

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BEAR DOWN BRANDS, LLC DBA VERILUX, INC.,

Petitioner,

v.

THE LITEBOOK COMPANY, LTD.,

Patent Owner.

Case IPR2023-00974

U.S. Patent No. 6,875,225

DECLARATION OF ERIC SIMON IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,875,225

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I. INTRODUCTION

1. I have been retained by Bear Down Brands, LLC dba Verilux, Inc., (“Verilux” or “Petitioner”) to provide my opinions on certain issues related to U.S. Patent No. 6,875,225 (the “’225 patent,” which I understand has been designated as Exhibit 1001) in connection with the above-captioned *inter partes* review (IPR) proceeding. In particular, I have been asked to provide my insights, analysis, and opinions regarding whether claims 1-6, 12, 15, 18-22, and 24-29 of the ’225 patent (“Challenged Claims”) are obvious over the prior art references identified below and as to whether persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have located these references.

2. I understand the ’225 patent is titled “Light Therapy Device,” identifies as its named inventors Larry V. Pederson, Clayton G. Coffey, Henry Hudema and is currently owned by The Litebook Company Ltd. I have considered the ’225 patent.

3. I understand that the file history of the ’225 patent has been designated as Exhibit 1002. I have considered this file history, and I will refer to it as the “’225 File History” or by its exhibit number.

4. I understand that the ’225 patent was filed as U.S. Patent Application 09/710,782 on November 13, 2000.

5. I have considered the prior art cited in my declaration, including:

1. **U.S. Patent No. 5, 167, 228** to Czeisler (“Czeisler”),
titled “Assessment and Modification of Endogenous
Circadian Phase and Amplitude,” filed on May 9, 1990,
and issued on December 1, 1992. I understand that a
copy of this publication has been designated as Exhibit
1004.
4. **U.S. Patent No. 5, 301, 090** to Aharon Z. Hed (“Hed”)
titled “Luminaire,” filed on March 16, 1992, and issued
on April 5, 1994. I understand that a copy of this patent
has been designated as Exhibit 1005.
5. **U.S. Patent No. 4,564,886** to Bernard Morcheles
 (“Morcheles”) titled “Portable Light Box,” filed on
October 7, 1982, and issued on January 14, 1986. I
understand that a copy of this patent has been designated
as Exhibit 1007.
6. **U.S. Patent No. 6,163,038** to Chin-Yuan Chen (“Chen”)
titled “White Light-Emitting Diode and Method of
Manufacturing the Same,” filed on May 14, 1998, and

issued on December 19, 2000. I understand that a copy of this patent has been designated as Exhibit 1008.

7. **U.S. Patent No. 6,267,779** to Harold M. Gerdes (“Gerdes”), titled “Method and Apparatus for Therapeutic Laser Treatment,” filed on March 29, 1999, and issued on July 31, 2001. I understand that a copy of this patent has been designated as Exhibit 1009.

6. I am currently being compensated by Verilux at my standard hourly consulting rate of \$375 for my time on this matter. My compensation is not dependent on the outcome of this proceeding.

7. As set forth herein, I have concluded that each of the Challenged Claims is rendered obvious by the prior art based on the references described below and as explained herein. In forming my opinions, I relied on the documents cited in this declaration and the documents identified in the attached **Appendix B**. These documents comprise patents, file histories, printed publications, and other related documents. As I discuss below, each document is of a type that experts in my field would have reasonably relied upon when forming their opinions. Further, experts in my field would have had access to each document either through the applicable

patent offices and/or well-known libraries, conferences, or publications in the field.

My opinions are also based upon my personal and professional experience.

II. QUALIFICATIONS

8. A detailed description of my professional qualifications, including a list of publications, patents, awards, and professional activities, is contained in my curriculum vitae, a copy of which is attached as **Appendix A**.

9. I received a Master of Engineering (M.Eng.) in Bioengineering and a Bachelor of Science (B.S.) in Materials Science and Engineering, both degrees from the University of Utah. My focus during my master's degree was on device design, mechanical engineering, and manufacturing processes; my focus during my bachelor's degree was on biomaterials and materials processing. In addition to various traditional engineering disciplines, my studies included physics, chemistry, ergonomics, optics, and applied biomaterials. I also had extensive coursework in the biological sciences, including neurobiology, cell biology, and medical-school level anatomy and physiology.

10. I have been designing biomedical products since 1981. I am the President, Design Engineer, and Founder of Dexterity Design, a product design, development, and engineering firm specializing in the design and development of biomedical and biotechnical products, including light therapy devices. The product scope of Dexterity Design is primarily biomedical and biotechnical devices and

instrumentation, both for therapeutics and diagnostics. I have also designed and developed consumer, industrial, and recreational products.

11. My experience with the development of light therapy devices includes the design, prototyping, testing, and manufacturing of devices for dermal and subdermal conditions. These conditions include various inflammatory skin disorders, dermal rejuvenation, and tissue pain and damage to near-surface structures such as tendons, ligaments, and muscles. The light sources of these products include LEDs and laser diodes. I also have experience with the design and implementation of lensing and reflecting elements, diffusing elements, and housings for these products. I am familiar with light therapy devices, including for mood and sleep applications, through studying aspects of their construction as well as the underlying biomedical mode-of-action of such devices. For example, before 2000, I had experience relating to experimental light panels prototyped for addressing mood disorders, and was involved in aspects of the design and manufacturing of laser devices for dermal applications. Additionally, I have experience analyzing and using two different commercially available light therapy products for SAD and for sleep-cycle reset after long distance travel.

12. I have experience designing and implementing a wide range of medical therapeutic and diagnostic devices including those used in orthopedics, dermatology,

ophthalmology, and cardiovascular. These encompass implantables, procedural tools, and extra-corporals, both durable and disposable. I also have experience in designing biotechnical instruments used in proteomics, genomics, and other areas of molecular analysis, as well as cell culture systems. I am often called upon to develop housings for these products and am very familiar with enclosure design and the materials, prototyping, and manufacturing thereof. Furthermore, I am regularly called upon to provide illumination, indication, and input functions to the products I am designing and therefore am experienced with the application of LEDs and other light sources, lenses, diffusers, key pads, displays, and associated componentry. I have a robust working knowledge of the use of microcontrollers and other circuitry for device control, and the programming challenges they encumber.

13. To date, I am a listed inventor on 22 U.S. patents, issued and pending. Several of these include housing designs and embodiments, and use some of the same principles as light therapy devices.

14. Please see my CV, attached hereto as **Appendix A**, for further information.

III. LEGAL UNDERSTANDING

15. In formulating my opinions, I have been informed of certain legal understandings relevant to my opinions. In formulating my opinions, I have relied on the legal understandings I have been provided with as set forth in this declaration.

16. I have been informed that in inter *partes* review proceedings, invalidity must be shown under a preponderance of the evidence standard.

A. My Understanding of Claim Construction

17. I have been informed that patent claims are construed from the viewpoint of a person having ordinary skill in the art of the patent at the time of the invention. I have been informed that patent claims generally should be interpreted consistent with their plain and ordinary meaning as understood by a person having ordinary skill in the art in the relevant time period (*i.e.*, at the time of the purported invention, or the so called “effective filing date” of the patent application), after reviewing the patent claim language, the specification, and the prosecution history (*i.e.*, the intrinsic record).

18. I have further been informed that a person having ordinary skill in the art must read the claim terms in the context of the claim itself, as well as in the context of the entire patent specification. I understand that in the specification and prosecution history, the patentee may specifically define a claim term in a way that differs from the plain and ordinary meaning. I understand that the prosecution history of the patent is a record of the proceedings before the U.S. Patent and Trademark Office, and may contain explicit representations or definitions made during prosecution that affect the scope of the patent claims. I understand that an

applicant may, during the course of prosecuting the patent application, limit the scope of the claims to overcome prior art or to overcome an examiner's rejection, by clearly and unambiguously arguing to overcome or distinguish a prior art reference, or clearly and unambiguously disavowing claim coverage.

19. In interpreting the meaning of the claim language, I understand that a person having ordinary skill in the art may also consider "extrinsic" evidence, including expert testimony, inventor testimony, dictionaries, technical treatises, other patents, and scholarly publications. I understand this evidence is considered to ensure that a claim is construed in a way that is consistent with the understanding of those of ordinary skill in the art at the time of the claimed invention. For example, this can be useful for a technical term whose meaning may differ from its ordinary English meaning. I understand that extrinsic evidence may not be relied on if it contradicts or varies the meaning of claim language provided by the intrinsic evidence, particularly if the applicant has explicitly defined a term in the intrinsic record.

B. My Understanding of Obviousness

20. I understand that a claim may be invalid if the subject matter described by the claim as a whole would have been obvious to a hypothetical person of ordinary skill in the art in view of a prior art reference or in view of a combination

of references at the time the claimed invention was made. Therefore, I understand that obviousness is determined from the perspective of a hypothetical person of ordinary skill in the art and that the asserted claims of the patent should be read from the point of view of such a person at the time the claimed invention was made. I further understand that a hypothetical person of ordinary skill in the art is assumed to know and to have all relevant prior art in the field of endeavor covered by the patent in suit.

21. I have been informed that there are two criteria for determining whether prior art is analogous and thus can be considered prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the patentee's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the patentee is involved. I have also been informed that the field of endeavor of a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field. I have also been informed that a reference is reasonably pertinent if, even though it may be in a different field from that of the patentee's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to a patentee's attention in considering their problem.

22. I have also been advised that an analysis of whether a claimed invention would have been obvious should be considered in light of the scope and content of the prior art, the differences (if any) between the prior art and the claimed invention, and the level of ordinary skill in the pertinent art involved. I understand as well that a prior art reference should be viewed as a whole.

23. I have also been advised that in considering whether a claimed invention could be obvious over a combination of prior art references, I may assess whether there are apparent reasons to combine known elements in the prior art in the manner claimed in view of interrelated teachings of multiple prior art references, the effects of demands known to the design community or present in the marketplace, and/or the background knowledge possessed by a person having ordinary skill in the art. I understand that other principles may be relied on in evaluating whether a claimed invention would have been obvious, and that these principles include the following:

- A combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results;
- When a device or technology is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or in a different one, so that if a person having

ordinary skill can implement a predictable variation, the variation is likely obvious;

- If a technique has been used to improve one device, and a person having ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond their skill;
- An explicit or implicit teaching, suggestion, or motivation to combine two prior art references to form the claimed combination may demonstrate obviousness, but proof of obviousness does not depend on or require showing a teaching, suggestion, or motivation to combine;
- Market demand, rather than scientific literature, can drive design trends and may show obviousness;
- In determining whether the subject matter of a patent claim would have been obvious, neither the particular motivation nor the avowed purpose of the named inventor controls whether the claim is obvious;
- One of the ways in which a patent's subject can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims;

- Any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed;
- “Common sense” teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person having ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle;
- A person having ordinary skill in the art is also a person having ordinary creativity, and is not an automaton;
- A patent claim can be proved obvious by showing that the claimed combination of elements was “obvious to try,” particularly when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions such that a person having ordinary skill in the art would have had good reason to pursue the known options within his or her technical grasp; and
- One should be cautious of using hindsight in evaluating whether a claimed invention would have been obvious.

24. I further understand that, in making a determination as to whether the claimed invention would have been obvious to a person having ordinary skill, the

Board may consider certain objective factors if they are present, such as: commercial success of products practicing the claimed invention; long-felt but unsolved need; teaching away; unexpected results; copying; and praise by others in the field. These factors are generally referred to as “secondary considerations” or “objective indicia” of non-obviousness. I understand, however, that for such objective evidence to be relevant to the obviousness of a claim, there must be a causal relationship (called a “nexus”) between the claim and the evidence and that this nexus must be based on a novel element of the claim rather than something in the prior art. I also understand that even when they are present, secondary considerations may be unable to overcome primary evidence of obviousness (such as motivation to combine with predictable results) that is sufficiently strong.

IV. BACKGROUND OF THE TECHNOLOGY

25. The '225 patent purports to disclose light therapy devices. The usage of light therapy devices in treatment and modification of human circadian rhythm has been well-known far before the '225 patent's priority date, with some uses dating back well over 100 years ago to as early as 1903. *See, e.g.* Ex. 1028 (“National Library of Medicine #101401066 (“U.S. Army, Fitzsimons General Hospital, Denver, CO: Alpine light treatment, Physio-therapy Department,” 1917-1919); *see also* Czeisler, 3:23-26 (“[R]esearch showed that human circadian cycles appeared to respond to timed application of light.”). As part of the development of such light

therapy devices, there has long been a significant amount of work in the area. For example, light therapy devices have been developed to use a variety of different types of light sources. As a limited set of examples, light therapy devices sometimes used incandescent or fluorescent lights for light therapy. *E.g.*, Ex. 1024 (US 6,488,698, (“Hyman”), titled “Portable Light Unit for Treatment of Seasonal Affective Disorders,” filed August 16, 2000), 2:34-36 (“The illumination source is either a twin-tubed fluorescent lamp or a single incandescent lamp powered 10 by either A.C.”); Ex. 1015 (U.S. 4,858,609 (“Cole”), titled “Bright Light Mask” and published on August 22, 1989), 3:48-50 (“Alternatively, banks of high brightness green light emitting diodes could be used in place of the incandescent lightbulb.”); Czeisler, 23:22-28 (“Fluorescent lamps were chosen over incandescent lamps for primarily economic reasons. As stated previously, there is no reason to suppose superiority or inferiority of a particular lamp at the appropriate light intensity as measured in lux or foot-candles, which are weighted to reflect the human visual sensitivity function.”) Before the ’225 patent’s priority date however, light emitting diode (“LED”) technology had been developed, and began being used for light therapy products due to its advantages of “having lower power consumption and less heat dissipation.” Cole, 3:48-50; *see also*, Hed, 1:34-36 (“among the better known monochromatic light sources we can cite light emitting diodes...”), 2:33-36 (“It is

an object of the invention to provide a luminaire particularly suitable for the modification and resetting of human circadian cycles, as taught by [Czeisler].”); Ex. 1025 (U.S. 6,350,275 (“Vreman,” filed June 9, 1998)), Abstract (“A device is provided for treating a circadian rhythm disorder in a subject....includ[ing] a plurality of light emitting diodes (LEDs).”), 3:10-11 (*see also* ’225FH, 133); Ex. 1026 (U.S. 5,923,398 (“Goldman,” titled “Interactive Light Field for Non Visual Stimulation”) published July 13, 1999), 1:65-67 (“It is an object of the present invention to ... adjust or maintain a circadian rhythm...”), 5:18-20 (“[L]ight from LEDs or other light sources...”) (*see also* ’225FH, 197); *see also* Ex. 1022 (“Heeke”), “Light-Emitting Diodes and Cool White Fluorescent Light Similarly Suppress Pineal Gland Melatonin and Maintain Retinal Function and Morphology in the Rat,” June 1999). It was therefore well-understood prior to the ’225 patent to use LEDs for light therapy.

26. Light therapy devices were also being developed to use a variety of different form factors. These form factors included everything ranging from glasses, helmets, suitcase-portable lamps, light panels, room lighting fixtures, and more. *See, e.g.*, Ex. 1018 (U.S. 6,139,164 (“Bolta-164”), titled “Adjustable Mobile Light Panel Stand”) Abstract (“A mobile light panel stand [with] two pair[s] of hinged legs.”); Kyricos (Ex. 1016), 3:9-11 (“bodily-worn support means for removably positioning

the apparatus vertically above the eyes of the subject...”) (using a visor); Cole (Ex. 1015), Abstract (“[M]ask adapted to be worn by the subject for covering the subject’s eyes regardless of body position.”) (using a face mask); Ex. 1019 (U.S. 1,660,794 (“Hudson”), titled “Light Therapy Appliance,” published February 28, 1928) 1:1-4, 1:60-64 (“light therapy appliance” that is “mounted in a box shaped somewhat like a suitcase”) (using a suitcase); Hyman, 1:7-10 (“[T]he invention is a portable brief-cased illumination device for treatment [*sic*] of seasonal affective disorders”) (using a briefcase). Thus, it was already known in the art to implement light therapy devices using a wide variety of different form factors.

27. Against this backdrop of development in the field, the claims of the ’225 patent purport to claim nothing more than another obvious variation of these same types of devices. Although the ’225 patent’s claims are directed to “light therapy device[s]” that purportedly address a need for “portable and lightweight hand-held” light therapy devices, the claims do not recite anything more than the use of conventional and well-known components for their conventional purposes. *See, e.g.,* ’225 patent, 1:38-39, claims 1, 18, 20, 24, 26. I reviewed the prosecution history of the ’225 patent for an understanding of why the examiner decided to allow the claims. According to the Examiner, the ’225 patent’s claims were allowed because of a combination of elements reciting pivoting members that contain LEDs that

produce a light of 2500-7500 lux at 12 inches, or that members are releasably locked together and combined with an ocular device.

28. I disagree with this reasoning for several reasons. Initially, the challenged claims do not all recite or require the limitations identified by the examiner as part of the reasoning for allowing the claims of the '225 patent. And, regardless, these features were well known in the relevant field prior to the '225 patent. One example of such prior art is U.S. Patent No. 5,167,228 ("Czeisler") which was originally assigned to Brigham and Women's Hospital Inc. and identifies Charles Czeisler as an inventor. I understand that a copy of Czeisler has been designated as Exhibit 1004. Czeisler teaches light therapy devices using "many different types of commercially available lamps," and further teaches that such lighting devices emit light generating at least between 3,000-12,000 lux at the patient from a lighting device at a variety of different distances from a patient undergoing light therapy treatment; such distances range from several feet away to less than an inch away from the patient's face. Czeisler, 23:3-6, 63:36-43. One such example device taught by Czeisler is a light appliance having a "flexible positioning stand" that allows adjustment to the preferred "height, tilt, and distance." Czeisler, 63:40-45. Czeisler discloses such a light appliance having the use of a manual input means and a means of electronically processing that input for controlling light output in

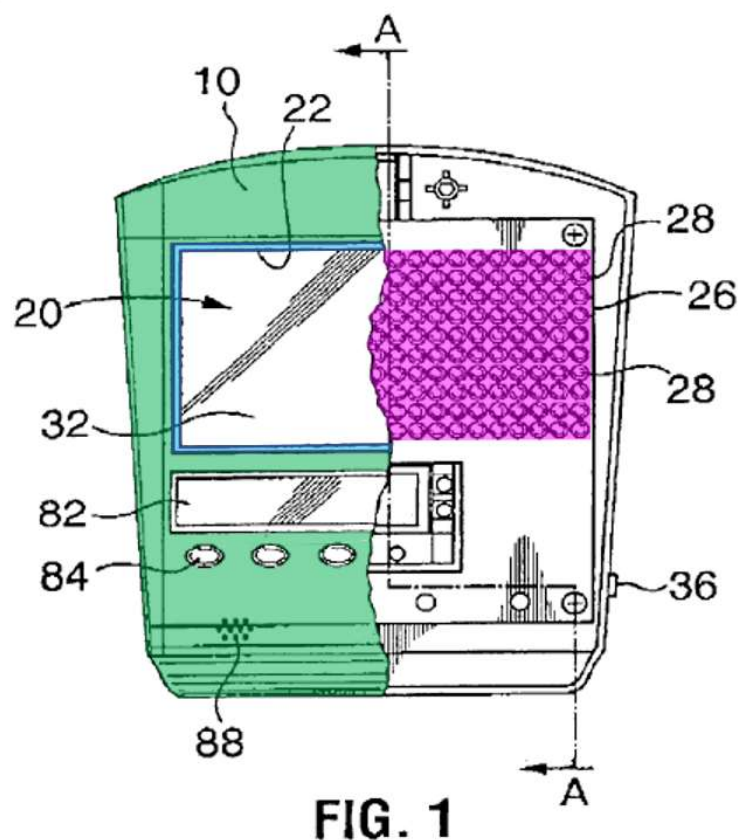
light therapy devices. Czeisler, 7:50-59, 74:50-68, Fig. 39a. Another example reference is U.S. Patent No. 5,301,090 (“Hed”), assigned to and invented by Aharon Hed. I understand that a copy of Hed has been designated as Exhibit 1005. Hed teaches a lighting device that uses LEDs as a light source for light therapy and/or decorative lighting purposes. Hed, 1:15-26. As I explain in greater detail below in Section IX.A.2, a person having ordinary skill in the art would have been motivated to modify Czeisler with Hed’s teachings.

29. None of the features recited in the Challenged Claims of the ’225 patent was novel at the time of the alleged invention, and there was nothing novel as to how the alleged inventors of the ’225 patent combined those features. As I discuss below, the Challenged Claims are obvious over the combinations of prior art cited herein, including Czeisler and Hed, as well as Morcheles (claims 21-22), Chen (claims 2, 19, 25, and 26), and Gerdes (claim 12), which I cite with respect to certain dependent claims herein as well. Further, there were no technological barriers to combining these elements to form the claimed invention and a person having ordinary skill in the art would have been motivated to combine these elements and would have understood that the combination would have yielded predictable results.

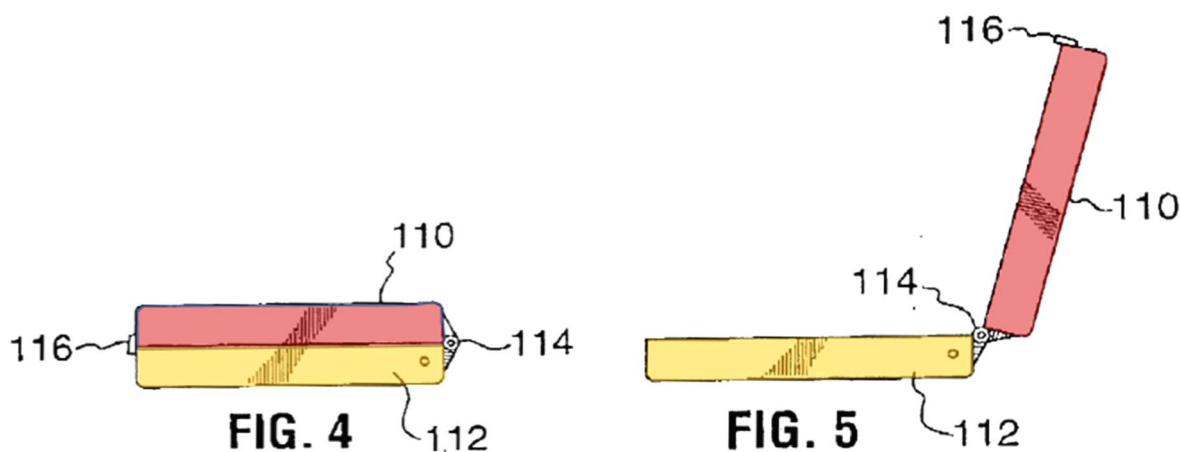
V. THE '225 PATENT

A. '225 Patent Overview

30. The Challenged Claims of the '225 patent each generally recite limitations directed to a light therapy device housed in a housing that includes two parts capable of pivoting or being releasably locked together. '225, Abstract, claims 1, 18, 24, 26, 2:50-64, Fig. 1. This light therapy device contains a light emitting assembly capable of generating 2,500-7,500 lux at a suggested distance of 12 inches. '225, Abstract, claims 1, 18, 20, 24, 26, 2:63-3:6, Fig. 1. The claimed light device is for therapeutic uses such as treatment for "Seasonal affective Disorder," jet lag, or sleep disorders. '225, 3:3-4. As the colors indicate, the device of Figs. 1-3 comprises an **outer housing 10**, like a casing, that contains an **opening 20** that allows the emission of light from an assembly of spaced **LEDs 28**. '225, 2:50-67, Fig. 1.



31. The **outer housing** of the device of Figs. 4-5 includes two “members”—**upper housing member 110** and **lower housing member 112**. As seen in Figs. 4-5, these members are pivotally connected (in this embodiment, using a hinge 114), and releasably locked together (in this embodiment, using a catch 116).
'225, 4:31-39, Figs. 4-5.



B. Prosecution History of the '225 Patent

32. In formulating my opinions, I considered the contents of the prosecution history of the '225 patent, a copy of which I understand has been designated as Exhibit 1002. During prosecution, the Examiner repeatedly rejected all pending claims as obvious over combinations of prior art. '225FH, 66-70, 131-137. In response to these rejections, Applicant disputed whether there was a motivation to combine the references. One of the pieces of prior art that the Examiner presented named as an inventor an employee of Applicant. Applicant submitted a declaration from this prior art inventor disputing whether there was a sufficient motivation to combine the references. Applicant also added several new claims, and argued the prior art did not disclose limitations including an outer housing with an "opening" and a "base." '225FH, 74-88, 141-145.

33. After a telephone interview between the Examiner and the Applicant, they agreed to insert “subject matter from claims 5 and 25 into independent claims 1, 19 and 28” and the Examiner issued a notice of allowance. ’225FH, 176-184.

34. The Examiner entered an Examiner’s amendment amending claim 1 to recite “a first member and a second member, the first member and the second member being releasably locked together” and “the light emitting assembly being storable in the first member and being mountable on the housing such that the housing acts as a base to support the light emitting assembly. ’225FH, 181-182. The Examiner entered an Examiner’s amendment amending claim 19 to recite “a base and an upper member pivotally connected to the base” and the light emitting assembly being “mounted in the upper member of the” housing. *Id.* The Examiner entered an Examiner’s amendment amending claim 28 to recite “a first member with” an opening, “a second member releasably lockable to the first member,” the housing “forming” a base, and the light emitting assembly in the “first member of the” housing. *Id.*

35. The notice of allowance stated the reason for allowance that “[t]he prior art of record neither teaches or suggests a light therapy device as claimed in combination with pivoting members that contain LEDs that produce a light of 2500-

7500 lux at twelve inches or whereby the members are releasable lockable together and are combined with an ocular device.” ’225FH, 182.

VI. THE ’225 PATENT PRIORITY DATE

36. I understand the ’225 patent matured from U.S. Application US09/710,782, which was filed on November 13, 2000. I understand that the ’225 patent claims priority to a Canadian patent filed on March 14, 2000, and another Canadian patent filed August 30, 2000. For purposes of this declaration, I was asked to assume, with respect to each of the prior art Grounds discussed in this declaration, that the ’225 patent is entitled to only its filing date of November 13, 2000. I have thus considered the patent and the prior art from the perspective of a person having ordinary skill in the art as of November 30, 2000. However, I was also asked to consider whether my opinions would have changed if the Challenged Claims were entitled to any other earlier date that was still after the cited prior art’s prior art dates. Even to the extent that the ’225 patent were found to be entitled to an earlier date, this would not materially affect my opinions so long as the references cited herein qualify as prior art. Each of the references I cite in the grounds of unpatentability below qualify as prior art even with respect to the earliest Canadian patent date of March 14, 2000.

VII. LEVEL OF ORDINARY SKILL IN THE ART

37. In rendering the opinions set forth in this declaration, I was asked to consider the patent claims and the prior art through the eyes of a person having ordinary skill in the art at the time of the alleged invention. I understand that the factors considered in determining the ordinary level of skill in a field of art include the level of education and experience of persons working in the field; the types of problems encountered in the field, the teachings of the prior art, and the sophistication of the technology at the time of the alleged invention. I understand that a person having ordinary skill in the art is not a specific real individual, but rather is a hypothetical individual having the qualities reflected by the factors above. I understand that a person having ordinary skill in the art would also have knowledge from the teachings of the prior art, including the art cited below.

38. I have been asked to assume that the '225 patent is entitled to the priority date of November 13, 2000. Upon consideration of the relevant factors listed above, in my opinion, on or before this priority date, a person of ordinary skill in the art, at the time the application that matured into the '225 patent was filed, would have had a minimum of a bachelor's degree in mechanical engineering, or a related field, along with at least two years of professional experience with light therapy devices. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

39. I have also been asked to consider whether my understanding of a person of ordinary skill in the art would be different if the '225 patent were entitled to an earlier priority date no later than March 14, 2000. My definition of a person of ordinary skill in the art would remain the same with respect to the March 14, 2000 priority date, and any difference in the level of ordinary skill between these priority dates does not materially impact my opinions set forth in this declaration.

40. Regardless of which priority date applies, I am qualified to opine concerning what a person having ordinary skill in the art would have known and understood during that time. Before both March 14, 2000 and November 13, 2000, my level of skill in the art was at least that of a person having ordinary skill. I am qualified to opine concerning what a person having ordinary skill in the art would have known and understood at the time of the '225 patent's purported invention. My analysis and conclusions herein are from the perspective of a person having ordinary skill in the art as of November 13, 2000. Even if that priority date were earlier, however, my opinions would not change as long as the identified prior art were still prior art.

VIII. CLAIM CONSTRUCTION

41. I have been instructed that the Challenged Claims 1-6, 12, 15, 18-22, and 24-29 of the '225 patent are to be given their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the alleged invention

in light of the specification and the prosecution history pertaining to the patent. I have followed these principles in my analysis set forth in this document. I reserve the right to supplement my opinions in this declaration to the extent that any parties later propose claim constructions for any claim terms in the '225 patent.

42. I have also been asked to assume that the preambles of the Challenged Claims are limiting. As set forth below in Section IX, applying this understanding, it is my opinion that each of the Challenged Claims is obvious.

IX. GROUNDS OF UNPATENTABILITY

43. As I explained above in Section IV, the portable light devices for circadian rhythm modification in the Challenged Claims were well-known in the art.

44. In this section, I will explain why combinations of teachings from the following references render obvious each of the Challenged Claims:

Reference	Priority Date	Issued / Published
Czeisler, U.S. 5,167,228 (Exhibit 1004)	5/9/1990	12/1/1992
Hed, U.S. 5,301,090 (Exhibit 1005)	3/16/1992	4/5/1994
Morcheles, U.S. 4,564,886 (Exhibit 1007)	1/14/1986	1/14/1986
Chen, U.S. 6,163,038 (Exhibit 1008)	5/14/1998	12/19/2000
Gerdes, U.S. 6,221,095 (Exhibit 1009)	7/15/1997	4/24/2001

45. I have been instructed to assume that each of these references qualifies as prior art.

46. As I explain below, the Challenged Claims are invalid based upon the following prior art grounds:

- a. **Ground 1:** Challenged Claims 1-6, 12, 15, 18-20, and 24-29 of the '225 patent are rendered obvious by Czeisler in view of Hed.
- b. **Ground 2:** Challenged Claims 1-6, 12, 15, 21-22, and 26-29 of the '225 patent are rendered obvious by Czeisler in view of Hed and Morcheles.
- c. **Ground 3:** Challenged Claims 2, 19, 25 and 26 of the '225 patent are rendered obvious by Czeisler in view of Hed and Chen.
- d. **Ground 4:** Challenged Claims 2 and 26 of the '225 patent is rendered obvious by Czeisler in view of Hed, Chen and Morcheles.
- e. **Ground 5:** Challenged Claim 12 of the '225 patent is rendered obvious by Czeisler in view of Hed and Gerdes.
- f. **Ground 6:** Challenged Claim 12 of the '225 patent is rendered obvious by Czeisler in view of Hed, Morcheles, and Gerdes.

47. **Czeisler** teaches a light therapy device including pivoting, releasably lockable members, and an interactive display and key pad with input processing for emission control, while **Hed** affirmatively discloses using LEDs in light therapy. **Morcheles** provides additional detailed disclosures about a support leg and

releasably locked members. **Chen** provides additional teachings of white LEDs. And **Gerdes** provides additional detailed teachings of a display, key pad, and processor.

48. It is my opinion that Challenged Claims 1-6, 12, 15, 18-22, and 24-29 of the '225 patent are unpatentable as explained below. I note that in this discussion, I may focus on the particular language in specific claims, but it should be understood that my analysis applies to the corresponding elements of all Challenged Claims containing identical or substantially identical language.

A. Ground 1 (Claims 1-6, 12, 15, 18-20, 24-29): Czeisler in view of Hed

1. Overview of Czeisler

49. Czeisler discloses “methods and devices for assessing and modifying the circadian cycle in humans.” Czeisler, 1:13-14. Czeisler discloses an “easily portable” light therapy device for treating various circadian phase ailments. Target patients may be “‘jet lag’ sufferers, shift workers, advanced circadian phase experienced by many elderly subjects, and those afflicted with delayed sleep phase insomnia.” Czeisler, Abstract.

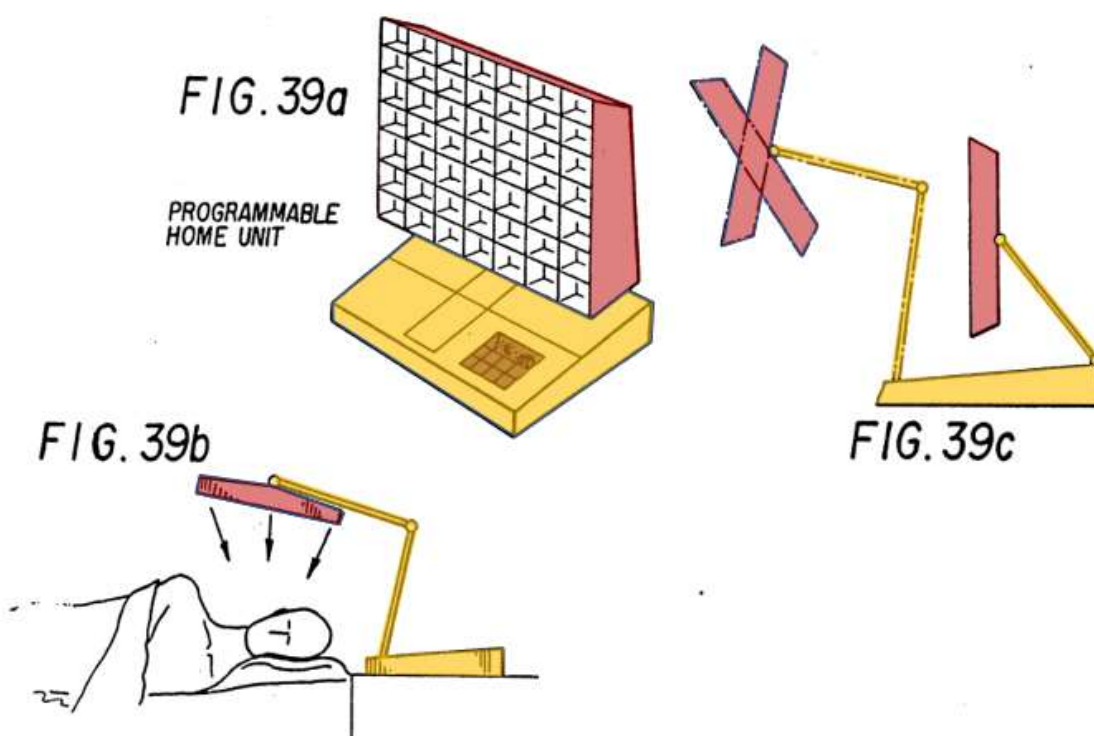
50. Czeisler’s device is an “easily portable” “**light fixture**,” allowing, for example, use and treatment at home. Czeisler, 62:35-50, 63:32-33. Czeisler’s device has an opening through which light is emitted from the light source(s). Czeisler, 63:31-36. The light sources used in this device may be implemented as one of “many methods for illuminating an environment.” Czeisler, 67:37-39. Czeisler describes,

for example, fixtures using “incandescent lamps” or, for “economic reasons” and for a more “diffuse” light, a “bank of ten four-foot fluorescent lamps.” Czeisler, 23:23, 62:35-50, 63:32-33. Indeed, Czeisler teaches that “bright light may be administered by any means which provides adequate optical illumination.” Czeisler, 23:29-30. Since commercially available white LEDs existed at the time of the priority date of the '225 patent, a person of ordinary skill in the art would have understood that Czeisler’s description included the use of LEDs.

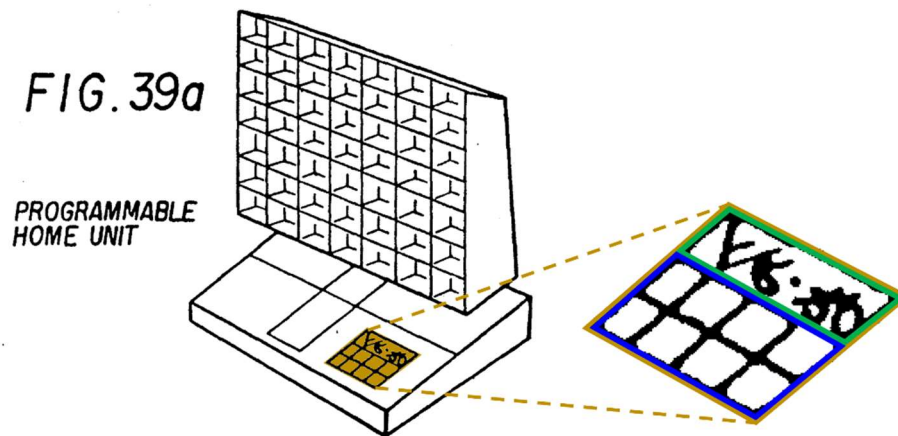
51. As colored in Figs. 39a-39c, Czeisler’s **light fixture** is portable and can also be configured to be “mounted” on a **flexible positioning stand** for stationary use. A person of ordinary skill in the art would have understood Figs 39a-c as depicting the same device. Further, a person of ordinary skill in the art would have understood that implementation of Czeisler’s device would have included all three depictions in Figs. 39a-c. Such mounting allows the patient for easier treatment administration at home or at work. Czeisler, 63:43-45. Thus, the patient can use the **light fixture** on a table and adjust it to an “ideal height, tilt, and distance,” further aiding treatment administration. Czeisler, 63:43-45.

52. Czeisler’s device includes a **display and input buttons** for a patient to input information into the device and visually confirm that input. Fig. 39a. For example, a program “queries the user” for information used for “[t]iming and

scheduling mechanisms ... built into” the device. Czeisler, 65:40-66:30, 67:1-9, Fig. 39a. The device may “automate” the treatment calculations to aid the patient in determining the appropriate treatment. Czeisler 65:51-55. Indeed, Czeisler’s Fig. 39a show a **display** and input **buttons**.



Czeisler, Figs. 39a-c.



Czeisler, Fig. 39a, expanded.

53. To place the light at “the ideal height, tilt, and distance,” Czeisler discloses mounting the **portable light fixture** on the adjustable **flexible positioning stand**. Czeisler, 63:31-48. In this way, the **portable light fixture** is releasably locked to the **flexible positioning stand**. The **portable light fixture** is mountable on the **flexible positioning stand** by releasably attaching to it. While on the **flexible positioning stand**, the **portable light fixture**’s position is able to be adjusted, as seen in Figs. 39a-c. The **portable light fixture** may be positioned as desired and once a patient has found an ideal position, **portable light fixture** remains in place as mounted to the **flexible positioning stand**. *Id.*, Figs. 39a-c. And by unmounting the **portable light fixture** (e.g., returning to the closed configuration) it can be readily transported for use in another location. *Id.*, 63:43-45 (“Such a fixture is easily

portable and can be *mounted* on a flexible positioning stand that would allow the user to place it at the ideal height, tilt, and distance.”) (emphasis added).

54. As seen in Figs. 39a-c, the **portable light fixture** is also pivotable as mounted on the **flexible positioning stand**. Figs. 39a-c show different pivoted angles for illumination.

55. Czeisler discloses several different distances between the patient and the light. *E.g.*, Czeisler, 62:43-47 (8x10 foot wall of lights, with a patient “a distance of ten feet or so”), 63:32-36 (3x4 foot area of lights with a patient 3 feet away). Czeisler discloses reducing the distance between the lights and the patient and, accordingly, using a smaller light source. For example, when “[h]alving the distance between the lights and the user” (*e.g.*, from 3 feet to 1.5 feet), the light size and intensity can be reduced, “quartering the total light output” needed to produce “the same amount of light incident to the user’s eye.” Czeisler, 63:36-40. Czeisler furthermore discloses goggles that reduce the distance further. Czeisler, 63:63-68.

56. At any distance, Czeisler discloses that the light intensity is generally “on the order of 7,000-12,000 lux (optimally averaging about 9,500 lux or greater).” Czeisler, 19:50-63, 23:3-12, 23:29-46. For example, Czeisler describes multiple different experiments each of which applied light intensities between 7,000 and 12,000 lux. *E.g.*, Czeisler, 45:21-32 (“7,000-12,000 lux” with human subjects);

67:28-38 (“7,000-12,000 lux” with human subjects). These disclosures of such experiments focused on the intensity of the light as experienced by the patient, confirming that as taught by Czeisler, at any given distance—including, for example, when applying light therapy using goggles at very close distances, or using a light panel at a farther distance ranging to, for example, three feet—the peak light intensity used should be between 7,000 and 12,000 lux. Further, Czeisler discloses using fluctuating light intensity. For example, both “preced[ing] and follow[ing]” a “7,000-12,000 lux” treatment with an “intermediate level light (3,000-6,000 lux).” Czeisler, 39:11-39, 40:15-20, 40:32-39. Indeed, treatments including light from a variety of ranges between 500-100,000 lux were well-known in the art. Czeisler-192, 7:29-34 (“[T]he intensity of light ... may fall within a variety of ranges... including ranges of approximately 500-1,000 lux; 1,000–2,000 lux; 2,000-4,000 lux; and 4,000-100,000 lux.”); *see also, e.g.*, Cole, Abstract, 4:24-30 (“[A]t least 2,000 LUX...”); Ex. 1023 (U.S. 5,047,006, (“Brandston”) published September 10, 1991), 1:30-33 (“[C]linical studies indicate that bright light of 2500 lux is effective in producing a marked remission rate in depressed persons. Bright light as low as 500-1000 lux and as high as 10,000 lux has also been shown to affect melatonin production.”); Ex. 1024 (U.S. 6,488,698, titled “Portable Light Unit for Treatment of Seasonal Affective Disorders,” filed August 16, 2000) (using 10,000 lux).

57. Czeisler discloses its device allows for applying light therapy in different locations, allowing it to be used for both “home use” and other uses. *E.g.*, Czeisler, 63:31-63:42, 63:42-48 (“Such a fixture is easily portable and can be mounted on a flexible positioning stand that would allow the user to place it at the ideal height, tilt, and distance. Such a fixture makes an ideal device for persons who must use the lights chronically. It may also be desirable to have such a device for home use.”), 63:48-64:2, 67:51-57. Finally, Czeisler’s teachings would have been understood by a person of ordinary skill in the art to be broad and flexible. Czeisler discloses several different teachings or “embodiments” for providing the light treatments. A person of ordinary skill in the art thus would have understood Czeisler’s different teachings to be compatible with one another. It would have been obvious to combine features that can be combined to receive their benefits.

2. Overview of Hed and Motivation to Modify Czeisler with Hed’s Teachings

58. Hed discloses “a lighting device” or “luminaire” that uses “light emitting diodes” (“LEDs”). *See, e.g.*, Hed, 1:15-36, 5:31-48, 6:8-10 (“In the preferred embodiment of the luminaire shown in FIG. 1, the light sources are simply small light emitting diodes, or LED’s”), 6:10-19, 8:34-39, 10:47-50. Hed discloses such a luminaire “for environmental modification [and] therapy.” Hed, 1:24-26. Hed

discloses such a luminaire for “implementation of shifting and control of human circadian cycles.” Hed, 13:32-34.

59. Hed discloses that LEDs were “available in a large variety of shapes and flux outputs from a number of manufacturers.” Hed, 6:8-38. Hed teaches that such LEDs were available from well-known manufacturers, including “Hewlett Packard of California,” which “provides a full line of LED's ranging in size from miniature devices to large devices having luminosity in the rang of microcandela to one candela.” Hed, 6:12-16. Hed discloses the benefit of such LEDs as allowing “one [to] control the light output and the chromaticity of a luminaire over a relatively large range.” Hed, 6:8-38.

60. Hed discloses the light from the LEDs is diffused with a **diffuser**. Hed, Abstract, 3:18-26, 3:37-62, 4:14-20, 5:36-48, 10:30-35, claims 1, 2, 3, 10, 13, 16. This causes the diffuse scattering of the light emitted by the LEDs. Hed, 4: 32-34. Hed discloses the use of a “dual screen diffuser” for further effective diffuse scattering. Hed, 5:36-39. The use of such diffusers on lighting sources was well known in the field. *E.g.*, Czeisler, 62:55-59 (“A similar wall bearing an array of *incandescent* lamps is also effective, but the intensity of light at the lamps' filaments may make it necessary to place a *diffuser* between the lamps and the viewer.”)

(emphasis added); Morcheles, 3:35-37 (“In the preferred embodiment diffuser 31 is a semi opaque material such as opal plastic, *which diffuses light.*”)

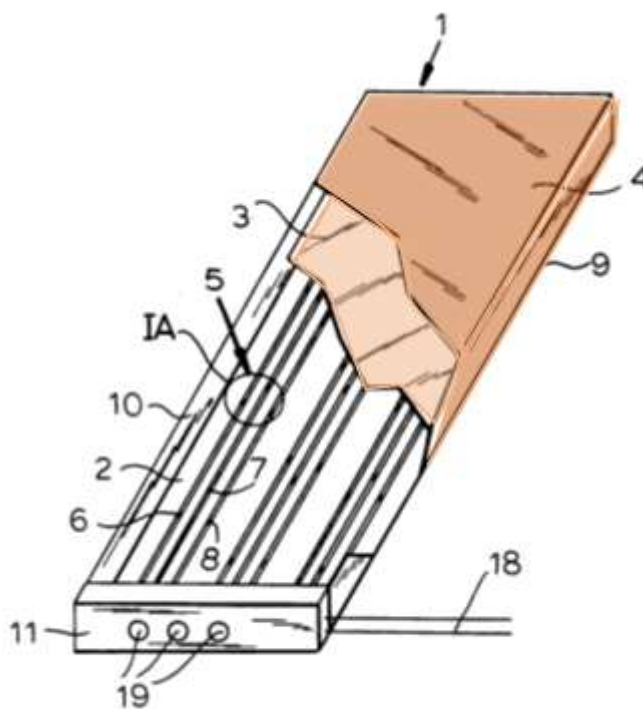


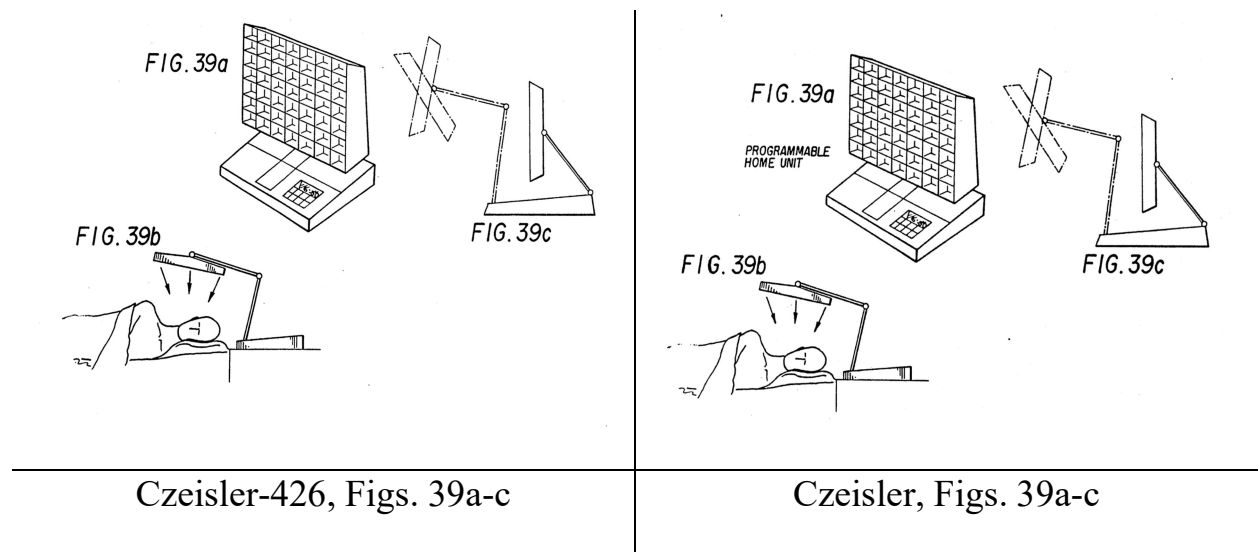
FIG.1

61. Both Czeisler and Hed are in the same field as the '225—portable lighting devices. A person of ordinary skill in the art would have understood Czeisler and Hed are both reasonably pertinent to the alleged problem(s) identified in the '225—*e.g.*, designing portable and lightweight light devices, including light therapy devices. '225, Abstract, 1:18-46 (light therapy device needed “that is portable,” “provides a portable and lightweight” device; “LEDs offer a light source that is lightweight, small in size”); Czeisler, 63:43-45 (light “fixture is easily portable”); Hed, 2:25-27 (“luminaires that are portable”), 6:8-10 (“[L]uminaire ... light sources

are ... small [LEDs]”). Indeed, Hed teaches that light sources are multi-purpose devices used for a variety of different applications, including for example “environmental modification, therapy and/or decorative lighting purposes.” Hed, 1:20-26; *see also* Kyricos (Ex. 1016), 8:57-60 (“A manual dimmer switch may also be provided on the visor... if the visor is used for general lighting purposes.”)

62. While Czeisler provides teachings of a light therapy device implemented using “many different types of commercially available lamps.” Czeisler, 23:3-5, it does not provide explicit teachings of using “LEDs.” Hed, however, explicitly teaches the use of “light emitting diodes” in light therapy devices. Hed, 2:33-43 (“light emitting diodes”), 13:32-34 (“for the implementation of shifting and control of human circadian cycles”); *see also* 1:34-36 (“Among the better known monochromatic light sources we can cite light emitting diodes, lasers of all types and gas discharge tubes.”), 5:8-38, 6:20-26 (“These commercial LEDs are usually encapsulated to facilitate mounting and shipment. In the instant invention one can use such commercial LEDs...”), 6:54-58, 7:54-57, 8:40-45; claim 14. A person of ordinary skill in the art would have been motivated to modify Czeisler’s device with Hed’s teachings of “LEDs.” This would have resulted in a light therapy device using LEDs.

63. There are several reasons why a person of ordinary skill in the art would have been motivated to modify Czeisler with Hed's teachings. Facially, Hed explicitly provides a motivation for a person of ordinary skill in the art to modify Czeisler with its teachings. Hed explicitly states that its "luminaire [is] particularly suitable for the modification and resetting of human circadian cycle, as taught by C.A. Czeisler in U.S. patent application Ser. No. 07/066,677." Hed 2:33-42. Czeisler is a continuation-in-part of application 07/066,677, which issued as U.S. 5,163,426 (Ex. 1014), Both have similar disclosures of the light fixture set forth in Czeisler's Figs. 39a-c, as shown below. *See* Ex. 1014, Figs. 39a-c, 7:29-44, 43:40-45:47, 45:50-46:42, 46:46-47:34, 47:54-57, 48:5-54).



64. As demonstrated by Hed, LED usage in light therapy was well known prior to the '225 alleged priority date. *See, e.g.,* Hed, 1:34-36 ("Among the better

known monochromatic light sources we can cite light emitting diodes, lasers of all types and gas discharge tubes.”), 6:10-12 (“LEDs... are available in a large variety of shapes and flux outputs from a number of manufacturers.”); *see also* Vreman, 3:10-12 (“[A] device is provided for treating a circadian rhythm disorder ...[and] comprises one or more light emitting diodes (LEDs)”), ’225FH, 133; Ex. 1026 (U.S. 5,923,398 (“Goldman”)), 1:65-67, 5:18-20 (“[L]ight from LEDs or other light sources...”); *see also* ’225FH, 197. Cole (Ex. 1015), 3:46-48 (“Alternatively, banks of high brightness green light emitting diodes could be used in place of the incandescent lightbulb.”) While LEDs “have the advantage of having lower power consumption and less heat dissipation,” a person of ordinary skill in the art would have expected LEDs to have the same effect on human circadian rhythm as fluorescent lights, just as a person of ordinary skill in the art would have expected incandescent lights to have the same effect on human circadian rhythm as fluorescent lights. Cole, 3:48-50. Indeed, a person of ordinary skill in the art would have understood that it was not the type of light source that was of primary importance in therapeutic benefit, but rather the characteristic of the light reaching the subject, including intensity, wavelength, and scatter.

65. Czeisler discusses the use of different lighting sources in its own teachings. Czeisler describes “many methods for illuminating an environment.”

Czeisler, 62:37-43. Czeisler provides examples of “incandescent” or “fluorescent” lights. Czeisler, 62:48-62. As I have explained above, LEDs were well-known devices for illumination and thus an obvious light source for use in Czeisler’s device, and the advantageous use of LEDs, taught by Hed, is further reasoned for more energy efficiency than alternative lighting techniques and less heat. Hed, 1:54-57, 6:8-38, 8:13-27. A person of ordinary skill in the art therefore would have been motivated to modify Czeisler with Hed’s LEDs teaching to advantageously provide a more efficient light therapy device with lower heat output.

66. Moreover, it was well-understood to use LEDs with a diffuser to generate diffuse, or even light. In discussing fluorescent lamps, Czeisler discloses that “they emit light over their entire surface ... [t]hus the light is diffuse.” Czeisler, 62:55-60. Because Czeisler suggests use of “many” different light sources to implement its device, Czeisler discloses that a “diffuser between the lamps and the viewer” may be desired if the lighting source chosen does not provide diffuse light. Czeisler, 63:50-60. Diffuse light allows the patient the ability to “stare directly” at the light source “without discomfort.” Czeisler, 62:50-53. It was well-known to a person of ordinary skill in the art to use a diffuser with LED light sources to generate diffuse light. For example, Hed teaches using a diffuser with the LEDs to diffuse the light for light therapy. Hed, 3:15-20 (“[T]he luminaire according to the invention

can comprise: a housing; a light-transmissive diffuser extending across the housing for diffusing light impinging upon the diffuser from within the housing..."); *see also* Hed, 3:37-44, 5:1-3 ("The middle sheet 3 and the top sheet 4 are light diffusing screens as described in my copending application Ser. No. 07/788,184 entitled "Light Weight Low Loss Refractive Light Diffusion System'...."), 5:36-42, Fig. 1; *see also* Czeisler, 62:50-51 ("Thus the light is diffuse enough that a person can stare directly at the glowing lamp from any distance without discomfort..."), 64:58-59.

67. In light of the above, a person of ordinary skill in the art would have had a reasonable expectation of success in modifying Czeisler's light therapy device with Hed's teachings of LEDs with a diffuser. Indeed, Hed teaches that LEDs are readily available for a variety of purposes. *E.g.*, Hed, 6:8-38 ("[T]he light sources are simply small light emitting diodes, or LED's. These are available in a large variety of shapes and flux outputs from a number of manufacturers. For instance Hewlett Packard of California provides a full line of LED's ranging in size from miniature devices to large devices having luminosity in the rang of microcandela to one candela,"); *see also* Chen (Ex. 1008), 2:10-11 ("[T]he white LED can radiate white light itself..."), 3:25-28; Chien (Ex. 1011), 7:58-64 ("[F]unction can be enhanced by using high brightness LEDs such as the 10 candlepower white LEDs manufactured by Toshiba corporation, to provide different brightness grades in a

Single arrangement, in which case it may be desirable to provide more than one switch to control the different lighting arrangements”); Lash (Ex. 1012), 2:58-65 (“The LEDs of LED array 12 are preferably 5 milliamp white LEDS Such as the NSPW Series white LED manufactured by Nichia Chemical Industries, Ltd. of Japan.”); Schick (Ex. 1013), 3:8-15, 3:27-33 (“One example of a suitable lamp is ... a ‘white LED’ [which] could comprise, for example, [the] Nichia America # NSCW-100”), 3:34-37.

3. Invalidity of Claims 1-6, 12, 15, 18-20, 24-29 Over Czeisler in view of Hed

(a) Element [1.pre]

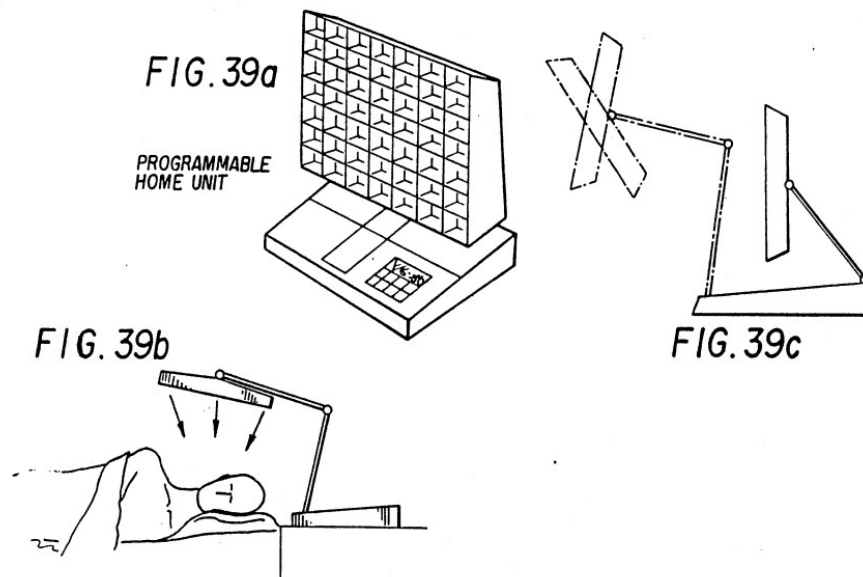
68. **Element [1.pre]**¹ recites “A light therapy device.” This element is met by Czeisler.

¹ The prior art discloses the preambles of claim 1, 18, 20, 24, and 26, regardless of whether they are limiting.

69. Czeisler discloses a light therapy device (e.g., “lighting appliance”).

Czeisler teaches a “lighting appliance” for “treating” users. Czeisler, Abstract, 28:27-45, 63:31-48, Figs. 39a-c. Czeisler discloses, for example:

- Figs. 39a-c



- **Abstract** (“Based on either individual or normative assessment data, the circadian phase and amplitude modification method involves the application of bright (about 9,500 lux) light and, advantageously, episodes of imposed darkness, at critically chosen phases to achieve rapid and stable changes in phase and amplitude.... The methods find special utility in treating "jet lag" sufferers, shift workers, advanced circadian phase experienced by many elderly subjects, and those afflicted with delayed sleep phase insomnia.”)
- **7:38-45** (“Another embodiment of the invention is an apparatus for administering bright light to a subject's retina, comprising luminous means for controllably emitting bright light; aperture means, located relative to the luminous means for allowing the subject to view his environment even when the luminous means are emitting bright light. The apparatus may be self-supporting, or it may be in the form of portable light goggles.”)

- **10:38-43** (“FIG. 39a illustrates a representative lighting appliance. FIG. 39b shows the representative lighting appliance applied to a subject. FIG. 39c illustrates the representative lighting appliance having a flexible stand.”)
- **23:38-40** (“Other devices, such as portable goggles or helmets or other appliances may also be employed.”)
- **28:27-45** (“The present invention uses a more useful description of circadian phase resetting by light in humans. This description requires a phased summation of graded responses. That is, the response of the circadian system to a given light-dark schedule depends on the cumulative effect of all the light intensity transitions within that schedule, and that the range of intensity changes which exert an important effect are not limited to bright light (e.g., greater than 2,000 lux) but encompass a graded range of responses to light exposures occurring from zero light intensity (i.e., darkness) to over 100,000 lux (e.g., the ambient light intensity of the midday sun). [¶] These findings are verified by several clinical intervention studies and demonstrate the practical use of the above principles in the treatment of actual jet-lag and sleep disorders. The utility of the above principles in the treatment of age-related changes in circadian function, and in the facilitation of temporal adjustment typically required by shift-workers, are also demonstrated.”)
- **37:54-61** (“Thus, methods of endogenous circadian pacemaker phase shifting according to the present invention allow a viable treatment method for transmeridian travelers in a variety of scenarios. Also, the endogenous circadian pacemaker phase shifting according to the present invention allows viable treatment for shift workers in a variety of rotating or otherwise unusual (from the point of view of a diurnal animal) work schedule.”)
- **63:31-48** (“An alternative to large light banks are smaller lights placed closer to the user (FIG. 39a, 39b, 39c). A bank of ten four-foot fluorescent lamps covering a three-foot by four-foot area and positioned vertically produces illumination of 9,500 lux at a distance of about 3 feet from the eye, if the user's gaze is toward the lamps. Halving the distance between the lights and the user allows halving each dimension of the array and quartering the total light output while producing the same amount of light incident to the user's eye. Thus, a light fixture two feet wide and eighteen inches high suffices if it remains approximately eighteen inches from the user's face. Such a fixture is easily portable and can be mounted on a flexible positioning stand that would allow the user to place it at the ideal height, tilt, and distance. Such a fixture

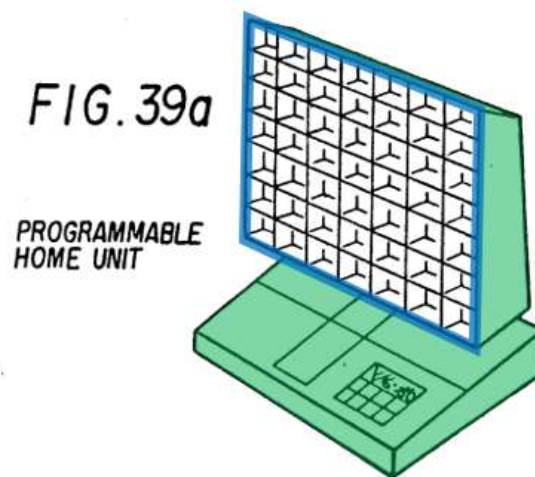
makes an ideal device for persons who must use the lights chronically. It may also be desirable to have such a device for home use”)

(b) Element [1.a]

70. Element [1.a] recites “an outer housing including an opening.” This element is met by Czeisler.

71. Czeisler discloses an outer housing including an opening (e.g., housing and opening shown in Fig. 39a). Czeisler discloses, for example:

- Fig. 39a



- **63:31-48** (“An alternative to large light banks are smaller lights placed closer to the user (FIG. 39a, 39b, 39c). *A bank of ten four-foot fluorescent lamps* covering a three-foot by four-foot area and positioned vertically *produces illumination* of 9,500 lux at a distance of about 3 feet from the eye, if the user's gaze is toward the lamps. Halving the distance between the lights and the user allows halving each dimension of the array and quartering the total light output while producing the same amount of light incident to the user's eye. Thus, *a light fixture* two feet wide and eighteen inches high suffices if it remains approximately eighteen inches from the user's face. Such a fixture is easily portable and can be mounted on a *flexible positioning stand* that would

allow the user to place it at the ideal height, tilt, and distance. Such a fixture makes an ideal device for persons who must use the lights chronically. It may also be desirable to have such a device for home use.”)

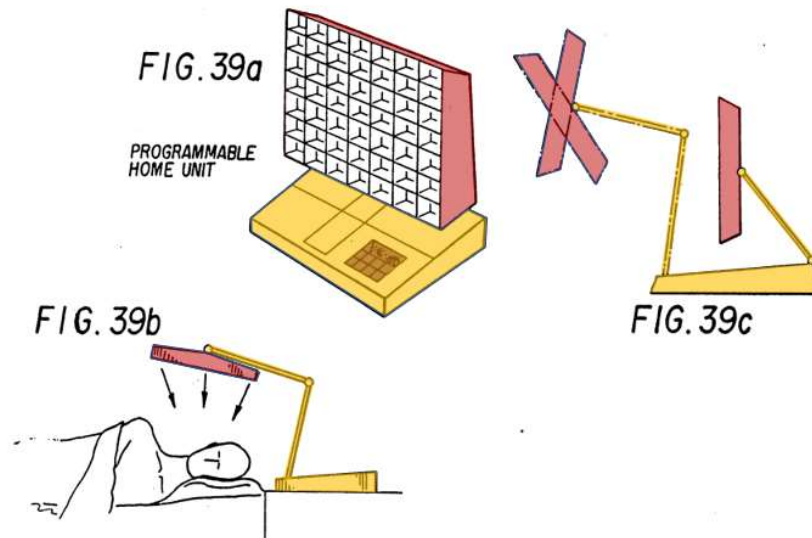
72. Czeisler discloses that the lighting appliance includes a “light fixture” and “flexible positioning stand” that, as shown in Fig. 39a, functions as an **outer housing** for lamps. The lamps emit light through an **opening** of the **outer housing**. Czeisler, Fig. 39a, 63:31-48.

(c) Element [1.b]

73. **Element [1.b] recites “a first member and a second member, the first member and the second member being releasably locked together. . .”** This element is met by Czeisler.

74. **Czeisler discloses a first member (e.g., member with the “light fixture”) and a second member (e.g., the “flexible positioning stand”), the first member and the second member being releasably locked together (e.g., the light fixture is “portable” and “can be mounted” on the flexible positioning stand and then adjusted for “height, tilt, and distance”).** Czeisler discloses, for example:

- Figs. 39a-c



- **63:31-48** (“Thus, a light fixture two feet wide and eighteen inches high suffices if it remains approximately eighteen inches from the user's face. Such a fixture is easily portable and can be mounted on a flexible positioning stand that would allow the user to place it at the ideal height, tilt, and distance. Such a fixture makes an ideal device for persons who must use the lights chronically. It may also be desirable to have such a device for home use.”)

75. Czeisler discloses that the lighting device includes a first member and a second member. The first member is the **light fixture** and the second member is the **flexible positioning stand**. The **light fixture** is “mounted” on the **flexible positioning stand**, which allows adjustment for the patient’s “ideal height, tilt and distance.” Czeisler, 63:31-48. Thus, the **light fixture** is releasably locked to the

flexible positioning stand. When the “portable” **fixture** is removed, it is released (*i.e.*, releasably unlocked) from the **stand**. Czeisler, Figs. 39a-39c, 63:31-48. Thus, the light fixture is releasably lockable (or attached) to the stand. This not only renders obvious but affirmatively discloses that the members are releasably locked together because the stand and fixture are attached to one another to be used as a device for home use, while the fixture is also removable such that it is portable and thus usable away from the home stand as well. *See id.*

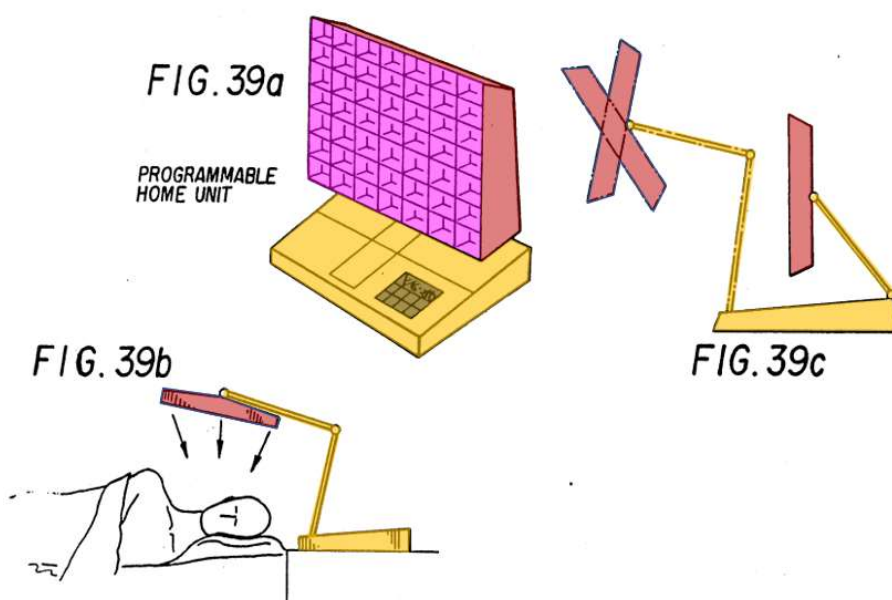
(d) Element [1.c]

76. **Element [1.c]** recites “**a light emitting assembly in the housing and operable to emit light through the opening in the housing, the light emitting assembly including a plurality of LEDs capable of generating 2,500 lux to 7,500 lux at 12 inches the light emitting assembly being storable in the first member and being mountable on the housing such that the housing acts as a base to support the light emitting assembly.**” This element is met by the combined teachings of Czeisler and Hed.

77. Czeisler discloses **a light emitting assembly in the housing and operable to emit light through the opening in the housing** (*e.g.*, “bank of ... lamps” “produces illumination”; *see* Fig. 39a), **the light emitting assembly capable of generating 2,500 lux to 7,500 lux at 12 inches** (*e.g.*, “3,000 to 6,000” and “7,000-12,000” lux at 1.5 feet) **the light emitting assembly being storable in the first**

member and being mountable on the housing such that the housing acts as a base to support the light emitting assembly (e.g., the lamps are mounted in the “light fixture” of the housing, which acts as a base to support the lamps via “flexible positioning stand”). Czeisler discloses, for example:

- Figs. 39a-c



- **19:50-59** (“It was discovered that bright light is necessary to rapidly achieve phase modification. Dimmer light, such as ordinary indoor lighting on the order of 100-300 lux, was ineffective to cause phase modification which could be clearly attributable to the application of such light. However, when bright light, on the order of 7,000-12,000 lux (optimally averaging about 9,500 lux or greater in the preferred embodiment) is applied daily, phase shifts on the order of 9-11 hours in a 2-3 day period are commonly observed.”)
- **23:29-46** (“Bright light may be administered by any means which provides adequate optical illumination, and it is recommended that user comfort, safety and practicality be considered. Nevertheless, to achieve the lighting intensity desirable for practice according to the preferred embodiment of the present

invention 7,000-12,000 lux, averaging about 9,500 lux, essentially the entire ceiling (or wall, etc.) of a room must be covered with fluorescent light fixtures if the subject is to be allowed to freely move throughout the room. *Other devices*, such as portable goggles or helmets or other appliances *may also be employed*. Such devices will be explained in greater detail below. All that is necessary is that the retina be exposed to bright light for the properly chosen pulse duration. Of course, the subject need not be staring directly at lights. It is sufficient that he be effectively surrounded by light of the appropriate intensity for the appropriate duration.”)

- **40:32-39** (“FIG. 1 illustrates an example of an individual being phase advanced using this technique, by an amount of eastward travel equivalent to a trip from Seattle to London. *Five hours of full bright light (7,000 to 12,000 lux) exposure was initiated at 6:30 A.M. (with 15 minute transitions of 3,000 to 6,000 lux preceding and following the 5 hour full-bright light exposure), about 1.5 hours before his 8:00 A.M.* ECP temperature minimum (as determined by an initial Constant Routine in this case or as could have been surmised from the approximately 9:30 A.M. traditional wake-time of this young man using the normative data of FIG. 5).”)
- **63:31-48** (“An alternative to large light banks are smaller lights placed closer to the user (FIG. 39a, 39b, 39c). *A bank of ten four-foot fluorescent lamps* covering a three-foot by four-foot area and positioned vertically produces illumination of 9,500 lux at a distance of about 3 feet from the eye, if the user's gaze is toward the lamps. Halving the distance between the lights and the user allows halving each dimension of the array and quartering the total light output while producing the same amount of light incident to the user's eye. Thus, *a light fixture* two feet wide and eighteen inches high suffices if it remains approximately eighteen inches from the user's face. *Such a fixture is easily portable and can be mounted on a flexible positioning stand that would allow the user to place it at the ideal height, tilt, and distance.* Such a fixture makes an ideal device for persons who must use the lights chronically. It may also be desirable to have such a device for home use.”)
- *See also 23:13-29, 32:45-48, 38:13-18, 39:31-35, 40:15-18, 42:28-31, 44:60-65, 45:21-26, 46:66-47:3, 61:28-33.*

78. Czeisler discloses that the **light fixture** includes, within the **housing**, a **light emitting assembly** that emits light at the patient. Czeisler, 63:31-62. Czeisler discloses that the **light emitting assembly** is enclosed in the light fixture's **housing**. Czeisler discloses that the **light emitting assembly** emits light through the **opening**, and is therefore storable in the **light fixture**. Czeisler, Figs. 39a-39c.

79. I have been informed that if the prior art discloses a point within a claimed range, the prior art anticipates the claim. I have been informed that a presumption of obviousness applies where a claimed range overlaps with a range disclosed in the prior art. This presumption can be overcome if the prior art teaches away from the claimed range, the claimed range produces new and unexpected results, or other evidence demonstrates non-obviousness of the claimed range. This presumption establishes that, absent a reason to conclude otherwise, a factfinder is justified in concluding that a disclosed range does just that—discloses the entire range.

80. Czeisler teaches using several different dosages of light treatments including “7,000-12,000 lux” to a user, preceded and followed by light of “3,000-6000 lux.” Czeisler, 39:31-35, 40:15-20. Thus, Czeisler discloses the claimed range of 2,500-7,500 lux for two reasons. First, Czeisler discloses that the entire range of 3,000 to 6,000 lux is output by the claimed device; this range therefore discloses the

claimed range. Moreover, Czeisler discloses that its lamp is further capable of generating light outputs within the range of 3,000 to 7,500 lux. Because this discloses outputting light at intensities within the claimed range of 2,500 to 7,500 lux (namely, 3,000 to 7,500 lux), this claim element is met. Nothing in the '225 patent suggests that there is any new or unexpected result in limiting the output to 2,500 to 7,500 lux, or demonstrates non-obviousness of that range. To the contrary, the claim recites mere capability of outputting light within this range of intensities; exceeding 7,500 lux does not preclude outputting an intensity of 7,500 lux, and there is no significance to the difference between 2,500 and 3,000 lux.

81. Moreover, because Czeisler teaches that its device outputs light at least in the range of 3,000 to 12,000 lux, a person of ordinary skill would have at least found it obvious that Czeisler's device is able to further reduce the intensity of light output from the device from 3,000 to 2,500 lux, rendering obvious that the device is capable of outputting the entire range. Indeed, it was known to allow both fluorescent and LED lights to have variable outputs, such that their individual lux outputs are reduced. *See, e.g.*, Kyricos (Ex. 1016), 8:57-60 ("A manual dimmer switch may also be provided on the visor ... to simply decrease the intensity of light generated by lamp 15..."); Chen (Ex. 1008), 2:19-31 ("by adjusting ...parameters...[the] intensity" is adjusted); Ex. 1030 (U.S. No. 6,016,038 ("Mueller"), titled

“Multicolored LED Lighting Method and Apparatus,” filed April 26, 1997), Abstract (“The light-emitting LEDs may be controlled by a processor to alter the brightness and/or color of the generated light.”) Similarly, because these devices use multiple different light sources (*e.g.*, multiple fluorescent tubes, LEDs, or high intensity discharge lights (“HIDs”)), it would have been obvious that light intensity could be further reduced by turning off some of those LEDs. *See, e.g.*, Hed, 14:3-16 (“The red light is then switched off and additional [light sources] are switched on.”) Thus, lowering the light intensity below 3,000 lux would have been done in the same way as lowering the intensity to 3,000 lux—namely, by either reducing the output of individual LEDs, turning off some of the LEDs, or both. *See, e.g.*, Hed, 14:6-11 (“The initial dose ... simulate[s] the dawn to full light transition. The red [LED] light is then switched off and the additional HID are switched on. At full intensity the luminaire emits more than 60,000 lumen as required.”)

82. Czeisler further discloses the claimed range of lux at 12 inches. For example, Czeisler discloses that “[a]n alternative to large light banks are smaller lights placed closer to the user (FIG. 39a, 39b, 39c).” Czeisler 63:31-32. Czeisler goes on to explain that while a “bank of ten four-foot fluorescent lamps covering a three-foot by four-foot area and positioned vertically produces illumination of 9,500 lux at a distance of about 3 feet from the eye, if the user's gaze is toward the lamps,”

this distance may be “halv[ed]” and the total light output “quartered” to accommodate a lower lux range. Czeisler, 63:30-40. Czeisler’s lamp producing 3,000-12,000 lux at 1.5 ft. results in 6,750-27,000 lux at 1 ft. (12 inches). Therefore, Czeisler’s device is capable of generating 6,750-7,500 lux.

83. Further, Czeisler discloses providing the light for therapy at many different ranges so long as the appropriate intensity of light is applied to the patient. For example, Czeisler discloses the **light emitting assembly** encompassing an entire wall of a room. Czeisler, 63:12-25. In another example, Czeisler discloses it close to one’s head (“headboard”). Czeisler, 63:52-54. In yet another example, Czeisler discloses the **light emitting assembly** to be mere millimeters from one’s retinas, in the form of “portable light goggles.” Czeisler, 7:38-45, 63:63-68, 67:36-40. Indeed, by reducing “precise distance from the lights to the eyes,” this makes “control of the illumination level very precise.” Czeisler, 63:63-64:4. This same logic applies to Czeisler’s teaching of reducing the size of a panel to bring it closer to the user. Specifically, these teachings render obvious and affirmatively disclose shrinking a light panel such that it is placed 1 foot, instead of 1.5 feet, from the user, thereby allowing the use of the preferred 3,000-12,000 lux while using less power and more precisely control illumination, meeting this element. *Id.*, 46:38-43, 63:31-64:9. *See also* Hed, 1:52-65 (describing light therapy device design considerations including

electricity usage and heat dissipation). Indeed, applying light treatment at one foot from a user was well known. *E.g.*, Bolta (Ex. 1006), 7:17-18 (“bringing the light panel within 12-24 inches from the patients”).²

84. As I discussed for at least [1.b], the **light fixture** is connected to the **flexible positioning stand** of the housing. As I discussed in [1.b], the **flexible positioning stand** acts as a base to support the **light emitting assembly**. The **flexible positioning stand** further provides for adjustments to height, tilt, and distance.

85. To the extent additional disclosure of this element is required, Hed discloses the light emitting assembly including a plurality of LEDs (*e.g.*, “LEDs”). Hed discloses, for example:

- **1:29-2:2** (“In general, artificial light sources are available in either a predetermined broad spectrum or in an almost monochromatic form. Some well known “white” light sources include incandescent lamps, high intensity discharge (HID) light sources and fluorescent light sources. Among the better known monochromatic light sources we can cite light emitting diodes, lasers of all types and gas discharge tubes. What has not been freely available heretofore, is an efficient light source with a temporally variable spectral output, or at least a time-variable appearance. Currently, when the need for such means of illumination arises, one can either use filters to allow only part of the spectrum of a white light source to be seen, or, one can use discrete light sources of different spectral distribution to illuminate a single scene. Both of these approaches are cumbersome. For instance, when using filters, the segment of the spectrum filtered out is lost to absorption and thus there is

² Moreover, nothing in the ’225 patent suggests that the distance of one foot from the patient, as opposed to 1.5 feet for example, is a key inventive aspect of the patent; 12 inches is instead merely identified as a “preferabl[e]” distance. ’225 patent, at 2:1-3:7.

a major reduction in the system efficiency. It is desirable to have flat light sources with variable chromaticity and a large degree of luminance homogeneity, which can be modular so as to allow for stepwise increase in total light output from single powering source. In most current lighting systems, the conversion of electrical power to light flux occurs at the point of use of the light. Since the efficiency of conversion of electricity to visible light is rarely more than 25%, and in some very large light sources, 30%, a large amount of heat must be dissipated at the point of use of the light. Furthermore, there are special situations, particularly in hazardous environments, where it is not desirable to have electrical connectors, conductors or any electrically powered devices within the space that is to be illuminated. In such areas the light sources and their associated wiring must be enclosed in special enclosures, a fact that increases installation costs and reduces efficiency of light output utility. It is thus desirable to provide luminaires which are remotely powered so as to allow for heat withdrawal at the remote location where electricity is converted to light, allow safe installation in hazardous environment, and provide for controllable chromaticity.”)

- **2:34-42** (“It is also an object of the invention to provide a luminaire particularly suitable for the modification and resetting of human circadian cycle, as taught by C. A. Czeisler in U.S. patent application Ser. No. 07/066,677, where very high intensity light sources capable of delivering at least 7500 lux are required, and, when desired, without having to discharge the heat generated from such light sources within the space where the light is used.”)
- **6:8-20** (“In the preferred embodiment of the luminaire shown in FIG. 1, the light sources are simply small light emitting diodes, or LED's. These are available in a large variety of shapes and flux outputs from a number of manufacturers. For instance Hewlett Packard of California provides a full line of LED's ranging in size from miniature devices to large devices having luminosity in the rang of microcandela to one candela. Hewlett Packard supplies both red (wavelength typically around 630 nanometers) and green (wavelength typically 560 nanometer) light emitting diodes suitable for the instant invention.”)
- **6:21-26** (“These commercial LEDs are usually encapsulated to facilitate mounting and shipment. In the instant invention one can use such commercial LEDs as well as purchase LEDs dies (not encapsulated, and thus lower the

overall cost of system) and solder the dies to the their [sic] respective conductors directly.”)

- **6:33-38** (“One of the advantages in using LEDs as the light sources in the instant invention is the fact that the output of the LED scales with the voltage applied over a relatively large range. As a result, one can control the light output and the chromaticity of a luminaire over a relatively large range.”)
- **8:13-27** (“While in the above description of the preferred embodiment I have referred to the light sources as light emitting diodes, it should be understood that other monochromatic light sources could be used, including monochromatic miniature gas discharge (“neon light”) light sources, or even incandescent light sources with appropriately colored external envelopes. It should be understood, however, that the latter method is extremely inefficient, in that only a very small percentage of the energy used to power the system results in visible light. The reason is that in the first place small incandescent light sources are very inefficient to start with, and second, a large proportion of their emitted light is absorbed in the process of rendering them “monochromatic”.”)
- **10:45-68** (“One of the shortcomings of the embodiments described above involves their application when very high levels of luminous flux are desired. Since light emitting diodes have an overall efficiency of converting electricity to light in the range of 8% to 12%, the balance of the energy is dissipated as heat. When very high luminous output of about 5000 lumens per square meter and higher are required, the heat generated at the luminaire may become too high for passive dissipation and can cause an appreciable rise in the temperature of the luminaire. While this is partially alleviated with the optional heat exchanging system described above, in a number of environments, it is not advisable to have "live" electrical wiring and connections in the illuminated zone. I can overcome these shortcomings by positioning the light source remotely from the luminaire and transmitting the light into the luminaire by optical fibers or optical wave guides. With this approach, high intensity light sources can be used, where the conversion of electricity to light is accomplished at the remote location, and thus heat removal is facilitated. Furthermore, the efficiency of a high intensity light source is, as a general rule, much greater than in small light sources.”)
- See also 13:32-14:2.

86. Czeisler discloses a variety of light sources for the device, as I discuss above. Hed teaches using LEDs because compared to other light sources, LEDs are more “efficient.” Hed, 2:14, *see also*, 8:13-21. Hed also teaches using LEDs because LEDs produce less heat than fluorescent and incandescent lights, and can be modulated for light output and chromaticity. Hed, 6:33-38, 8:13-27. LED light output tracks with voltage over a large range. Thus, the LEDs are capable of generating light at 12 inches between 2,500 lux for a low voltage, to 7,500 lux, “as taught by ... Czeisler.” Hed, 1:20-26, 2:34-42, 10:50-55. As I discussed in Section IX.A.2, a person of ordinary skill in the art would have been motivated to modify Czeisler with Hed’s LED teachings based on Hed’s explicit discussion of using its teachings with Czeisler’s device and to advantageously reduce power and heat output, yielding a light fixture using LEDs. Hed, 1:54-57, 2:33-42, 6:8-38, 8:13-27.

(e) Claim [2]

87. **Claim [2]** recites “**The light therapy device of claim 1 wherein at least some of the LEDs are capable of emitting white-light.**” This claim is met by the combined teachings of **Czeisler** and **Hed**.

88. Hed discloses that the LEDs are capable of emitting white-light (*e.g.*, group of LEDs emit “white light”). *See* my discussions of element [1.c]. Hed discloses, for example:

- **3:28-36** (“In general, where I use the term “monochromatic” to describe the light emitted by one of the light sources of a group, it should be noted that the term is intended to be used in a loose sense to indicate that the sources have different output colors and that the colors are selected so that the combination of light colors emitted by the group has the desired composite effect, e.g. white light. The “monochromatic” light of each emitter can have a wider or narrower band width as desired.”)
- **6:8-12** (“In the preferred embodiment of the luminaire shown in FIG. 1, the light sources are simply small light emitting diodes, or LED’s. These are available in a large variety of shapes and flux outputs from a number of manufacturers.”)
- **6:54-58** (“FIG. 1 shows a specific arrangement of the LEDs, namely they are arranged in rows of RGB groups, with all the groups within a column having the same relative orientation and with adjacent columns having mirror inverted orientation.”)
- *See also* 2:34-42, 6:12-20, 10:45-68, 13:32-14:2.

89. While Czeisler teaches using white light “[b]ecause the photopic and scotopic sensitivity functions cover most regions of the visible spectrum,” and thus “most ‘white’ light” is effective, it does not explicitly disclose LEDs capable of emitting white-light. Czeisler, 23:3-19; *see also* 45:32-48. Hed teaches that a group of LEDs are used to create “white light.” As I discussed for [1.c], it would have been obvious to a person of ordinary skill in the art to implement Czeisler’s device using LEDs to obtain benefits regarding efficiency and heat, as taught by Hed. As I discussed in Section IX.A.2, the use of white LEDs was well known prior to the ’225 priority date.

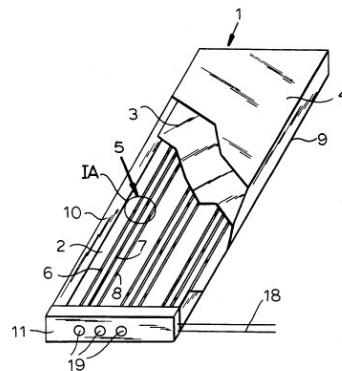
(f) Claim [3]

90. Claim [3] recites “The light therapy device of claim 1 wherein a diffuser screen of light diffusing sheet material is positioned over the LEDs.”

This claim is met by Hed.

91. Hed discloses a light emitting device housing a diffuser over LEDs within the housing (e.g., “transmissive diffuser extending across the housing” over the device’s LEDs). Hed discloses, for example:

- Fig. 1



- 3:15-27 (“More particularly, the luminaire according to the invention can comprise: a housing; a light-transmissive diffuser extending across the housing for diffusing light impinging upon the diffuser from within the housing; a multiplicity of groups of light emitters in the housing, each group consisting of three emitters emitting light of complementary colors, the groups being spaced apart over an area of the diffuser, whereby the light from the emitters in a group mixes at and is diffused by the diffuser; and means for energizing the light emitters.”)
- 3:37-44 (“Alternatively, the luminaire can comprise: a light-transmissive diffuser extending across the housing for diffusing light impinging upon the diffuser from within the housing; a multiplicity of elongated light guides in

the housing emitting light over respective lengths thereof; and means at an end of the housing for injecting light into corresponding ends of the light guides”)

- **4:64-5:6:** (“An array of groups 5 of light sources 6, 7, 8 are fastened on the bottom sheet 2, and include respectively a red light source, a green light source and a blue light source. The light sources are mounted in such a way that the light is emitted to the inner space of the box and toward the middle plane 3. The middle sheet 3 and the top sheet 4 are light diffusing screens as described in my copending application Ser. No. 07/788,184 entitled "Light Weight Low Loss Refractive Light Diffusion System". In essence, the two sheets and 4 form one diffusing screen.”)
- **5:36-42** (“The use of the dual screen diffuser composed of the sheets 4 and 3, assures that light emitted from the individual light sources emanates from the outer surface of the luminaire completely intermixed. This can be achieved by having the periodicity of the screens be a whole multiple (including the same period) of the period of the light sources groups.”)
- **8:65-68** (“The sheets 42 and 43 are two diffusion screens as described for the embodiment in FIG. 1 and are based on my copending application Ser. No. 07/788,184.”)

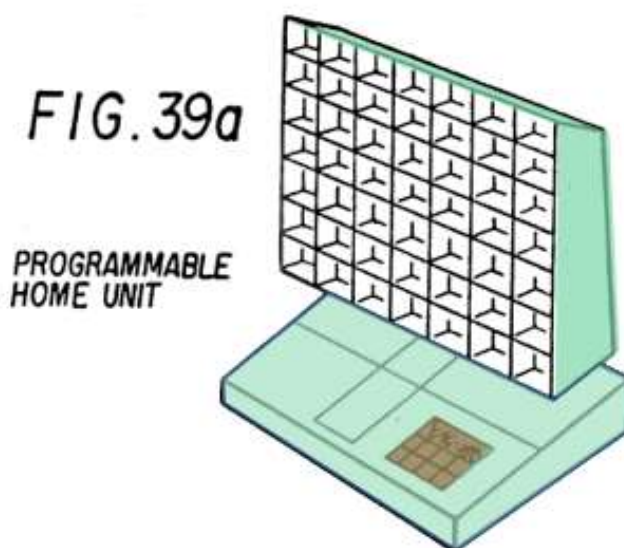
92. In addition to Czeisler’s disclosure of a diffuser between the lamp and the viewer, Hed teaches a diffuser housed in the light therapy device to diffuse LED emissions. Czeisler, 62:48-62; Hed, 3:15-27, 3:37-44. As I discussed in Section IX.A.2, a person of ordinary skill in the art would have been motivated to modify Czeisler with Hed’s LED diffuser to ensure that the LED light emission is diffusely scattered.

(g) Claim [4]

93. Claim [4] recites “The light therapy device of claim 1 wherein the housing accommodates a therapy calculator programmed to calculate a treatment regime based on an input of information.” This claim is met by Czeisler.

94. **Czeisler discloses that the housing accommodates a therapy calculator** (*e.g.*, “timing and scheduling mechanisms” including a “computer program ... that performs” “relevant calculations” for “therapeutic reasons”) **programmed to calculate a treatment regime based on an input of information** (*e.g.*, “program ... inform[s] the user what times to schedule light and darkness” or “automatically turn the lights on when appropriate” based on “information” from “user”). Czeisler discloses, for example:

- **Fig. 39a** (showing a “programmable home unit”)



- **6:32-37** (“Also, computer-based methods automatically determine the correct amount of phase adjustment required to synchronize a subject's circadian cycle with a desired activity cycle, and "prescribe" a sequence of applications of bright light so as to achieve that phase adjustment.”)
- **7:50-59** (“The apparatus comprises input means for inputting pre-stimulus timing data; assessing means for receiving the pre-stimulus timing data, and for assessing characteristics of the subject's circadian cycle; modeling means, connected to said assessing means, for computing substantially optimum durations and application times of the bright light pulses and, optionally, the darkness pulses; and output means, connected to the modelling means, for outputting the substantially optimum durations and application times.)
- **65:57-68** (“A computer program can be created for any given computer device that performs the relevant calculations. The program queries the user about his or her sleep characteristics and the nature of the change desired. The program allows the user to express this information in nontechnical language—for example, in the case of jet lag amelioration, it would ask the origin and destination locations and the times of the airline flights; the user would not

need to know the longitudes of the locations or any of the principles behind the method. The program would inform the user what times to schedule light and darkness.”)

- **65:45-56** (“A physician or other person trained in the method can make the determination for an individual; this is appropriate in cases where the change is to be effected for *therapeutic reasons* such as the treatment of affective personality disorders or the treatment of delayed sleep phase insomnia. However, other applications of the technique, such as treatment of jet lag or to facilitate adaptation to shift changes transitions for workers, may benefit from devices that automate or simplify the *calculation* of light and darkness schedules based on the formulae of the mathematical model developed herein.”)
- **66:22-25** (“*Timing and scheduling mechanisms can also be built into the light fixtures and installations themselves.* These devices would determine the proper times and automatically turn the lights on when appropriate.”)
- *See also* Fig. 19, 37:11-38:4, 67:1-9, claim 1.

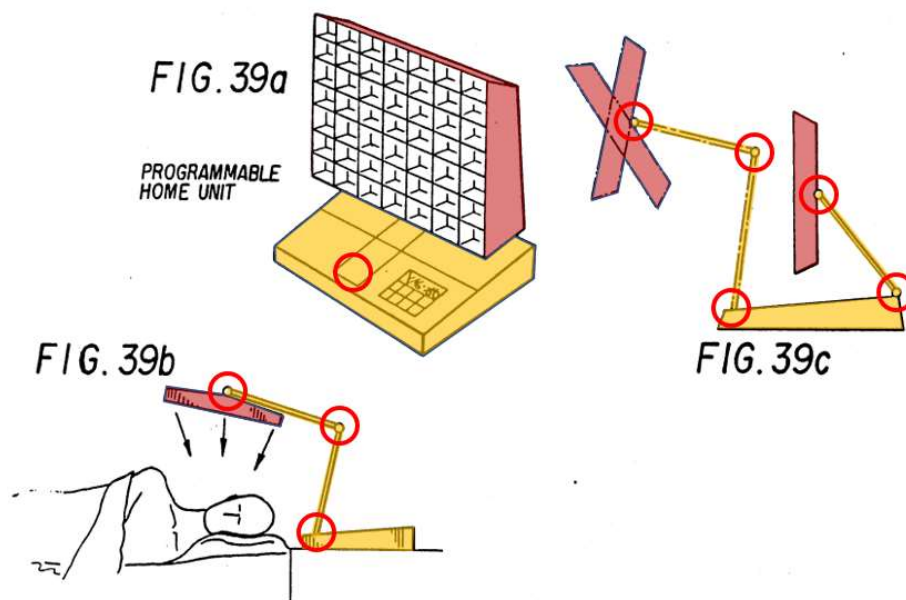
95. Czeisler discloses the **housing** includes a therapy calculator in the form of built-in timing and scheduling mechanisms for calculating proper times to turn on the lights. These calculated times provide a treatment regime to the user. The calculation is made based on “information” input from the user in response to queries from a computer program using a **display and input buttons**, *e.g.*, as shown in Fig. 39a. The information provided by the user includes, for example, “the origin and destination locations and the times of the airline flights” for programming treatment for jet lag amelioration. Czeisler, 65:57-68. Indeed, this disclosure from Czeisler is similar to the “Jet Lag Calculator” embodiment described in the ’225 patent. *See* ’225 patent, 5:1-28.

(h) Claim [5]

96. Claim [5] recites “The light therapy device of claim 1 wherein the first and second members are pivotally connected.” This claim is met by Czeisler.

97. Czeisler discloses the light therapy device of claim 1 wherein the first (e.g., including the “light fixture”) and second members (e.g., including the “flexible positioning stand”) are pivotally connected (e.g., the light fixture “can be mounted” on the flexible positioning stand and adjusted for “height, tilt, and distance”). Czeisler discloses, for example:

- Figs. 39b-c



- See also 63:31-48 (see [1.a]-[1.c])

98. See my discussions of element [1.a] and [1.b]. As shown in Figs. 39a-c, the **light fixture** is pivotally connected to the **flexible positioning stand** on a

pivoting arm such that the **light fixture** can be tilted, raised/lowered, and moved forward/backward (pivot points circled in red). As shown in the figures, and in particular Fig. 39b, the pivot points are similar to those found in everyday table or desk lamps that allow for articulation and placement of the light in a variety of positions. For example, the pivot point circled in red in Fig. 39a allows for the **light fixture** to pivot and be raised and moved closer to the user from a more compact position. The additional pivot points shown in Figs. 39b and 39c further allow for aiming the **light fixture** up and down, or for adjusting the **light fixture** even further. These adjustable points of the **flexible positioning stand** are what help facilitate the stand's flexible positioning. As I described above in Section IX.A.1, a person of ordinary skill in the art would have understood that Figs. 39a, 39b, and 39c are the same embodiment shown in different deployment positions. Fig. 39c shows a lateral view of both Figs. 39a and 39b: the deployment position of the right side of Fig 39c being associated with that of Fig. 39a, and the deployment position of the left side of Fig 39c being associated with that of Fig. 39b. Thus, the adjustable points circled above in Fig. 39a are pivoting points.

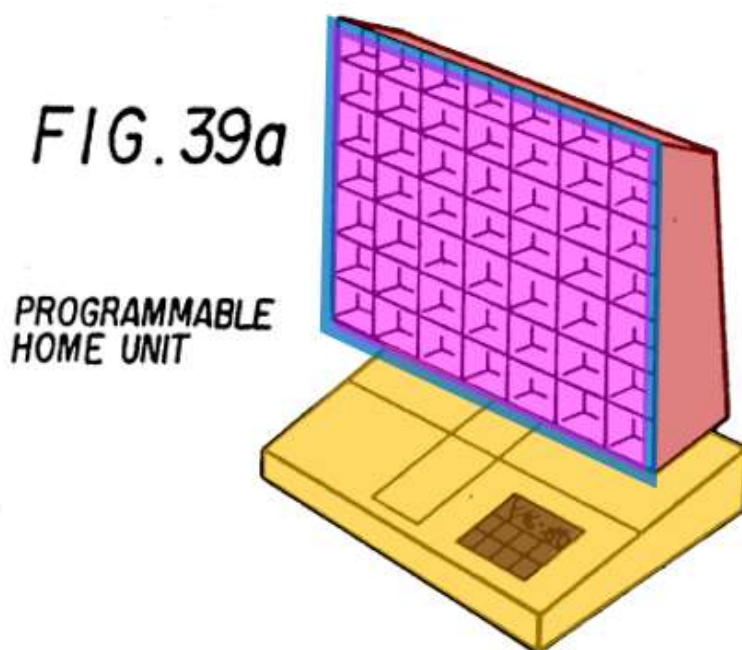
(i) Claim [6]

99. **Claim [6]** recites “**The light th[e]rapy device of claim 5 wherein the light emitting assembly is mounted onto the first member and the second**

member forms a base for support of the first member.” This Claim is met by Czeisler.

100. Czeisler discloses the light therapy device of claim 5 wherein the **light emitting assembly is mounted onto the first member** (*e.g.*, the “light fixture” is mounted on the first member (*see* [1.b])) **and the second member** (*e.g.*, including the “flexible positioning stand”) **forms a base for support of the first member** (*e.g.*, the first member is “mounted on a flexible positioning stand,” *see* [1.b]). Czeisler discloses, for example:

- Fig. 39a



- *See also* 63:31-48 (*see* [1.a]-[1.c])

101. *See* my discussions of elements [1.b] and [1.c], and claim 5. The **flexible positioning stand** is a base, and the **light fixture** is mounted onto the base, with the **light emitting assembly** mounted onto the **light fixture**.

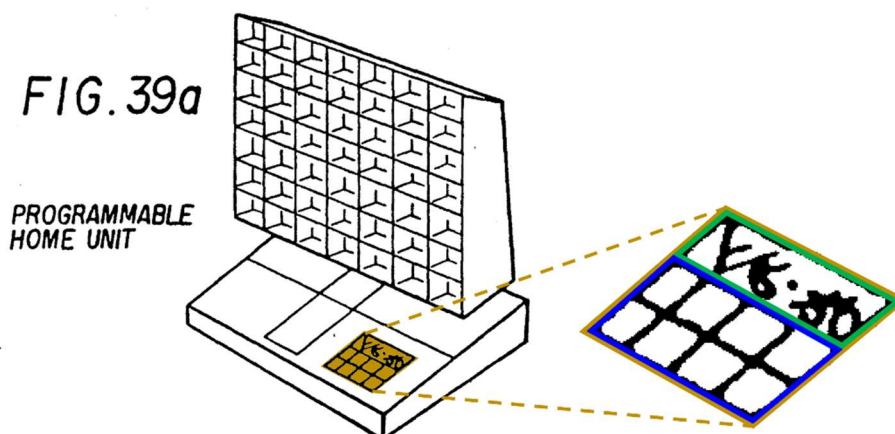
(j) Claim [12]

102. Claim [12] recites “**The light therapy device of claim 4 wherein the therapy calculator includes a display, a key pad for inputting information and a processor for accepting the information and calculating a treatment regime.**”

This Claim is met by Czeisler.

103. Czeisler discloses that the therapy calculator (*see* [4]) includes a **display, a key pad for inputting information** (*e.g.*, display and key pad in Fig. 39a for “inputting” information when program “queries the user”) and a **processor for accepting the information and calculating a treatment regime** (*e.g.*, “computer device” “performs the relevant calculations” and “inform[s] the user what times to schedule light and darkness” based on input information). Czeisler discloses, for example:

- Fig. 39a



- **7:46-59** (“Another embodiment of the invention is a computer apparatus for prescribing a substantially optimum stimulus regimen of bright light pulses, and, optionally, darkness pulses, to allow a subject's circadian cycle to be modified to a desired state. The apparatus comprises input means for inputting pre-stimulus timing data; assessing means for receiving the pre-stimulus timing data, and for assessing characteristics of the subject's circadian cycle; modeling means, connected to said assessing means, for computing substantially optimum durations and application times of the bright light pulses and, optionally, the darkness pulses; and output means, connected to the modelling means, for outputting the substantially optimum durations and application times.”)
- **65:51-68** (“[O]ther applications of the technique, such as treatment of jet lag or to facilitate adaptation to shift changes transitions for workers, may benefit from devices that automate or simplify the calculation of light and darkness schedules based on the formulae of the mathematical model developed herein. [¶] A computer program can be created for any given computer device that performs the relevant calculations. The program queries the user about his or her sleep characteristics and the nature of the change desired. The program allows the user to express this information in nontechnical language—for example, in the case of jet lag amelioration, it would ask the origin and destination locations and the times of the airline flights; the user would not need to know the longitudes of the locations or any of the principles behind the method. The program would inform the user what times to schedule light and darkness.”)

- **66:22-30** (“*Timing and scheduling mechanisms can also be built into the light fixtures* and installations themselves. These devices would determine the proper times and automatically turn the lights on when appropriate. This is particularly effective where lights are installed in workplaces (for shift change adjustment) or in airport waiting areas and aircraft (for jet lag compensation) since they would operate on programmed schedules without human intervention.”)
- **See also 67:1-9** (“portable equipment such as ... exposure time calculators”).

104. Czeisler discloses that the device includes a **display** and **input buttons** for a user to operate the device. *See* Fig. 39a, 7:46-59. For example, Figure 39a shows a plurality of keys to comprise a key pad, and a component positioned superior to the key pad that contains graphical information used to input and present information processed by a processor. Czeisler does not discuss the key pad, display, and processor in great detail, but a person of ordinary skill in the art would have understood, both from the key pad and display in this figure, as well as from Czeisler’s specification, that this device includes a key pad, display, and processor. For example, the calculation program “queries the user” for information used for “[t]iming and scheduling mechanisms ... built into” the device that are used for “perform[ing] the relevant calculations.” Czeisler, 65:51-68, 66:22-30, 67:1-9. Displays and input buttons were basic user interface elements, well-known to persons of ordinary skill in the art, for use in computer-based systems to solicit and receive information from users; and, likewise, processors were well-known in the art as the mechanisms by which such computers execute “programs” as described

by Czeisler. Czeisler, 65:61. Indeed, it was well understood in the art to use such key pads, displays, and processors for purposes of inputting, displaying, and processing user inputs for therapeutic purposes. *See, e.g.*, Gerdes (Ex. 1009), 7:67-8:3, 8:7-22, 9:61-10:56 (describing a “numeric entry keypad,” an “output display,” and “controller”), Figs. 1-2; Ex. 1027 (U.S. 4,429,373 (“Fletcher”) titled “Data Analyzing System for Clinical Spectrophotometer,” published January 31, 1984) Abstract, 7:7:18-25, 7:47-55 (describing a “key pad,” “display panel,” and “microprocessor”); Ex. 1029 (U.S. No. 6,221,095 (“Van Zuylen”), titled “Method and Apparatus for Photon Therapy,” filed July 15, 1997), 3:3-12, 3:28-30, 8:37-54 (“The main controller ... has two key elements, microprocessor 108 and digital signal processor 110. ... A liquid crystal display 1512 provides display of various parameters associated with the treatment. A data entry key pad ... provides means for entering dat[a] and accessing various treatment parameters.”), 10:38-40.

(k) Claim [15]

105. **Claim [15]** recites “**The light therapy device of claim 4 wherein th[e] therapy calculator is programmed to prompt a user for an input of information.**” This Claim is met by Czeisler.

106. Czeisler discloses the light therapy device of claim 4 wherein the therapy calculator is programmed to prompt a user for an input of information (*e.g.*, “queries the user”). Czeisler discloses, for example:

- **65:57-68** (“A computer program can be created for any given computer device that performs the relevant calculations. The program queries the user about his or her sleep characteristics and the nature of the change desired. The program allows the user to express this information in nontechnical language—for example, in the case of jet lag amelioration, it would ask the origin and destination locations and the times of the airline flights; the user would not need to know the longitudes of the locations or any of the principles behind the method. The program would inform the user what times to schedule light and darkness.”)

107. See my discussions of claims [4] and [12]. Czeisler teaches that the calculator program “queries the user” for information. When a program queries a user for information, this describes prompting the user to input the information that has been queried by the program. Czeisler teaches that the user inputs the required information using “nontechnical language” such that the therapy calculator “inform[s] the user what times to schedule light and darkness.” Czeisler, 65:57-68.

(I) Element [18.pre]

108. **Claim [18.pre]** recites “**An ocular light therapy device.**” This Claim is met by **Czeisler**.

109. **Czeisler discloses an ocular light therapy device** (*e.g.*, “apparatus for administering bright light to a subject’s retina”). Czeisler discloses, for example:

- **7:38-45** (“Another embodiment of the invention is an apparatus for administering bright light to a subject’s retina, comprising luminous means for controllably emitting bright light; aperture means, located relative to the luminous means for allowing the subject to view his environment even when the luminous means are emitting bright light. The apparatus may be self-supporting, or it may be in the form of portable light goggles.”)

- **23:32-40** (“Nevertheless, to achieve the lighting intensity desirable for practice according to the preferred embodiment of the present invention 7,000-12,000 lux, averaging about 9,500 lux, essentially the entire ceiling (or wall, etc.) of a room must be covered with fluorescent light fixtures if the subject is to be allowed to freely move throughout the room. Other devices, such as portable goggles or helmets or other appliances may also be employed. Such devices will be explained in greater detail below. All that is necessary is that the retina be exposed to bright light for the properly chosen pulse duration. Of course, the subject need not be staring directly at lights. It is sufficient that he be effectively surrounded by light of the appropriate intensity for the appropriate duration.”)
- **40:11-25** (“By subtracting the initial phase from the desired phase, the magnitude and direction of the required phase shift is determined. Then, by interpolation of FIG. 11 or FIG. 15B, the optimum time to begin the administration of a bright light pulse is determined. This bright light pulse is approximately five hours in duration and has a dosage of approximately 7,000-12,000 lux in a preferred embodiment. Light of half intensity may precede and follow this five-hour pulse for approximately 15 minutes. By interpolation of FIG. 14 or FIG. 15B, the optimum time to begin the dark (sleep) pulse is determined. The dark pulse lasts from approximately six to nine hours in a preferred embodiment. The retina of the eye should be appropriately shielded from all light.”)
- See also Abstract, 10:38-43, 28:27-45, 37:54-61, 63:31-48.

110. See my discussions of element [1.pre]. Czeisler’s device is for ocular light therapy because it administers light “to a subject’s retina.”

(m) Element [18.a]

111. Element [18.a] recites “**an outer housing including an opening, a base and an upper member pivotally connected to the base. . .**” This element is met by Czeisler.

112. **Czeisler discloses an outer housing including an opening** (*see* [1.a]) a base (*see* [1.c]) **and an upper member** (*e.g.*, first member including the “light fixture,” *see* [1.c]) **pivotally connected to the base** (*see* [5]).

113. *See* my discussions of elements [1.a] through [1.c] and claim 5. Czeisler discloses an outer housing including an opening as I discussed for [1.a], comprises a housing that acts as a base as I discussed for [1.c], has a first member—which is an upper member above the base—that includes the “light fixture” as I explained in my discussion of element [1.c] and that is pivotally connected to the base as I explained in my discussion of claim 5.

(n) Element [18.b]

114. **Element [18.b]** recites “a **light emitting assembly mounted in the upper member of the the** [*sic*] **housing and operable to emit light through the opening in the housing, the light emitting assembly including a plurality of LEDs capable of generating 2,500 lux to 7,500 lux at 12 inches.**” This element is met by the combined teachings of Czeisler and Hed renders for the same reasons explained for [1.c]. *See* my discussions of element [1.c].

(o) Claim [19]

115. **Claim [19]** recites “**The light therapy device of claim 18 wherein at least some of the LEDs are capable of emitting white-light.**” This Claim is met by the combined teachings of **Czeisler** and **Hed**. *See* my discussions of claim 2.

(p) Elements [20.pre]-[20.a]

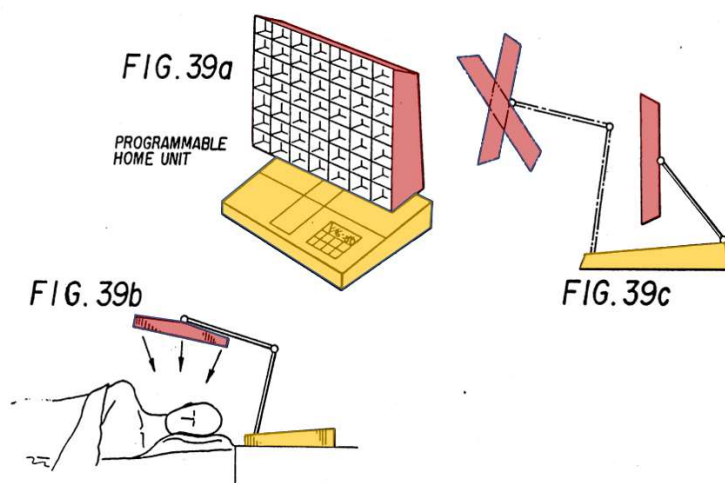
116. Elements [20.pre]-[20.a] recite “**A light therapy device comprising: an outer housing including an opening. . .**” These elements are met by Czeisler. See [1.pre]-[1.a].

(q) Element [20.b]

117. Element [20.b] recites “**the housing including a base for supporting the housing in a therapy position on a support surface. . .**” This element is met by Czeisler.

118. Czeisler discloses the housing including a base for supporting the housing (See [1.b]) in a therapy position (e.g., a position that “allow[s] the user to place it at the ideal height, tilt, and distance” for treatment) **on a support surface** (e.g., on a surface, see Fig. 39b). Czeisler discloses, for example:

- Fig. 39a-c:



- *See also* 63:31-48 (*see* [1.a]-[1.c])

119. *See* my discussions of elements [1.a], [1.b], claim 6, and element [18.a].

As I previously explained for element [1.b], Czeisler’s “**flexible positioning stand**” is a base supporting the housing and **light fixture**. Czeisler, 63:40-48. The **flexible positioning stand** is on a surface. For example, Fig. 39b shows the **flexible positioning stand** supported on a table for therapeutic use while the user is resting. The **light fixture** is moved and tilted as shown in Figs. 39a-c to position the **light fixture** at a desired “height, tilt, and distance” from the user’s face for “treatment.” Czeisler, 63:40-48; Czeisler 65:45-56. Additionally, Czeisler’s **flexible positioning stand** would have supported the housing on any such surface, for example other tables, desks, or on a floor.

(r) Element [20.c]

120. **Element [20.c]** recites “**a light emitting assembly in the housing and operable to emit light through the opening in the housing, the light emitting assembly including a plurality of LEDs capable of generating 2,500 lux to 7,500 lux at 12 inches.**” This element is met by the combined teachings Czeisler and Hed. *See* [1.c], [18.b].

(s) Element [24.pre]

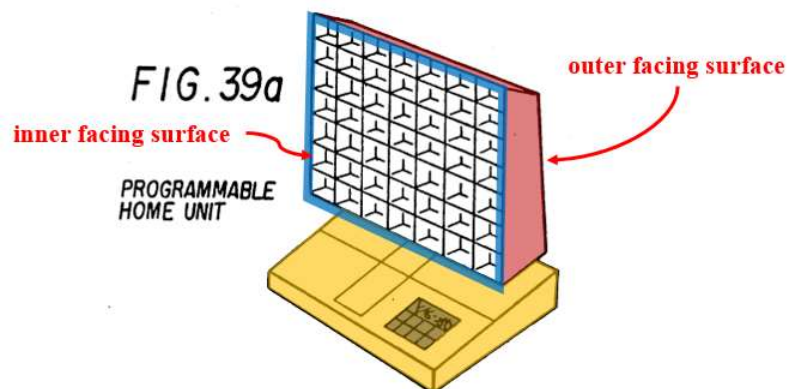
121. **Element [24.pre]** recites “**A light therapy device comprising. . .**” This element is met by Czeisler. *See* [1.pre], [18.pre], [20.pre].

(t) Element [24.a]

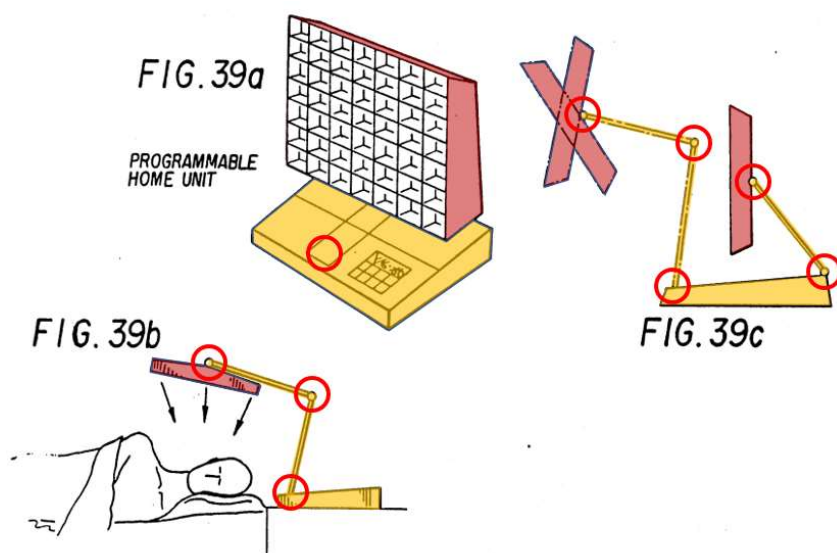
122. Element [24.a] recites ‘an outer housing including a base for supporting the device on a support surface and an upper member having an inner facing surface and an outer facing surface, the base and the upper member being pivotally connected such that the inner facing surface can be pivoted adjacent the base. . .’ This element is met by Czeisler.

123. Czeisler discloses an outer housing including a base for supporting the device on a support surface and an upper member (*see* [1.a]-[1.c], [6], [18.a], [20.b]) having an inner facing surface and an outer facing surface (*see* [1.a], [1.c], [6], [18.a]-[18.b], [20.a], [20.c], Fig. 39a below), the base and the upper member being pivotally connected (*see* [5], [18.a],) such that the inner facing surface can be pivoted adjacent the base (*e.g.*, “allow the user to place it at the ideal height, tilt, and distance,” *see* Fig. 39c below). Czeisler discloses, for example:

- Fig. 39a (showing a base and upper member and inner and outer surfaces)



- Figs. 39a-c (showing pivot points and light fixture adjacent to the base)



- See also 63:31-48 (see [1.a]-[1.c])

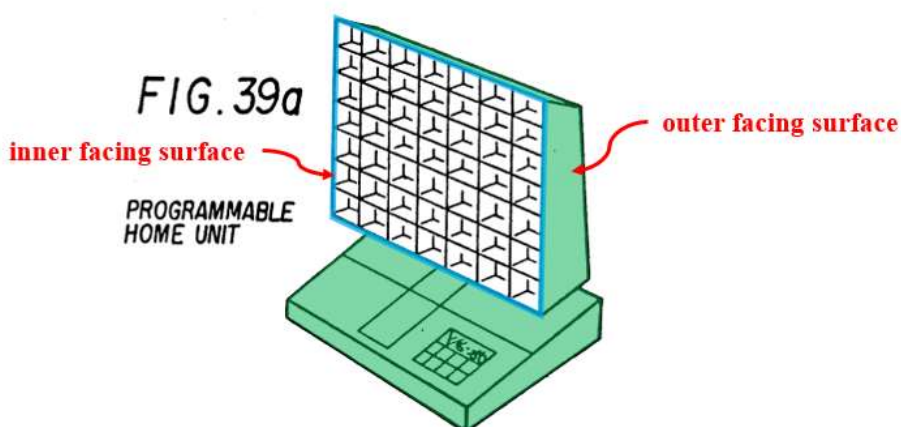
124. As I discussed for [1.pre]-[1.c], [6], [18.a], and [20.b], Czeisler discloses that the lighting appliance includes a housing including a **flexible positioning stand** (a base for supporting the device on a support surface, e.g., a table) and a **light fixture** (an upper member). As I discussed for [1.a], [1.c], [6], [18.a]-[18.b], [20.a], and [20.c], the **light fixture** has an inner facing surface, with a perimeter generally defined by an **opening**, that faces towards the user for shining light through an **opening**, and an outer facing surface that faces away from the user. Czeisler, Fig. 39a. The base and the upper member are pivotally connected as I previously explained for claim 5 and element [18.a].

(u) Element [24.b]

125. Element [24.b] recites “an opening in the inner facing surface of the upper member. . .”. This element is met by Czeisler.

126. Czeisler discloses an opening in the inner facing surface of the upper member (e.g., see Fig. 39a). Czeisler discloses, for example:

- Fig. 39a



- See also 63:31-48 (see [1.a]-[1.c])

127. See my discussions of elements [1.a], [1.c], [18.a], [18.b], [20.a], and [20.c]. Czeisler discloses that lamps emit light through an opening of the outer housing. The inner perimeter of the opening is defined by the inner facing surface as shown in Fig. 39a, through which light is emitted from the light sources.

(v) Element [24.c]

128. Element [24.c] recites “a light emitting assembly in the housing and operable to emit light through the opening in the housing, the light emitting

assembly including a plurality of LEDs capable of generating an output of light suitable for ocular light therapy.” This element is met by Czeisler in view of Hed.

129. **Czeisler** in view of **Hed** renders obvious **a light emitting assembly in the housing and operable to emit light through the opening in the housing, the light emitting assembly including a plurality of LEDs capable of generating an output of light** (*see* [1.c], [18.b], [20.c]) **suitable for ocular light therapy** (*see* [1.pre], [18.pre]).

(w) Claim [25]

130. **Claim [25]** recites “**The light therapy device of claim 24 wherein the light emitting assembly includes at least some white light LEDs.**” This claim is met by the combined teachings of **Czeisler** and **Hed**. *See* [2], [19].

(x) Element [26.pre]

131. **Element [26.pre]** recites “**An ocular light therapy device**” This element is met by Czeisler. *See* [18.pre].

(y) Element [26.a]

132. **Element [26.a]** recites “**an outer housing including a first member with an opening and a second member releasably lockable to the first member, the housing forming a base for supporting the housing in a treatment position on a support surface. . .**”

133. Czeisler discloses **an outer housing including a first member with an opening (see [1.a]-[1.c]) and a second member releasably lockable to the first member (see [1.b]), the housing forming a base for supporting the housing in a treatment positions on a support surface (see [1.c], [20.c]).**

(z) Element [26.b]

134. Element [26.b] recites **“a light emitting assembly in the first member of the housing housing [sic] and operable to emit light through the opening in the housing, the light emitting assembly including a plurality of white light emitting LEDs.”**

135. Czeisler in view of Hed discloses **a light emitting assembly in the first member of the housing and operable to emit light through the opening in the housing (see [1.c], [18.b], [20.c], [24.c]), the light emitting assembly including a plurality of white light emitting LEDs. (see [2], [19], [25]).**

(aa) Claim [27]

136. Claim [27] recites **“The light therapy device of claim 26 wherein the plurality of LEDS is capable of generating an output of light suitable for ocular light therapy.”** This Claim is met by the combined teachings to Czeisler and Hed. See [24.c].

(bb) Claim [28]

137. **Claim [28]** recites “**The light therapy device of claim 26 wherein the plurality of LEDs is capable of generating 2,500 lux to 7,500 lux at 12 inches.**” This Claim is met by the combined teachings of **Czeisler** and **Hed**. *See* [1.c], [18.b], [20.c].

(cc) Claim [29]

138. **Claim [29]** recites “**The light therapy device of claim 26 wherein the plurality of LEDs has a total output of light of between 50 and 500 candelas.**” This Claim is met by the combined teachings of **Czeisler** and **Hed**.

139. **Czeisler in view of Hed discloses the LEDs having a total output of light of between 50 and 500 candelas** (*e.g.*, LED’s generating 3,000-12,000 lux at 12 inches (*see* [1.c]) is equivalent to 278.7-1114.8 candelas).

140. As I discussed for [1.c], it would have been obvious to implement Czeisler’s device with a **light emitting assembly** for viewing at 12 inches. Light generating 3,000-12,000 lux (*see* [1.c]) at 12 inches has a light output of approximately 278.7-1114.8 candelas, which includes an output of 278.7-500 candelas.³

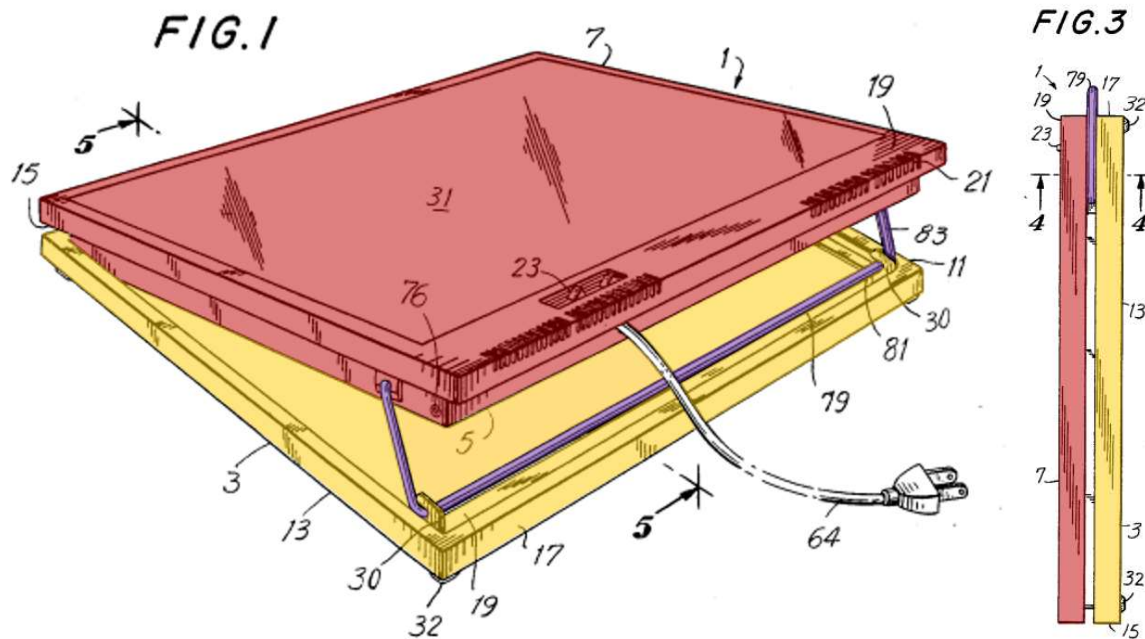
³ (luminous intensity in candelas) = (luminance in lux)*(distance in meters)².

B. Ground 2 (Claims 1-6, 12, 15, 21-22, 26-29): Czeisler in view of Hed and Morcheles

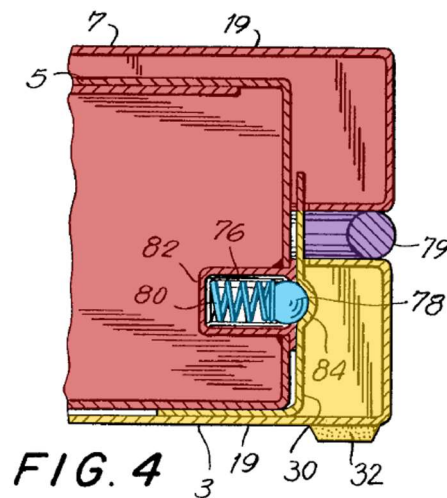
1. Overview of U.S. 4,564,886 (“Morcheles”) and Motivation to Combine

141. In addition to Czeisler’s teachings of a portable light fixture mounted on a flexible positioning stand, Morcheles provides additional teachings of executing a portable light fixture so that it can be used when a patient has no stand available (*e.g.*, when a patient is on-the-go). Morcheles, Abstract, 1:39-45. Morcheles discloses a “portable light box” that is able to stand at an angle horizontal to the surface it is sitting or laid upon. Morcheles, 1:6-9, 1:38-45, 1:53-2:7. To aid in a patient’s treatment where they need to administer treatment on-the-go, Morcheles’s device allows the patient to angle the device on a surface, so as to easier target the treatment tissue. It is “self-contained,” and so can be angled at a patient without the use of other devices when on-the-go. Morcheles, 1:38-45. Morcheles’s device does not require a “separate easel,” or “wire strut” “carried separately,” and thus advantageously allows the patient to get treatment on-the-go. Morcheles, 1:38-45. While many portable light boxes exist, many are not easily usable on their own in regard to propping or angling towards the patient. Morcheles improves these devices by creating a portable lightbox which is used with ease and without attachments if the patient so chooses.

142. The light box includes **base 3** and **light tray 5 with cover 7**. Morcheles, 2:49-51. To store Morcheles's device in the "closed" position, **cover 7** and **base 3** are closed together, as shown in Fig. 3 below. Further, **bail 79** is pivotally rotated into the same plane of the light box, as shown in Fig. 3 below. **Bail 79** functions as a carrying handle in the closed position, as shown in Fig. 3 below. Morcheles, Abstract, 5:22-26. To open the light box, **bail 79** is pivotally rotated to enter the "C" retainers 30. Thus, **bail 79** acts as a support leg, as shown in Fig. 1 below. In the opened position, **light tray 5 with cover 7** sit at an angle to the surface upon which the light box rests, as shown in Fig. 1 below. Morcheles, 5:26-31. *See also* Morcheles, 5:12-21, Figs. 5-6.



143. If a patient wants to transport this device easily, they may do so by putting it in the closed position. When base 3 is closed and around light tray 5, base 3 and light tray 5 are releasably locked together via a ball and spring. “[A] spring-loaded detent 76 comprising a ball 78 and spring 80 are provided in a housing 82 located in sides 37 of light tray 5 near back edge 41.” Morcheles, 4:63-68, see also Fig. 4. “Ball 78 engages a recess 84 in “C” retainers 30 to releasably lock base 3 to light tray 5, when base 3 is closed down and around light tray 5.” Id. Thus, in order to put the Morcheles light box in the “closed” position (e.g., for transport), ball 78 engages with recess 84 to releasably lock base 3. Thus, Morcheles discloses members releasably locked together.



144. A person of ordinary skill in the art would have been motivated to modify Czeisler (and Hed) with Morcheles’s teachings. Czeisler, Hed, and Morcheles are in the same field as the ’225—portable lighting devices— Czeisler,

Hed, and Morcheles are reasonably pertinent to the alleged problem(s) identified in the '225—*e.g.*, designing portable and lightweight devices. '225, Abstract, 1:33-46; Czeisler, 63:43-45 (“easily portable”); Hed, 2:25-27 (“luminaires that are portable”), 6:8-10; Morcheles, 1:6-9 (“related to light boxes ... having at least one side partially surface with a light diffuser and having therein electric lamps”), 1:53-64 (“object ... to provide a light box which is easily portable ... relatively slim in profile”). *See also* Section IX.A.2. Indeed, it was common in the art that light therapy devices are used for general lighting purposes as well. *E.g.*, Kyricos (Ex. 1016), 8:57-60 (“A manual dimmer switch may also be provided on the visor for the same purpose, or to simply decrease the intensity of light generated by lamp 15 if the visor is used for general lighting purposes.”)

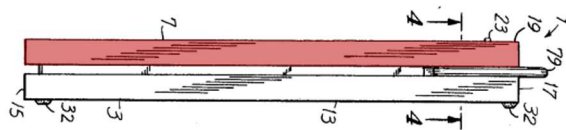
145. Czeisler discloses using a portable **light fixture** that can be mounted on a **flexible positioning stand**. Czeisler discloses the advantage of having an “easily portable” device and suggests mounting the device in at least one scenario—when the user is at rest. *See* IX.A.1. As with Czeisler’s **flexible positioning stand**, essentially a desk lamp design well-known in the art, a person of ordinary skill in the art would have been further aware and cognizant of different ways to make use of the portable device. Czeisler, Figs. 39a-c, 63:31-48. Morcheles discloses that its teachings improve upon “rectangular enclosure[]” light boxes and even those that

had “incorporated some features of portability.” Morcheles, 1:12-38. Some enclosed light boxes were “not truly self-contained” and were not easily used without the aid of an external attachments like a stand. *Id.*, 1:39-50. Morcheles describes these external attachments as a “separate easel” or “wire strut.” *Id.*

146. A person of ordinary skill in the art therefore would have been motivated to modify Czeisler using Morcheles’s teachings to advantageously allow the **light fixture** to also be portably used without the **flexible positioning stand**, and thus “self-contained,” by implementing Czeisler’s **light fixture** as Morcheles’s light box with a bail and spring-loaded locking mechanism. Czeisler, **Figs. 39a-c, 63:31-48**; Morcheles, 1:12-38, 5:12-31, Figs. 5-6. Indeed, Morcheles’s **light tray** box serves the same purpose as **Czeisler’s light fixture**:



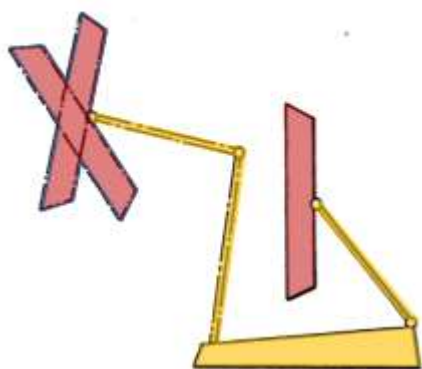
Czeisler Fig. 39c



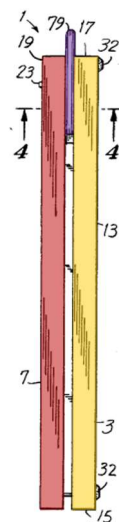
Morcheles Fig. 3

Czeisler’s **light fixture** and Morcheles’s **light tray** box are members with openings, which hold a bank of lights and allow emission of such light. *See, e.g.*, Czeisler, 63:31-45; Morcheles 3:48-52. Modifying Czeisler’s light fixture with Morcheles’s **bail** would allow Czeisler’s light fixture to be more easily used on-the-go. *See, e.g.*, Morcheles, 1:6-9, 1:38-45, 1:53-2:7. A patient would have the option of using the

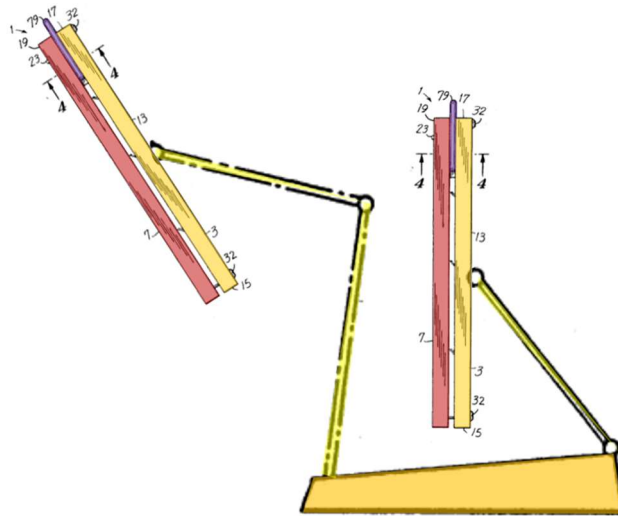
device with or without a **flexible positioning stand**. For example, when on-the-go, the modified device enables a patient to advantageously use the device without the **flexible positioning stand**. And at home, the modified device advantageously enables the patient to use the device mounted on the **flexible positioning stand** for additional flexibility in angling and adjustment. Modifying Czeisler's **light fixture** with Morcheles therefore results in a **fixture** including Morcheles's **base** which is dismountable from the **flexible positioning stand** and uses Morcheles's **bail** leg for portable treatment. This gives the patient the ability to use the **flexible positioning stand** when desired, for example, in home treatments. An example of the depiction of this combination is below; Czeisler Fig. 39c and Morcheles Fig. 3 below:



Czeisler, Fig 39c



Morcheles, Fig. 3



Czeisler in view of Morcheles

Czeisler Fig. 39c; Morcheles, 4:63-68, 5:12-31, Fig. 3. Thus, as Czeisler's **light fixture** and Morcheles's **light tray** are serving the same purpose, modifying Morcheles's light tray with Czeisler's **flexible positioning stand** yields a similar result. The result would be a bank of lights, releasably locked with a bail. Further, any such modification using Morcheles's **bail** and **base** renders obvious the claims for the same reasons set forth in this section because, in any such device, the "**bail**" is a support leg in a releasably lockable device.

147. Czeisler's and Morcheles's well-known housings, bases, legs, etc., represent no more than common elements and configurations. As described above, this combination was a predictable use of prior elements.

148. In light of the above teachings, a person of ordinary skill in the art also would have had a reasonable expectation of success in applying Morcheles's teachings of a support leg and locking mechanism with Czeisler's light therapy device. Indeed, Czeisler discloses that bright light "may be administered by any means," including "self supporting devices." Czeisler, 7:38-45, 23:29-46, 63:31-64:9. One such "self-supporting device" is taught by Morcheles's light box.

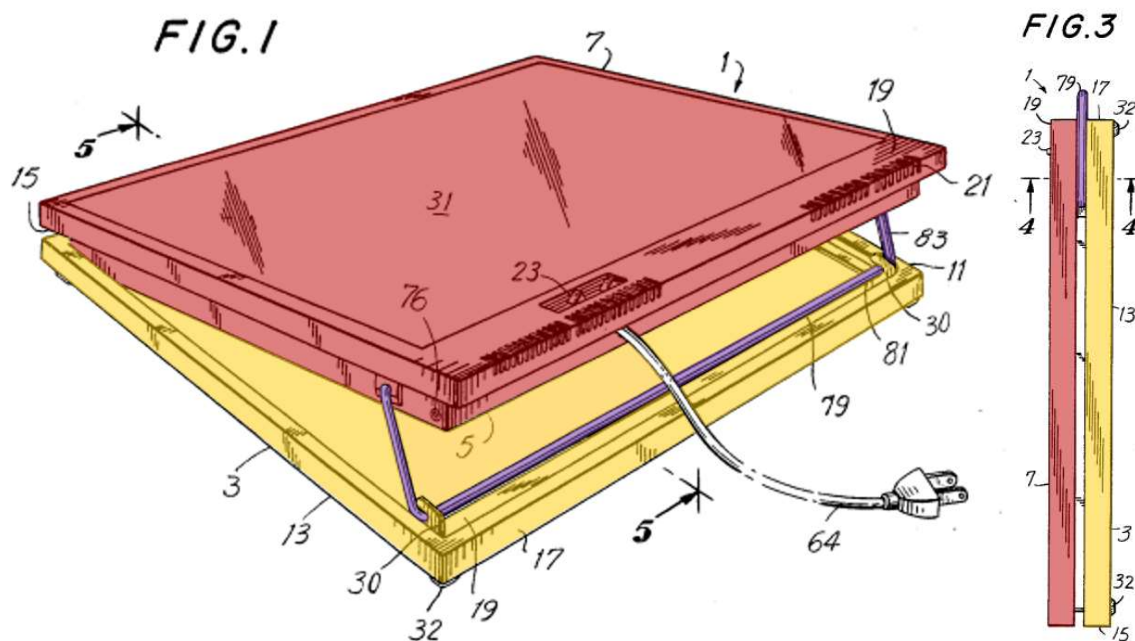
2. Morcheles's Support Leg Teachings (Claims 21-22)

149. **Claim 21 recites "The light therapy device of claim 20 further comprising a support leg for supporting the housing in propped position for light therapy." Claim [22] recites "The light therapy device of claim 21 wherein the support leg is pivotally connected to the housing and rotatable between a supporting position and a stored position."** Both claims 21 and 22 are met by the combined teachings of Czeisler, Hed, and Morcheles.

150. **Czeisler in view of Hed and Morcheles discloses the light therapy device of claim 20 (Czeisler's "light box" with Hed's "LEDs," see Ground 1) further comprising a support leg (e.g., "bail" in "position" to "act as an easel strut" to place light "at an angle to the surface") for supporting the housing in propped position for light therapy.** Morcheles discloses. Likewise, Czeisler in view of Hed and Morcheles discloses **the light therapy device of claim 21 (see claim 21)**

wherein the support leg is pivotally connected to the housing and rotatable between a supporting position and a stored position. (*e.g.*, “bail” “can be rotated” between “easel” position and “collapsed” position). Morcheles, 5:22-23. Morcheles discloses, for example:

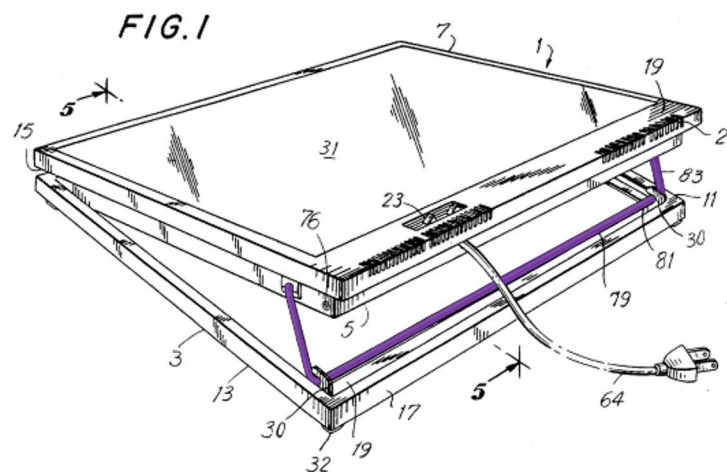
- **2:8-17** (“In accordance with the preferred embodiment of the present invention, the above and other objects are obtained by a portable light box having a light tray. A cover, having an aperture therein, is hinged to the light tray. A diffuser is secured in said aperture. A base is also hinged to the light tray. Bail means releasably lock said cover to said light tray, thereby securing the diffuser in the aperture, and may function as a carrying handle or an easel strut to support the light tray at a predetermined angle to the base.”)
- **5:12-31** (“Referring to FIGS. 1 and 6 bail 79 has a long straight portion 81. Two relatively short legs 83, extending from each end of the straight portion 81, are perpendicular to the straight portion 81. Pins 85 are located at the ends of short legs 83 and are perpendicular thereto. Bail 79 has sufficient resiliency so that pins 85 can pass through both sets of holes 29 and 67 and thus releasably lock cover 7 to light tray 5 (see FIG. 6). Portion 81, legs 82 and pins 85 in the preferred embodiment are formed by bending a continuous rod. Further, bail 79 can rotate about pins 85. When light box. 1 is collapsed, *i.e.*, cover 7 and base 3 are closed about light tray 5, bail 79 can be rotated into the plane of light box 1 and provide means to permit the easy carrying of light box 1 (see FIG. 3). On the other hand, when base 3 and light tray 5 are opened, bail 79 can be rotated to permit long straight portion 81 to enter 'C' retainers 30. (See FIGS. 1 and 5). In this position bail 79 acts as an easel strut and places diffuser 31 at an angle to the surface upon which base 3 rests.”)
- Figs. 1, 3.



151. As I discussed for Ground 1 above, Czeisler discloses an “easily portable” light therapy device. Czeisler, 63:43-45, Abstract, 1:13-14. And as explained above, Morcheles discloses an easily portable device further comprising a support leg for supporting the housing in propped position (e.g., “**bail**” in “position” to “act as an easel strut” to place light “at an angle to the surface”) (claim 21), and is pivotally connected to the housing and rotatable between a supporting position (as shown in Fig. 1 below) and a stored position (e.g., “**bail**” “can be rotated” between “easel” position and “collapsed” position) (claim 22). 2:13-27, 5:12-31. Thus, the Morcheles **bail** acts as a support leg for supporting the lightbox in the easel position.

152. Therefore, modifying Czeisler with Morcheles's **bail** results in a light therapy device with the claimed support leg that, when combined with Czeisler and Hed (Ground 1) renders obvious claims 21-22.

153. A patient can more easily angle Czeisler's portable light box when on-the-go with Morcheles's support leg. The bail leg advantageously enables the device to be used more easily used portably without carrying the separate stand, as compared to a lightbox which can only lay flat on a horizontal surface and requires a patient to either stare directly down, or find a place to prop the device. In this way, Czeisler's device with Morcheles's support leg is "self-contained," in needing no other device to administer light comfortably to a patient. This provides for an effective treatment when the positioning stand is unavailable, or when the support surface is not horizontal.



3. Morcheles's Releasable Locking Teachings (Claims 1, 26)

154. Claims 1 and 26 disclose members “releasably locked together” and “releasably lockable,” respectively. As I discussed above, Czeisler discloses a light fixture that is “easily portable,” and Morcheles teaches implementing Czeisler’s light fixture with a base to improve portability. Czeisler, 63:43-45. To the extent additional disclosure of “releasably locked” (claim 1)/“releasably lockable” (claim 26) members is required, Morcheles further discloses this term. Morcheles discloses, for example:

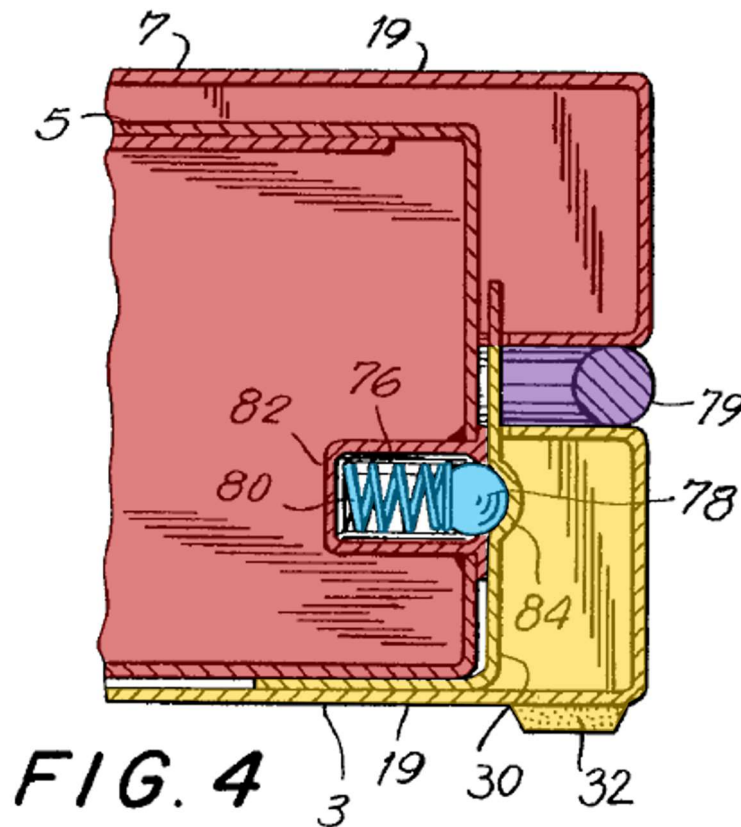
- 2:8-17 (“In accordance with the preferred embodiment of the present invention, the above and other objects are obtained by a portable light box having a light tray. A cover, having an aperture therein, is hinged to the light tray. A diffuser is secured in said aperture. A base is also hinged to the light tray. Bail means releasably lock said cover to said light tray, thereby securing the diffuser in the aperture, and may function as a carrying handle or an easel strut to support the light tray at a predetermined angle to the base.”)
- 5:12-31 (“Referring to FIGS. 1 and 6 bail 79 has a long straight portion 81. Two relatively short legs 83, extending from each end of the straight portion 81, are perpendicular to the straight portion 81. Pins 85 are located at the ends of short legs 83 and are perpendicular thereto. Bail 79 has sufficient resiliency so that pins 85 can pass through both sets of holes 29 and 67 and thus releasably lock cover 7 to light tray 5 (see FIG. 6). Portion 81, legs 82 and pins 85 in the preferred embodiment are formed by bending a continuous rod. Further, bail 79 can rotate about pins 85. When light box. 1 is collapsed, i.e., cover 7 and base 3 are closed about light tray 5, bail 79 can be rotated into the plane of light box 1 and provide means to permit the easy carrying of light box 1 (see FIG. 3). On the other hand, when base 3 and light tray 5 are opened, bail 79 can be rotated to permit long straight portion 81 to enter 'C' retainers 30. (See FIGS. 1 and 5). In this position bail 79 acts as an easel strut and places diffuser 31 at an angle to the surface upon which base 3 rests.”)

- [1.f] (“bail means arranged to releasably engage said cover and said light tray, whereby said cover and light tray can be coupled, and arranged to rotate about an axis defined by said coupling, said bail means having first and second positions, wherein said bail means supports said cover and said light tray at a predetermined angle of inclination with respect to said base when said bail means is in said first position, and said bail means extends outside of said light box for use as a carrying handle when said bail means is in said second position and said -cover is closed with respect to said base”)
- Abstract (“Bail means releasably lock the cover to the light tray, thereby securing the diffuser in the aperture, and may function as a carrying handle or an easel strut to support the light tray at a predetermined angle to the base.”)

155. For [1.b], Morcheles discloses a first member (*e.g.*, “light tray”) and a second member (*e.g.*, “base”), the first member and the second member being releasably locked together (*e.g.*, “ball” and “spring” “releasably lock” the “base” and “light tray”). *See* IX.B.1. Likewise, for [26.a], the device comprises an outer housing (*e.g.*, “cover”) including a first member with an opening (*see* [1.b], [6]) and a second member releasably lockable to the first member (*see* [1.b]).

156. Morcheles further teaches that **base 3** can be closed down and around **light tray 5**, for example, if the patient wants to transport it, and take it on-the-go. Morcheles, 4:63-68, *see* Figs. 3-4. Then, **base 3** and **light tray 5** are releasably locked together via “a spring-loaded detent 76 comprising a **ball 78 and spring 80**.” Morcheles, 4:63-68, (referring to Fig. 4). “**Ball 78** engages a recess 84 in “C” retainers 30 to releasably lock base 3 to **light tray 5**, when **base 3** is closed down

and around **light tray 5**.” Morcheles, 4:63-68, Fig. 4. Thus, Morcheles teaches that its “**base**” is “hinged” to the light tray. And such a hinge base allows for the **base** and light tray to be pivotally connected. Morcheles, Abstract, 2:12-13.



157. With respect to claim 5, Morcheles discloses that these first and second members are pivotally connected (e.g., “A base is also hinged to the light tray”). Morcheles, Abstract, 2:12-13; *see also* element [1.e] (“a base hinged to said light tray for relative rotation of said base about an axis”). Expanding the bail pivots the base and the light tray away from one another such that the light projects out at a desired angle, improving the ability to use the device for treatment. Morcheles, 5:1-

2 (“As one skilled in the art will readily recognize cover 7 and base 3 rotate about hinges 71 and 69, respectively.”), 5:29-31 (“In this position bail 79 acts as an easel strut and places diffuser 31 at an angle to the surface upon which base 3 rests.”)

158. With respect to claim 6, Morcheles discloses that the light emitting assembly is mounted onto the first member (*e.g.*, “portable light box” is mounted on “light tray”) and the second member forms a base for support of the first member (*e.g.*, “base” for “light tray”). For example, in a collapsed position, the light tray is mounted onto the base with the bail in a collapsed position such that it is easy to carry, lay flat, or mount in a flat orientation as shown above in Section IX.B.1.

159. Accordingly, Czeisler in view of Hed and Morcheles (Ground 2) further renders obvious claims 1-6, 12, 15, 21-22, and 26-29.

**C. Grounds 3 (Claims 2, 19, 25, and 26) and 4 (Claims 2 and 26):
Czeisler in view of Hed and Chen and Morcheles**

160. **Claims 2, 19, 25, and 26 recite “white-light.” Claims 2 and 26 recite “white light LEDS” and “white light emitting LEDs,” respectively. As I discussed for Ground 1 above, Czeisler in view of Hed discloses a light fixture including LEDs that generate white light. See [2], [19], [25], and [26.b] in Section IX.AError! Reference source not found.. To the extent additional disclosure is required of LEDs emitting white light (claims 2, 19)/“white light LEDs” (claim 25)/“white light emitting LEDs” (claim 26), Chen discloses these**

features. Chen discloses a “white LED” that “can radiate white light itself.” Chen, 2:3-16.

161. Chen describes a “white light-emitting diode.” Chen, Abstract, Claims 1-43. Chen improves on LEDs using “white LED [that] can radiate white light itself and [thus] does not require combining many LEDs.” Chen, 2:7-10. By doing so, Chen reduces “cost’ and difficulty of fabricating.” *Id.* Chen explains that by “appropriately adjusting” parameters during manufacture, the “spectrum” of output can be varied. Chen, 2:17-29; *see also* 4:53-54 (“To increase the brightness of white LED and to adjust the intensities of different peaks in the spectrum...”) Thus, white LEDs were well known before the priority date of the ’225 patent.

162. As stated above, Hed and Czeisler are in the same field as the ’225. Chen is also in the same field as the ’225, and Hed and Czeisler. Chen also seeks to improve the efficiency of a lighting device. Chen, 1:12-46 (“white light-emitting device” where “each pixel ... consists of two red LEDs (R), two green LEDs (G), and one blue LED (B)” is “very complex because at least four electrical terminals are needed”). *See also* Section IX.A.2. A person of ordinary skill in the art would have been motivated to further modify Hed’s teachings of using multiple “monochromatic” LEDs to generate the white light for Czeisler’s device. (Hed, 3:28-36, 6:8-53; Czeisler, 23:3-19, 45:32-48) because Chen teaches that using a white

LEDs instead advantageously simplifies the design. Chen, 1:24-2:16, 2:66-67. Using white LEDs allows the reduction of the number of LEDs required to generate light. Chen, 1:24-2:16, 2:66-67. As stated above, using white LEDs reduces the “cost and the difficulty of” the lighting product. Chen, Abstract, 2:8-11. A person of ordinary skill in the art would have had an expectation of success modifying Hed’s (and Czeisler’s) teachings by using white LEDs because, as I discussed earlier, LEDs were well known sources of light in light therapy. Such a device would save on costs and manufacturing difficulties. Further, white LEDs were well known sources of light and commercially available. *See* IX.A.2

D. Grounds 5 and 6 (Claim 12): Czeisler in view of Hed and Gerdes (Ground 5) and Morcheles (Ground 6)

163. As I discussed for Ground 1 above, Czeisler discloses this claim. *See* my discussion of claim 12 in Section **Error! Reference source not found..**

164. However, to the extent additional disclosure is required of a “display,” “key pad,” and/or “processor” (claim 12), Gerdes further teaches these features.

165. Gerdes discloses a therapeutic device for “treatment of medical conditions.” Gerdes, 1:5-7, *see also* 1:15-35. Gerdes describes the input of a user, as accepted on a **keypad 100**. Gerdes, 7:67-8:3, 8:7-22, 10:48-56, Figs. 1-2. Gerdes describes displaying information pertinent to treatment on **LCDs 115, 120**. *Id.* For example, Gerdes’s LCDs may display treatment time remaining, or a treatment time

suggested from the calculation based off of user input. To control the device components, as well as make calculations regarding treatment or time remaining etc., a controller, which is a microcontroller is described. Gerdes, 9:61-10:56, Fig. 5.

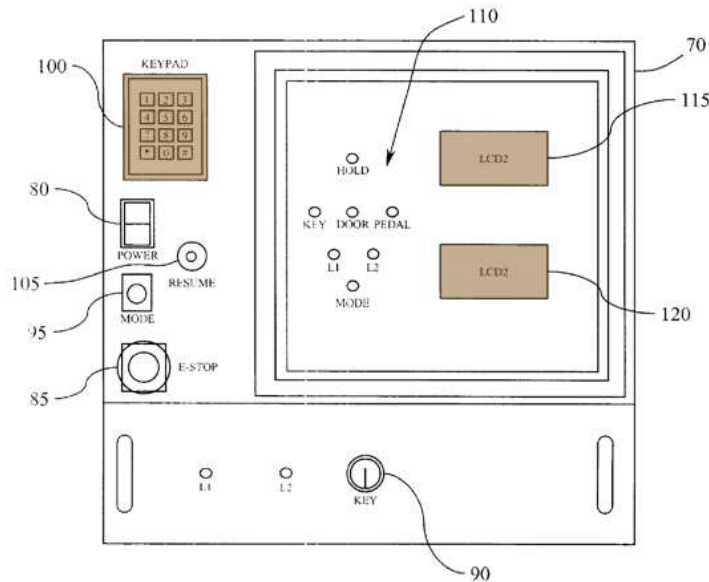


FIG. 2

166. A person of ordinary skill in the art would have been motivated to modify Czeisler (and Hed) with Gerdes's **keypad** and **display** teachings. Like Czeisler and Hed, Gerdes is also in the same field of light therapy devices. Gerdes seeks "[t]o facilitate therapy [using] a therapy calculator for determining a treatment regime based on an input of information." '225, 2:12-14. Like the '225 patent, Gerdes is an "apparatus ... in the treatment of medical conditions." Gerdes 1:4-6. And again like the '225 patent, Gerdes discloses a "control panel ... that includes

various input and output devices needed for operating the device”. Gerdes, 7:40-42. Thus, they seek to provide an easy method for therapy treatment through simplifying the treatment calculation.

167. Czeisler teaches a treatment device that “queries the user” and “allows the user to express this information” Czeisler, 65:58-67. Thus, Czeisler broadly teaches a key pad and display for querying a user and accepting inputs but leaves it to a person of ordinary skill in the art to implement these features. Czeisler, Figs. 39a, 65:58-67. Gerdes provides additional teachings of implementing a treatment device with a key pad and two displays, controlled by a microcontroller. Gerdes’s device includes a “controller component 210 that is preprogrammed to control each of the other components and functions of the device 10.” Gerdes, 9:61-63. Gerdes further teaches that “[t]he controller 210 is programmed to accept operator input from the keypad 100 ... prompting displayed on the LCDs 115, 120.” Gerdes, 10:48-56. Thus, Gerdes teaches a device that allows the user to input information, resulting in corresponding display changes. Further, input from the user affects treatment output. Gerdes, 9:61-10:56. A person of ordinary skill in the art therefore would have been motivated to modify Czeisler with Gerdes’s display keyboard teachings in order to advantageously provide the user with an easier to use device for emitting white LED light.

168. Indeed, Czeisler's and Gerdes's displays, key pads, and processors are no more than well-known components and configurations of computing devices that interface with users to provide and receive information. In fact, display, key pads, and processors were common and obvious additions to medical devices well before the '225 priority date. *See, e.g.*, Ex.1027; Ex. 1029.

169. In light of the above teachings, a person of ordinary skill in the art also would have had a reasonable expectation of success in applying Gerdes's teachings of a key pad, display, and processor to Czeisler's light therapy device.

X. SECONDARY CONSIDERATIONS

170. I have not seen any evidence in the prosecution history of the '225 patent or any related application that I considered of any arguments regarding secondary considerations exist. Nor have I seen any evidence that any such evidence would have a nexus to any of the Challenged Claims 1-6, 12, 15, 18-22, and 24-29. Moreover, as shown above with respect to the prior art referenced in Section IX, any alleged solutions to problems or unexpected results in the '225 patent were already well known.

XI. CONCLUSION

171. Substantial, new, and noncumulative technical teachings have been presented for the '225's Claims, which are rendered obvious for the reasons set forth above. There is a reasonable likelihood—and its is highly likely—that Petitioner will

prevail as to claims 1-6, 12, 15, 18-22, and 24-29. *Inter partes* review of these Claims is accordingly requested.

Ground	'225 Patent Claims	Anticipation or Obviousness	Prior Art References
1	1-6, 12, 15, 18-20, 24-29	Obvious	Czeisler in view of Hed
2	1-6, 12, 15, 21-22, 26-29	Obvious	Czeisler in view of Hed and Morcheles
3	2, 19, 25, 26	Obvious	Czeisler in view of Hed and Chen
4	2, 26	Obvious	Czeisler in view of Hed, Chen, and Morcheles
5	12	Obvious	Czeisler in view of Hed and Gerdes
6	12	Obvious	Czeisler in view of Hed, Gerdes, and Morcheles

172. To the extent it is argued that any further disclosure is required for an element in Challenged Claims 1-6, 12, 15, 18-22, 24-29 that I have identified as being disclosed, a person having ordinary skill in the art would certainly have found that element obvious to include based on the same explicit disclosure or inherent disclosures and analysis I have identified above.

173. I reserve the right to supplement my opinions in the future to respond to any arguments that Patent Owner or its expert(s) may raise and to take into account new information as it becomes available to me.

174. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

175. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this June 16, 2023, in Salt Lake City, Utah.

Respectfully submitted,


Eric Simon

Appendix A

Curriculum Vitae of **ERIC MICHAEL SIMON**

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Salt Lake City, Utah 84108 - 1788 USA
cell / office 801.541.9000 - email info@dexteritydesign.com

 [linkedin.com/in/ericmsimon1](https://www.linkedin.com/in/ericmsimon1) |  [researchgate.net/profile/Eric_Simon](https://www.researchgate.net/profile/Eric_Simon)
 [facebook.com/dexterityproductdesign](https://www.facebook.com/dexterityproductdesign)
portfolio.dexteritydesign.com/html/portmain.html
legalconsulting.esimonconsulting.com

Career Highlights

- ❖ Founder and Principal – President / Design Engineer – Dexterity Design: Product design and engineering services, prototyping, testing, pre-production services
- ❖ Founder and Chief Technologist – Acme Biosystems; R&D, production, and marketing of systems for 3-dimensional, high density, long-term culture of mammalian cells
- ❖ SwiftKey™ fastener – successfully conceived, prototyped, patented, marketed, and licensed product, currently licensed to MicroPlastics Inc.
- ❖ Co-Manager—Miniature Implantable Drug Delivery Systems Project (funded by Merck): Two patents issued; responsible for technical development, personnel management, budgeting, scheduling, reporting
- ❖ National Institute of Health SBIR Grant Principle Investigator—Fibrous Substrates for Cell Culture: First known use of polymeric electro-spun cell substrates and prelude to 3D scaffold culture
- ❖ Twenty-two patents issued & pending; numerous products designed, produced, and marketed

Experience

DESIGN ENGINEER / CONSULTANT

1995 to Present

Dexterity Design, Salt Lake City, Utah

- Product design and prototyping, engineering, testing and failure analysis, bridge to manufacturing
- Project management, market and patent research, expert witness services
- Focus on medical device, biotechnical, consumer, and recreational product sectors
- Recent and Current Projects:
 - ◆ Portable hand-held ventilator
 - ◆ Automated cell processing instrument with magnetic bead separation
 - ◆ DVT ultrasonic ablation system
 - ◆ Syringe aspiration accessory
- Prior Work: **Biosensors:** Nanopore proteomics, SPR proteomics, PCR rapid pathogen, TIRF Fluorescence; **Orthopedics:** Targetable needle-over-needle stem cell delivery (vertebral disc), ALIF Cage (vertebral fixation), Ti6 toe fixation implant and driver; **Dermatology:** Forced-air headlice treatment, LED- and Laser-based phototherapy, Micro-dermabrasion, Cellulite reduction; **Ophthalmic:** Topographic surface measurement for LASIK, Ophthalmic iontophoretic drug delivery; **Vascular:** Subclavian catheter sealing system; Bevel-tip cardiac catheter; Cardiac catheter incision closure, Venous blood pressure transducer; **Misc Med & Biotech:** Portable handheld ventilator, PCR hybridization automated wash, Ultrasonic probe, misc device enclosures, misc dental devices; **Non-Medical:** Ruggedized portable data-clock, Snowflake metrical instrument, Modular event canopy, Biometric time clock, Sport bottle, Modular crowd-control barrier, Drug-delivery port fluidic connector, Tool-less irrigation couplings, Modular climbing wall, Water-filled barriers, Sunglasses and ski goggles, Sport gloves.



Experience (continued) 	SR. SYSTEMS ENGINEER / MICROFLUIDICS SPECIALIST 2018 to 2020 Carterra, Inc., Salt Lake City, Utah • Systems engineering, project management, constraint and risk analysis • Design and implementation of milli- and micro-fluidic systems • Design and implementation of proteomic biosensor instruments		
	FOUNDER / PRESIDENT / CHIEF TECHNOLOGIST 2005 to Present Acme Biosystems, Salt Lake City, Utah  • Invention and development of advanced gas-permeable cell culture systems • Project management, market research, patent prosecution • Management and strategic planning		
Prior Experience	PROJECT ENGINEER / BIOMATERIALS SPECIALIST Center for Engineering Design, Salt Lake City, Utah Drug Delivery Devices, Cell Culture Systems, Micro Electromechanical Systems (MEMS), Abdominal Implants, Material and Design Consultation, Robotics, Technical and Grant Writing, Project Management BIOMATERIALS / DEVELOPMENT ENGINEER SynCardia Systems / Symbion Inc., Salt Lake City, Utah Artificial Heart Devices and Instrumentation ZAMBONI OPERATOR Sun Valley Ice Center, Sun Valley, Idaho Ice Sheet Maintenance and Refrigeration Systems MANUFACTURING ENGINEER American Medical Optics, Irvine, California Intraocular and Contact Lenses		
	Education Master of Engineering, Bioengineering, Biomaterials & Product Design, University of Utah Bachelor of Science, Materials Science & Engineering, Biomaterials/Fabrication University of Utah Mechanical Engineering / Premedicine, University of Michigan		
Legal Experience <i>(complete history available upon request)</i>	Expert Witness - 12 cases total Patent Infringement / Invalidation / Breach of Confidentiality - 3 cases Personal Injury / Medical Malpractice - 9 cases • Invalidation of blood separation device patent • Infringement of specialty toothbrush and invalidation of patent • Failure of eyeglass frame resulting in permanent eye damage to consumer • Failure of embolic microspheres resulting in patient blindness and brain damage • Failure of heparin infusion pump resulting in patient death • Failure of implantable penile prosthesis (unrelated to prior case) • Failure of conventional hip implant • Failure of night light and subsequent hand injury • Failure of custom implantable hip prosthesis • Entanglement of hand in rotor assembly of vacuum blower • Failure of implantable penile prosthesis		
Professional Skills	Project Management Systems Engineering Budgeting & Scheduling Patent Review & Analysis Proposal Preparation Legal Expert Witness Market Review & Analysis Mechanical & Product Design Prototyping / 3D Printing CAD/CAE - SolidWorks Design Review Product Styling & Ergonomics New Product Analysis KOL Interaction Surface Characterization Materials Selection Surface Modification Molding & Fabrication Manufacturing Analysis Failure Modes Analysis Risk Analysis		

Product Scope	Drug Delivery Systems	Cardiovascular Devices	Ophthalmic Devices
	Fluidics and Microfluidics	Biosensors	Stem Cell Devices
	Cell Culture Products	Disposable Medical Products	Performance Apparel
	Percutaneous Access Devices	Dental Products	Micro Mechanisms/Sensors
	In Vitro Diagnostic Systems	Soft Goods	Device Enclosures/Housings
	Laboratory Products & Instruments	Sport Optics	Catheter-Based Devices
	Needle-based devices	Mounting Systems/Platforms	Instrument Subsystems
	Biomaterials Selection/Analysis	Recreational Products	Consumer Healthcare Products
Patents	Syringe Aspiration Accessory Device and Methods of Use (patent pending, US & EU Nat'l Phase)		
	Cell Culture Apparatus and Associated Methods (8,486,692; pro se prosecution)		
	Airflow Applicators and Related Treatment Methods (8,475,510)		
	Container and Lid (US design patent pending)		
	Airflow Attachment (D62687)		
	Time Clock (D622168)		
	Interlocking Barriers (7,275,888)		
	Interlocking Barrier (D552,250)		
	Detachable Clasp Fastener (6,243,922; pro se prosecution)		
	Control Barrier with Rotatable Legs (6,676,113)		
	Reusable Fluid Pressure Transducer Monitoring Apparatus (6,635,020)		
	Method and System for Performing Microdermabrasion and Suction Massage (6,926,681)		
	Method and System for Performing Microdermabrasion (6,582,442)		
	Dermabrasion Handpiece (D451,196); Dermabrasion System (D450,842)		
	Lens and Associatable Flow Cell (6,108,463 & 6,356,676 & 6,611,634; EP0928416;)		
	Interlocking Control Barrier Systems (6,086,285)		
	Waveguide Lens (D426,783)		
	Teeth Cleaning Implement with Integrated Fluid Dispenser (5,642,994)		
	Implantable Drug Delivery System with Piston Actuation (5,196,002 & 5,059,175)		
	Multiple Vesicle Implantable Drug Delivery System (5,167,625)		
	Disposable Toothbrush Cover (5,139,142; pro se prosecution)		
Technical Reports	History of Aspiration Devices and Centrifugation Vessels		
	History and Physics of Gas-Permeable Cell Cultureware		
	Technical Brief: CELLUXE Gas-Permeable Cell Culture System		
	Analysis of Metal Sintering System for Ti Toe Fixation Implants		
	Thermal Block Production Methods for the Olympia PCR Instrument		
	Site-Rite Clinical Evaluation Report		
	Product Design Assessment: Defective Reading Glasses		
	Findings: Pingle v. BioSphere Medical, Inc.		
	Effects of a Magnetic Fluid Mixture on Cells Cultured in ACCS		
	Ergonomic Analysis of Site-Rite Ultrasound Probe		
	Failure of Implantable Penile Prosthesis		
	Sealing System for a Long-Term Dialysis Catheter		
	Tipping Analysis of Water-Filled Barrier		
	Ophthalmic Electrode Materials Search		
	Search Report: Tube and Pipe Fittings		
	Manufacturing Feasibility for Production of Orlock™ Tubing		
	Design Specification: Passive Cartridge v1.1		

Tech Reports
(continued)

Apollo™ Flashtube Chassis Design Verification
 Prophyze™ DDPA Pros & Cons
 Optimization of Waveguide Signal-To-Noise Ratio
 Implant Testing of Butyrate Sheet Subjects to Static Cling Vinyl Labels
 Incompatibility of Static Cling Vinyl Labels with Ski Goggle Lenses
 Brittle Failure of Cellulose Propionate Sheet
 Surgical Microscope Shield—Concept Design & Materials
 Plastics Recommendations for Modular Cellular Telephone
 Discussion of Goggle Spacer-Foam Adhesion Failure
 L.L. Bean Lens Abrasion—Results of Optical and Physical Analysis
 Sunglass Frame Materials—Comparison of Properties
 Alternative Plastic Materials for High Performance Sunglass Frames
 Analysis and Performance Testing of the Snap Fit Assembly of a Night Light
 Materials Recommendations for Adjustable Ski Pole Clamp
 Sunglass Frame Redesign—Fortified Lens Groove
 Sunglass Lens Failure—Hardcoat Delamination
 Goggle Face-Foam Adhesion—Interim Report
 Coating Durability of Plastic Sunglass Lenses—QA Specification
 Rutherford Backscattering Analysis of Mirror Lens Coatings
 Summary of Findings—Baxter v. Cincinnati Fan
 Injection Molding, Embrittlement, and ESC of Sunglass Frames
 Materials for Encapsulation of Transcutaneous Energy Transmission System
 Polycarbonate Thermal Lens Fogging
 Process Control for Thermoformed Lens Production
 Crazing of L.L. Bean Sunglass Lenses
 Environmental Stress Crack Failure of Ventilator Cartridge Tubing Connector
 Redesign of Ventilator Cartridge and Coupline
 Miniature Implantable Drug Delivery System—Phase II Final Report
 Historical and Technical Review of Drug Delivery Systems
 NIH SBIR Phase I Final Report: Fibrous Substrates for Cell Culture
 A Review of the FLEX Series Displacement Sensors
 Electret Materials: Preparation By Corona Discharge and Electron Bombardment
 Preparation of Teflon Fibers for Electret Materials
 Electrostatic Spinning of Solution Polymers: Design and Surface Characterization
 Surface and Bulk analysis of Biomer® Polyurethane in Explanted Artificial Hearts
 Review of Surface Passivation Technologies for Blood-Contact Materials
 Polish Formulation and Finishing Methodology for IOL and Contact Lens Production
 Review of IOL Haptic Design

Proposals

Development of a Novel Bone Marrow Fractionation and Isolation Device
 Development and Testing of High Performance Plate-Based Cultureware, NIH SBIR
 Reliable Central-Nervous-System Interfaces, DARPA
 Medical Diagnosis Platform for Category A and B Toxins and Inhalation Bacteria
 Rapid Diagnostics Platform for Category A and B Toxins and Inhalation Bacteria
 Investigation of the Effects of a Magnetic Fluid Mixture on Mammalian Cells
 Advanced System for Routine Primary Hepatocyte Culture, NSF SBIR
 Proposal for Design and Dev't of an Anesthesia Rebreathing Absorber Module
 Ophthalmic Electrode Materials

**Proposals
(continued)**

Development and IP Review of a Micro-Dermabrasion System
Intermediate Waveguide: Overview and Development Budget
Design and Prototype of a Custom Photo Station for AMS
Design and Prototype of an Aesthetic Massage System
RFQ: Multibarrier 1B Finite Element Analysis
Test Fixtures for Fluorescence Immuno-Diagnostic System
Plastic Enclosure for the Genesis-2000 Dental Laser System
Disposable Dental Articulator
Electrical Connection System for pH Enteral Feeding Catheter
Dental Implant Surgical Guide
Double-Blade Biopsy Knife
Thermoformed Enclosure for Vibrotactile Tester
Plastic Enclosure for the AccuCure 3000 Dental Laser System
Materials & Analysis of Overmolded Ski Pole Grip
Determination of Lens Surface Temperature
Medical Device Introducer—Materials & Fabrication
Porcelain Dispensing System for Dental Fabrication
Heated Matched-Mold for Thermal Lens Production
A Pet Collar Drug Delivery System
MIDDS—University of Utah Biomedical Research Support Grant
Thermal Energy Generation from Palladium Hydrolytic Cells
MIDDS: A Miniature Implantable Drug Delivery System
Fibrous Substrates for Cell Culture, NSF SBIR
Fibrous Substrates for Cell Culture, NIH SBIR
Subcutaneous Peritoneal Access Device: Review of Potential Development Projects

Specifications

Gemini Protein Binding Biosensor
Optical Module and Assembly for Crawling Robot
Stem Cell Delivery Device: Design and Product Specification
AcmeBio Test Plate: Rack + Lid Mold Specification
Thermaflux Product Development Specification
Design Specification: Site-Rite Ultrasound Probe Handle
Head Lice Treatment Device
Therapeutic Laser Handpiece Product Specification
TIRF Diagnostic Device Cartridge and Instrument
Portable Photo Booth Product Specification
Cellulite Reduction System Design Specification

**Business
Documents**

Syrasist™ Syringe Aspiration Accessory—Licensing Plan and Financial Analysis, in preparation
Celluxe™ Advanced Cell Culture Products—Business Plan and Financial Analysis, 2015
Quikey™ Rapid Key Link—Business and Licensing Plan and Financial Analysis, 1999
Calapso™ Drinkware Products—Business Plan and Financial Analysis, 1994
SportStax™ Production Financial Analysis, 1993
VersaGlove™ High-performance Gloves—Business Plan and Financial Analysis, 1991

Publications	Gergely M, Shkurko K, Simon E. A Novel Technique for Automated Mass Measurements of Individual Snowflakes (AGU A23A-0177). Poster presented at: the American Geophysical Union Fall Meeting; 12-16 December 2016; San Francisco, CA.	
	Herron JN, Wang H-K, Tan L, Brown SZ, Terry AH, Durtschi JD, Simon EM, Astill ME, Smith RS, Christensen DA. Planar Waveguide Biosensors for Point-Of-Care Clinical and Molecular Diagnostics. In: <u>Fluorescence Sensors and Biosensors</u> (R. B. Thompson, Ed.). Marcel Dekker, New York, 2006. pp. 283-332.	
	Simon E. "Be Careful with the 'Custom' Device Exclusion," <u>SCOPE</u> , 2(1), February 1995, p. 6.	
Citations	Anstey A, et al., Nanofibrillated polymer systems: Design, application, and current state of the art. Prog. Polymer Sci, 113 (2021), Elsevier, New York, p. 2.	
	Chapter 10 - Electrospun Nanofibrous Filtration Membranes for Heavy Metals and Dye Removal, in <u>Nanoscale Materials in Water Purification - Micro and Nano Technologies</u> , 2019, Elsevier, New York, p. 5	
	Marzioch, J, Microsensor System for the Metabolic Monitoring in Cancer Cell Culture, Doctoral Thesis, Albert-Ludwigs-Universität Freiburg im Breisgau, 2019, Ch. 3.1 Cell Culturing, p. 40.	
Presentations	Rapid IVD testing using Planar Waveguide Biosensors. Presented at Biodot Inc. St. Paul Workshop "Emerging Technologies to Enable Quantitative Rapid Tests". 23-25 June 2008. St. Paul Hotel, St. Paul, Minnesota.	
	Growing Better Cells for Science. Presented at the Wayne Brown Institute Deal Forum. 15 November 2006. Salt Lake City, Utah.	
	ACCS – Advanced Cell Culture System. Presented at HyClone Laboratories Inc. 29 March 2005. Logan, Utah.	
	Multiple Vessicle Implantable Drug Delivery Device. Presented to Merck Sharp & Dohme. March 2020. Center for Engineering Design, Salt Lake City, Utah.	
	Fluoropolymer-based Electret Materials. Presented to DARPA. July 1988. Center for Engineering Design, Salt Lake City, Utah.	
Awards & Affiliations	Intermountain Society of Inventors and Designers	Society of Plastics Engineers
	Intermountain Biomedical Association	Utah Soc for Biomaterials Research (President, 1985)
	College of Engineering Scholarship, U of Utah	Regent's Scholarship, U of Michigan
	Tau Beta Pi, Engineering Honor Society	Phi Kappa Phi, National Honor Society
After Hours	Inventing Cooking Road & Mountain Biking Alpine & Nordic Skiing Whitewater Kayaking	

Appendix B

LIST OF MATERIALS CONSIDERED

Exhibit ("Ex.")	Description
1001	U.S. Patent No. 6,875,225
1002	File History of U.S. Patent No. 6,875,225
1003	RESERVED
1004	U.S. Patent No. 5,167,228 ("Czeisler")
1005	U.S. Patent No. 5,301,090 ("Hed")
1006	U.S. Patent No. 5,733,032 ("Bolta-032")
1007	U.S. Patent No. 4,564,886 ("Morcheles")
1008	U.S. Patent No. 6,163,038 ("Chen")
1009	U.S. Patent No. 6,267,779 ("Gerdes")
1010	U.S. Patent No. 5,545,192 ("Czeisler-192")
1011	U.S. Patent No. 5,871,271 ("Chien")
1012	U.S. Patent No. 6,086,220 ("Lash")
1013	U.S. Patent No. 5,908,294 ("Schick")
1014	U.S. Patent No. 5,163,426 ("Czeisler-426")
1015	U.S. Patent No. 4,858,609 ("Cole")
1016	U.S. Patent No. 5,503,637 ("Kyricos")
1017	U.S. Patent No. 5,562,719 ("Lopez-Claros")
1018	U.S. Patent No. 6,139,164 ("Bolta-164")
1019	U.S. Patent No. 1,660,794 ("Hudson")
1020	Canadian Patent No. 2,300,569 ("Pederson CA1")

1021	Canadian Patent No. 2,317,319 (“Pederson CA2”)
1022	Heeke, “Light-Emitting Diodes and Cool White Fluorescent Light Similarly Suppress Pineal Gland Melatonin and Maintain Retinal Function and Morphology in the Rat,” June 1999
1023	U.S. Patent No. 5,047,006 (“Brandston”)
1024	U.S. Patent No. 6,488,698 (“Hyman”)
1025	U.S. Patent No. 6,350,275 (“Vreman”)
1026	U.S. Patent No. 5,923,398 (“Goldman”)
1027	U.S. Patent No. 4,429,373 (“Fletcher”)
1028	National Library of Medicine #101401066 (“U.S. Army, Fitzsimons General Hospital, Denver, CO: Alpine light treatment, Physiotherapy Department”), 1930
1029	U.S. Patent No. 6,221,095 (“Van Zuylen”)
1030	U.S. Patent No. 6,016,038 (“Mueller”)