IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Ewing et al.

U.S. Patent No.: 7,043,543 B2

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Examiner: Jeffrey Pwu

Real Party in Interest: American Power Conversion Corporation

Title: VERTICAL-MOUNT ELECTRICAL POWER DISTRIBUTION PLUGSTRIP

Art Unit: 3992

Examiner: Christopher E. Lee

Reexamination No.: 95/001,485

Confirmation No.: 8636

Mail Stop "*Inter Partes* Reexam"
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF DR. MARK HORENSTEIN

Dear Sir:

I, Mark Horenstein, hereby declare as follows:

1. I am a Professor of Electrical Engineering at Boston University. A copy of my curriculum vitae and list of publications is attached as Exhibit A.

Background

2. I have a Bachelor's of Science from the Massachusetts of Technology, a Master's of Science from the University of California at Berkley, and a Ph.D. from the Massachusetts Institute of Technology, all in Electrical Engineering.

3. I am currently a tenured professor at Boston University, in the Department of Electrical and Computer Engineering. I have been on the faculty of Boston University since 1979, first as an Assistant Professor, then as an Associate Professor, and now as a full Professor.

I also served as Associate Department Chair for nine years, and as Associate Dean for Graduate Programs and Research for nine years after that. I have an active program in teaching and research in areas relevant to power switching technology. I am a Registered Professional Engineer (Electrical) in the Commonwealth of Massachusetts.

4. Prior to my employment at Boston University, I worked for Spire Corporation in the areas of high voltage systems and pulsed power.

5. As part of my work at Boston University, I have taught various courses for electrical engineering students over the years. These courses include, among others, introduction to engineering, electric circuit theory, introduction to operating systems, introduction to electronics, analog electronics, electromagnetic energy transmission, and modern active circuit design. I was also responsible for developing and teaching our first Senior Capstone design course, which I taught for 10 years over the period 1990 to 2000. The course, by my design, continues to be based on a "customer" model in which the students design a product or system for a real-world customer.

6. A large part of my graduate training involved the study and design of AC power distribution systems. I also have considerable experience in electrical wiring, having served as an apprentice to a Master Electrician during my college years. I have taught both undergraduate and graduate students. Since 1979 and until the present day, literally thousands of students under my tutelage have graduated from Boston University with Bachelor's and Master's degrees in electrical engineering. These students fulfilled their degree requirements in part by taking courses taught by me.

7. As part of work as a professor at Boston University, I have engaged in outside research projects and interests. My research interests include, among others, experimental electromagnetics, electrostatics in industry, electrostatic safety, and power electronic applications. At least two current projects specifically involve the remote control of relays for power distribution via a serial-network communication system.

8. I have authored two books that are used in teaching engineering students: *Design Concepts for Engineers*, 4th Ed., Upper Saddle River, NJ: Prentice Hall, 2009; and *Microelectronic Circuits and Devices*, 2nd Ed., Upper Saddle River, NJ: Prentice Hall, 1996. I have also authored chapters on electrostatics in two other books, and published numerous journal articles in the field of electrical engineering. In addition, I am named as an inventor on five

different patents, all of which are related in various ways to electrical engineering and electrostatics. A full list of my publications and patents is attached as part of Exhibit A.

Work for APC

9. I have been engaged by American Power Conversion Corporation ("APC"), to provide advice on technical issues relating to litigation between Server Technology, Inc. ("STI") and APC, and also this reexamination. I may testify in the litigation between STI and APC. I am being compensated for my time spent in connection with all of these matters.

10. I have reviewed U.S. Patent No. 7,043,543 B2 (the "'543 patent"), which I understand is being reexamined by the U.S. Patent Office ("PTO") in the present *inter partes* reexamination. I have also reviewed a number of the prior art references that I understand are being asserted by APC against the '543 patent in this reexamination, including: (1) The MasterSwitch™ VM ("MSVM") Literature, which includes the MasterSwitch™ VM User Guide (the "MSVM User Guide," Exhibit B to the APC's Detailed Request for *Inter Partes* Reexamination ("Request")), the MasterSwitch™ VM Power Distribution Unit Installation and Quick Start Manual (the "MSVM Quick Start Manual," Exhibit C to the Request) and the PowerNet® SNMP Management Information Base (MIB) v3.1.0 Reference Guide (the "MSVM PowerNet Guide," Exhibit D to the Request); (2) the BayTech Literature, which includes downloads of *www.BayTech.net* from web.archive.org (the "BayTech Website," Exhibit E to the Request, and attached as separate documents as Exhibits E1-E3 to APC's Third Party Comments), an Owner's Manual for BayTech Remote Power Control Unit (the "BayTech Manual," Exhibit F to the Request), and M2 Communications Ltd., "BayTech," M2 Presswire, Bay St. Louis, Mississippi, U.S.A., November 19, 1999 (the "BayTech Article," Exhibit G to the Request); (3) McNally et al., U.S. patent 6,741,442 ("McNally", Exhibit I to the Request); (4) the Power Administrator™ 800 User Guide ("PA-800," Exhibit H to the Request); (5) Lee, U.S. Patent No. 5,650,771 ("Lee," Exhibit J to the Request); and (6) Liu, U.S. Patent No. 6,476,729 ("Liu," Exhibit K to the Request).

11. In addition, I have reviewed portions of the first Office Action in this reexamination, STI's Office Action Response ("OXR"), and the declarations STI submitted with its Response by Carrel W. Ewing ("Ewing"), Chris Hardin ("Hardin"), KC Mares ("Mares"), and B. Michael Aucoin ("Aucoin").

12. I have been told by counsel for APC that the relevant time frame for my comments is the years leading up to the priority date that the Examiner has determined is appropriate for the reexamined claims of the '543 patent, which I have been informed is December 8, 2000. I have confined my observations herein to that time frame.

Level of Ordinary Skill in the Art

13. It is my understanding that STI has taken the position in this reexamination that a person of ordinary skill in the art in the relevant time frame would have had bachelor's degree in electrical engineering with one to three years of experience in designing and making power distribution systems for use in racks. (OXR at 35). In other words, STI's position is that the person of ordinary skill in the art was an electrical engineer who had recently entered the workforce. I have reservations regarding STI's description of the level of ordinary skill in the art, and also the way in which STI and its declarants apply that level (which I will discuss further below). That said, I believe that my position as a professor teaching electrical engineering students has given me an excellent understanding of what a person of ordinary skill in the art, as defined by STI, on December 8, 2000 would have known.

14. In my positions at Boston University, I have been actively involved in determining what engineering students should be taught, in advising these students, and in teaching their courses. A core element of our student advising, as well as the mode by which we train them, is a firm understanding of what electrical engineers entering the engineering profession after graduation must know to succeed in the workplace. I also have regular conversations with alumni and the directors of our Career Development Office to amplify my understanding of these issues.

15. In my role as a professor, I have interacted with engineering students and have had many opportunities to observe what engineering students actually did and do know in preparation for assuming engineering jobs.

16. As a specific example of both curriculum choices made to prepare students for jobs as electrical engineers and my interactions with these students, in 1990 we instituted in the Department of Electrical and Computer Engineering at Boston University a required capstone senior design project. The requirement for engineers to complete a senior design project has been retained as a graduation requirement continuously since then. Moreover, from the start I

designed the course based on a "customer" model, whereby the course instructors (me over the first decade of the course offering) solicit real world customers in need of a product or system to be designed. This model for the course is still in place as of today, and it also has been adopted by two other departments in the College of Engineering.

17. Products of the type described in the '543 patent are commensurate in complexity with some of the senior design projects of average difficulty performed by engineering students. Projects of this type would have been straight-forward and routine in the time frame of December 8, 2000. In fact, the very first project assigned to the class when the course began in 1990 was a system for the remote monitoring of current consumption at duplex outlets, and the reporting back of the data to a computer via an RS-232 network. The latter, one of the state-of-the-art digital communication technologies in 1990, would be considered a precursor to the Ethernet type of communication that is the backbone of the current Internet

18. Prior to December 8, 2000, an engineer having recently entered the work force would definitely have had the skills to design a product having outlets, switching components (such as relays), sensor elements (such as current sensors), input/output devices (such as electronic or numeric displays), control components (such as one or more processors) and communications components (such as a network interface). I understand that these elements are disclosed in the '543 patent. Using the communication components for remotely receiving information regarding operation of the product, or to supply commands to control the product, was also within the skills of engineers entering the work force. This latter fact is evident given the project that I assigned to EE students as early as 1990.

19. Furthermore, an engineer having recently entered the work force would have recognized that operation of the components that make up the product would not be influenced by the form-factor of the housing. Specifically, an engineer entering the work force would have expected the components to perform the same functions whether packaged in a vertical housing or a horizontal housing, or in a one-piece housing or a multi-piece housing. This fact regarding the horizontal-vertical equivalence of form factor – especially for a system for which gravity is irrelevant – is evident by the widespread availability, for example, of personal "desktop computers" that could be placed on a desktop in a horizontal position, or, with equal ease, placed on the floor in a vertical position.

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