

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

American National Manufacturing Inc.,
Petitioner

v.

Sleep Number Corporation
f/k/a Select Comfort Corporation,
Patent Owner

Case IPR: IPR2019-00497
Patent No. 8,769,747

Case IPR: IPR2019-00500
Patent No. 9,737,154

**DECLARATION OF DR. JOSHUA PHINNEY, PH.D., P.E.
IN SUPPORT OF PETITIONER'S REPLY TO
PATENT OWNER'S RESPONSE**

I, Joshua Phinney, declare as follows:

I. INTRODUCTION

1. I am a Principal Engineer in the Electrical Engineering and Computer Science practice at Exponent, an engineering and scientific consulting firm headquartered at 149 Commonwealth Drive, Menlo Park, California 94025.

2. I have been retained as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (the “Patent Office”). I am a salaried employee of Exponent. Exponent charges an hourly rate of \$550 plus expenses for my work performed in connection with this case. My compensation is not dependent on the opinions I render or the outcome of this proceeding.

3. I submitted expert declarations in support of American National Manufacturing’s (“ANM”) Petitions for *inter partes* review (IPR). My declaration in support of IPR2019-00497 regarding U.S. Patent No. 8,769,747 (“the ’747 patent”) is Ex. 1007. My declaration in support of IPR2019-00500 regarding U.S. Patent No. 9,737,154 (“the ’154 patent”) is Ex. 1009. I understand that IPRs were instituted in the above proceedings.

4. I understand that Patent Owner Sleep Number Corporation (“PO”) submitted a Patent Owner Response (POR) in IPR2018-00497 (Paper 46) and a POR in IPR2019-00500 (Paper 45), each addressing grounds for obviousness presented

by Petitioner in its Petitions. I submit this expert declaration in support of ANM's Reply to the POR for each proceeding.

5. Details regarding my qualifications, testifying experience, employment history, fields of expertise, and publications are provided in my prior declarations in these proceedings.

II. EXPLANATION OF OPINIONS

A. Construction of “desired pressure setpoint” and “pressure target”

6. I understand that PO's construction of “desired pressure setpoint” is “a value that represents a selected pressure.” In my opinion, this definition is inconsistent with how a person of ordinary skill would understand the term “desired pressure setpoint” in light of the '747 and '154 patent disclosures.

7. First, the specifications of both patents do not discuss “a value that represents” a selected pressure. What both patents do disclose is a desired pressure setpoint that is *commensurate* with a pressure reading. As one example, claim 1 of the '747 patent provides a “desired pressure setpoint” that is compared to the sensed pressure “within the pump housing” and “the actual chamber pressure” within the air chamber of the air bed. In both these instances, pressure transducer 46 is the only instrument described as determining, sensing, or reading pressure within the pump housing or air chamber. Given this disclosure, a person of ordinary skill would

understand that a “desired pressure setpoint” must also be a pressure, namely a pressure reading that is desired (or “selected,” using PO’s language).

8. Second, to the extent that controller (such as microprocessor 36) works with internal numerical quantities to practice the claimed invention, a person of ordinary skill would understand that a “desired pressure setpoint” in this case is still a pressure. I.e., the microprocessor works *in terms of pressure*, and uses pressure readings in calculations involving the “desired pressure setpoint.” I therefore see no reason, nor has PO articulated any, that “desired pressure setpoint” should be further construed to include “a value representing...”

9. I understand that PO’s construction of “pressure target” is “a value representing the desired level of inflation or deflation.” In my opinion, this definition is also inconsistent with how a person of ordinary skill would understand the term “pressure target” in light of the ’747 and ’154 patent disclosures.

10. The specifications of both patents never use the term “desired” to describe the “pressure target,” and do not disclose “a value representing the desired level of inflation or deflation.” Reiterating the discussion above, what both patents do disclose is a pressure target that is *commensurate* with a pressure reading. As one example, both patents describe a deflate “pressure target” and an inflate “pressure target” that correspond to the sensed manifold pressure that will yield the desired pressure setpoint (for IPR2019-00497, see Ex. 1001, 8:13-19; and for

IPR2019-00500, see Ex. 1001, 8:36-42). Given this disclosure, a person of ordinary skill would understand that a “pressure target” must also be a pressure, a pressure that corresponds to a sensor reading that is used to terminate inflation or deflation. I see no reason, nor has PO articulated any, that “pressure target” should be further construed to include “a value that represents...”

B. Opinions regarding the Motivation to Combine Prior-art References

11. As I explain in my previous declarations accompanying the Petitions, the secondary references I discussed (Mittal, Pillsbury, and Ebel) would have logically commended themselves to an inventor’s attention because of the discrepancy between sensed pressure and chamber pressure in the air-bed system of Gifft.

12. A person of ordinary skill would appreciate that during inflation or deflation in Gifft, a pressure reading on the pump side of an air hose is not equal to the bladder pressure at the opposite end of the hose. Gifft, for instance, distinguishes its approach from the prior art, which during inflation periodically closes off the air outlet “in order to provide to the processor board 20 a reading of the existing pressure in the bladder.” Ex. 1004, 1:63-2:3. From this statement, a person of ordinary skill would appreciate that for pressure measurements at the valve enclosure assembly (at the pump side of an air hose), closing the air outlet and stopping air flow allows the

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