

I, Richard A. Flasck, declare as follows:

1. I have been retained by Sony Corporation in connection with its petition for *inter partes* review of U.S. Patent No. 6,934,148 (“148 patent”).
2. I received a Bachelor of Science degree in Physics from the University of Michigan (Ann Arbor, MI) in 1970. I received a Master of Science degree in Physics from Oakland University (Rochester, MI) in 1976.
3. During the course of my professional career, my projects have involved power components and assemblies in enclosures that required cooling, either natural convective cooling or forced air convective cooling. Often heat sinks were also necessary.
4. I am an inventor on a number of issued patents, and I have worked on numerous projects involving the cooling of electronics, including through forced air cooling. On one end of the spectrum is my micro thermal print head (US 4,170,728), which required microscopic thermal management at the tiny print head and cooling of the electronics driving the print head. On the other end of the spectrum were two programs, one to develop a small footprint 2000 watt thermal printer and the other was a high power LED theatrical spotlight (US 9,328,898), both of which required forced air cooling.
5. Other projects that involved natural convection or forced air convection (using tubeaxial fans or centrifugal blowers) include:

- a.) High fidelity class A single ended audio power amplifier using power mosfets;
 - b.) Large format HDTV units;
 - c.) A therapeutic medical device for Seasonal Affective Disorder (SAD);
 - d.) Small pocket projectors using high power LEDs;
 - e.) A variety of LCD flat panel backlight units (BLUs) using either CCFLs or high power LEDs;
 - f.) Various power supplies, voltage regulators and current regulators for numerous projects such as signal generators, frequency counters, stepper motor drivers, and railroad warning signals.
6. The thermal management of power dissipating devices and assemblies in enclosures has been part and parcel of most of my projects throughout my career.
7. Additional details about my employment history, fields of expertise, and publications are included in my curriculum vitae, attached as Ex. A.
8. I have reviewed the '148 patent as well as its prosecution history. I have also reviewed U.S. Patent No. 6,317,319 ("Lewis") and a certified translation of Japanese Published Patent Application No. 11-53061 ("Hanaguchi"). I have further reviewed U.S. Patent No. 6,914,779 ("Askeland") and U.S. Patent No. 4,860,163 ("Sarath").

The '148 Patent

9. The '148 patent describes a "chassis and housing having an integrated forced air cooling system that preserves the front panel and display appearance generally associated with a rack-mounted electronics chassis system." '148 patent, 1:6-11.

10. Figure 1 of the '148 patent is a front perspective view of a chassis 10 with a front panel and display module in place. '148 patent, 1:54-56.

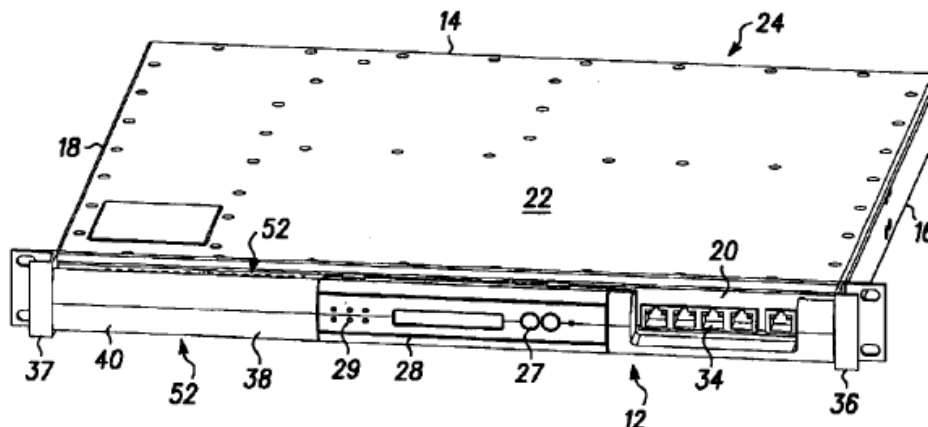
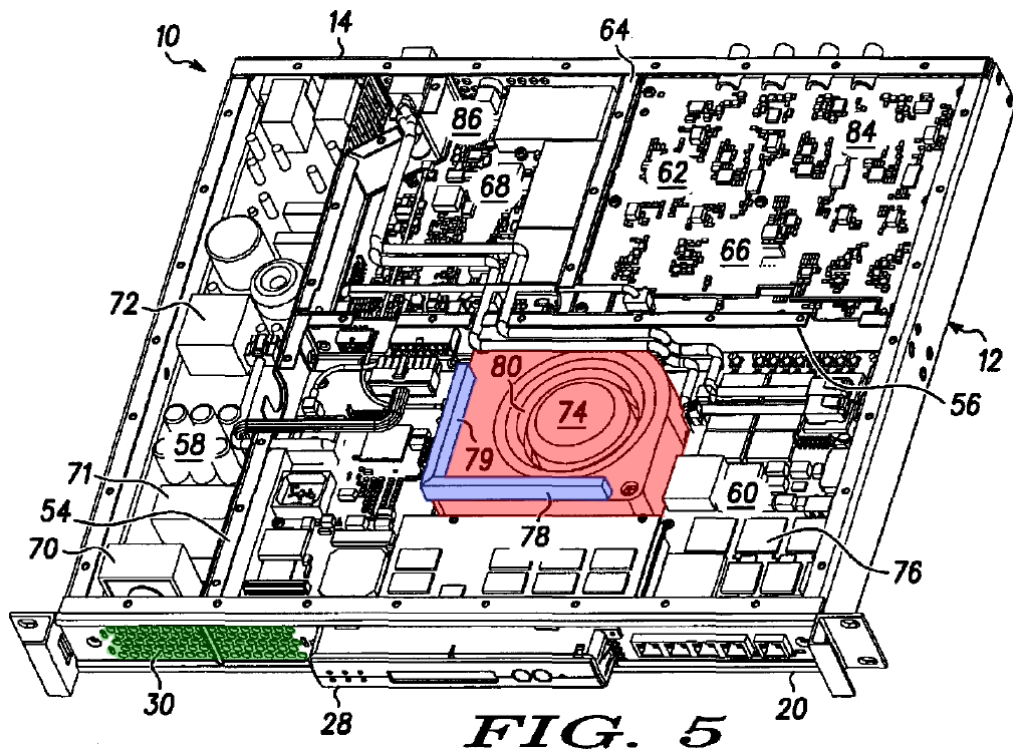


FIG. 1 10

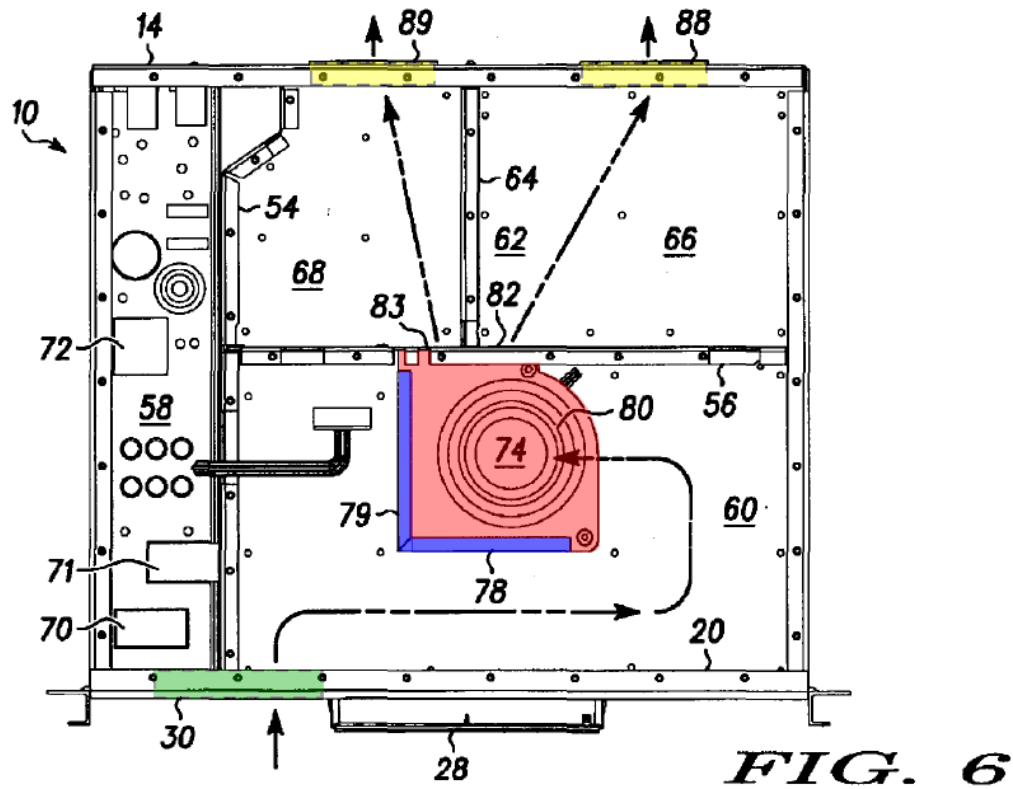
11. The chassis 10 includes a base 12 and a top 22, as well as rear 14, left 16, and right 18 side walls. Ex. 1001, 2:37-40. A front panel 20 is also shown.

12. Figure 5 of the '148 patent shows “a top perspective view of the chassis without the front and top panels, but with the display module, showing the internal components and centrifugal blower.” Ex. 1001, 1:65-67, 2:32-34. Figure 5 of the '148 patent is reproduced below with colored annotations.



13. The chassis includes an inlet vent 30 (green), a centrifugal blower 74 (red), and “baffles” 78 and 79 (blue). *See* Ex. 1001, 2:41, 3:26-27, 3:37-40. Centrifugal blower 74 includes an inlet port 80 on the top-facing side. Ex. 1001, 3:48-49.

14. Figure 6 of the '148 patent is a “top plain view of the chassis illustrating the internal air flow through the chassis.” Ex. 1001, 2:1-2. Figure 6 of the '148 patent is reproduced below with colored annotations.



15. Intake air flows into the air inlet vent 30 (green), and the path of air entering the chamber 60 is influenced by the blower 74. Ex. 1001, 3:17-19, 26-27. The blower 74 “pulls the intake air into its intake port 80” (red), and “move[s] hotter air outwardly through the blower exhaust ports 82, 83 and into the RF PWA chamber 62.” Ex. 1001, 3:48-51. The “final air egress from the RF PWA chamber 62 is through one or more exhaust vents 88, 89.” Ex. 1001, 3:60-61. The ’148 patent illustrates internal air flow with a dashed-line arrow path.

Background Information

16. The use of forced air cooling in an electronic components chassis, including the use of baffles to provide horizontally non-linear air flow paths from a housing inlet to a fan inlet, was well known before April 15, 2003.

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