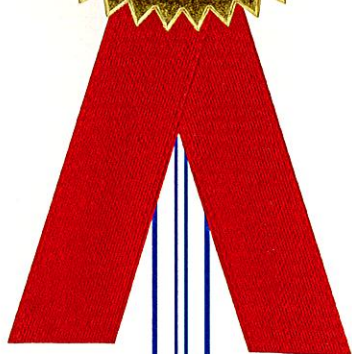


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Patent and Trademark Office**

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

David J. Kyfos

Director of the United States Patent and Trademark Office



US008084715B2

**(12) United States Patent
Hall****(10) Patent No.: US 8,084,715 B2**
(45) Date of Patent: Dec. 27, 2011**(54) METHOD AND MEANS FOR HEATING AND
CONTROLLING THE TEMPERATURES IN A
SAUNA****(75) Inventor: Keith A. Hall, Bettendorf, IA (US)****(73) Assignee: Quad Cities Automatic Pools, Inc.,
Bettendorf, IA (US)****(*) Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 366 days.**(21) Appl. No.: 12/296,502****(22) PCT Filed: Apr. 10, 2006****(86) PCT No.: PCT/US2006/013050**

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H02J 3/14 (2006.01)**(52) U.S. Cl. 219/200; 219/494; 219/483; 219/486;
219/508; 219/509; 307/38; 307/39****(58) Field of Classification Search 219/200,
219/494, 483, 486, 508, 509; 307/38, 39**
See application file for complete search history.**(56) References Cited****U.S. PATENT DOCUMENTS**4,908,498 A * 3/1990 Kivela 219/494
5,504,306 A * 4/1996 Russell et al. 219/497
6,965,097 B2 11/2005 Lee
2004/0129693 A1 * 7/2004 Hook 219/483
* cited by examiner*Primary Examiner* — Shawntina Fuqua**(57) ABSTRACT**

A control panel used in combination with a power unit to control the operation of a sauna. The control panel is equipped with a microprocessor that has software and proper circuitry to allow a user to use buttons to input information into the control panel regarding the time, temperature, and day on which heating within the sauna is to occur. Additionally, the power unit has a microprocessor with a pulse width modulation output that causes individual heating elements to continuously produce varying intensities of heat in order to maintain a consistent desired temperature, and/or intermittently radiate heat creating a wave of heat to be emitted by each individual heating element.

14 Claims, 8 Drawing Sheets