



(43) International Publication Date
27 April 2017 (27.04.2017)

(51) International Patent Classification:

A47D 5/00 (2006.01) *F21V 33/00* (2006.01)
A47D 15/00 (2006.01)

(21) International Application Number:

PCT/US2016/058502

(22) International Filing Date:

24 October 2016 (24.10.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/245,187	22 October 2015 (22.10.2015)	US
------------	------------------------------	----

(71) **Applicant:** PRINCE LIONHEART, INC. [US/US]; 2421 South Westgate Road, Santa Maria, CA 93455 (US).

(72) **Inventors: McCONNELL, Michael**; 2421 South Westgate Road, Santa Maria, CA 93455 (US). **McCONNELL, Kelly**; 2421 South Westgate Road, Santa Maria, CA 93455 (US).

(74) Agent: **KING, Anthony, S.**; 2301 Dupont Drive, Suite 510, Irvine, CA 92612 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW

(84) Designated States (*unless otherwise indicated, for every*

kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: CONTOURED DIAPER CHANGING PAD INCLUDING ILLUMINATION

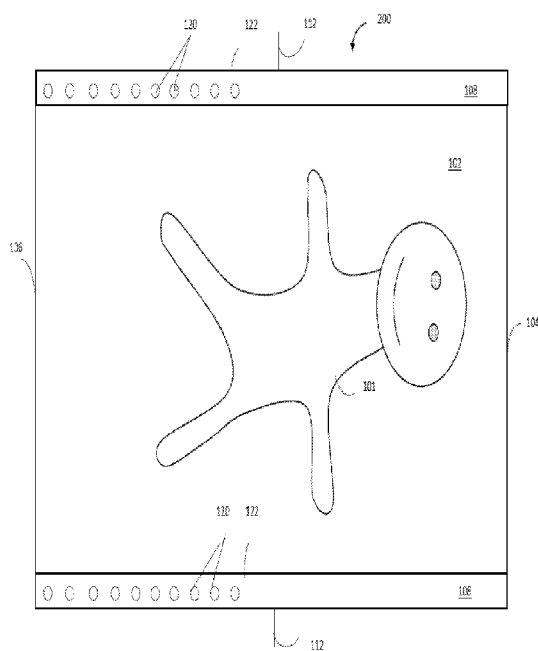


FIG. 2

(57) Abstract: A diaper changing pad having a main body, wherein the main body includes a head end, a foot end, and marginal side edges. There is at least one light source coupled to the diaper changing pad. The light source can be integrated or detachably attached to the diaper changing pad. Optionally, the diaper changing pad can have toy mobile and an audio device to keep the baby entertained.

CONTOURED DIAPER CHANGING PAD INCLUDING ILLUMINATION**PRIOR APPLICATIONS**

This application claims priority to and incorporates by reference in its entirety provisional application No. 62/245,187 filed on October 22, 2015, by the same inventor(s).

5

COPYRIGHT NOTICE

One or more portions of this disclosure contain material which is subject to copyright protection. The copyright owner makes no objection to reproduction by anyone of this disclosure as disclosed in the Patent and Trademark Office files, record, or the like.

Otherwise, the copyright owner reserves any and all copyright rights whatsoever for this patent disclosure. 37 CFR 1.71(d).

10

BACKGROUND OF THE DISCLOSURE

The following information may be useful in a better understanding of this disclosure. Please note that information contained in this section is not an admission that the information provided is material or prior art to this disclosure or as described in claimed disclosure, or that any publication or document that is specifically, implicitly or otherwise referenced is prior art.

15

1. Field of the Disclosure

The present disclosure relates generally to the field of diaper changing pads and more specifically relates to a novel diaper changing pad including a light source which can or cannot be detachable.

20

2. Description of the Related Art

Conventional diaper changing pads include pads, straps, support cushions, changing valets and the like.

5 For example, conventional diaper changing technologies include:

(1) a baby pad and mattress with a strap disposed in the middle of the mat, e.g., USD 436281; and an infant support cushion including a V-shaped mat (or a pad with triangular sides) as disclosed in US 6,125,487;

(2) a lamp used in diaper changing devices, for example, US7810181 and
10 US20060163236 both have lights close to the head of a baby and may include an aroma diffuser and a music playing device; and US20140311843 that has a night light on an edge of a case; and CN203000132U having two lights pointing at a baby's feet and not hurting a baby's eyes;

(3) a folding case having a diaper pad and lights disposed on a side of a case used for
15 entertainment, such as US8400300 B2;

(4) a forced air dryer as part of a baby's diaper changing process, such as US6928235 B2;

(5) phototherapy lights including a plurality of blue lights, such as US20080116401, and CN203777515 U, used for neonatal jaundice treatment of baby;

(6) a bottom plate of a baby incubator has a warm light, such as CN203777515 U;

(7) a plumber's support pillow including a support cushion to provide light in front of a person, e.g., US7305728 B2, working under a sink in a cabinet;

(8) a bottom plate of an incubator, e.g., CN203802728 U, has a warm light arranged
5 on a base plate of the incubator (in a corner of the incubator) and can provide illumination when changing diapers; and

(9) beds or mattresses are provided with lights such as night light(s), such as CN202020099U, CN203882566 U, US4220984 A, US 2,290,866, CN203915309U, and CN2907407Y.

10 None of the above disclosures and patents, taken either singly or in combination, is seen to describe the disclosure as claimed. Thus, a need exists for an improved diaper pad having any or all the following attributes, e.g., less complexity, e.g., less parts, improved diaper changing capability, e.g., longer life, better illumination, and additional features or options, or the like, e.g., provides entertainment or fun environment, within a more
15 convenient means and ideally a smaller footprint means, e.g., compact sized design, while changing diapers and to reduce or avoid many of the above-mentioned problems.

BRIEF SUMMARY OF THE DISCLOSURE

In view of the foregoing disadvantages inherent in the known diaper changing pads, the present disclosure provides a novel diaper changing pad including illumination. The
20 general purpose of the present disclosure, which will be described subsequently in greater

detail, is to provide a specially designed diaper changing pad having illumination near a foot end of the pad.

In one aspect, a diaper changing pad is disclosed including a main body having a head end, a foot end, and marginal side edges. At least one light source is coupled to or integrated
5 within the diaper changing pad proximal to the foot end.

In another aspect, a diaper changing pad is disclosed including a main body having a head end and a foot end and marginal side edges. At least one light source is coupled to or integrated within a lower half of the main body including the foot end.

In another aspect, a diaper changing pad is disclosed including a main body having a
10 head end and a foot end and marginal side edges. The marginal side edges can be simply flat or they can be contoured bolsters to help centering the baby. The at least one light source can be coupled to or integrated within a lower region of the main body including the foot end, and/or coupled to or integrated within the marginal side edges.

The present disclosure holds significant improvements and serves as a diaper
15 changing pad having a light source. As described herein, it is to be understood that not necessarily advantages, and novel features may be achieved in accordance with any one particular embodiment of the disclosure. Thus, the disclosure can be embodied or carried out in a manner that optimizes or achieves one or a group thereof of advantages as taught herein without achieving many or all advantages as may be taught or suggested. Features of the
20 disclosure which are believed to be novel are distinctly claimed in the specification. It should be noted that the drawing figures may be in simplified form and might not be to precise scale. In reference to the disclosure herein, for purposes of convenience and clarity only, directional terms such as top, bottom, left, right, up, down, over, above, below, beneath, rear, front, distal,

and proximal are used with respect to the accompanying drawings. Such directional terms should not be construed to limit the scope of the embodiment in any manner.

BRIEF DESCRIPTION OF THE DRAWINGS

The figures which accompany the written portion of this specification illustrate
5 embodiments and method(s) of use for the present disclosure of a contoured diaper changing
pad **100** according to the teachings of the present disclosure.

FIG. 1 shows a block diagram illustrating a contoured diaper changing pad **100**
according to an embodiment of the present disclosure.

FIG. 2 is a top view illustrates a consumer product **200** using a contoured changing
10 pad **100** with a series of spaced-apart, recessed LED lights **120** of 50% lower portion of the
marginal side edges **108** according to an embodiment of the present disclosure of **FIG. 1**.

FIG. 3 is a top view illustrates a consumer product **300** using a contoured changing
pad **100** with series of spaced-apart, recessed LED lights **120** of 50% lower portion **122** of the
marginal side edges **108** including security straps **110** and buckles **111** according to an
15 embodiment of the present disclosure of **FIG. 1**.

FIG. 4 is a top view that illustrates a consumer product **400** using a contoured
changing pad **100** that includes at least one light source **118** recessed and integrated into
approximately a lower half **128** from a mid-line position **126** of a main body **102** including a
foot end **106** according to an embodiment of the present disclosure of **FIG. 1**.

20 **FIG. 5** is a top view that illustrates a consumer product **500** using a contoured

changing pad **100** with a contoured, semi-light transparent, patterned hood **130** having an edge **132** extended and attached proximal to the foot end **106** according to an embodiment of the present disclosure of **FIG. 1**.

FIG. 6 is a side view that illustrates a consumer product **600** for using a contoured
5 changing pad **100** with a contoured, semi-light transparent, patterned hood **130** having an edge **132** extended and attached proximal to the foot end **106** that redirects light from the at least one light source **118** positioned approximately two thirds of a distance **134** from a mid-line position **138** of the main body **102** proximal to the foot end **106**, and projects thorough its outer surface an after dark constellation scene **140** on a ceiling **142** of a room or a nursery
10 viewable by a user on the head end **104** according to an embodiment of the present disclosure of **FIG. 5**.

FIG. 7 is a top view illustrating a diaper changing pad **100** including spaced apart LED display **149**, **153** respectively on a foot end **106** and a head end **104** according to an
15 embodiment of the present disclosure of **FIG. 1**.

FIG. 8 is a top view illustrating a diaper changing pad **100** including at least extended light bar **151**, **155** respectively on a foot end **106** and a head end **104** according to an embodiment of the present disclosure of **FIG. 1**.

20

FIG. 9 is a top view illustrating a diaper changing pad **100** with a mobile insert toy **150** located proximal to the head end **104** and the at least one light source **118** supported by a bendable, hidden, retractable arm **146** at the foot end **106** according to an embodiment of the present disclosure of **FIG. 1**.

FIG. 10 is an illustration of an embodiment where the light source is a standalone device.

FIG. 11 is an illustration where the standalone device of **FIG. 10** has a base that is wedged under the diaper changing pad.

5 **FIG. 12** is an illustration of an embodiment where the light source is a standalone device.

FIG. 13 illustrates the standalone device of **FIG. 12** being placed on top of a diaper changing pad.

10 **FIG. 14** is a block diagram showing the relationship of a light source and a switch within a diaper changing pad.

FIG. 15 is a block diagram showing the relationship of a light source, an audio device, and a switch within a diaper changing pad.

The various embodiments of the present disclosure will hereinafter be described in conjunction with the appended drawings, wherein like designations denote like elements.

15

DETAILED DESCRIPTION

As discussed above, embodiments of the present disclosure relate to the field of diaper changing pads and more specifically relates to a novel diaper changing pad with illumination where the illumination piece can or cannot be a detachable accessory.

20 Referring to the drawings by numerals of reference there is shown in **FIGS. 1-9**, as discussed above, embodiments of the present disclosure relate to diaper changing pads. Generally speaking, a diaper changing pad is disclosed with illumination at a foot end. Advantageously, this diaper changing pad provides improved illumination, e.g., ambient

lighting, accent lighting, tasking lighting, and directional lighting, for users when changing
diapers so that diaper changing can be performed at night, e.g., middle of the night, without
turning on a room light. Advantageously, in some embodiments, the diaper changing pad
provides a strap to hold down the baby so the baby does not fall or slip when having a diaper
5 change. In addition, other novel diaper changing pad advantages include repositionable light
source on the foot end, toys being mounted on the head end, and/or illuminated ceiling
displays for a baby when changing his/her diaper on the novel diaper changing pad.

FIG. 1 shows a block diagram illustrating a diaper changing pad **100** according to an
embodiment of the present disclosure.

10 Referring now to **FIG. 1**, a diaper changing pad **100** is disclosed including a main
body **102** having a head end **104** and a foot end **106** and marginal side edges **108**. One or
more light source(s) **118** are integrated within (or coupled to, or detachably attached to) the
diaper changing pad **100** proximal to the foot end **106**, e.g., see **FIGS. 2 and 3**.

One contemplated novel feature is to have at least one light source **118** disposed on
15 the top surface of the diaper changing pad **100**, wherein the light source **118** faces upward
and is preferably flush with the top surface of the diaper changing pad **100** for ease of
cleaning. In one contemplated embodiment, the light source **118** is not a spot light but an
ambient light, so as not to cause discomfort to the person who is changing diaper on the baby
and also facing the light source **118**.

20 Advantageously, in some embodiments, the at least one light source **118** can include
a series of spaced-apart, recessed LED lights **120** integrated on (or coupled to, or detachably
attached to) an approximately 50% lower portion **122** of the marginal side edges **108**
extended proximally the foot end **106**. Advantageously, by having light emitted at sides from

marginal side edges **108**, when changing the baby **101**, the diaper does not block the light. In some embodiments, the at least one light source **118** integrated (or coupled to, or detachably attached to) includes a light source **118** disposed approximately at a lower half **128** from a mid-line position **126** of the main body **102** including the foot end **106**.

5 In one exemplary embodiment, as illustrated most notably in **FIGS. 3-4**, there are various dimensions and locations for the at least one light source **118**, the security straps **110**, and the main body **102**.

 Although the above embodiments specifically requires a series of spaced-apart, recessed LED lights, it should be noted that any types of known illuminating elements (e.g.,
10 incandescent light bulbs, or other non-LED light) in any shapes or sizes (e.g., light strips, single light, light bars) are also contemplated in the above and below described embodiments.

 As illustrated throughout this disclosure, the at least one light source **118** may be recessed, flat, cylindrical, spaced apart, elongated, or the like and may be located on at least one of the foot end **106**, the head end **104**, and the marginal side edges **108**, for example,
15 along a 50% lower portion **122**, of the main body **10**.

 The security straps **110** may be made of nylon, cloth, fabric, rubber, composite material or the like and may have various length(s), width(s), and thickness(es), and various fastening means, e.g., attaching apparatus **147**, as necessary to conform to the main body **102** and so that the baby **101** can be safely and comfortably secured thereto.

20 In some embodiments, as most notably illustrated in **FIG. 3**, security straps **110** attach, e.g., using fasteners **111**, e.g., buckles **111**, approximately mid-range **112** along the marginal side edges **108** of the main body **102** and extend over a top side **116** of the main body **102**,

for example, secure the baby **101** during diaper changing to the diaper changing pad **100**. The security straps **110** may be any attaching apparatus **147**, for example, a clip, a magnet, a hook and loop fastener, or the like, for retraction, storage, and extending capability into an out of the main body **102**, and the attaching apparatus **147** is not limited to the examples
5 provided herein.

The main body **102** may be various length(s), width(s), and height(s) that are necessary for comfort and security of the baby **101**, for example, in accordance with room, surrounding, ambient conditions, size, length, and age of the baby, or the like.

In one exemplary example: the at least one light source **118** recessed includes a **DIA**
10 = approximately 139.7 mm diameter and **DEPTH** = approximately 31.78 recess depth; the security straps **110** are **SL (strap left)** = approximately 444 mm in length and **SR (strap right)** = approximately 244 mm in length, and **SW**= approximately 25.44 mm in width; and the main body **102** include **ML**= approximately 787 mm in length and **MW** = approximately 406 mm in width and **MH** = approximately 101 mm in height.

15 In one example, most notably illustrated in **FIG. 4**, the middle portion of the main body **102** is contoured so that an inner portion where the baby **101** lays is lower than the marginal sides **108**. In one embodiment, the middle portion of the main body **102** is approximately 38 mm in height, the marginal sides **108** are angled such that it goes from a height of approximately 38 mm (at edge of middle portion of the main body **102** and
20 beginning of marginal side edges **108**) to an approximate final height of 101 mm (at outer edges of marginal side edges **108**).

In some embodiments, a contoured, semi-light transparent, patterned hood **130** is utilized having an edge **132** extended and attached proximal to the foot end **106**.

As most notably illustrated in **FIG. 5**, the contoured, semi-light transparent, pattern hood **130** is, for example, color blue, and, for example, has different shaped, colored items (that are light-transparent), e.g., white stars **131**, yellow colored half-moon **133**, and the like, arranged on a top of the contoured, semi-light transparent, patterned, hood **130**.

5 Advantageously, the contoured, semi-light transparent, hood **130** covers a portion of light emitted from the at least one light source **118**. Advantageously, the contoured, semi-light transparent, hood **130** redirects light from the at least one light source **118** positioned approximately two thirds a distance **134** from a mid-line position **138** of the main body **102** proximal to the foot end **106**.

10 Furthermore, as most notably illustrated in **FIG. 6**, the contoured, semi-light transparent hood **130** projects thorough its outer surface an after dark constellation scene **140** on a ceiling **142**, e.g., of a room or a nursery, viewable by a user, e.g., baby, on the head end **104**.

In yet another embodiment, the semi-light transparent, hood **130** is located near the
15 head end **104** and redirects light from the at least one light source **118** away from a user that stands near the foot end **106**. There is an additional light source disposed at the foot end to illuminate the baby's bottom.

In yet another embodiment, the semi-light transparent, hood **130** can be detachably or permanently coupled to the diaper changing pad **100** at any desired location so to projects
20 thorough its outer surface an after dark constellation scene **140** on a ceiling **142** of a room or a nursery at a user's choice.

In some embodiments, as most notably illustrated in **FIGS. 7** and **8**, the light source includes at least one light source **152, 154**, e.g., spaced-apart recessed LED lights **149, 153**, extended light tube or extended light bar **151, 155**, or the like, proximately attached near the foot end **106** and/or the head end **104**.

5 In some embodiments, as most notably illustrated in **FIG. 9**, a bendable, hidden, retractable arm **146** has at least one light source **118** capable of being positioned along locations **144** proximate to the foot end **106**.

In some embodiments, as most notably illustrated in **FIG. 9**, a mobile insert toy **150** removably attaches to and dangles approximately two-thirds distance **136** from a midline position **138** of the main body **102** proximal to the head end **104**.
10

As discussed previously, the at least one light source **118, 152, 154** can include accent lighting, tasking lighting, ambient lighting, and directional lighting.

In some embodiments, as most notably illustrated in **FIG. 9**, a bendable, hidden, retractable arm **146** has the at least one light source **118** that can be positioned along locations
15 **144** proximate to the foot end **106**. In some embodiments, a bendable, hidden, retractable arm **146** has the at least one light source **118** that can be positioned along locations **144** proximate to the foot end **106**.

In some embodiments, the bendable, hidden, retractable arm **146** including the at least one light source **118**, is attached at a foot end **106** to the pad **100** by any attaching apparatus
20 **147**, for example, a clip, a magnet, a hook and loop fastener, or the like, for retraction, storage, and extending capability into an out of the main body **102**, and the attaching apparatus **147** is not limited to the examples provided herein.

In some embodiments, the bendable, hidden, retractable arm **148** attached at the head end **104** to the pad **100** by any attaching apparatus **147**, for example, a clip, a magnet, a hook and loop fastener, or the like, for retraction, storage, and extending capability into an out of the main body **102**, and the attaching apparatus **147** is not limited to the examples provided
5 herein.

In some embodiments, the at least one light source **152** including an extended light bar **151**, spaced part LED display **149**, or a like, and is positioned approximately along the foot end **106**.

For example, the at least one light sources **118**, **152**, **154** includes accent lighting,
10 tasking lighting, ambient lighting, and directional lighting.

In some embodiments, for example, as most notably illustrated in **FIG. 9**, a mobile insert toy **150** is removably attached to and dangling approximately two-thirds distance **136** from a midline position **138** of the main body **102** proximal to the head end **104**. For example, the at least one light source **152** includes a directional light, e.g., extended light tube
15 **151**, spaced-apart recessed LED lights **149**, or the like, proximately attached near the foot end **106**.

Another aspect of the invention relates to a detachable accessory to a diaper changing pad **100**. Any of the above described light sources (i.e., light bar, light bulbs, series of LED lights, light on a retractable arm, light with a hood illuminating a constellation) can be a
20 standalone accessory that can be placed on, inserted into, adhere to, coupled to, or wedged under, any known diaper changing pad.

Referring now to **FIG. 10**, a diaper changing pad **102** is placed on top of a table **5**. The standalone light accessory is placed adjacent to the diaper changing pad on the table **5**. The standalone light accessory is contemplated to have a body portion **246** to which a light source **218** is coupled to. Any of the above-described light source type can be implemented.

5 Preferably the body portion **246** is taller than the thickness of the diaper changing pad **102**. The body portion **246** can be coupled to a base **255** that forwardly extends and is capable of wedging (or sliding) under the diaper changing pad **102** as shown in **FIG. 11**, thereby stabilizing itself by the mere weight of the diaper changing pad. Preferably the base **255** forwardly extends from the body portion **246** by at least 10cm, more preferably by at least

10 15cm, or most preferably by at least 20cm. In this embodiment, the accessory does not require any clips or clamps to securely attach itself to the diaper changing pad. The user can freely wedge the base **255** under any side (i.e., head end side, foot end side, lateral sides) of the diaper changing pad **102** as he/she pleases to provide the most appropriate direction of lighting to change a diaper.

15 Referring now to **FIGS. 12** and **13**, a standalone light accessory having a housing **288** is placed next to a diaper changing pad **102**. The standalone light accessory has a light source **218** and a hood **218** covering over the light source **218**. A user may freely place this standalone light accessory on the top surface of the diaper changing pad **102** as shown in **FIG. 13**.

20 In other contemplated embodiments, the hood **218** as shown in **FIGS. 12** and **13** can have similar construction as the embodiment shown in **FIG. 6**, where the hood **218** can tilt to reflect the light toward the baby. In yet another embodiment, the hood **218** as shown in **FIGS. 12** and **13** can also have similar designs as the embodiment shown in **FIGS. 5** and **6**,

where the hood **218** can have a constellation of stars or other shapes or characters, so as to project onto the ceiling to keep the baby interested.

Any embodiments of the standalone light accessory described herein can be powered by batteries, a power cord, or have recharging capabilities.

5 In yet another embodiment, the standalone accessory can having any mobile kit such as toy mobile, and musical mobile, as an alternative to, or in addition to, having a light source **218**.

Thus far the embodiments of the standalone accessory are disclosed to be capable of being placed on, or wedged under, the diaper changing pad. In other embodiments, the
10 standalone accessory can be detachably attached to the diaper changing pad **102** by any known methods such as by clips, by VELCRO adhesive tapes, and by clamps.

The turning on and off of the light source in any of the herein disclosed embodiments including the standalone accessories can be by any known switches **192**, and can include proximity sensors, infrared sensors, or weight sensors. In one embodiment, when a baby is
15 placed on the diaper changing pad, the weight sensor detects it and turns on the light source.

Throughout this specification, a diaper changing pad is sometimes described as a contoured diaper changing pad. It should be specifically noted that various shapes of the diaper changing pad are contemplated, whether with a contour top surface or without a contour top surface.

20 It is especially contemplated that an electronic audio device **195** can be included in any of the disclosed embodiments. This audio device **195** can include speakers to transmit sound (white noise, music, simulated sound from a mother's womb, etc.) to the baby. The

content of the transmission can be made available by any known methods such as downloading, streaming, recording, rebroadcasting from an audio source via wireless transmission (e.g., BLUETOOTH), or a pre-recording embedded by the manufacturer. The location of the audio device **195** is contemplated to be anywhere on the diaper changing pad, or anywhere on the standalone accessory. Preferably, the audio device **195** is located on the top surface of the diaper changing pad near both sides of the baby's head.

Upon reading this specification, it should be appreciated that, under appropriate circumstances, considering such issues as user requirements or wishes, design considerations, marketing preferences, cost(s), structural requirement(s), available materials, technological advances, etc., other methods of use arrangements such as, for example, orders within above-mentioned list that are different, eliminated and/or additional steps, including or eliminating, for example, procedure, process, and/or maintenance step(s), etc., may be sufficient.

It should be apparent, however, to those skilled in the art that many more modifications besides those already described are possible without departing from the disclosed concepts herein. The embodiment, therefore, is not to be restricted except in the spirit of the appended claims. Moreover, in interpreting both the specification and the claims, all terms should be interpreted in the broadest possible manner consistent with the context.

In particular, the terms "comprises" and "comprising" should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or steps may be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced. Insubstantial changes from the claimed subject matter as viewed by a person with ordinary skill in the art, now known or later devised, and as described herein are expressly contemplated as being

equivalent within the scope of the claims and understood by those knowledgeable in the art. Therefore, obvious substitutions now or later known to one with ordinary skill in the art are defined to be within the scope of the defined elements and the reading of the specification as described herein.

5 The claims are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, what can be obviously substituted and also what essentially incorporates the essential idea of the embodiment. In addition, where the specification and claims refer to at least one of something selected from the group consisting of A, B, C and N, the text should be interpreted as requiring only one element from the
10 group, not A plus N, or B plus N, etc.

CLAIMS

What is claimed is new and desired to be protected by Letters Patent is set forth in the appended claims:

1. A diaper changing pad comprising:

5 a main body having a head end, a foot end, and marginal side edges; and
 at least one light source coupled to the diaper changing pad proximal
to the foot end.

2. The pad of claim 1, wherein the at least one light source is coupled to an
approximately 50% lower portion of the marginal side edges extending to proximally the foot
10 end.

3. The pad of claim 1, wherein the at least one light source is recessed and coupled to
approximately a lower half from the mid-line position of main body including the foot end.

4. The pad of claim 1, comprising a semi-light transparent, patterned hood
having an edge extended and attached proximal to the foot end;
15 wherein the semi-light transparent, hood covers a portion of the at least
one light source, redirects light from the at least one light source positioned approximately
two thirds a distance from a mid-line position of the main body proximal to the foot end, and
projects thorough its outer surface an after dark constellation scene on a ceiling of a room or
a nursery viewable by a user on the head end.

20 5. The pad of claim 1, comprising a retractable arm having the at least
one light source that can be positioned along locations proximate to the foot end.

6. The pad of claim 1, comprising a bendable, hidden, retractable arm having the at least
one light source that can be positioned along locations proximate to the head end.

7. The pad of claim 1, comprising the at least one light source includes an extended

light bar positioned proximately along the foot end.

8. The pad of claim 1, comprising a mobile insert toy removably attached to and dangling approximately two-thirds distance from a midline position of the main body proximal to the head end;

5 wherein the at least one light source includes an extended light bar proximately attached near the foot end.

9. The pad of claim 1, wherein the at least one light source includes accent lighting, tasking lighting, ambient lighting, and directional lighting, and further comprising an electronic audio device to transmit sound.

10 10. The pad of claim 1, comprising security straps attached approximately mid-range along the marginal sides edges side of the main body and extended over a top side of the main body.

11. A diaper changing pad comprising:

a main body having a head end, a foot end, and marginal side edges;

15 at least one light source coupled to a lower half of the main body including the foot end; and

a sensor to detect the existence of a baby on the pad.

12. The pad of claim 11, comprising a semi-light transparent, patterned hood having an edge extended and attached to the foot end;

20 wherein the semi-light transparent, hood covers a portion of the at least one light source, redirects light from the at least one light source positioned approximately two thirds a distance from a mid-line position of the main body proximal to the foot end, and projects thorough its outer surface an after dark constellation scene on a ceiling of a room or a nursery viewable from by a user on the head end.

13. The pad of claim 11, further comprising an audio device coupled to the pad adapted to play a sound when the baby is detected.

14. The pad of claim 11, wherein the sensor is a weight sensor or a proximity sensor.

15. An accessory to a diaper changing pad comprising:

5 a connecting end adapted to couple to the diaper changing pad;
 a light source coupled to the connecting end.

16. The accessory of claim 15, wherein the connecting end is adapted to couple to a head end, a foot end or a marginal side edge of the diaper changing pad.

17. The accessory of claim 15, wherein the light source includes accent lighting, tasking
10 lighting, ambient lighting, and directional lighting, and wherein the connecting end is a flat base to slide underneath the diaper changing pad.

18. The accessory of claim 15, further comprising a toy mobile.

19. The accessory of claim 15, further comprising an articulated extension arm that is bendable and rotatable to a desired angle.

15 20. The accessory of claim 19, further comprising an audio device to play a sound when the baby is detected.

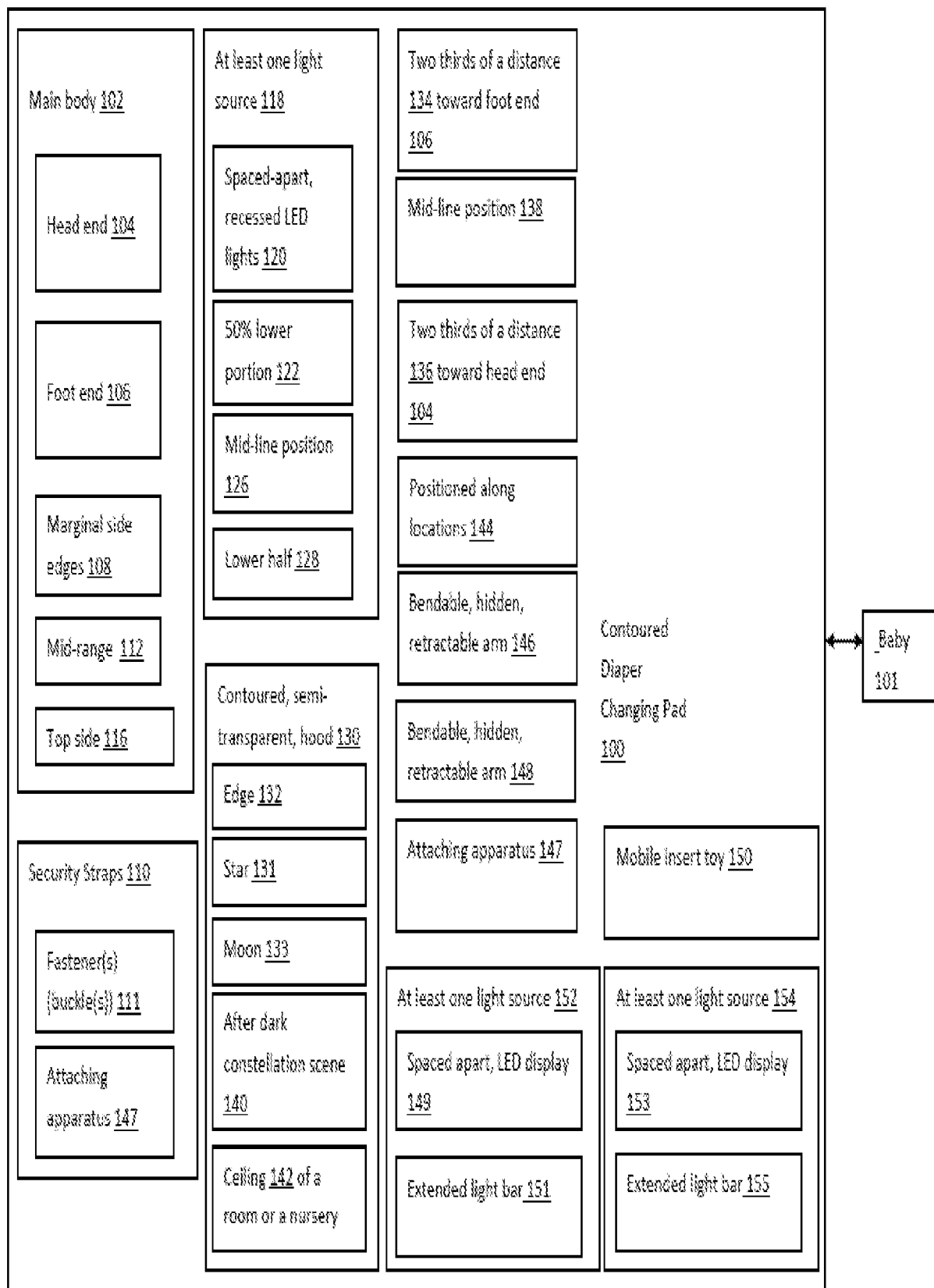


FIG. 1

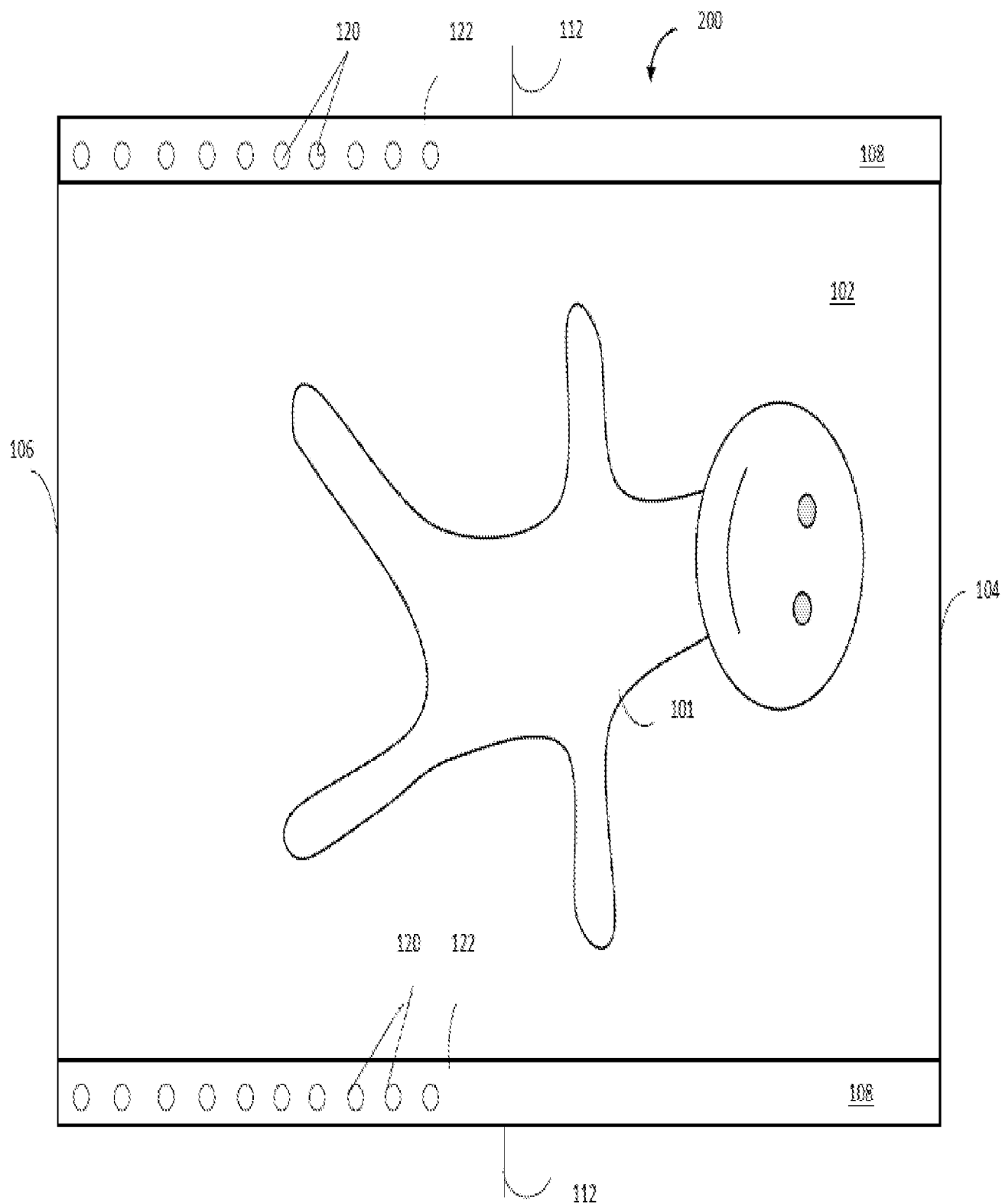


FIG. 2

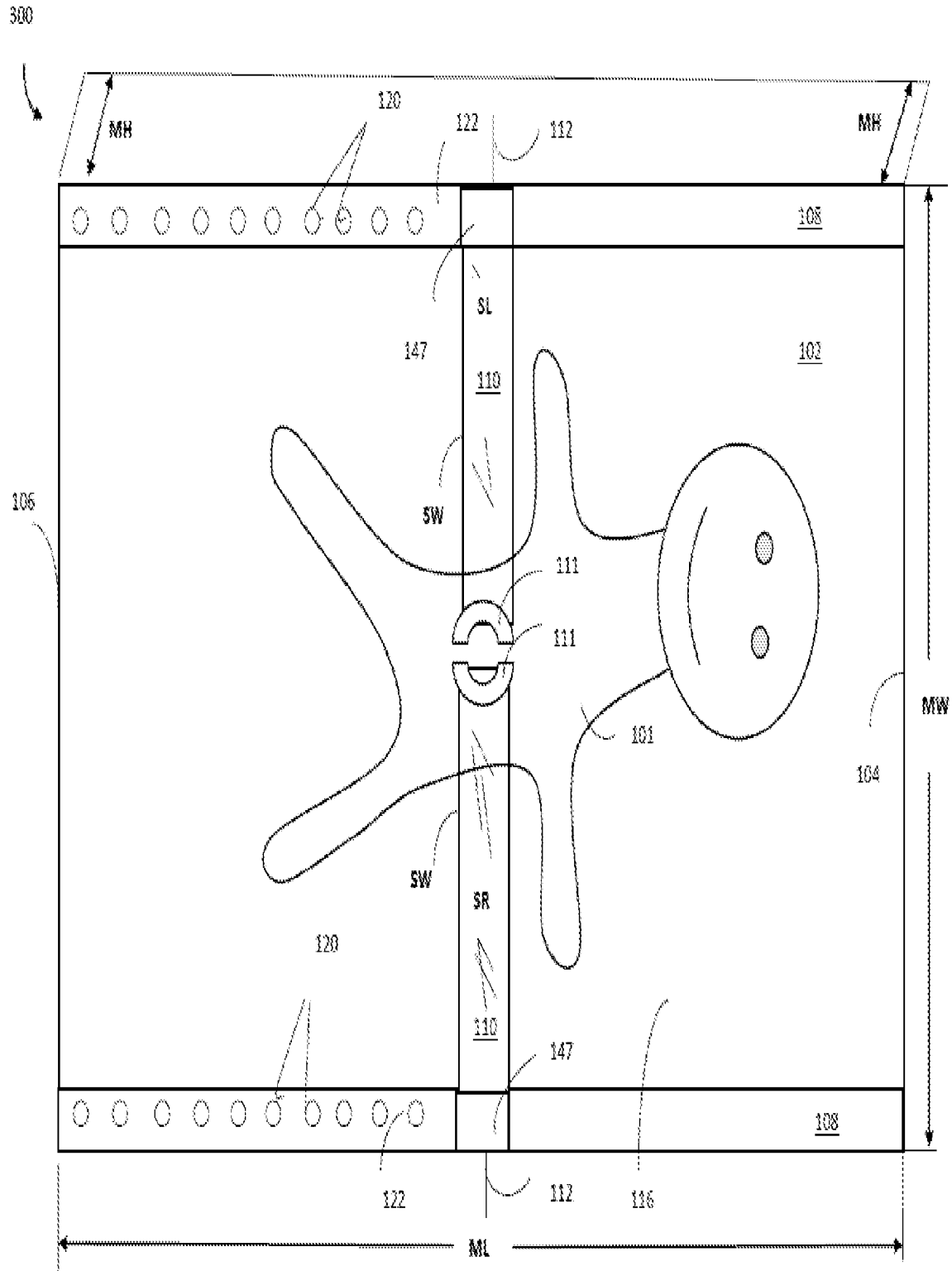


FIG. 3

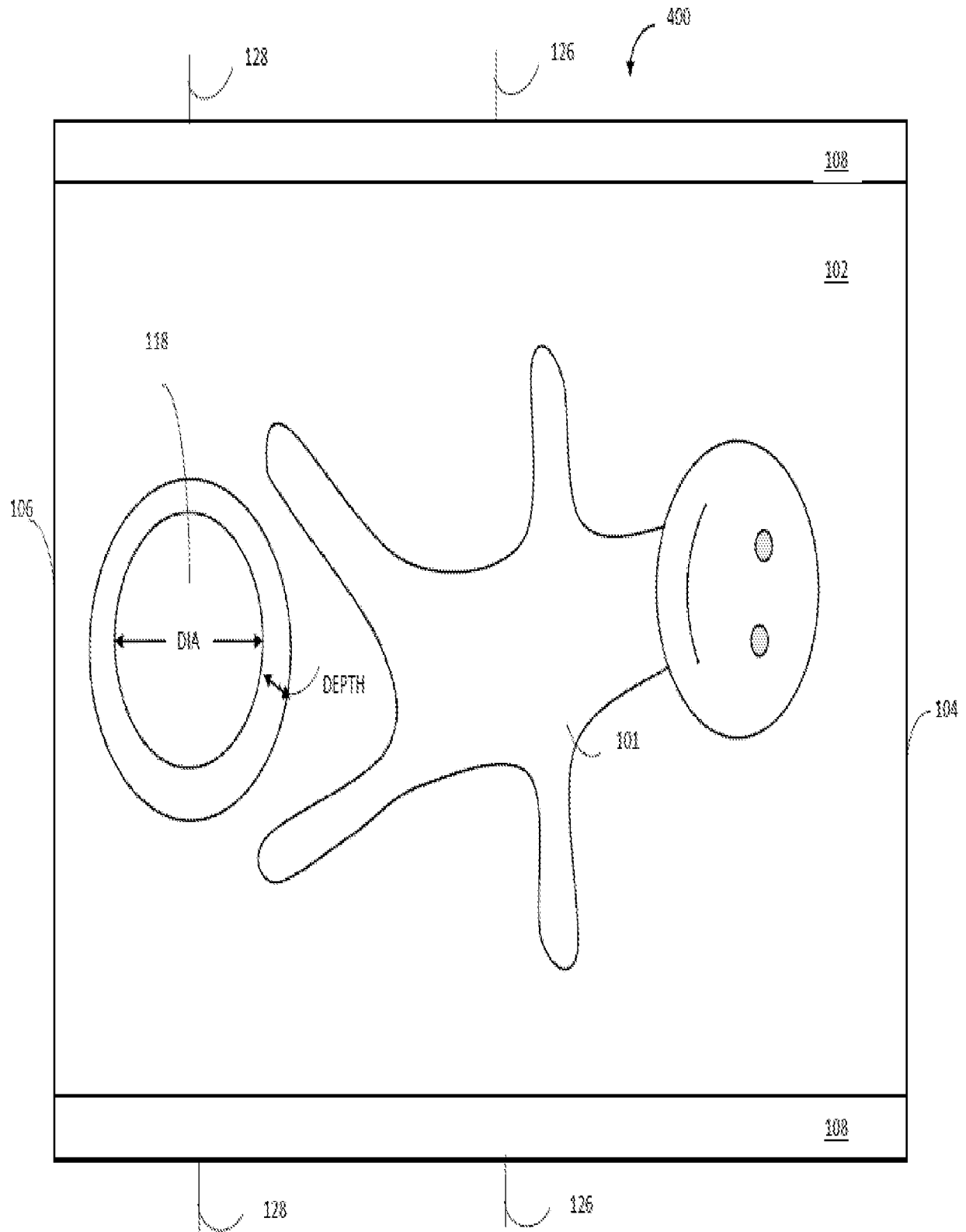


FIG. 4

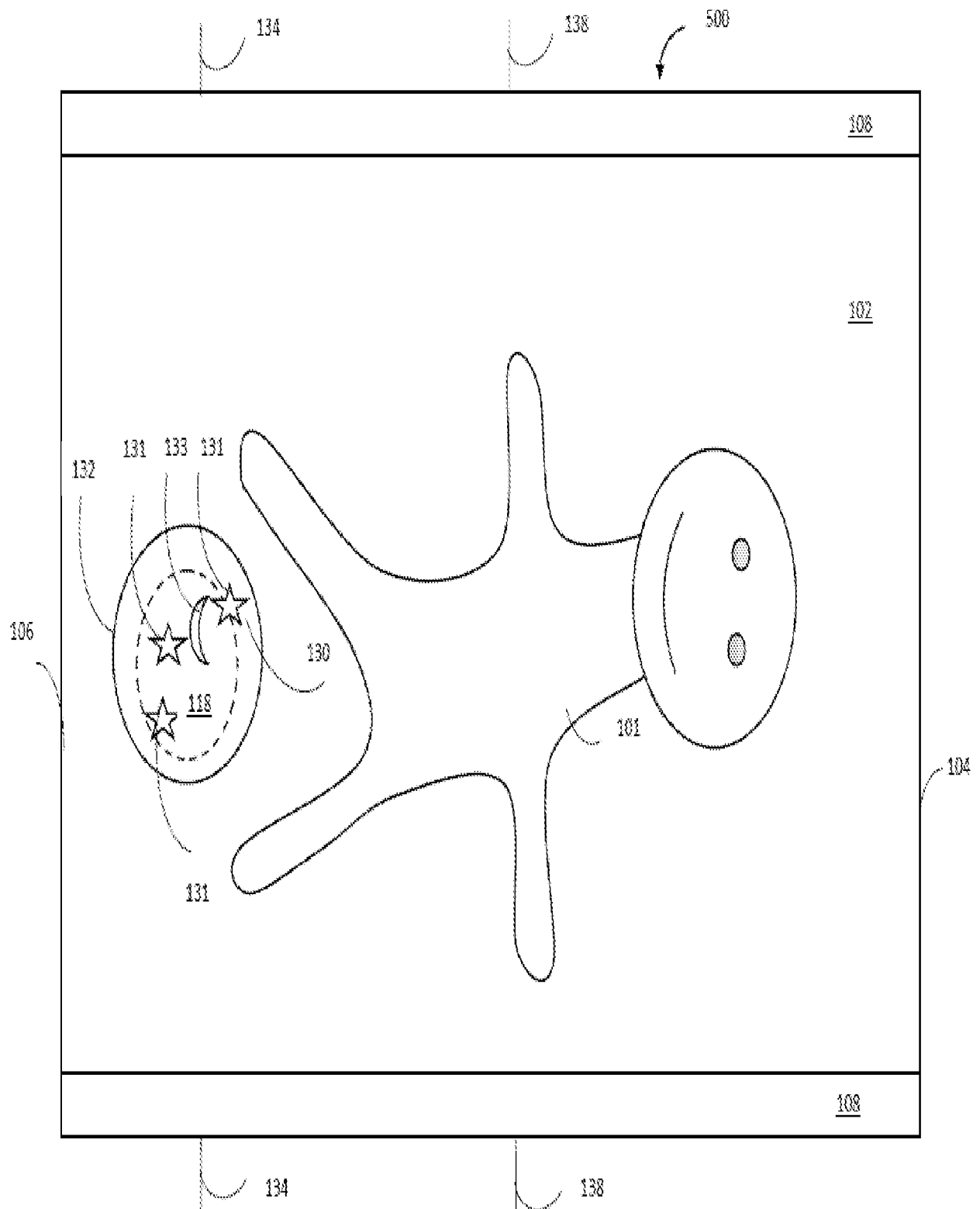


FIG. 5

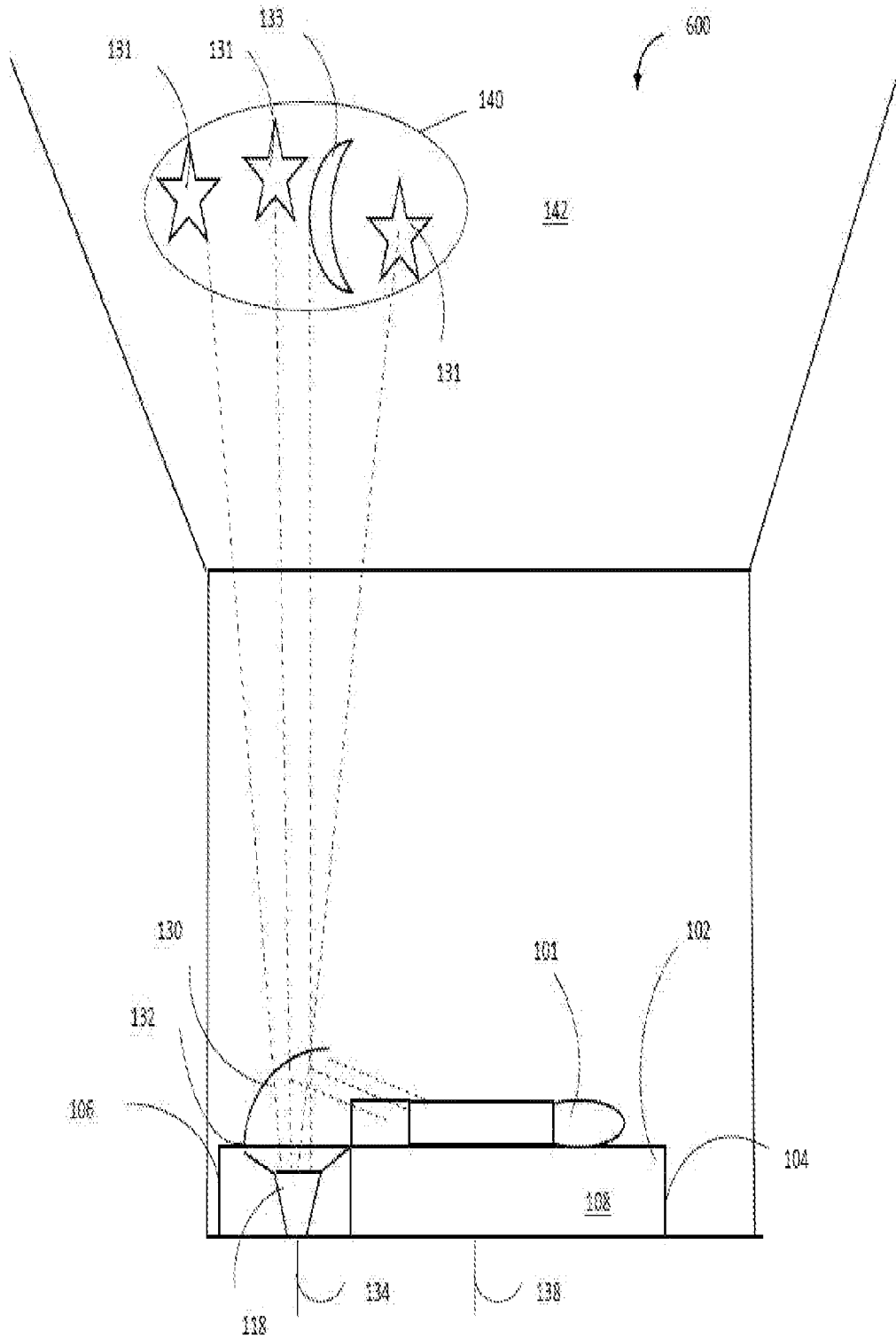


FIG. 6

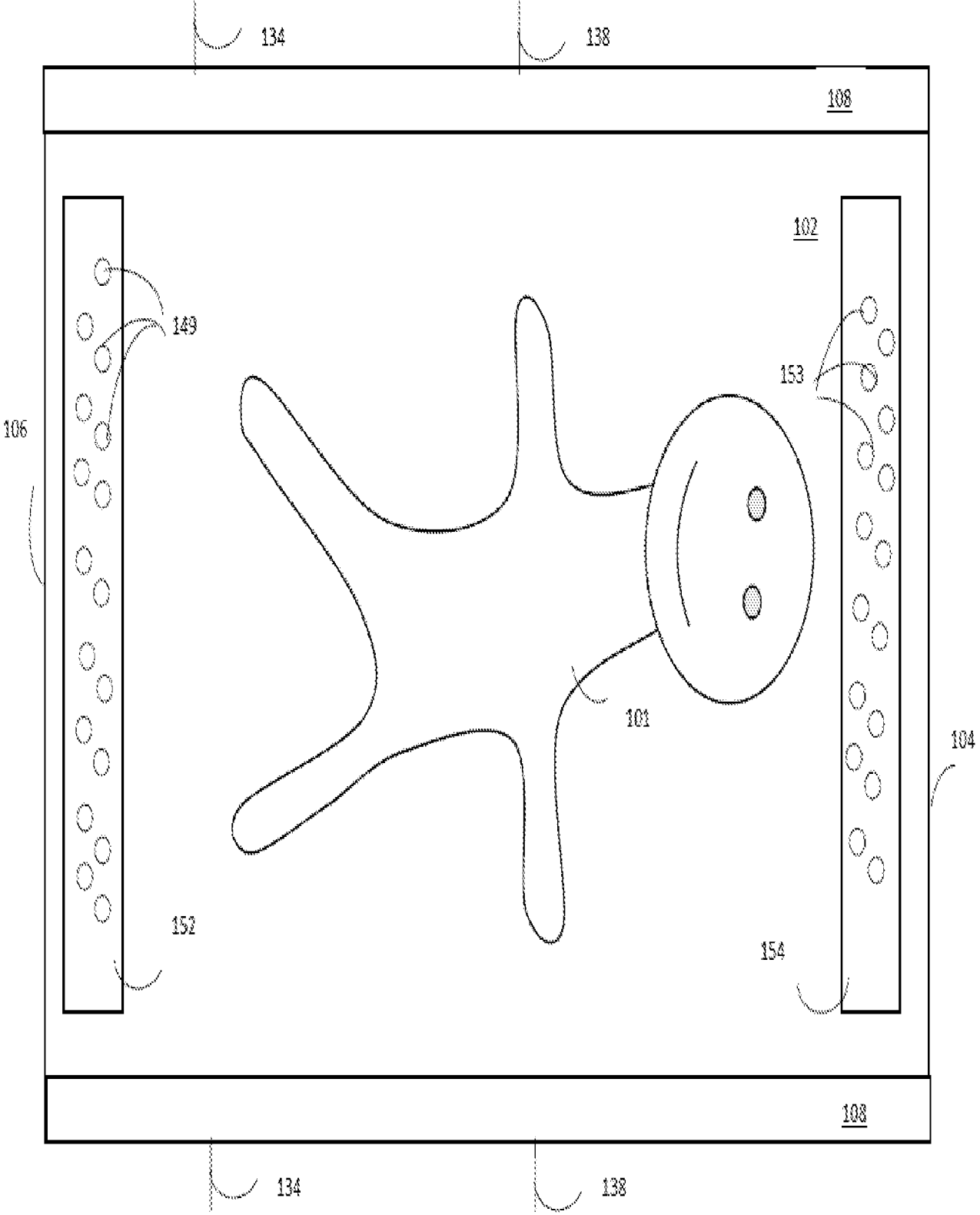


FIG. 7

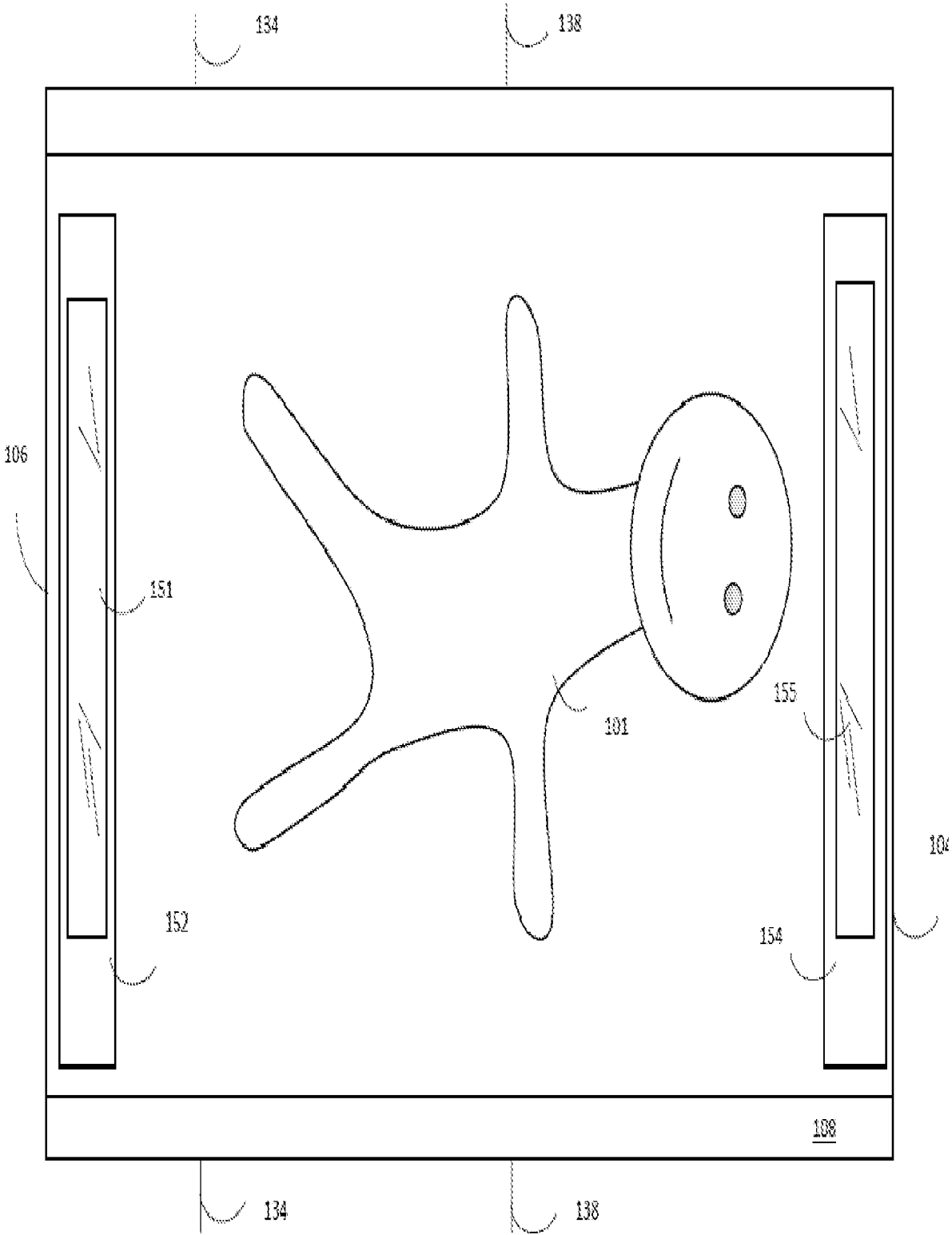


FIG. 8

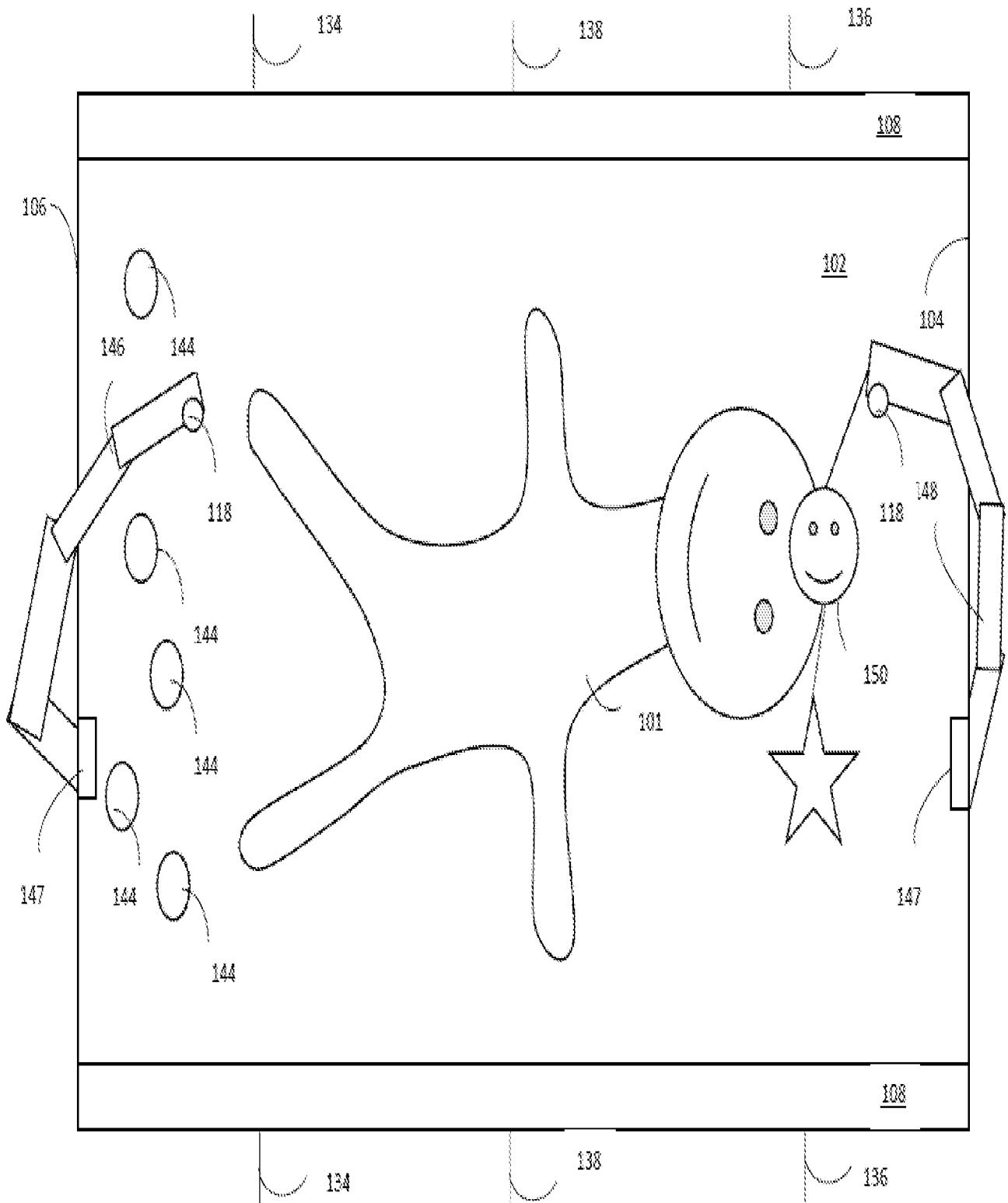


FIG. 9

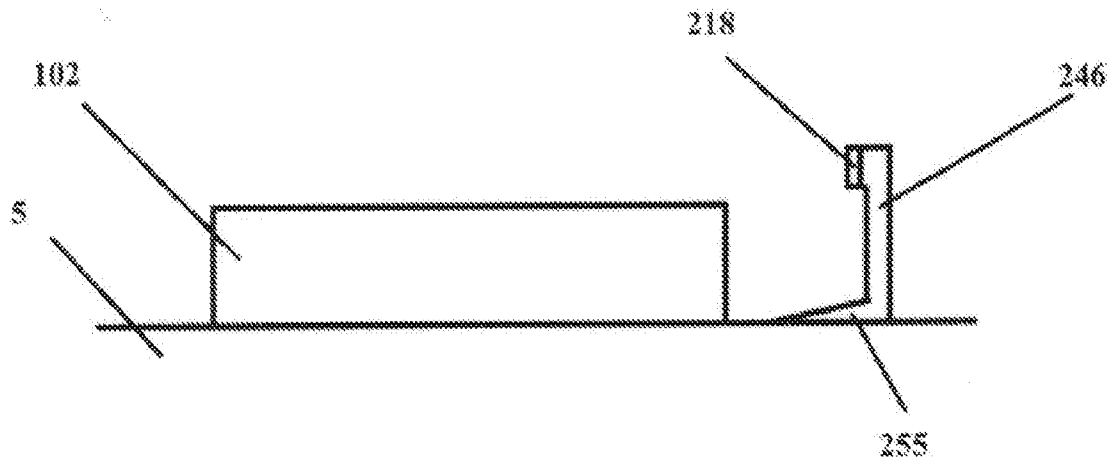


FIG. 10

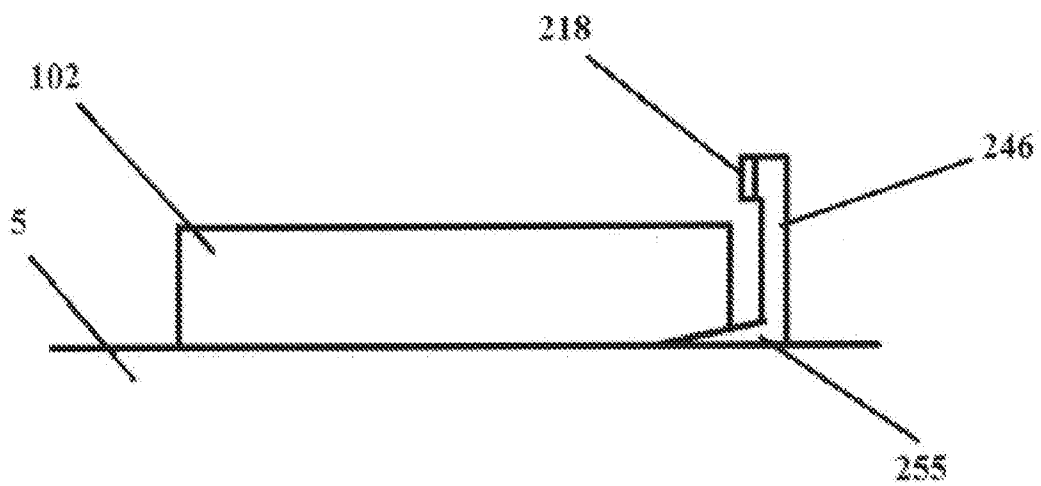


FIG. 11

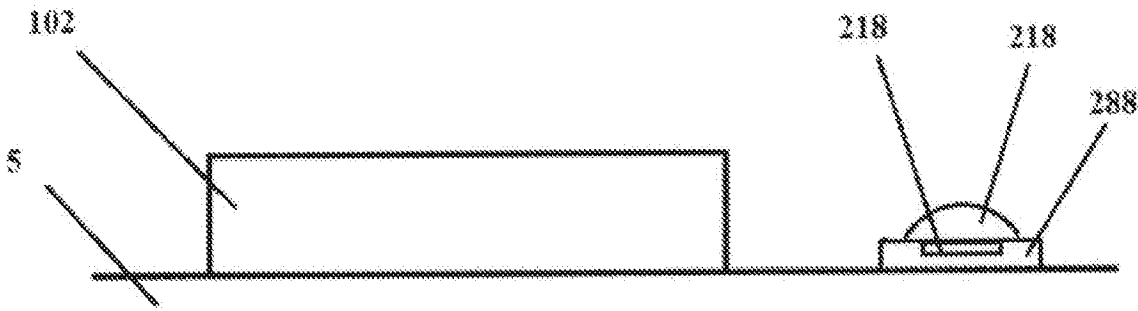


FIG. 12

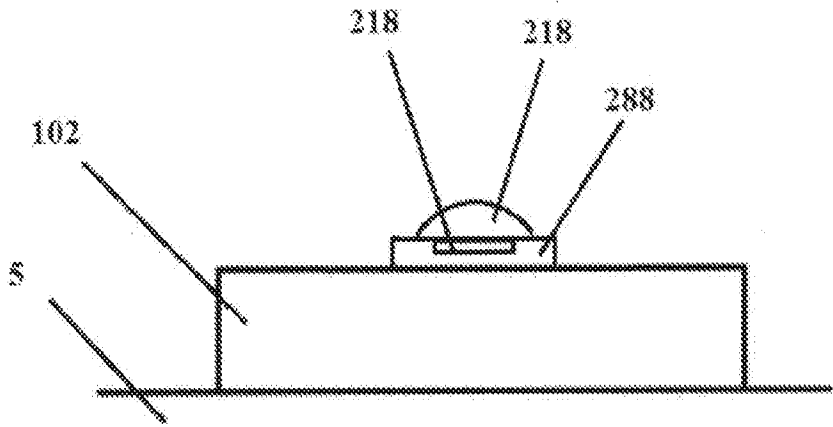


FIG. 13

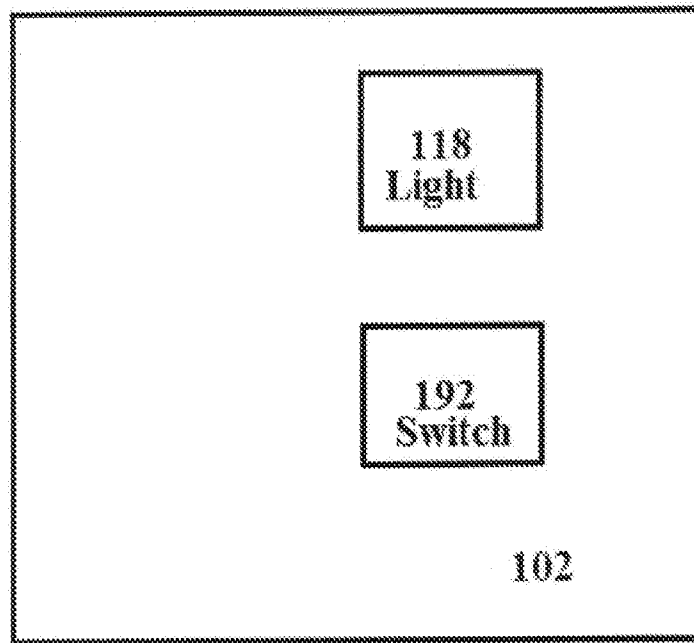


FIG. 14

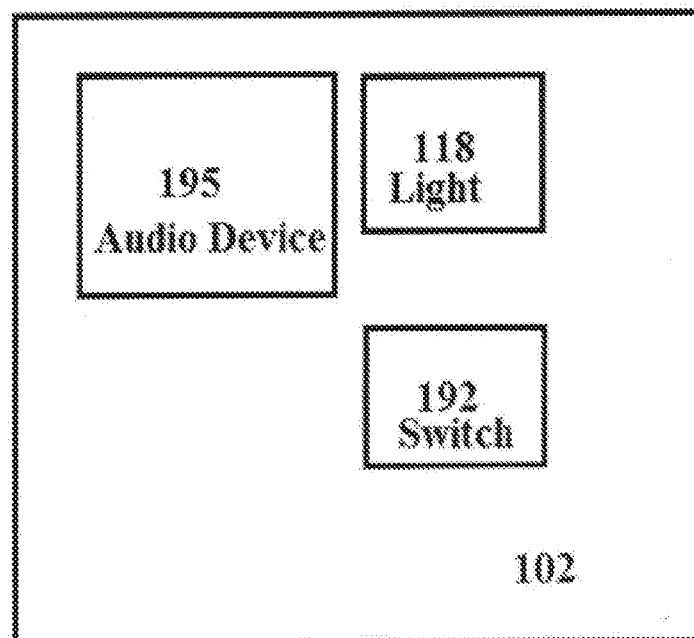


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 16/58502

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A47D 5/00, A47D 15/00, F21V 33/00 (2016.01) CPC - A47D 5/00, A47D 15/00, A47D 13/00, F21V 33/0012 According to International Patent Classification (IPC) or to both national classification and IPC																													
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8): A47D 5/00, A47D 15/00 (2016.01) CPC: A47D 5/00, A47D 15/00, A47D 13/00 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched US: 5/655, 340/691.6, 5/420, 5/424, 5/603, 362/130 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Google (Scholar, Web, Patent), PatBase. Search terms used: pad, mat, rug, light, ilum*, infant, baby, child, toddler, cushion, entertain, chang*, play, mattress, audio, sound, music, speaker, star, constellation, project																													
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>GB 2495759 A (SOMERVILLE) 24 April 2013 (24.04.2013) Entire document, especially pg 2, para 2, pg 1, para 13, pg 2, para 1, pg 1, para 3 and FIGS. 1, 3.</td> <td>1-3, 7</td> </tr> <tr> <td>Y</td> <td>GB 2399749 A (BROWN) 29 September 2004 (29.09.2004) Entire document, especially pg 2, para 1 and FIG. 1.</td> <td>4-6, 8-14</td> </tr> <tr> <td>Y</td> <td>US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.</td> <td>9, 11-14</td> </tr> <tr> <td>Y</td> <td>US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.</td> <td>8</td> </tr> <tr> <td>Y</td> <td>US 2013/0225041 A1 (JOHNSON et al.) 29 August 2013 (29.08.2013) Entire document, especially para [0014] and FIG. 1.</td> <td>4, 12</td> </tr> <tr> <td>Y</td> <td>US 2007/0266498 A1 (LORD et al.) 22 November 2007 (22.11.2007) Entire document, especially para [0011] and FIGS. 2, 4.</td> <td>10</td> </tr> <tr> <td>Y</td> <td>US 7,311,418 B2 (ZELLER et al.) 25 December 2007 (25.12.2007) Entire document, especially col 2, ln 48-51, col 3, ln 34-35, col 3, ln 24-25 and FIGS. 2, 4.</td> <td>5, 6</td> </tr> <tr> <td>A</td> <td>US 7,302,724 B2 (Solomon et al.) 4 December 2007 (4.12.2007) Entire document.</td> <td>1-20</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	GB 2495759 A (SOMERVILLE) 24 April 2013 (24.04.2013) Entire document, especially pg 2, para 2, pg 1, para 13, pg 2, para 1, pg 1, para 3 and FIGS. 1, 3.	1-3, 7	Y	GB 2399749 A (BROWN) 29 September 2004 (29.09.2004) Entire document, especially pg 2, para 1 and FIG. 1.	4-6, 8-14	Y	US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.	9, 11-14	Y	US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.	8	Y	US 2013/0225041 A1 (JOHNSON et al.) 29 August 2013 (29.08.2013) Entire document, especially para [0014] and FIG. 1.	4, 12	Y	US 2007/0266498 A1 (LORD et al.) 22 November 2007 (22.11.2007) Entire document, especially para [0011] and FIGS. 2, 4.	10	Y	US 7,311,418 B2 (ZELLER et al.) 25 December 2007 (25.12.2007) Entire document, especially col 2, ln 48-51, col 3, ln 34-35, col 3, ln 24-25 and FIGS. 2, 4.	5, 6	A	US 7,302,724 B2 (Solomon et al.) 4 December 2007 (4.12.2007) Entire document.	1-20
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																											
X	GB 2495759 A (SOMERVILLE) 24 April 2013 (24.04.2013) Entire document, especially pg 2, para 2, pg 1, para 13, pg 2, para 1, pg 1, para 3 and FIGS. 1, 3.	1-3, 7																											
Y	GB 2399749 A (BROWN) 29 September 2004 (29.09.2004) Entire document, especially pg 2, para 1 and FIG. 1.	4-6, 8-14																											
Y	US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.	9, 11-14																											
Y	US 2005/0172411 A1 (SNEDEKER) 11 August 2005 (11.08.2005) Entire document, especially para [0042] and FIGS. 1, 3.	8																											
Y	US 2013/0225041 A1 (JOHNSON et al.) 29 August 2013 (29.08.2013) Entire document, especially para [0014] and FIG. 1.	4, 12																											
Y	US 2007/0266498 A1 (LORD et al.) 22 November 2007 (22.11.2007) Entire document, especially para [0011] and FIGS. 2, 4.	10																											
Y	US 7,311,418 B2 (ZELLER et al.) 25 December 2007 (25.12.2007) Entire document, especially col 2, ln 48-51, col 3, ln 34-35, col 3, ln 24-25 and FIGS. 2, 4.	5, 6																											
A	US 7,302,724 B2 (Solomon et al.) 4 December 2007 (4.12.2007) Entire document.	1-20																											
☐ Further documents are listed in the continuation of Box C. ☐																													
<table border="0"> <tr> <td> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family																									
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family																												
Date of the actual completion of the international search 5 December 2016		Date of mailing of the international search report 23 FEB 2017																											
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774																											

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 16/58502

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
see extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-14

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 16/58502

****Continuation of: Box No III - Observations where unity of invention is lacking****

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-14, directed to a diaper changing pad with a light source.

Group II: Claims 15-20 directed to an accessory to a diaper changing pad with a connector.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

SPECIAL TECHNICAL FEATURES

The invention of Group I includes the special technical feature of a diaper changing pad comprising: a main body having a head end, a foot end, and marginal side edges, not required by the claims of Group II.

The invention of Group II includes the special technical feature of an accessory to a diaper changing pad comprising a connecting end, not required by the claims of Group I.

COMMON TECHNICAL FEATURES

Groups I-II share the common technical feature of a light source. However, this shared technical feature does not represent a contribution over prior art as being anticipated by US 7,302,724 B2 to Solomon, et al. (hereinafter 'Solomon'), which discloses an infant play mat comprising a light source (col 9, ln 61-65).

As the common technical features were known in the art at the time of the invention, these cannot be considered special technical features that would otherwise unify the groups.

Therefore, Groups I-II lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.