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(54) **THERAPEUTIC LED SYSTEM FOR A HOT TUB**

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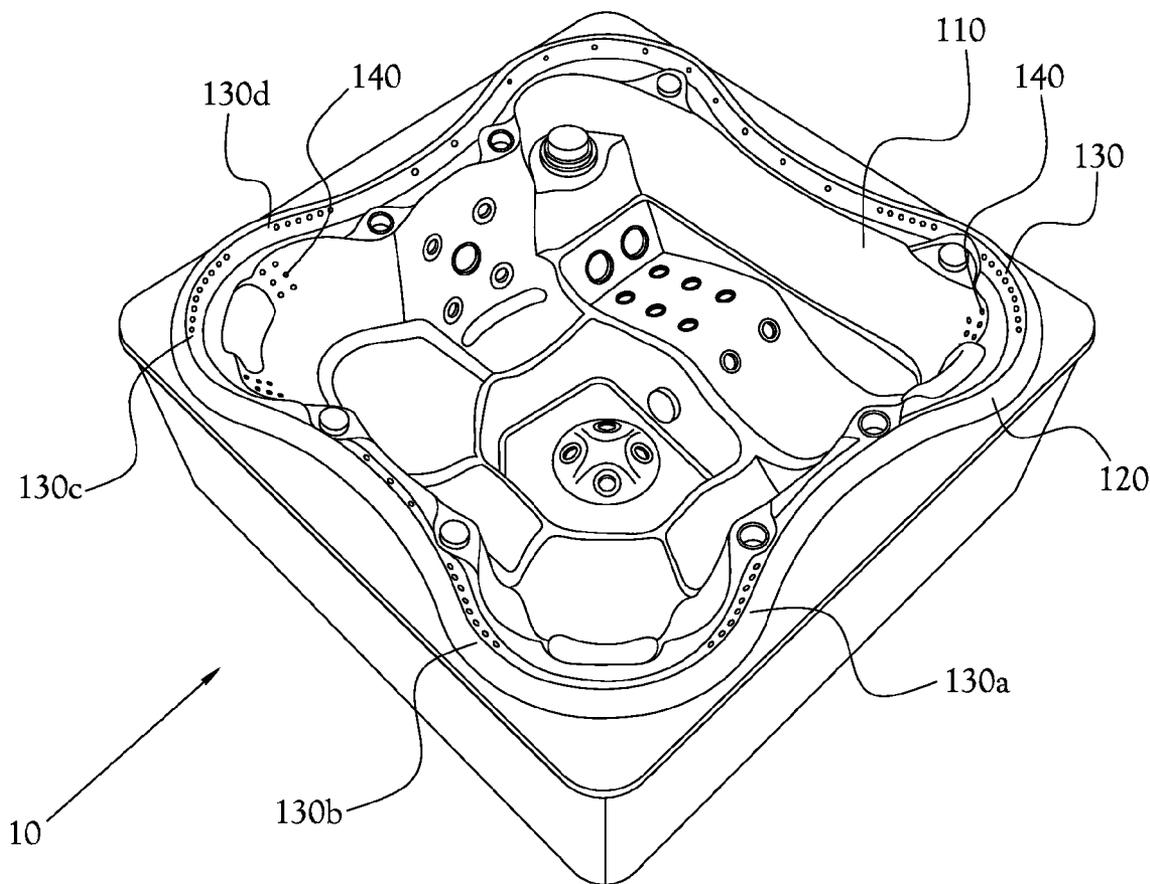
(57) **ABSTRACT**

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A housing containing individual light therapy Light Emitting Diode bulbs that can be adjusted to illuminate up to nine different modes of different colors and different levels of nanometers designed to aid in specific medical conditions and assist in maintaining healthy skin. It is designed to be installed in tanning beds and hot tub products at angles directly aimed at the facial region.

Related U.S. Application Data

(60) Provisional application No. 61/817,641, filed on Apr. 30, 2013.



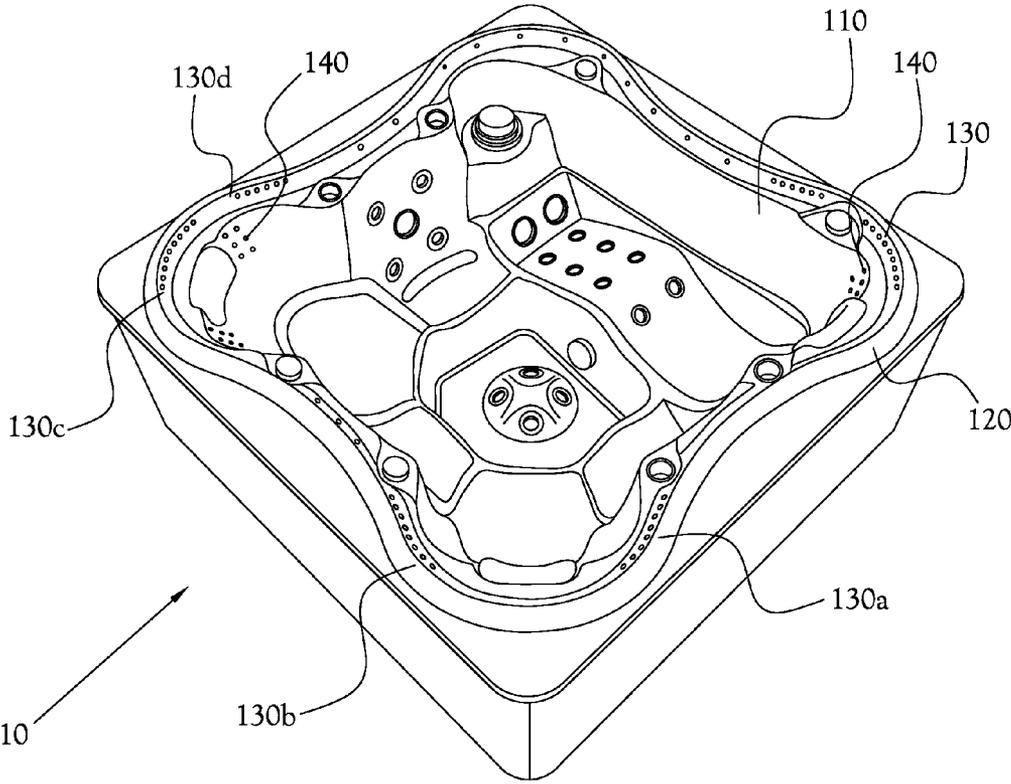


Fig. 1

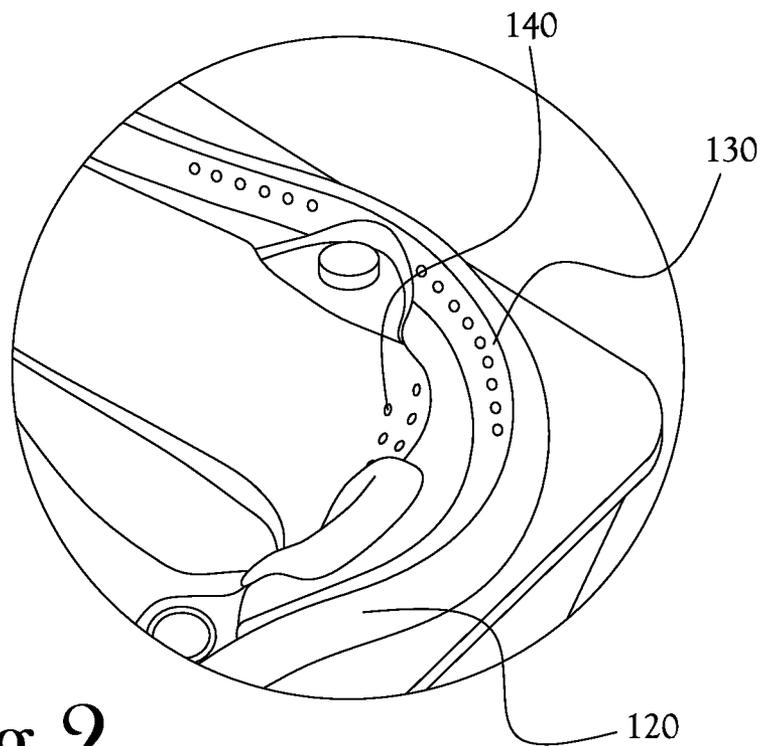


Fig. 2

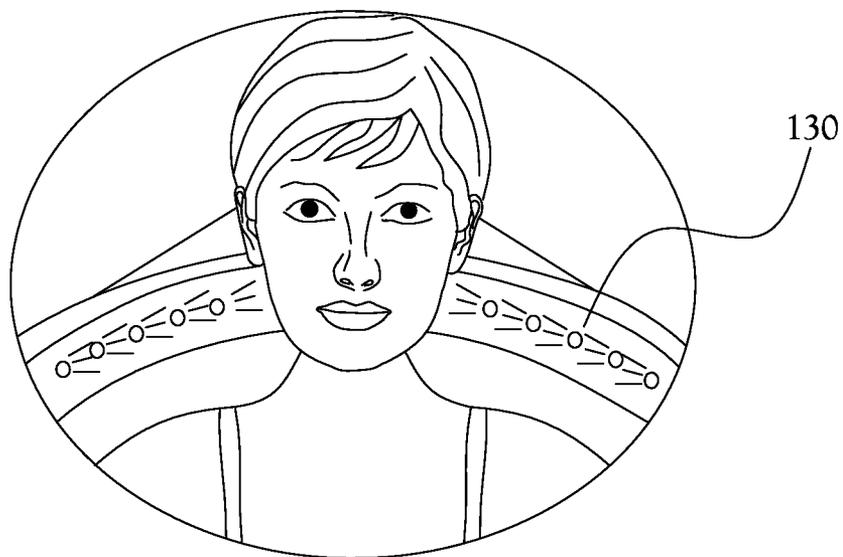


Fig. 3

THERAPEUTIC LED SYSTEM FOR A HOT TUB

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This Application claims priority to and claims the benefit of U.S. Provisional Patent Application Ser. No. 61/817,641, filed Apr. 30, 2013, the entirety of which is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

BACKGROUND OF THE INVENTION

[0003] 1. Field of Invention

[0004] The present invention relates to hot tubs and to light therapy for treating symptoms of seasonal affective disorder.

[0005] 2. Description of the Related Art

[0006] Hot tubs and similar devices are used for recreation, exercise, and physical therapy. Hot tubs are often employed for treating sore muscles or for relaxation after exercise or rigorous physical activity.

[0007] Use of hot tubs often occurs out of doors and after dark. For reasons of safety and convenience, lighting systems are often mounted in hot tubs. Such lighting systems help to create a positive atmosphere or ambience, which may change as a function of the brightness of the lights, the types and colors of the lights, the number of light sources, and the location of the light sources relative to the users.

[0008] Lighting systems in hot tubs or pools have historically involved placing point light sources slightly above the water line within the main body of the tub, generally in water tight fixtures that either slightly protrude from the walls of the hot tub or pool, or, more commonly, are recessed within a niche formed into the walls to which they are mounted. Light is typically supplied from an incandescent light bulb or a light emitting diode (LED) lamp placed in the fixture.

[0009] The lighting systems in the art generally involve one or more point light sources of varying brightness placed below the water line. These light sources propagate light into a body of water in a direction principally perpendicular to the wall on which the light source is mounted.

[0010] U.S. Pat. No. 7,712,913 discloses a lighted panel system for use in hot tubs, swim spas, and swimming pools that is mounted to the wall or lining of a tub. The lighted panel system comprises a light diffusing panel, a light source that illuminates the light diffusing panel, and a mounting structure that couples the light diffusing panel to the tub wall. Diffusers are preferably provided to the light diffusing panel in line with the light source and mounting structure to decoratively hide such components and further diffuse the light.

[0011] U.S. Pat. No. 7,204,602 discloses an LED light assembly, the light assembly comprising a reflective plate comprising a plurality of perforations formed therethrough the reflective plate, a plurality of LED bulbs wherein each LED bulb protrudes through a respective perforation of the plurality of perforations, and a control circuit selectively operable to produce a plurality of colored lights through the plurality of LED bulbs wherein the control circuit comprises a switch which when activated a defined number of times produces a plurality of at least light colors and light patterns

wherein each of the plurality of at least light colors and light patterns are selected based on the defined number of times the switch is activated.

[0012] U.S. Pat. No. 6,752,517 discloses a lighting system suitable for chromatherapy includes a plurality of light fixtures mounted through walls of a tub basin to project different color light into the water in the tub. The light fixtures are operated by a central control unit and each includes a housing having a concave internal surface. An array of light emitting diodes that project different color light is mounted under a cap covering one end of the housing. A lens is threaded onto the opposite end of the housing from within the tub basin to secure the light fixture to the tub. The concave surface has the different color light projected on it, and reflects light out the light fixture in mixed fashion.

SUMMARY OF THE INVENTION

[0013] The present invention includes, in some of its many embodiments, a housing containing individual light therapy Light Emitting Diode bulbs that can be adjusted to illuminate up to nine different modes of different colors and different levels of nanometers designed to aid in specific medical conditions and assist in maintaining healthy skin. It is designed to be installed in tanning beds and hot tub products at angles directly aimed at the facial region.

[0014] In some example embodiments of the present general inventive concept, a hot tub with therapeutic light emitting diode lighting system for treating seasonal affective disorder includes a hot tub body with a raised area above a maximum level reached by water when the hot tub body is filled with water, and light emitting diode (LED) bulbs positioned on said raised area, said LED bulbs illuminating colors and wavelengths selected to treat seasonal affective disorder, said LED bulbs being angled to direct light at the facial region of a person sitting in the hot tub body.

[0015] Some embodiments further include LED bulbs positioned below said raised area.

[0016] In some embodiments, said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

[0017] In some embodiments, said LED bulbs illuminate green light.

[0018] In some embodiments, said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

[0019] In some example embodiments of the present general inventive concept, a therapeutic light emitting diode lighting system for treating seasonal affective disorder, to be installed in a hot tub wall, includes light emitting diode (LED) bulbs positioned in the hot tub wall, said LED bulbs illuminating colors and wavelengths selected to treat seasonal affective disorder, said LED bulbs being angled to direct light at the facial region of a person sitting in the hot tub body.

[0020] In some embodiments, said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

[0021] In some embodiments, said LED bulbs illuminate green light.

[0022] In some embodiments, said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

[0023] In some example embodiments of the present general inventive concept, a therapeutic light emitting diode lighting system for installation in a hot tub wall includes a light source including light emitting diode (LED) bulbs, said LED bulbs capable of being adjusted to illuminate in up to nine different modes of different colors and different wavelengths, whereby light emitted by said LED bulbs in said

different modes is adapted to aid in specific medical conditions and assist in maintaining healthy skin, and a housing to hold said LED bulbs, said housing configured to angle said LED bulbs to direct light at the facial region of a person using hot tub.

[0024] In some embodiments, said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

[0025] In some embodiments, said LED bulbs are capable of being adjusted to illuminate multiple wavelengths in nine separate modes.

[0026] In some embodiments, said LED bulbs illuminate green light.

[0027] In some embodiments, said LED bulbs illuminate red light.

[0028] In some embodiments, said LED bulbs illuminate blue light.

[0029] In some embodiments, said LED bulbs illuminate yellow light.

[0030] In some embodiments, said LED bulbs illuminate light that includes light with a wavelength of 633 nanometers.

[0031] In some embodiments, said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

[0032] In some embodiments, said LED bulbs illuminate light that includes light with a wavelength of 419 nanometers.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING FIGURES

[0033] The above features, and other features and aspects of various example embodiments of the present general inventive concept, will become more apparent from examination of the drawing figures, in which:

[0034] FIG. 1 illustrates a hot tub according to one example embodiment of the present general inventive concept;

[0035] FIG. 2 is a close-up view of the example embodiment shown in FIG. 1; and

[0036] FIG. 3 is a second close-up view of the example embodiment shown in FIGS. 1 and 2, showing a person using the hot tub and the LED bulbs directing therapeutic light at the person's facial area.

DETAILED DESCRIPTION

[0037] The present invention includes, in some embodiments, a housing containing individual light therapy Light Emitting Diode bulbs that can be adjusted to illuminate up to nine different modes of different colors and different levels of nanometers designed to aid in specific medical conditions and assist in maintaining healthy skin. It is designed to be installed in tanning beds and hot tub products at angles directly aimed at the facial region.

[0038] In some embodiments, a therapeutic light emitting diode lighting system for installation in a hot tub wall includes a light source comprising light emitting diode (LED) bulbs, said LED bulbs capable of being adjusted to illuminate in up to nine different modes of different colors and different wavelengths, whereby light emitted by said LED bulbs in said different modes is adapted to aid in specific medical conditions and assist in maintaining healthy skin, and a housing to hold said LED bulbs, said housing configured to angle said LED bulbs to direct light at the facial region of a person using the lamp.

[0039] In some embodiments, a therapeutic light emitting diode lighting system is installed in a raised molded area slightly above the main body of the hot tub, designed so that

the lights are substantially at face level so that therapeutic lighting is directed at the facial areas of persons using the tub.

[0040] Turning to the Figures, FIG. 1 illustrates generally a hot tub comprising one example embodiment according to the present general inventive concept. As shown in FIG. 1, a hot tub 10 includes a molded tub body 110 with a lip or raised area 120. As shown in FIG. 1 and in the close-up view in FIG. 2, a grouping of LED bulbs 130 are positioned on the raised area 120. (In some embodiments, including the example embodiment shown in FIG. 1, the hot tub 10 is equipped with additional assemblies or groupings of LED bulbs are positioned in multiple locations on the raised area 120, e.g. LED bulb groupings 130a, 130b, 130c, 130d.) Generally, the raised area 120 and the grouping of LED bulbs 130 are a few inches above the water line of the hot tub 10 when the hot tub 10 is filled with water to the designed maximum capacity of the particular model of hot tub 10. In some embodiments, an additional grouping of LED bulbs 140 is positioned on the molded tub body 110, as shown in FIG. 2, below the above-mentioned grouping on LED bulbs 130 positioned on the raised area 120. (Generally, this second grouping of LED bulbs 140 is also above the water line of the hot tub 10.) As shown in FIG. 3, the grouping of LED bulbs 130 directs light generally at the facial area of a person sitting or reclining in the hot tub 10.

[0041] In some embodiments, a therapeutic LED bulb system is capable of nine different modes, including:

[0042] Mode 1: emitting red light at approximately 633 nanometers for aid in collagen and anti-aging.

[0043] Mode 2: emitting blue light at approximately 419 nanometers for aid in Acne treatment.

[0044] Mode 3: emitting green light at approximately 552 nanometers for aid in treatment for seasonal affective disorder (SAD).

[0045] Mode 4: emitting normal red light only intended for illumination.

[0046] Mode 5: emitting normal blue light only intended for illumination.

[0047] Mode 6: emitting normal yellow light only intended for illumination.

[0048] Mode 7: emitting normal green light only intended for illumination.

[0049] Mode 8: emitting white light only intended for illumination.

[0050] Mode 9: emitting normal red, blue, yellow, green, white light in a sequence of one color after the other intended only for illumination.

[0051] Thus, in various embodiments of the present general inventive concept, the LED bulbs can be adjusted to illuminate different colors and different wavelengths, with at least some of the colors and wavelengths being selected and designed to aid in specific medical conditions (such as Seasonal Affective Disorder) or to assist in maintaining healthy skin.

[0052] While the present invention has been illustrated by description of several embodiments and while the illustrative embodiments have been described in considerable detail, it is not the intention of the applicant to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus and methods, and illustrative examples shown and described. Accordingly, departures may be made from such

details without departing from the spirit or scope of applicant's general inventive concept.

What is claimed is:

1. A hot tub with therapeutic light emitting diode lighting system for treating seasonal affective disorder, comprising:

a hot tub body with a raised area above a maximum level reached by water when the hot tub body is filled with water; and

light emitting diode (LED) bulbs positioned on said raised area, said LED bulbs illuminating colors and wavelengths selected to treat seasonal affective disorder, said LED bulbs being angled to direct light at the facial region of a person sitting in the hot tub body.

2. The hot tub with therapeutic light emitting diode lighting system of claim 1, further comprising LED bulbs positioned below said raised area.

3. The hot tub with therapeutic light emitting diode lighting system of claim 1, wherein said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

4. The hot tub with therapeutic light emitting diode lighting system of claim 1, wherein said LED bulbs illuminate green light.

5. The hot tub with therapeutic light emitting diode lighting system of claim 1, wherein said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

6. A therapeutic light emitting diode lighting system for treating seasonal affective disorder, to be installed in a hot tub wall, comprising:

light emitting diode (LED) bulbs positioned in the hot tub wall, said LED bulbs illuminating colors and wavelengths selected to treat seasonal affective disorder, said LED bulbs being angled to direct light at the facial region of a person sitting in the hot tub body.

7. The therapeutic light emitting diode lighting system of claim 6, wherein said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

8. The therapeutic light emitting diode lighting system of claim 6, wherein said LED bulbs illuminate green light.

9. The therapeutic light emitting diode lighting system of claim 6, wherein said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

10. A therapeutic light emitting diode lighting system for installation in a hot tub wall, comprising:

a light source including light emitting diode (LED) bulbs, said LED bulbs capable of being adjusted to illuminate in up to nine different modes of different colors and different wavelengths, whereby light emitted by said LED bulbs in said different modes is adapted to aid in specific medical conditions and assist in maintaining healthy skin; and

a housing to hold said LED bulbs, said housing configured to angle said LED bulbs to direct light at the facial region of a person using hot tub.

11. The therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs are capable of being adjusted to illuminate multiple wavelengths.

12. The therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs are capable of being adjusted to illuminate multiple wavelengths in nine separate modes.

13. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate green light.

14. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate red light.

15. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate blue light.

16. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate yellow light.

17. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate light that includes light with a wavelength of 633 nanometers.

18. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate light that includes light with a wavelength of 552 nanometers.

19. The hot tub with therapeutic light emitting diode lighting system of claim 10, wherein said LED bulbs illuminate light that includes light with a wavelength of 419 nanometers.

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