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Turtzo

(54) **INTEGRATED SYSTEM, METHOD AND APPARATUS FOR TREATING BACK PAIN DURING REST**

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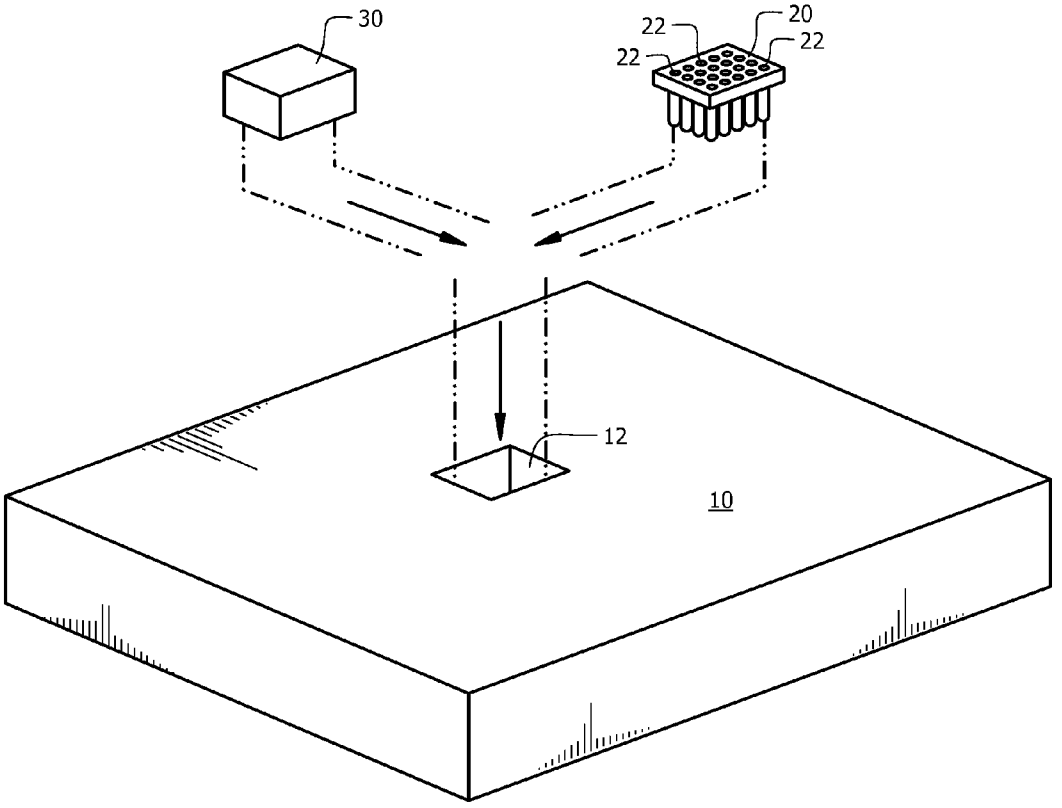
(52) **U.S. Cl.** **5/421**

(57) **ABSTRACT**

An application for a mattress that directs light and heat towards an area of pain of a person while the person rests on the mattress. The light and heat are provided by an array of LEDS that are integrated into the mattress. A controller provides electrical power to the LEDS for providing sufficient heat and light for therapeutic treatment of pain to the person who rests on the mattress above the array of LEDS.



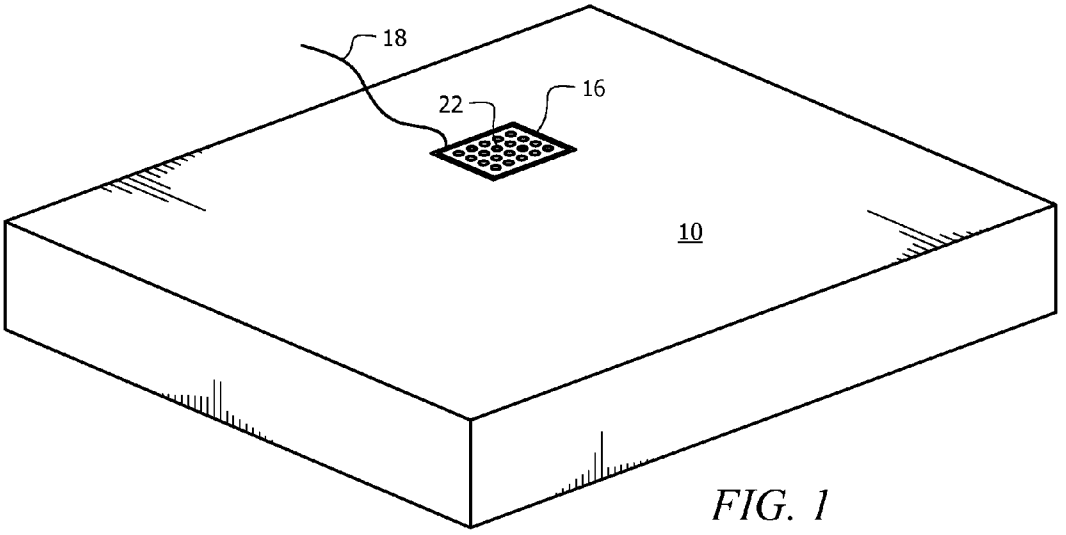


FIG. 1

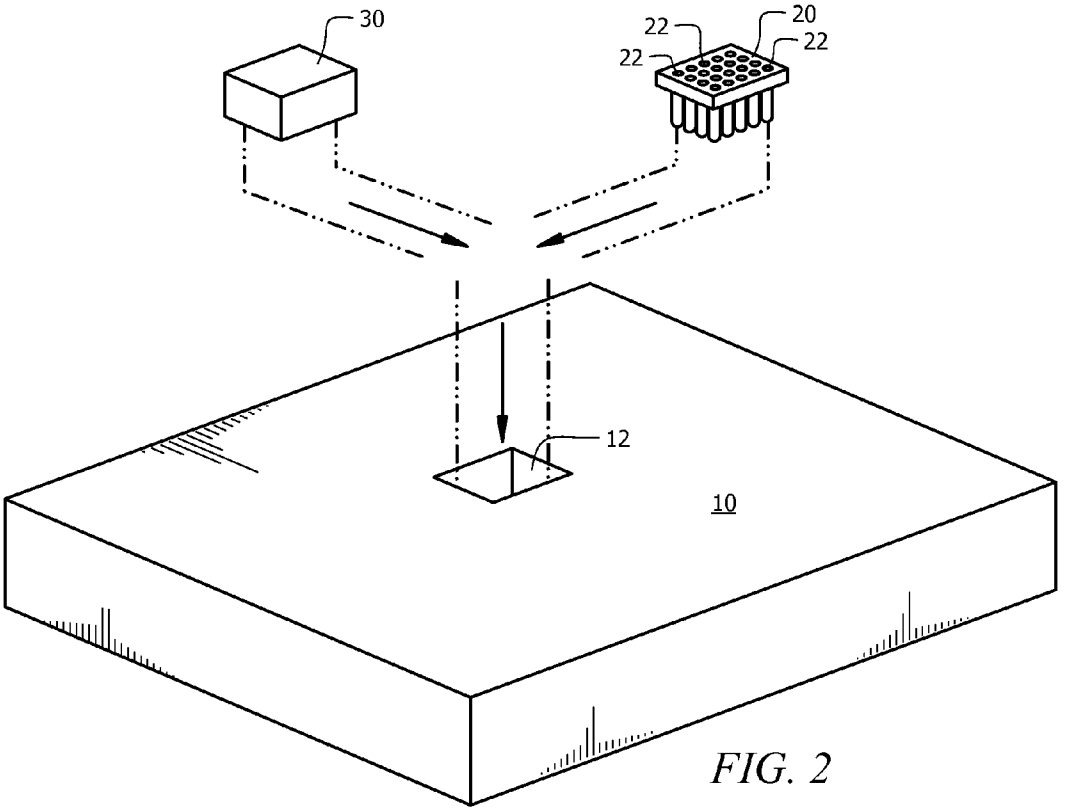


FIG. 2

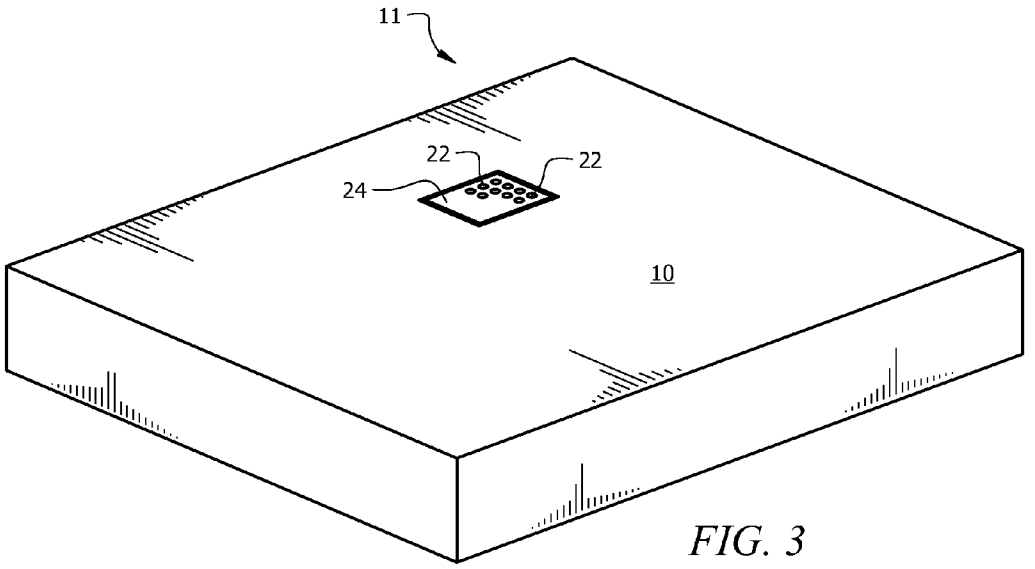


FIG. 3

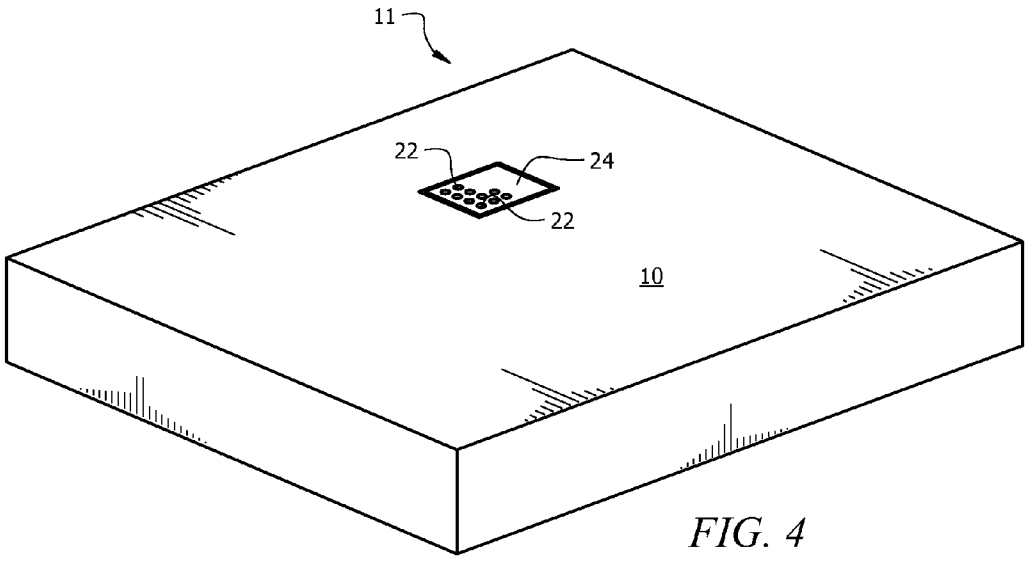


FIG. 4

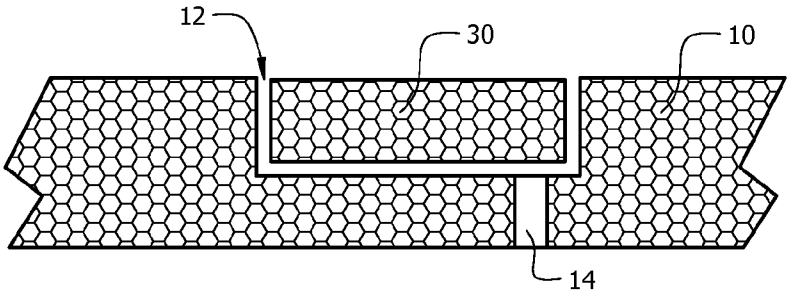


FIG. 5

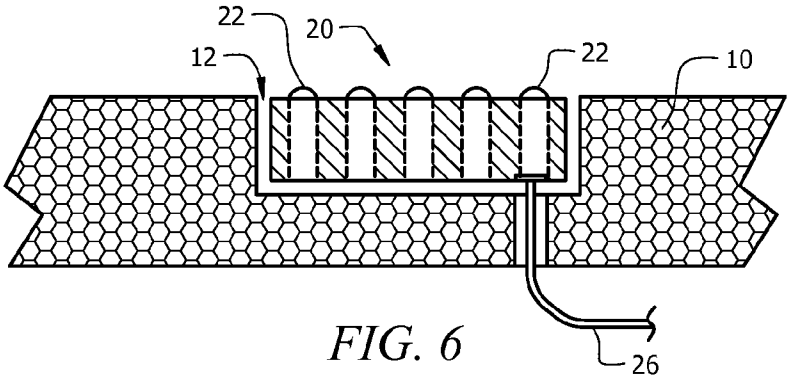


FIG. 6

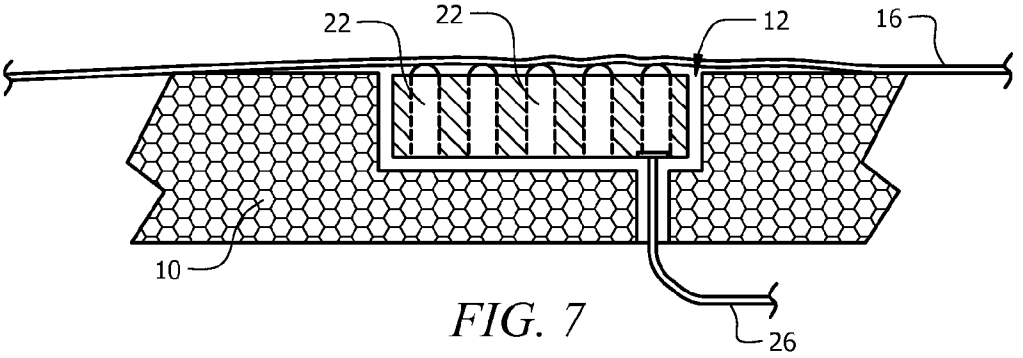


FIG. 7

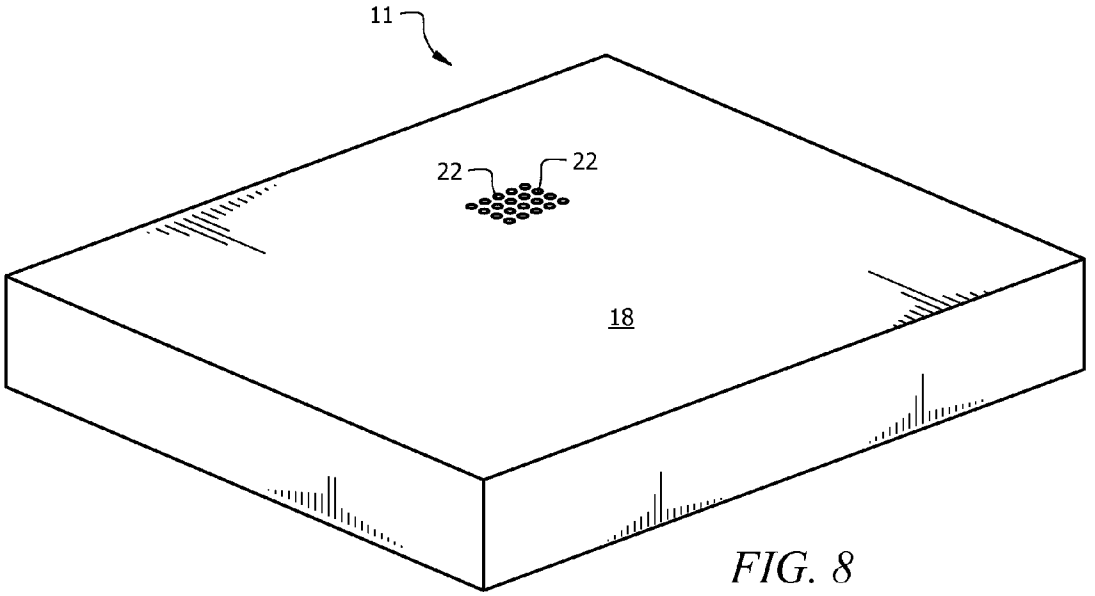


FIG. 8

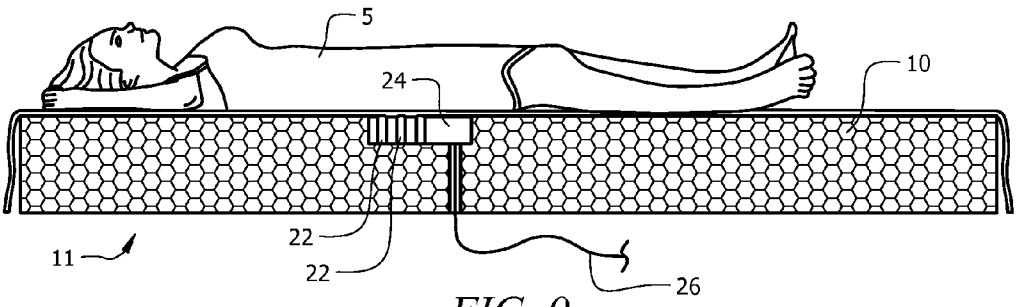


FIG. 9

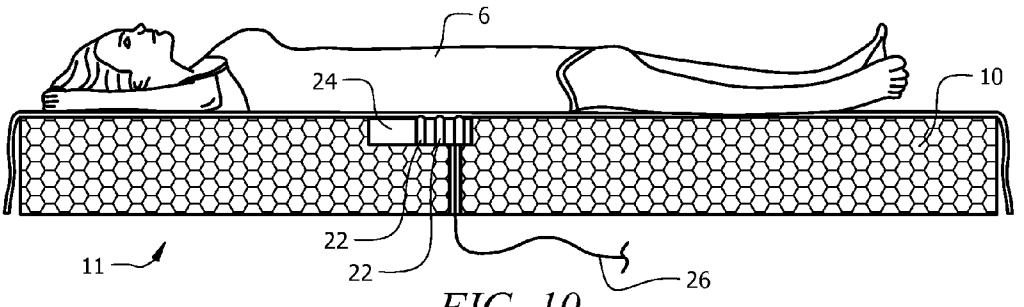


FIG. 10

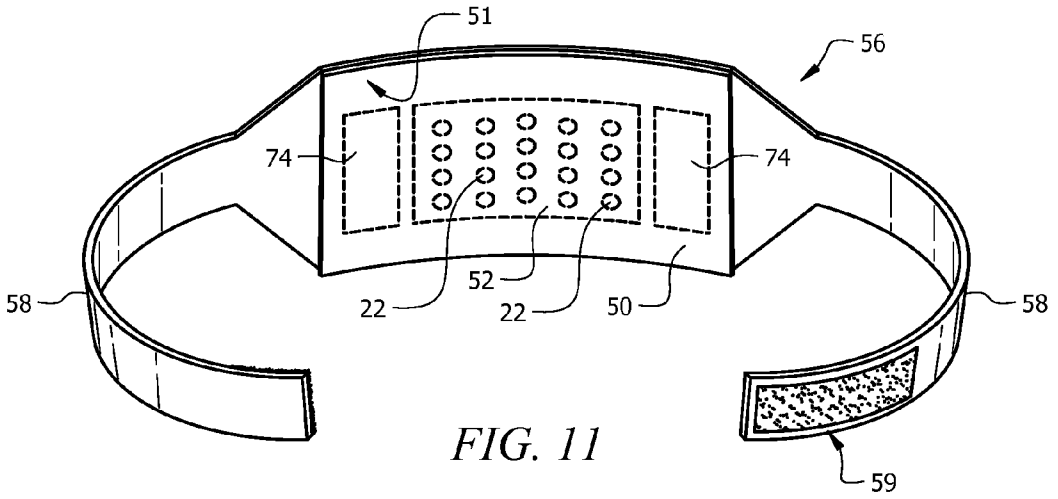


FIG. 11

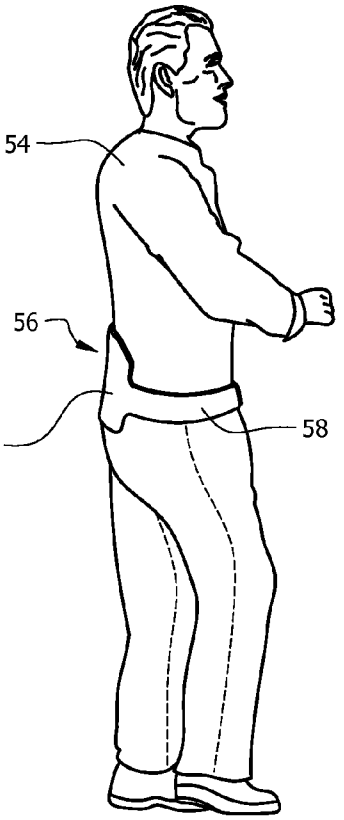


FIG. 12

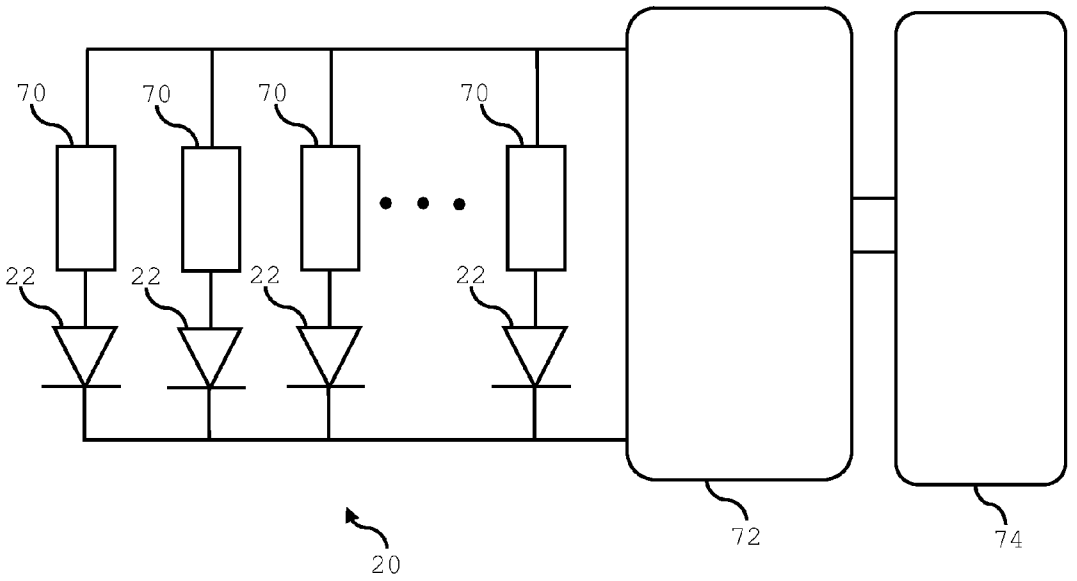


FIG. 13

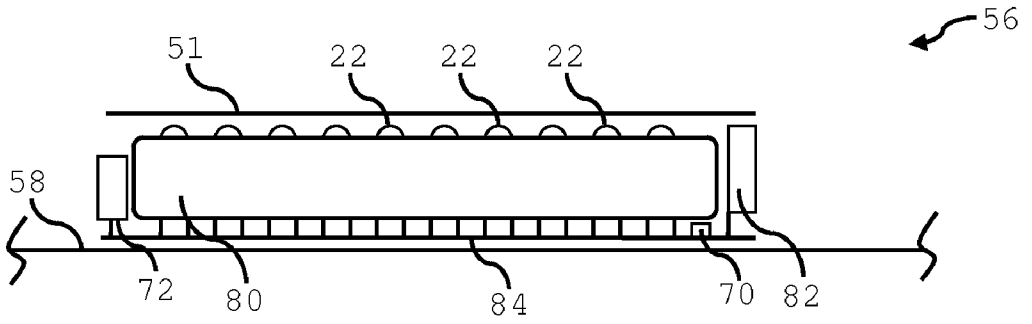


FIG. 14

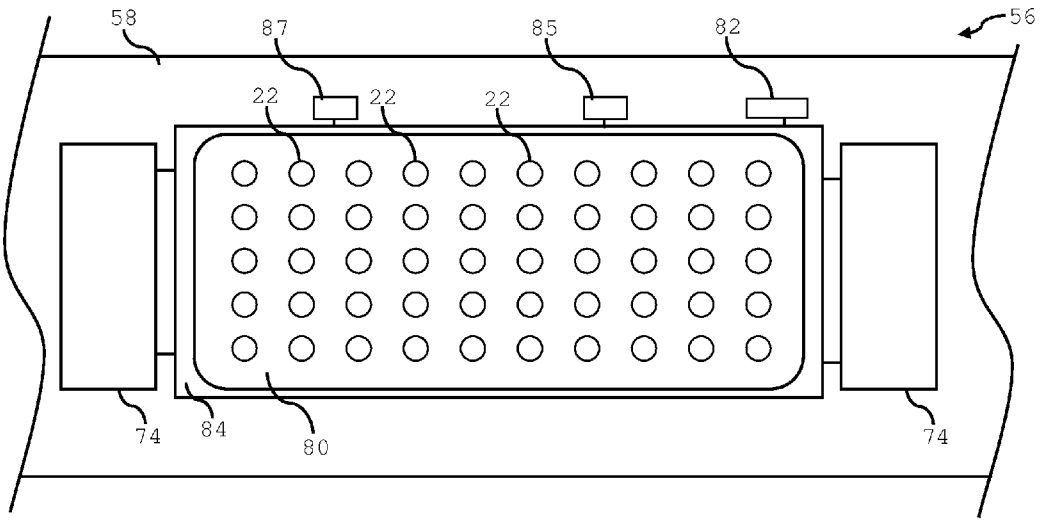


FIG. 15

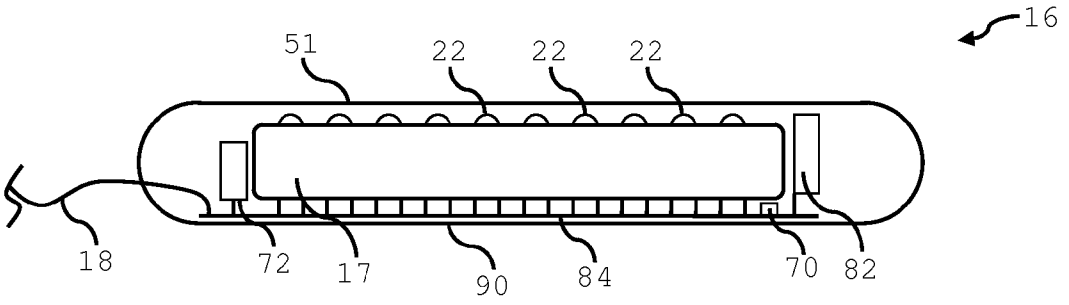


FIG. 16

INTEGRATED SYSTEM, METHOD AND APPARATUS FOR TREATING BACK PAIN DURING REST

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is related to U.S. patent application Ser. No. _____ titled "SYSTEM, METHOD AND APPARATUS FOR TREATING BACK PAIN DURING REST," attorney docket 552.4 filed even date here within. This application is also related to U.S. patent application Ser. No. _____ titled "HEAT AND LIGHT-EMITTING PAD," attorney docket 552.5 filed even date here within. This application is also related to U.S. patent application Ser. No. _____ titled "WORN HEAT AND LIGHT-EMITTING DEVICE," attorney docket 552.7 filed even date here within.

FIELD

[0002] This invention relates to the field of pain relief and more particularly to a system for the deliver of heat and infrared light to a user for the relief of pain.

BACKGROUND

[0003] It is known that exposure to heat and certain wavelengths of light are useful to temporarily increase local circulation, reduce pain and to enhance healing as detailed in Michlovitz and Nolan, Modalities for Therapeutic Intervention (4th Ed.), F.A. Davis Company (2005). Recent inventions have used light and/or heat as a therapeutic device for the relief of pain. In particular, it has been shown that infra-red and near infra-red light of certain wavelengths possess therapeutic qualities. Exposure to certain wavelengths of light is known to alleviate various effects that sun exposure, gravity, pollution and chemicals have on the skin.

[0004] LED Devices that emit infrared wavelengths of light are well known and are capable of providing sufficient light for therapeutic effects to persons exposed to the light under certain conditions. Additionally, such LED Devices also emit heat, which also provide therapeutic effects such as reducing pain in certain situations. Existing stand-alone LED devices do not provide for sufficiently convenient at-home applications of infrared light and heat. For example, cable-connected devices are available having multiple LED arrays for the irradiation of a user's leg or foot, but the cable causes problems as the user moves. Likewise, battery powered devices also having multiple LED arrays for the irradiation of a user's foot or leg improve upon this problem, but the batteries cause an issue by presenting hard bulges that exert pressure on the user when the user rests in certain positions.

[0005] What is needed is a system that will irradiate a locale of a user with heat and light while the user rests.

SUMMARY OF THE INVENTION

[0006] A mattress that directs light and heat towards an area of pain of a person while the person rests on the mattress. The light and heat are provided by an array of LEDS that are integrated into the mattress. A controller provides electrical power to the LEDS for providing sufficient heat and light for therapeutic treatment of pain to the person who rests on the mattress above the array of LEDS.

[0007] In one embodiment, a mattress for providing heat and light to a person for the purpose of treating pain is disclosed. The mattress has an integrated array of LEDS, the LEDS being interfaced with a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress. The system has a controller interfaced to the LEDS for controlling electric current provided to the array of LEDS and a source of the electric current.

[0008] In another embodiment, a method of reducing pain in a person is disclosed including providing a mattress having an array of LEDS integrated into the mattress, the light-emitting edge of the LEDS being interfaced with a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress. The mattress includes a controller interfaced to the LEDS for controlling electric power and a source of the electric power. The method continues with the person resting a portion of the person's body having the pain (e.g. lower back) on the surface of the mattress having the array of LEDS. The LEDS emit light and heat towards the portion of the person's body during a portion of the period of time (e.g. during sleep).

[0009] In another embodiment, a system for supporting and providing heat and light to a person for the purpose of treating pain is disclosed including a mattress that has an integrated device for providing heat and light. The integrated device for providing heat and light is interfaced with a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress and has a circuit for selectively providing electric current to control the heat and light and a source of the electric current.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The invention can be best understood by those having ordinary skill in the art by reference to the following detailed description when considered in conjunction with the accompanying drawings in which:

[0011] FIG. **1** illustrates a perspective view of a first embodiment.

[0012] FIG. **2** illustrates a second perspective view of a second embodiment.

[0013] FIG. **3** illustrates a third perspective view of the second embodiment.

[0014] FIG. **4** illustrates a fourth perspective view of the second embodiment.

[0015] FIG. **5** illustrates a cross-sectional view of the second embodiment.

[0016] FIG. **6** illustrates a second cross-sectional view of the second embodiment.

[0017] FIG. **7** illustrates a third cross-sectional view of the second embodiment.

[0018] FIG. **8** illustrates a perspective view of a third embodiment.

[0019] FIG. **9** illustrates a first cross-sectional view of the second embodiment in use.

[0020] FIG. **10** illustrates a first cross-sectional view of the second embodiment in use.

[0021] FIG. **11** illustrates a perspective view of a fourth embodiment.

[0022] FIG. **12** illustrates a perspective view of a fourth embodiment in use.

[0023] FIG. **13** illustrates a schematic view of an exemplary control system of all embodiments.

[0024] FIG. **14** illustrates a cutaway side plan view of an exemplary LED array and control system of all embodiments.

[0025] FIG. **15** illustrates a top plan view of an exemplary LED array and control system of all embodiments.

[0026] FIG. **16** illustrates a cutaway side plan view of an exemplary LED array and control system of the first embodiment.

DETAILED DESCRIPTION

[0027] Reference will now be made in detail to the presently preferred embodiments, examples of which are illustrated in the accompanying drawings. Throughout the following detailed description, the same reference numerals refer to the same elements in all figures.

[0028] Throughout this description, a mattress (bed) is used as an example of furniture. This is but an example and it is anticipated that the present method, apparatus and system be used in conjunction and/or integrated into any type of human-supporting or contact furniture such as pillows, chairs, recliners, couches, sofas, futons, car/vehicle seats etc. It is further anticipated that the present method, apparatus and system be applied to other devices/systems that normally contact the human body such as bicycle seats, motorcycle seats, arm rests, head rests, etc. When integrated into, for example, a pillow, the pillow is, for example, placed behind the back when the person is sitting in a chair for back pain or against the neck for neck pain.

[0029] Referring to FIG. **1**, a perspective view of a first embodiment is shown. In this embodiment, an array of LEDS **22** is integrated into a treatment pad **16** that is positioned on, for example, a bed/mattress **10**. The LEDS **22** are connected by a circuit board **84** and held in a soft, rubber/plastic holder **17** (see FIG. **16**). In some embodiments, the thin pad **16**, LEDS **22** and circuit board **84** are enclosed in a cloth cover for protection. The LEDS are powered through a cable **18** connected to a power supply/controller (see FIG. **13**). The power supply/controller provides a controlled amount of electrical energy to the array of LEDS **22**, causing the LEDS **22** to emit light at one or more wavelengths, preferably including infrared or near infrared. Additionally, the LEDS **22** produce heat. Both the light and heat provide therapeutic effect to a person in contact with the thin pad **16** of LEDS **22** when in contact with the person. It is anticipated that, for relief of back pain, the person positions themselves such that the person's back or lower back is located directly over the thin pad **16** of LEDS **22** (see FIGS. **9** and **10**). The invention is anticipated to perform equally as well with other parts of the human body.

[0030] Referring to FIG. **2**, a second perspective view of a second embodiment is shown. This embodiment includes a modular section within furniture such as a mattress **10**. In such, a cavity **12** is made/formed/left in the furniture/mattress **10** into which an option module **30**/**20** is fit. In such, for deployment of the furniture/mattress **10** without the array **20** of LEDS **22**, a blank insert **30** is placed in the cavity. Therefore, when the furniture/mattress **10** is covered (e.g., with a sheet **16**—see FIG. **7**) and the cavity **12** is filled with the blank insert, it is difficult to detect by a person using the furniture/mattress **10**. Alternately, when the array **20** of LEDS **22** is to be used, the blank insert **30** is removed and the array **20** of LEDS **22** is inserted into the cavity **12** of the mattress/furniture **10**. As shown in FIG. **2**, the entire array **20** is populated with LEDS **22**, preferably infrared or near-infrared LEDS **22** or a mixture of infrared or near-infrared LEDS **22** and/or visible light LEDS **22**. Any wavelength of LEDS **22** is anticipated. In embodiments in which the furniture/mattress **10** is a mattress **10**, it is anticipated that the mattress **10** comprise any known mattress material currently used in the industry, including foam rubber (e.g., latex foam), memory foam (visco-elastic memory foam material) and the like. Memory foam material is often made from synthetic polyurethane foam material with the addition of certain types of chemicals which increase the weight or density of the foam, as known in the industry. It is further anticipated that the mattress **10**, in some embodiments, is an air mattress **10** and, therefore, the mattress **10** is completely sealed and air-tight around the cavity **12**.

[0031] Referring to FIGS. **3** and **4**, a third and fourth perspective view of the second embodiment is shown. In this the array **24** of LEDS **22** is populated with LEDS **22** towards one end of the array **24** and the array **24** is passive at the opposite end (absent of active LEDS). In such, when a shorter person uses the array **24**, for example to relieve lower back pain, the array **24** is positioned in the mattress as shown in FIG. **3** and the active LEDS **22** are positioned toward the head of the bed **11**, thereby aligning with the shorter person's lower back. Alternately, as shown in FIG. **4**, when a taller person uses the array **24**, for example to relieve lower back pain, the array **24** is turned 180 degrees within the mattress so that the active LEDS **22** are positioned away from the head of the bed **11**, thereby aligning with the taller person's lower back.

[0032] Referring to FIG. **5**, a cross-sectional view of the second embodiment is shown. In this view, the blank insert **30** is snuggly fit within the cavity **12** (e.g. a tight fit limiting or reducing movement/sliding along any axis). In some embodiments, a hole or slot **14** connects the cavity with the bottom of the furniture/mattress **10** for running cables **26** (see FIG. **6**).

[0033] Referring to FIG. **6**, a second cross-sectional view of the second embodiment is shown. In this view, the array **20** of LEDS **22** is snuggly fit within the cavity **12** (e.g. a tight fit limiting or reducing movement/sliding along any axis). In some embodiments, an electrical cable **26** from the LEDS **22** to a controller **70** and/or power supply **74** (see FIGS. **12** and **13**) exits through the hole or slot **14** connects the cavity with the bottom of the furniture/mattress **10** for running cables **26**.

[0034] Referring to FIG. **7**, a third cross-sectional view of the second embodiment is shown. In this view, the array **20** of LEDS **22** is positioned within the cavity **12**. In some embodiments, an electrical cable **26** from the LEDS **22** to a controller **72** and/or power supply **74** (see FIG. **13**) exits through the hole or slot **14** that connects the cavity with the bottom of the furniture/mattress **10** for running cables **26**. In this view, a cloth cover **16** is positioned over the array **20** of LEDS **22**. Studies have shown that by increasing the power and/or duration of activity of the LEDS **22**, sufficient heat and light penetrate layers of cloth **16** such as sheets, bedding, etc, and provide relief for pain such as lower back pain. Therefore, as shown in FIG. **7**, the sheet **16** (for example) covers the LEDS **22** and the user positions their body such that the area in pain rests on top of the sheet **16** where the LEDS **22** lay beneath.

[0035] Referring to FIG. **8**, a perspective view of a third embodiment is shown. In this embodiment, a set of LEDS **22** are integrated directly into furniture/mattress **18**. The LEDS **22** are fitted into holes or apertures of the mattress **18** and are in a fixed position relative to the head **11** of the mattress. Again, as in FIG. **7**, it is anticipated that in some embodiments, a cloth cover **16** is positioned over the LEDS **22** and the power and/or duration of activity of the LEDS **22** is increased, providing sufficient heat and light to penetrate the layers of cloth **16** such as sheets, bedding, etc, and provide relief for pain such as lower back pain.

[0036] Referring to FIGS. **9** and **10**, a first and second cross-sectional view of the second embodiment in use is shown. In this the array **24** of LEDS **22** is populated with LEDS **22** towards one end of the array **24** and the array **24** is passive at the opposite end. In such, when a shorter person **5** uses the array **24**, for example to relieve lower back pain, the array **24** is positioned in the mattress **10** as shown in FIG. **9** and the active LEDS **22** are positioned toward the head of the bed **11**, thereby aligning with the shorter person's **5** lower back. Alternately, as shown in FIG. **10**, when a taller person **6** uses the array **24**, for example to relieve lower back pain, the array **24** is positioned in the mattress **10** so that the active LEDS **22** are positioned away from the head of the bed **11**, thereby aligning with the taller person's **6** lower back.

[0037] Referring to FIGS. **11** and **12**, perspective views of a fourth embodiment is shown. In this embodiment, an array **52** of LEDS **22** and power sources **74** are integrated into a wearable device **56** that attaches to a person's body **54** with a belt **58** and fastener **59**. The belt **58** and fastener **59** are any such device as known in the industry and the exemplary hook and loop fastener **59** is one possible fastener. Other belt **58** lengths, widths and shapes are anticipated as well as other fasteners **59** such as buckles, buttons, snaps, etc.

[0038] In some embodiments, the array **52** of LEDS **22** and power sources **74** (e.g. batteries **74**) are covered with a cloth material **51** such as nylon, silk, polyester, cotton, etc. As previously discussed, the power and/or duration of activity of the LEDS **22** is/are increased, providing sufficient heat and light to penetrate the layer of cloth **51** to provide relief for pain such as lower back pain as shown in FIG. **12**. It is anticipated that the wearable device **56** of this embodiment is adaptable in size and shape to be worn on other parts of the body **54** such as feet, ankles, knees, legs, other areas of the back, neck, arms, hands and head. By situating the power source **74** (e.g. batteries **74**) within the back area of the wearable device **56**, heat emitted from the batteries as they discharge provides additional heat to, for example, the person's **54** back (see FIG. **12**).

[0039] Referring to FIG. **13**, a schematic view of an exemplary control system of all embodiments is shown. In this example, each LED **22** in the array **20** is current limited by an individual resistor **70**. To illuminate the LEDS **22**, a voltage is supplied by the controller **72** and the value of the resistors **70** determines the current flowing through each LED **22** and hence, the power output of each LED **22**. The lower the resistance of each resistor **70**, the higher the power output of its corresponding LED **22**. This is an example of how such LEDS **22** are provided with a predetermined amount of power and other methods are well known using various combinations of LEDS **22** connected in series and/or parallel with various combinations of resistors **70** or other current controlling devices. In some embodiments, the current is directly controlled by the controller **72**, eliminating the need for resistors **70**. Any known system for providing a controlled amount of power to the LEDS **22** is anticipated here within.

[0040] As discussed previously, in applications in which a cloth **16**/**51** is situated between the user and the LEDS **22**, the power to the LEDS **22** is increased to provide greater heat and light output to overcome the loss inserted by the cloth **16**/**51**. This is accomplished in any way known in the industry including selecting lower resistance values of the resistors **70** or increasing the voltage output of the controller **72**, etc.

[0041] The controller **72** provides power to the LEDS **22** during an active period. It is anticipated that the controller **72** provide power to the LEDS **22** for a pre-determined period of time from minutes up to continuously, as needed to address the user's specific pain. It is also anticipated that the controller **72** provide any known sequencing of power levels and timing as needed to address the specific pain. For example, for certain pain/healing operations, it is desired to alternate heat/cool and the controller **72** provides power for one period, thereby providing heat, and no or little power for another period, thereby removing the heat. Additionally, the controller **72**, in some embodiments, provides pulse width modulation to control the power to the LEDS in which, the greater the pulse width, the greater the power supplied to the LEDS and the greater the light and heat intensity. In this embodiment, the pulse width and frequency is either fixed or variable.

[0042] For completeness, a power source **74** is shown, as known in the industry. Any known power source **74** is anticipated, including, but not limited to, a battery pack, a rechargeable battery pack and a power supply such as a power brick for converting household electric power into a DC voltage.

[0043] Referring to FIG. **14**, a cutaway side plan view of an exemplary LED array control system of all embodiments is shown. In the preferred embodiment, the LEDS **22** are held in holes of a material **80**, preferably a soft, sponge-like material that also conducts heat to provide a more even heat should one LED **22** heat more than another LED **22**. The LEDs are physically and electrically interfaced to a circuit board **84** situated between the belt **58** and the LEDs **22**/material **80**. Other components such as the controller **72** and resistors **70** (if needed) are preferably mounted on the circuit board **84**. Also connected to the circuit board **84** is a power switch **82** for signaling the controller **72** to enter an operating mode. Responsive to the user operating the power switch **82**, the controller provides power to the LEDS **22**. For example, after the user operates the power switch **82**, the controller **72** provides power to the LEDS **22** for a fixed amount of time and then removes power to the LEDS **22** for another fixed amount of time, repeating this sequence for a pre-determined number of cycles. Although any switch **82** is anticipated, a proximity switch **82** is preferred to reduce the chance of the user inadvertently tripping the switch while wearing the belt **56**. The proximity switch **82** preferably has hysteresis requiring the user to touch the proximity switch **82** for a time period before the operating mode is entered and requiring the user to again touch the proximity switch **82** for a time period before shutting off power. To inform the user that the operating mode has been entered or the system is shut off, a sounder **87** (see FIG. **15**) is provided in some embodiments, preferably emitting one sound or sequence for entering the operating mode and another for power off.

[0044] In some embodiments, the LEDS **22** and power sources **74** (not visible in FIG. **14**) are covered with a cloth material **51** such as nylon, silk, polyester, cotton, etc. As previously discussed, the power and/or duration of activity of the LEDS **22** is/are increased, providing sufficient heat and light to penetrate the layer of cloth **51** to provide relief for pain such as lower back pain. It is anticipated that the wearable device **56** of this embodiment is adaptable in size and shape to be worn on other parts of the body **54** such as feet, ankles, knees, legs, other areas of the back, neck, arms, hands and head. By situating the power source **74** (e.g. batteries **74**) within the back area of the wearable device **56**, heat emitted from the batteries as they discharge provides additional heat to, for example, the person's **54** back (see FIG. **12**).

[0045] Referring to FIG. **15**, a top plan view of an exemplary LED array control system of all embodiments is shown. In the preferred embodiment, the LEDS **22** are held in holes of a material **80**, preferably a soft, sponge-like material that also conducts heat to provide a more even heat should one LED **22** heat more than another LED **22**. The LEDs are physically and electrically interfaced to a circuit board **84** situated between the belt **58** and the LEDs **22**/material **80**. Other components such as the controller **72** and resistors **70** (if needed) are preferably mounted on the circuit board **84**. The power source **74** (e.g. batteries **74**) is electrically connected to the circuit board **84** the power source **74** (e.g. batteries **74**) is situated within the back area of the wearable device **56**. In some embodiments, the power source **74** is located near the circuit board **84** so that as the batteries **74** discharge, heat emitted provides additional heat to, for example, the person's **54** back (see FIG. **12**).

[0046] Also connected to the circuit board **84** is a power switch **82** for signaling the controller **72** to enter an operating mode. Responsive to the user operating the power switch **82**, the controller provides power to the LEDS **22**. For example, after the user operates the power switch **82**, the controller **72** provides power to the LEDS **22** for a fixed amount of time and then removes power to the LEDS **22** for another fixed amount of time, repeating this sequence for a pre-determined number of cycles. Although any switch **82** is anticipated, a proximity switch **82** is preferred to reduce the chance of the user inadvertently tripping the switch while wearing the belt **56**. The proximity switch **82** preferably has hysteresis requiring the user to touch the proximity switch **82** for a time period before the operating mode is entered and requiring the user to again touch the proximity switch **82** for a time period before shutting off power. To inform the user that the operating mode has been entered or the system is shut off, a sounder **87** (see FIG. **15**) is provided in some embodiments, preferably emitting one sound or sequence for entering the operating mode and another for power off.

[0047] The power source **74** is charged through a power connector **85** that is connected to an external power source (not shown) such as a wall-wart as known in the industry.

[0048] Referring to FIG. **16**, a cutaway side plan view of an exemplary LED array control system of the first embodiment is shown. In the preferred implementation, the LEDS **22** are held in holes of a material **17**, preferably a soft, sponge-like material that also conducts heat to provide a more even heat should one LED **22** heat more than another LED **22**. The LEDs are physically and electrically interfaced to a circuit board **84**. Other components such as the controller **72** and resistors **70** (if needed) are preferably mounted on the circuit board **84**. Also connected to the circuit board **84** is a power switch **82** for signaling the controller **72** to enter an operating mode. Responsive to the user operating the power switch **82**, the controller provides power to the LEDS **22**. For example, after the user operates the power switch **82**, the controller **72** provides power to the LEDS **22** for a fixed amount of time and then removes power to the LEDS **22** for another fixed amount of time, repeating this sequence for a pre-determined number of cycles. Although any switch **82** is anticipated, a proximity switch **82** is preferred to reduce the chance of the user inadvertently tripping the switch while wearing the belt **56**. The proximity switch **82** preferably has hysteresis requiring the user to touch the proximity switch **82** for a time period before the operating mode is entered and requiring the user to again touch the proximity switch **82** for a time period before shutting off power. To inform the user that the operating mode has been entered or the system is shut off, a sounder **87** (see FIG. **15**) is provided in some embodiments, preferably emitting one sound or sequence for entering the operating mode and another for power off.

[0049] In some embodiments, the LEDS **22** and electronics **70/72/82/84** are enclosed within a cloth material **90** such as nylon, silk, polyester, cotton, etc. As previously discussed, the power and/or duration of activity of the LEDS **22** is/are increased, providing sufficient heat and light to penetrate the layer of cloth **90** to provide relief for pain such as lower back pain. It is anticipated that any number of LEDS **22** be present to cover a suitable area of the user's body. In some embodiments, power is provided by a power cable **18** connected to an external power source such as a power brick or wall-wart, as known in the industry.

[0050] Equivalent elements can be substituted for the ones set forth above such that they perform in substantially the same manner in substantially the same way for achieving substantially the same result.

[0051] It is believed that the system and method and many of its attendant advantages will be understood by the foregoing description. It is also believed that it will be apparent that various changes may be made in the form, construction and arrangement of the components thereof without departing from the scope and spirit of the invention or without sacrificing all of its material advantages. The form herein before described being merely exemplary and explanatory embodiment thereof. It is the intention of the following claims to encompass and include such changes.

What is claimed is:

1. A mattress for providing heat and light to a person for the purpose of treating pain, the system comprising:

an array of LEDS, the array of LEDS integrated into the mattress, the LEDS positioned in openings of a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress;

a controller interfaced to the LEDS for controlling an electric current provided to the array of LEDS; and

a source of the electric current.

2. The system of claim **1**, wherein the LEDS emit heat and infrared light.

3. The system of claim **1**, wherein the LEDS emit heat, infrared light and visible light.

4. The system of claim **1**, further comprising a sheet situated between the LEDS and the person, the controller increasing the electric current to the array of LEDS to compensate for heat and light loss caused by the sheet.

5. The system of claim **2**, wherein the mattress is made of memory foam.

6. A method of reducing pain in a person, the method comprising:

providing a mattress having an array of LEDS, the array of LEDS integrated into the mattress, the light-emitting edge of the LEDS interfaced with a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress; a controller interfaced to the LEDS for controlling an electric power provided to the array of LEDS; and a source of the electric power;

the person resting a portion of the person's body having the pain on the surface of the mattress having the array of

LEDS, the LEDS emitting the light and the heat towards the portion of the person's body during a portion of the period of time.

7. The method of claim **6**, wherein the LEDS emit heat and infrared light.

8. The method of claim **6**, wherein the LEDS emit heat, visible light and infrared light.

9. The method of claim **6**, further comprising a sheet situated between the LEDS and the person and the method further comprising the step of increasing the electric power applied to the LEDS to compensate for reductions of the heat and the light introduced by the sheet.

10. The method of claim **6**, wherein the mattress is made of memory foam.

11. The method of claim **6**, wherein the period of time is when the person is sleeping and the portion of the period of time is less than or equal to the period of time when the person is sleeping.

12. A system for supporting and providing heat and light to a person for the purpose of treating pain, the system comprising:

a mattress;

a means for providing heat and light integrated into the mattress, the means for providing heat and light interfaced with a surface of the mattress to direct the light and the heat towards an area of pain of the person when the person lays on the surface of the mattress;

a means for selectively providing an electric current to the means for providing heat and light; and

a source of the electric current.

13. The system of claim **12**, wherein means for providing heat and light emit heat and infrared light.

14. The system of claim **12**, wherein means for providing heat and light emit heat, infrared light and visible light.

15. The system of claim **13**, wherein means for providing heat and light is an array of infrared LEDS.

16. The system of claim **14**, wherein means for providing heat and light is an array of intermixed infrared LEDS and visible light LEDS.

17. The system of claim **12**, further comprising a sheet situated between the means for providing heat and light and the person, the means for selectively providing the electric current increasing the electric current to the means for providing heat and light to compensate for lost heat and lost light caused by the sheet.

18. The system of claim **12**, wherein the mattress is made of memory foam.

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