art admission does not disclose a detection means and means for turning the driver off, or storing the result of the detection means.

The Examiner then points<sup>19</sup> to Price for teaching a detection means and states Price "inherently discloses turning off the driver" and "inherently discloses storing the results . . . since the connection isn't reestablished until the current condition is removed." The Examiner then finds<sup>20</sup> that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have turned the driver off because this would conserve power, since no data would be transmitted when an over-current occurs.

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<sup>17</sup> Final, pages 3-4, section c

<sup>18</sup> Final, page 4, section e

<sup>19</sup> Final, page 4, section e

<sup>20</sup> Final, pages 4-5, section e

As regards claims 10-12, the Examiner finds<sup>21</sup> that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have used the same protection circuit of Price on operating power because this would protect the device/circuit card from damage due to over-current conditions.

As regards claims 13-16, the Examiner admits<sup>22</sup> that Appellants' admitted prior art does not disclose means for turning the driver off, or storing the result of the detection means. The Examiner asserts that Price inherently discloses turning off the driver<sup>23</sup> and storing the results<sup>24</sup> since the connection is not established until the current condition is removed. The Examiner then finds<sup>25</sup> that it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to have turned the driver off because this would conserve power since no data would be transmitted when an over-current occurs.

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<sup>21</sup> Final, page 5, section h

<sup>22</sup> Final, page 6, section i

<sup>23</sup> Column 5, lines 37-56

<sup>24</sup> Column 5, lines 54-56

<sup>25</sup> Final, page 7, section i

In response to Appellants' arguments that there is no motivation for the use of a disjunctive circuit or its equivalent, the Examiner asserts<sup>26</sup> that when Price is combined with Appellants' admitted prior art "it can be seen that the current sensing circuitry would monitor both power inputs and thus would act like the disjunctive circuitry of the present invention."

In response to Appellants' argument that Price does not teach that a different signal line should be disconnected from the PC card when an over-current condition is met, the Examiner states,<sup>27</sup> "The examiner doesn't feel that the claims ever teach that the lines that are connected are different than the ones that are associated with the over-current."

Turning first to Appellants' claims 1, 2, 13, 14 and 18, we find that each of these claims provides<sup>28</sup>

"Disjunctive circuit means for logically adding the outputs of both said first and second detectors"

We agree with Appellants that neither their admitted prior art nor Price teaches this limitation. We disagree with the

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<sup>26</sup> Answer, page 4, section 11

<sup>27</sup> Answer, page 4, section 11, subsection 1

<sup>28</sup> Subparagraph 5

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Examiner's finding that it would have been obvious to have used disjunctive circuitry in the prior art because the prior art uses two power lines and thus both would need to be monitored for over-current.

We find that monitoring two lines does not require or even suggest the need for disjunctive circuits. The application of Price's teaching to monitor a PC modem card line for excessive current and triggering a circuit breaking relay upon detection of an over-current to the two power lines of Appellants' figure 11 would suggest separate sensor and relay operation for each power line.

Thus, the Examiner has not established why one having ordinary skill in the art would have been led to the claimed invention, which explicitly requires a disjunctive circuit, by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions.

In addition, we disagree with the Examiner's assertion that when Price is combined with Appellants' admitted prior art, the current sensing circuitry would monitor both power inputs and thus would act like the disjunctive circuitry of the present invention. Monitoring both power inputs does not make a

disjunctive circuit for logically adding the outputs of both first and second detectors as claimed.

Accordingly, we reverse the Examiner's rejection of claims 1, 2, 13, 14 and 18. We also reverse the rejection of claim 3, as claim 3 is dependant upon claim 1.

Turning next to Appellants' claims 4 and 5 we find that claim 4 requires<sup>29</sup> first and second fuses that blow when an over-current occurs in their respective power lines, as well as<sup>30</sup> first and second detection means having an output set to the ON state by the blowing of its respective fuse. Considering these claim limitations, we find that the combination of Appellants' figure 11 and Price as set forth by the Examiner teach away from using fuses with the detectors.

Price teaches<sup>31</sup> that fuses are not practical where electrical components are miniaturized and disposed within sealed enclosures. Furthermore, Price teaches that the reaction time of fuses are relatively slow and often unpredictable, and require using higher rated components.

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<sup>29</sup> Subparagraphs 3 and 4

<sup>30</sup> Subparagraphs 5-6

<sup>31</sup> Column 4, lines 28-42

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As a substitute for fused circuits, Price teaches<sup>32</sup> using the current sensing circuitry (46) with a processor (48) controlled relay (56) which is resettable to protect from line over-current. Applying this teaching to the PCMCIA Standard (Appellants' figure 11) mandates substitution of fuses 33 and 34 with the protective relay circuitry of Price. Therefore, neither the dual fuses nor the dual detectors are obviated by the prior art.

Accordingly, we reverse the Examiner's rejection of claim 4. We also reverse the rejection of claim 5, as claim 5 is dependant upon claim 4.

We then turn to claims 6, 7, 15 and 16. Claims 6 and 7, at the last subparagraph recite "means for turning off said driver in response to said detection result obtained from said detection means," while claims 15 and 16, at their last subparagraphs, recite "means for turning off said driver in response to output from said holding means." We agree with Appellants that the problem solved by turning off the driver is not shown in prior art figure 11 or Price, and one of ordinary skill in the art would not have been led to appreciate any desire for the disconnection of the driver which transmits signals to the PC

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<sup>32</sup> Figure 3 and column 11, lines 19-30

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card in response to the detection of an over-current condition in separate power lines. The Examiner has failed to establish why one having ordinary skill in the art would have been led to turn off the driver in response to the over-current detector by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions.

Accordingly, we reverse the Examiner's rejection of claim 6, 7, 15 and 16. We also reverse the rejection of claims 8, 9, and 17, as claims 8 and 9 are dependent upon claim 7, and claim 17 is dependent upon claim 16.

We now turn to claims 10-12. At the outset, we note that Appellants have indicated on page 7, section VII, of the brief that claims 10-12 form a single group, and the brief does not include a statement that the claims of this group do not stand or fall together. We further note that Appellants have argued all the claims in this group together<sup>33</sup> and have not explained why the claims of this group are believed to be separately patentable. 37 CFR § 1.192 (c) (7) (July 1, 1998) *as amended* at 62 Fed. Reg. 53196 (October 10, 1997), which was controlling at the time of Appellants' filing the brief, states:

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<sup>33</sup> Brief, pages 14 and 15

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For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

We will, therefore, consider this group of Appellants' claims as standing or falling together, and we will treat claim 10 as a representative claim of that group.

We first address the claimed invention. We find that the preamble of claim 10 is directed to a power enabling method for controlling the supply of operating power from an information processing apparatus to a detachable input/output device. Appellants' admitted prior art figure 11 shows control of operating power  $V_{cc}$  and  $V_{pp}$  from a computer to a detachable PC card (60), all the limitations of the preamble.

The first subparagraph of this claim recites "detecting whether or not there exists a power supply abnormality." Price teaches<sup>34</sup> the implementation of current sensing circuitry (46) to detect excessive line current supplied to line interface

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<sup>34</sup> *Inter alia*, figure 3

circuitry of a PCMCIA modem card (14). Appellants' Figure 11 shows fuses 33 and 34 in an over-current detector (40) which detect power supply abnormalities caused by PC card (60).

The final subparagraph of claim 10 recites "halting transmission of a signal to said input/output device in response to said power supply abnormality that is detected." Price teaches<sup>35</sup> the use of processor 48 to control relay circuit 56 to halt transmission along the incoming TIP line by opening the relay. While Price does not halt the transmission of a signal, we find that in implementing the sensor controlled relay in place of the fuses of figure 11, upon a short circuit in the PC card (60) during its operation, the relays will disconnect the power supply lines (35 and 36) and thereby stop the signal transmission from the PC card.

We find Appellants' recitation of the prior art<sup>36</sup> to include the problem that there are PC cards that have large power consumption that exceeds the power supply capabilities of the PC card power circuits that are provided in the PCS, and there have been some instances where such PC cards have been loaded into the slots of PCS. Appellants continue "In another case, the power

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<sup>35</sup> Column 8, line 56 through column 9, line 14

<sup>36</sup> Specification, page 4, line 29, through page 5, line 10

sources are short-circuited to GND (ground) because of the abnormalities of internal circuits of the PC cards. . . . When the power consumption of a loaded PC card is unexpectedly great, the PC card power supply circuit in the PC and the power circuit of the PC itself may be destroyed, and the data contents of the memory for the PC will be lost."

While the prior art of Appellants' figure 11 provides fuses (33) and (34) to protect the system from over-currents, Price, which is directed to protecting a PC modem card, teaches<sup>37</sup> that the reaction time of fuses is relatively slow and often unpredictable and requires using higher rated components. Although Price protects a PCMCIA card modem while Appellants protect a computer, this difference is *de minimus* in view of the proximity of the art and the specific teaching by Price.

In addition, Price's invention uses the current sensing circuitry (46) with a processor (48) controlled relay (56) which is resettable to protect from line over-current. Applying this teaching to the PCMCIA Standard (Appellants' figure 11) teaches the substitution of fuses 33 and 34 with the protective relay circuitry of Price.

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<sup>37</sup> Column 4, lines 28-42

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Appellants' argument that PCMCIA Standards are inviolate, and one skilled in the art would not modify them, is not cogent. Standards are regularly updated and replaced by new standards which typically include improvements and upgrades over the prior standards. In fact, Appellants' own claimed invention is directed to the modification of a self-admitted Standard.

Therefore, we find that it would have been obvious to one of ordinary skill in the art to combine the teachings of Price with the prior art disclosed by Appellants and provide PC card signal transmission stoppage with power supply stoppage when power supply abnormalities are detected.

Therefore, the decision of the Examiner rejecting claims 10-12 under 35 U.S.C. § 103 is affirmed.

Accordingly, the decision of the Examiner rejecting claims 1-9 and 13-18 under 35 U.S.C. § 103 is reversed, and the decision of the examiner rejecting claims 10-12 under 35 U.S.C. § 103 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

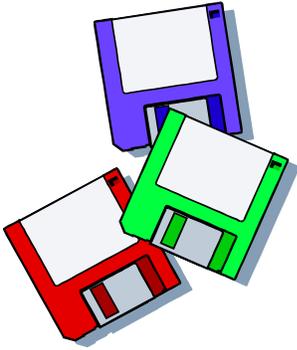
AFFIRMED-IN-PART

MICHAEL R. FLEMING	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
ANITA PELLMAN GROSS	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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HOWARD B. BLANKENSHIP	)	
Administrative Patent Judge	)	

MRF/LBG

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LAWRENCE D. CUTTER  
INTELLECTUAL PROPERTY LAW  
2455 SOUTH ROAD, 1386  
POUGHKEEPSIE, NY 12601



## ***Lesley***

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APJ FLEMING

APJ GROSS

APJ BLANKENSHIP

DECISION: AFFIRMED-IN-PART

Prepared: September 15, 2003

Draft            Final

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PALM / ACTS 2 / BOOK

DISK (FOIA) / REPORT