**DISPOSABLE ABSORBENT ARTICLES HAVING A POCKETED TEMPERATURE SENSOR**

SAUGFÄHIGE EINWEGARTIKEL MIT TASCHENTEMPERATURFÜHLER

ARTICLES ABSORBANTS JETABLES DOTÉS D’UN CAPTEUR DE TEMPÉRATURE PLACÉ DANS UNE POCHE

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FIELD OF THE INVENTION

[0001] The present invention relates to a disposable absorbent suitable for receiving and containing bodily exudates wherein the article further comprises a first waist region, a second waist region and a crotch region disposed between said first or second waist region, each region having two opposing longitudinal edges and wherein the article comprises a pocket for a non-electronic temperature sensor wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides.

BACKGROUND OF THE INVENTION

[0002] One of the primary concerns of a mother of an infant is the health and wellness of the infant. As such, there are a number of diagnostic tools that have been found useful to indicate the health and wellness of infants. These tools include thermometers, analyte indicators, pH indicators, wetness indicators, etc. Oftentimes, however, these indicators are utilized primarily by professionals in clinical and health care environments rather than by caregivers. In order for these diagnostic devices to be convenient for caregivers to use, Applicants therefore thought that it would be desirable to incorporate such indicators into the daily infant care routine. One effective way of including these indicators into the routine would be integration of these indicators into the design of the disposable absorbent articles. In particular, the present invention is directed to providing a disposable absorbent article to a consumer for infant use wherein the article includes a sensor pocket. This sensor pocket may be disposed on any of the outward facing surfaces of the article that allows for facilitated visual awareness of the sensor and the condition it is indicating.

SUMMARY OF THE INVENTION

[0003] The present invention is directed to a kit for visually detecting an infant's health status, said kit comprising:

a. disposable absorbent articles, each suitable for receiving and containing bodily exudates, and comprising a first waist region, a second waist region and a crotch region disposed between said first or second waist region, each region having two opposing longitudinal edges, and wherein each article further comprises a pocket suitable for a non-electronic temperature sensor wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides; and
b. one or more non-electronic temperature sensors, placable in said pocket.

DETAILED DESCRIPTION OF THE INVENTION

[0004] Figure 1 is a plan view of an article made according to the present invention.

Figure 2 is a top perspective view of the diaper of Figure 1.

Figure 3 is a hack perspective view of the (diaper of Figure 1.

Figure 4 is a perspective view of a disposable pant-type garment made according to the present invention.

[0005] As used herein, the term "absorbent article" refers to devices which absorb and contain body exudates and, more specifically, refers to devices which are placed against or in proximity to the body of the wearer to absorb and contain the various exudates discharged from the body. The term "disposable" is used herein to describe absorbent articles which generally are not intended to be laundered or otherwise restored or reused as absorbent articles (i.e., they are intended to be discarded after a single use and, preferably, to be recycled, composted or otherwise discarded in an environmentally compatible manner). A "unitary" absorbent article refers to absorbent articles which are formed of separate parts united together to form a coordinated entity so that they do not require separate manipulative parts like a separate holder and/or liner. A preferred embodiment of an absorbent article of the present invention is the unitary disposable absorbent article, diaper 20, shown in Figure 1.

[0006] As used herein, the terms "diaper", "training pants", "swim pants", "pull-on pants" each refer to an absorbent article generally worn by infants and incontinent persons about the lower torso. A diaper is typically fastened about the waist of an infant by a caregiver via relatively narrower tape or hook and loop tabs than training, swim, and pull-on pants which typically have relatively wider side panels that are either refastenable or non-refastenable such that the pants can be easily donned by the toddler alone. The present invention is also applicable to other absorbent articles such as incontinence briefs, incontinence undergarments, absorbent inserts, diaper holders and liners, feminine hygiene garments, wipes, bandages and the like.

[0007] Figure 1 is a plan view of the diaper 20 of the present invention in a flat-out, state with portions of the structure being cut-away to more clearly show the construction of the diaper 20. The portion of the diaper 20 which faces the wearer is oriented towards the viewer. As shown in Figure 1, the diaper 20 preferably comprises a liquid pervious topsheet 24; a liquid impervious backsheet 26; an absorbent core 28 which is preferably positioned between at least a portion of the topsheet 24 and the backsheet 26; side panels 30; elasticized leg cuffs
32; an elastic waist feature 34; and a fastening system generally designated 40. The diaper 20 is shown in Figure 1 to have a first waist region 36, a second waist region 38 opposed to the first waist region 36 and a crotch region 37 located between the first waist region 36 and the second waist region 38. Each of these three regions has an exterior surface and an interior surface. The periphery of the diaper 20 is defined by the outer edges of the diaper 20 in which longitudinal edges 50 run generally parallel to the longitudinal centerline 100 of the diaper 20 and end edges 52 run between the longitudinal edges 50 generally parallel to the lateral centerline 110 of the diaper 20.

[0009] The backsheet 26 of the diaper 20 comprises the main body of the diaper 20. The chassis 22 comprises at least a portion of the absorbent core 28 and preferably an outer covering including the topsheet 24 and/or the backsheet 26. If the absorbent article comprises a separate holder and a liner, the chassis 22 generally comprises the holder and the liner. (For example, the holder may comprise one or more layers of material to form the outer cover of the article and the liner may comprise an absorbent assembly including a topsheet, a backsheet, and an absorbent core. In such cases, the holder and/or the liner may include a fastening element which is used to hold the liner in place throughout the time of use.) For unitary absorbent articles, the chassis 22 comprises the main structure of the diaper with other features added to form the composite diaper structure. While the topsheet 24, the backsheet 26, and the absorbent core 28 may be assembled in a variety or well known configurations, preferred diaper configurations are described generally in U.S. Pat. No. 3,860,003 entitled "Contractible Side Portions for Disposable Diaper" issued to Kenneth B. Buell on January 14, 1975; U.S. Pat. No. 5,151,092 issued to Buell on September 9, 1992; and U.S. Pat. No. 5,221,274 issued to Buell on June 22, 1993; and U.S. Pat. No. 5,554,145 entitled "Absorbent Article With Multiple Zone Structural Elastic-Like Film Web Extensible Waist Feature" issued to Roe et al. on September 10, 1996; U.S. Pat. No. 5,569,234 entitled "Disposable Pull-On Pant" issued to Buell et al. on October 29, 1996; U.S. Pat. No. 5,580,411 1 entitled "Zero Scrap Method For Manufacturing Side Panels For Absorbent Articles" issued to Nease et al. on December 3, 1996; and U.S. Patent No. 6,004,306 entitled "Absorbent Article With Multi-Directional Extensible Side Panels" issued to Robles et al. on December 21, 1999.

[0011] The backsheet 26 may be joined to the topsheet 24, the absorbent core 28 or any other element of the diaper 20 by any attachment means known in the art. (As used herein, the term "joined" encompasses configurations whereby an element is directly secured to another element by affixing the element directly to the other element, and configurations whereby an element is indirectly secured to another element by affixing the element to intermediate member(s) which in turn are affixed to the other element.) For example, the attachment means may include a uniform continuous layer of adhesive, a patterned layer of adhesive, or an array of separate lines, spirals, or spots of adhesive. One preferred attachment means comprises an open pattern network of filaments of adhesive as disclosed in U.S. Patent 4,573,986 entitled "Disposable Waste-Containment Garment", which issued to Minetola et al. on March 4, 1986. Other suitable attachment means include several lines of adhesive filaments which are swirled into a spiral pattern, as is illustrated by the apparatus and methods shown in U.S. Patent 3,911,173 issued to Sprague, Jr. on October 7, 1975; U.S. Patent 4,785,996 issued to Ziecker, et al. on November 17, 1993; and U.S. Patent 4,842,666 issued on February 2, 1990 to LaVon et al.; U.S. Pat. No. 5,571,096 issued to Dobrin et al. on November 5, 1996.

Trademarks, service marks, and logos used herein, the term "joined" encompasses configurations whereby an element is directly secured to another element by affixing the element directly to the other element, and configurations whereby an element is indirectly secured to another element by affixing the element to intermediate member(s) which in turn are affixed to the other element.) For example, the attachment means may include a uniform continuous layer of adhesive, a patterned layer of adhesive, or an array of separate lines, spirals, or spots of adhesive. One preferred attachment means comprises an open pattern network of filaments of adhesive as disclosed in U.S. Patent 4,573,986 entitled "Disposable Waste-Containment Garment", which issued to Minetola et al. on March 4, 1986. Other suitable attachment means include several lines of adhesive filaments which are swirled into a spiral pattern, as is illustrated by the apparatus and methods shown in U.S. Patent 3,911,173 issued to Sprague, Jr. on October 7, 1975; U.S. Patent 4,785,996 issued to Ziecker, et al. on November 17, 1993; and U.S. Patent 4,842,666 issued on February 2, 1990 to LaVon et al.; U.S. Pat. No. 5,571,096 issued to Dobrin et al. on November 5, 1996.
found to be satisfactory are manufactured by H. B. Fuller Company of St. Paul, Minnesota and marketed as HL-1620 and HL-1358-ZXP. Alternatively, the attachment means may comprise heat bonds, pressure bonds, ultrasonic bonds, dynamic mechanical bonds, or any other suitable attachment means or combinations of these attachment means as are known in the art.

The topsheet 24 is preferably positioned adjacent body surface 47 of the absorbent core 28, and may be joined thereto and/or to the backsheet 26 by any attachment means known in the art. Suitable attachment means are described above with respect to means for joining the backsheet 26 to other elements of the diaper 20. In one preferred embodiment of the present invention, the topsheet 24 and the backsheet 26 are joined directly to each other in some locations and are indirectly joined together in other locations by directly joining them to one or more other elements of the diaper 20.

The topsheet 24 is preferably compliant, soft-feeling, and non-irritating to the wearer's skin. Further, at least a portion of the topsheet 24 is liquid pervious, permitting liquids to readily penetrate through its thickness. A suitable topsheet may be manufactured from a wide range of materials, such as porous foams, reticulated films, or nonwoven materials of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polyester or polypropylene fibers), or a combination of natural and synthetic fibers. If the topsheet 24 includes fibers, the fibers may be spun-bond, carded, wet-laid, meltblown, hydroentangled, or otherwise processed as is known in the art. One suitable topsheet 24 comprising a web of staple-length polypropylene fibers is manufactured by Veratec, Inc., a Division of International Paper Company, of Walpole, MA under the designation P-8.

Suitable formed film topsheets are described in U.S. Pat. No. 3,9299,135, entitled "Absorbent Articles Having Tapered Capillaries" issued to Thompson on December 30, 1975, U.S. Pat. No. 4,324,246 entitled "Disposable Absorbent Article Having A Stain Resistant Topsheet" issued to Mullane, et al. on April 13, 1982; U.S. Patent 4,342,314 entitled "Resilient Plastic Web Exhibiting Fiber-Like Properties" issued to Radel, et al. on August 3, 1982; U.S. Pat. No. 4,463,045 entitled "Macroscopically Expanded Three-Dimensional Plastic Web Exhibiting Non-Glossy Visible Surface and Cloth-Like Tactile Impression" issued to Ahr, et al. on July 31, 1984; and U.S. Pat. No. 5,006,394 "Multilayer Polymeric Film" issued to Baird on April 9, 1991. Other suitable topsheets 30 may be made in accordance with U.S. Pat. Nos. 4,609,518 and 4,629,643 issued to Curro et al. on September 2, 1986 and December 16, 1986, respectively, and both of which are incorporated herein by reference. Such formed films are available from The Procter & Gamble Company of Cincinnati, Ohio as "DRI-WEAVE" and from Tredegar Corporation, based in Richmond, VA, as "CLIFF-T."

Preferably, at least a portion of the topsheet 24 is made of a hydrophobic material or is treated to be hydrophobic in order to isolate the wearer's skin from liquids contained in the absorbent core 28. If the topsheet 24 is made of a hydrophobic material, preferably at least a portion of the upper surface of the topsheet 24 is treated to be hydrophilic so that liquids will transfer through the topsheet more rapidly. The topsheet 24 can be rendered hydrophilic by treating it with a surfactant or by incorporating a surfactant into the topsheet. Suitable methods for treating the topsheet 24 with a surfactant include spraying the topsheet 24 material with the surfactant and/or immersing the material into the surfactant. A more detailed discussion of such a treatment and hydrophilicity is contained in U.S. Pat. No. 4,988,344 entitled "Absorbent Articles with Multiple Layer Absorbent Layers" issued to Reising, et al. on Jan. 29, 1991 and U.S. Pat. No. 4,988,345 entitled "Absorbent Articles with Rapid Acquiring Absorbent Cores" issued to Reising on Jan. 29, 1991. A more detailed discussion of some suitable methods for incorporating a surfactant in the topsheet 24 can be found in U.S. Statutory Invention Registration No. 111670 published on July 1, 1997 in the names of Aziz et al. Alternatively, the topsheet 24 may include an apertured web or film which is hydrophobic. This may be accomplished by eliminating the hydrophilizing treatment step from the production process and/or applying a hydrophobic treatment to the topsheet 24, such as a polytetrafluoroethylene compound like SCOTCHGUARD or a hydrophobic lotion composition, as described below. In such embodiments, it is preferred that the apertures be large enough to allow the penetration of aqueous fluids like urine without significant resistance.

Any portion of the topsheet 24 may be coated with a lotion as is known in the art. Examples of suitable lotions include those described in U.S. Pat. Nos. 5,607,760 entitled "Disposable Absorbent Article Having A Lotioned Topsheet Containing An Emollient and a Polyol Polyester Immobilizing Agent" issued to Roe on March 4, 1997; U.S. Pat. No. 5,609,587 entitled "Diaper Having A Lotion Topsheet Comprising A Liquid Polyol Polyester Emollient And An Immobilizing Agent" issued to Roe on March 11, 1997; U.S. Pat. No. 5,635,191 entitled "Diaper Having A Lotioned Topsheet Containing A Polysiloxane Emollient" issued to Roe et al. on June 3, 1997; U.S. Pat. No. 5,643,588 entitled "Diaper Having A Lotioned Topsheet" issued to Roe et al. on July 1, 1997; U.S. Pat. No. 5,968,025 entitled "Absorbent Article Having a Lotioned Topsheet" issued to Roe et al. on October 19, 1999 and U.S. Pat. No. 6,716,441 entitled "Compositions for the efficient release of active ingredients" issued to Osborne on April 6, 2004. The lotion may function alone or in combination with another agent as the hydrophobizing treatment described above. The topsheet 24 may also include or be treated with antibacterial agents, some examples of which are disclosed in PCT Publication No. WO 95/24173 entitled "Absorbent Articles Containing Antibacterial Agents in the Topsheet For Odor Control" which was published on September 14, 1995 in the name of
Theresa Johnson. Further, the topsheet 24, the backsheet 26 or any portion of the topsheet or backsheet may be embossed and/or matte finished to provide a more cloth like appearance. [0017] The topsheet 24 may comprise one or more apertures to ease penetration of exudates therethrough, such as urine and/or feces (solid, senu-solid, or liquid). The size of at least the primary aperture is important in achieving the desired waste encapsulation performance. If the primary aperture is too small, the waste may not pass through the aperture, either due to poor alignment of the waste source and the aperture location or due to fecal masses having a diameter greater than the aperture. If the aperture is too large, the area of skin that may be contaminated by “rewet” from the article is increased. Typically, the aperture should have an area of between about 10 cm² and about 50 cm². The aperture preferably has an area of between about 15 cm² and 35 cm². [0018] Further, the topsheet 24 may be fully or partially elasticated or may be foreshortened so as to provide a void space between the topsheet 24 and the core 28. Exemplary structures including elasticized or foreshortened topsheets are described in more detail in U.S. Pat. No. 4,892,536 issued to DesMarais et al. on January 9, 1990 entitled “Absorbent Article Having Elastic Strands”; U.S. Pat. No. 4,990,147 issued to Freeland on February 5, 1991 entitled “Absorbent Article With Elastic Liner For Waste Material Isolation”; U.S. Pat. No. 5,037,416 issued to Allen et al. on August 6, 1991 entitled “Disposable Absorbent Article Having Elastically Extensible Topsheet”; and U.S. Pat. No. 5,269,775 issued to Freeland et al. on December 14, 1993 entitled “Trisection Topsheets For Disposable Absorbent Articles and Disposable Absorbent Articles Having Such Trisection Topsheets”. [0019] The absorbent core 28 may comprise any absorbent material which is generally compressible, conformable, non-irritating to the wearer’s skin, and capable of absorbing and retaining liquids such as urine and other certain body exudates. The absorbent core 28 may be manufactured in a wide variety of sizes and shapes (e.g., rectangular, hourglass, “T”-shaped, asymmetric, etc.) and may comprise a wide variety of liquid-absorbent materials commonly used in disposable diapers and other absorbent articles such as comminuted wood pulp, which is generally referred to as airfelt. Examples of other suitable absorbent materials include creped cellulose wadding; meltblown polymers, including coform; chemically stiffened, modified or cross-linked cellulosic fibers; tissue, including tissue wraps and tissue laminates; absorbent foams; absorbent sponges; superabsorbent polymers; absorbent gelling materials; or any other known absorbent material or combinations of materials. [0020] The configuration and construction of the absorbent core 28 may also be varied (e.g., the absorbent core(s) or other absorbent structure(s) may have varying caliper zones, hydrophilic gradient(s), a superabsorbent gradient(s), or lower average density and lower average basis weight acquisition zones; or may comprise one or more layers or structures). Exemplary absorbent structures for use as the absorbent core 28 are described in U.S. Patent 4,610,678 entitled “High-Density Absorbent Structures” issued to Weisman et al. on September 9, 1986; U.S. Patent 4,673,402 entitled “Absorbent Articles With Dual-Layered Cores” issued to Weisman et al. on June 16, 1987; U.S. Patent 4,834,735 entitled “High Density Absorbent Members Having Lower Density and Lower Basis Weight Acquisition Zones” issued to Alemany et al. on May 30, 1989; U.S. Patent 4,888,231 entitled “Absorbent Core Having A Dusting Layer” issued to Angstadt on December 19, 1989; U.S. Pat. No. 5,137,537 entitled “Absorbent Structure Containing Individualized, Polymeric Acid Crosslinked Wood Pulp Cellulose Fibers” issued to Herron et al. on August 11, 1992; U.S. Patent 5,147,345 entitled “High Efficiency Absorbent Articles For Incontinence Management” issued to Young et al. on September 15, 1992; U.S. Pat. No. 5,342,338 entitled “Disposable Absorbent Article For Low-Viscosity Fecal Material” issued to Roe on August 30, 1994; U.S. Pat. No. 5,260,345 entitled “Absorbent Foam Materials For Aqueous Body Fluids and Absorbent Articles Containing Such Materials” issued to DesMarais et al. on November 9, 1993; U.S. Pat. No. 5,387:207 entitled “Thin-Until-Wet Absorbent Foam Materials For Aqueous Body Fluids And Process For Making Same” issued to Dyer et al. on February 7, 1995; and U.S. Pat. No. 5,625,222 entitled “Absorbent Foam Materials For Aqueous Fluids Made From High Internal Phase Emulsions Having Very High Water-To-Oil Ratios” issued to DesMarais et al. on July 22, 1997. [0021] The diaper 20 may also include a sublayer disposed between the topsheet 24 and the backsheet 26. (As used herein, the term “disposed” is used to mean that an element(s) of the diaper is formed (joined and positioned) in a particular place or position as a unitary structure with other elements of the diaper or as a separate element joined to another element of the diaper.) The sublayer may be any material or structure capable of accepting, storing or immobilizing bodily exudates. Thus, the sublayer may include a single material or a number of materials operatively associated with each other. Further, the sublayer may be integral with another element of the diaper 20 or may be one or more separate elements joined directly or indirectly with one or more elements of the diaper 20. Further, the sublayer may include a structure that is separate from the core 28 or may include or be part of at least a portion of the core 28. [0022] Suitable materials for use as the sublayer may include large cell open foams, macroporous compression resistant nonwoven highlofts, large size particulate forms of open and closed cell foams (macro and/or microporous), highloft nonwovens, polyolefin, polystyrene, polyurethane foams or particles, structures comprising a multiplicity of vertically oriented looped strands of fibers, absorbent core structures described above having punched holes or depressions, and the like. (As used
herein, the term "microporous" refers to materials which are capable of transporting fluids by capillary action. The term "macroporous" refers to materials having pores too large to effect capillary transport of fluid, generally having pores greater than about 0.5 mm in diameter and, more specifically, having pores greater than about 1.0 mm in diameter.) One embodiment of a sublayer includes a mechanical fastening loop landing element, having an uncompressed thickness of about 1.5 millimeters available as XPI-7124 from the 3M Corporation of Minneapolis, Minnesota. Another embodiment includes a 6 denier, crimped and resin-bonded nonwoven high loft having a basis weight of 110 grams per square meter and an uncompressed thickness of 7.9 millimeters which is available from the Glit Company of Wrens, Georgia. Other suitable absorbent and nonabsorbent sublayers are described in U.S. Patent No. 6,680,422 entitled "Disposable Absorbent Article Having Capacity to Store Low-Viscosity Fecal Material" issued to Roe on January 20, 2004 and U.S. Patent No. 5,941,864 entitled "Disposable Absorbent Article Having Improved Fecal Storage" issued to Roe on August 24, 1999. Further, the sublayer, or any portion thereof, may include or be coated with a lotion or other known substances to add, enhance or change the performance or other characteristics of the element.

The diaper 20 may also comprise at least one elastic waist feature 34 that helps to provide improved fit and containment. The elastic waist feature 34 is generally intended to elastically expand and contract to dynamically fit the wearer's waist. The elastic waist feature 34 preferably extends at least longitudinally outwardly from at least one waist edge of the absorbent core 28 and generally forms at least a portion of the end edge 52 of the diaper 20. Disposable diapers are often constructed so as to have two elastic waist features, one positioned in the first waist region 36 and one positioned in the second waist region 38. Further, while the elastic waist feature 34 or any of its constituent elements may comprise one or more separate elements affixed to the diaper 20, the elastic waist feature 34 may be constructed as an extension of other elements of the diaper 20, such as the backsheet 26, the topsheet 24, or both the backsheet 26 and the topsheet 24.

The elastic waist feature 34 may be constructed in a number of different configurations including those described in U.S. Pat. No. 4,515,595 issued to Klevit et al. on May 7, 1985; U.S. Pat. No. 4,710,189 issued to Lash on December 1, 1987; U.S. Pat. No. 5,151,092 issued to Robertson on October 16, 1993; and U.S. Pat. No. 5,221,274 issued to Buell on June 22, 1993. Other suitable waist configurations may include waistcap features such as those described in U.S. Pat. No. 5,026,364 issued to Robertson on June 25, 1991 and U.S. Pat. No. 4,816,025 issued to Foreman on March 28, 1989.

The diapers 20 may also include a fastening system 40. The fastening system 40 preferably comprises the first waist region 36 and the second waist region 38 in a configuration so as to provide lateral tensions about the circumference of the diapers 20 to hold the diaper 20 on the wearer. The fastening system 40 preferably comprises a fastener such as tape tabs, hook and loop fastening components, interlocking fasteners such as tabs or slots, buckles, buttons, snaps, and/or hermaphroditic fastening components, although any other known fastening means are generally acceptable. Some exemplary surface fastening systems are disclosed in U.S. Patent 3,848,594 entitled "Tape Fastening System for Disposable Diaper" issued to Buell on November 19, 1974; U.S. Patent B1 4,662,875 entitled "Absorbent Article" issued to Hirotsu et al. on May 5, 1987; U.S. Patent 4,846,815 entitled "Disposable Diaper Having An Improved Fastening Device" issued to Scripps on July 11, 1989; U.S. Patent 4,894,060 entitled "Disposable Diaper With Improved Hook Fastening Portion" issued to Nester et al. on January 16, 1990; U.S. Patent 4,946,527 entitled "Pressure-Sensitive Adhesive Fastener And Method of Making Same" issued to Battrell on August 7, 1990; the herein before referenced U.S. Pat. No. 5,151,092 issued to Buell on September 9, 1992; and U.S. Pat. No. 5,221,274 issued to Buell on June 22, 1993. An exemplary interlocking fastening system is disclosed in co-pending U.S. Patent No. 6,432,098 entitled "Absorbent Article Fastening Device" in the names of Kline et al. issued on August 13, 2002. The fastening system 40 may also provide a means for holding the article in a disposal configuration as disclosed in U.S. Pat. No. 4,963,140 issued to Robertson et al. on October 16, 1990. The fastening system may also include primary and secondary fastening systems, as disclosed in U.S. Pat. No. 4,699,622 entitled "Disposable Diaper Having An Improved Side Closure" issued to Toussaint et al. on October 13, 1987, to reduce shifting of overlapped portions or to improve fit as disclosed in U.S. Pat. No. 5,242,436 entitled "Absorbent Article With Fastening System Providing Dynamic Elasticized Waistband Fit" issued to Weil et al. on September 7, 1993; U.S. Pat. No. 5,499,978 entitled "Absorbent Article With Dynamic Elastic Waist Feature Having A Predisposed Resilient Flexural Hinge" issued to Buell et al. on March 19, 1996; U.S. Pat. No. 5,507,736 entitled "Absorbent Article With Dynamic Elastic Waist Feature Comprising An Expansive Tummy Panel" issued to Clear et al. on April 16, 1996; U.S. Pat. No. 5,591,152 entitled "Absorbent Article With Dynamic Elastic Waist Feature Having A Predisposed Resilient Flexural Hinge" issued to Buell et al. on January 7, 1997.

In certain embodiments, the article may be preformed by the manufacturer to create a pant-type diaper as shown in Figure 4. The terms "pant" or "pant-type diaper", as used herein, refers to disposable garments having a waist opening and leg openings designed for infant or adult wearers. A pant may be placed in position on the wearer by inserting the wearer's legs into the leg openings and sliding the pant into position about the wearer's lower torso. A pant may be preformed by any suitable technique including, but not limited to, joining together portions of the article using refastenable and/or
non-refastenable bonds (e.g., seam, weld, adhesive, cohesive bond, fastener, etc.). A pant may be preformed anywhere along the circumference of the article (e.g., side fastened, front waist fastened). While the term "pant" is used herein, pants are also commonly referred to as "closed diapers", "prefastened diapers", "pull-on diapers", "training pants" and "diaper-pants". Suitable pants are disclosed in U.S. Patent No. 5,246,433, issued to Hasse, et al. on September 21, 1993; U.S. Patent No. 5,569,234, issued to Buell et al. on October 29, 1996; U.S. Patent No. 6,120,487, issued to Ashton on September 19, 2000; U.S. Patent No. 6,120,489, issued to Johnson et al. on September 19, 2000; U.S. Patent No. 4,940,464, issued to Van Gompel et al. on July 10, 1990; U.S. Patent No. 5,092,861, issued to Nomura et al. on March 3, 1992; U.S. Patent Application Serial No. 10/171,249, entitled "Highly Flexible And Low Deformation Fastening Device", filed on June 13, 2002; U.S. Patent No. 5,897,545, issued to Kline et al. on April 27, 1999; U.S. Patent No. 5,957,908, issued to Kline et al. on September 28, 1999.

The diaper 20 may also comprise side panels 30. The side panels 30 may be elastic or extensible to provide a more comfortable and contoured fit by initially conformably fitting the diaper 20 to the wearer and sustaining this fit throughout the time of wear well past when the diaper 20 has been loaded with exudates since the elasticized side panels 30 allow the sides of the diaper 20 to expand and contract. The side panels 30 may also provide more effective application of the diaper 20 because even if the diaperer pulls one elasticized side panel 30 farther than the other during application, the diaper 20 will "self-adjust" during wear. While the diaper 20 of the present invention preferably has the side panels 30 disposed in the second waist region 38, the diaper 20 may be provided with side panels 30 disposed in the first waist region 36 or in both the first waist region 36 and the second waist region 38. The side panels 30 may be constructed in any suitable configurations. Examples of diapers with elasticized side panels are disclosed in U.S. Patent 4,857,067, entitled "Disposable Diaper Having Shirred Ears" issued to Wood, et al. on August 15, 1989; U.S. Patent 4,381,781 issued to Sciaraffa, et al. on May 3, 1983; U.S. Patent 4,938,753 issued to Van Gompel, et al. on July 3, 1990; the herein before referenced U.S. Pat. No. 5,151,092 issued to Buell on September 9, 1992; U.S. Pat. No. 5,221,274 issued to Buell on June 22, 1993; U.S. Patent No. 5,669,897 issued to LaVon, et al. on September 23, 1997 entitled "Absorbent Articles Providing Sustained Dynamic Fit"; and U.S. Patent No. 6,004,306 entitled "Absorbent Article With Multi-Directional Extensible Side Panels" issued to Robles et al. on December 21, 1999.

The diaper 20 preferably further includes leg cuffs 32 which provide improved containment of liquids and other body exudates. Leg cuffs 32 may also be referred to as leg bands, side flaps, barrier cuffs, or elastic cuffs. U.S. Patent 3,860,033 describes a disposable dia-

5 per which provides a contractible leg opening having a side flap and one or more elastic members to provide an elasticized leg cuff (a gasketing cuff). U.S. Patent Nos. 4,808,178 and 4,909,803 issued to Aziz et al. on February 28, 1989 and March 20, 1990, respectively, describe disposable diapers having "stand-up" elasticized flaps (barrier cuffs) which improve the containment of the leg regions. U.S. Pat. Nos. 4,695,278 and 4,795,454 issued to Lawson on September 22, 1987 and to Dragoo on January 3, 1989, respectively, describe disposable diapers having dual cuffs, including gasketing cuffs and barrier cuffs. In some embodiments, it may be desirable to treat all or a portion of the leg cuffs 32 with a lotion, as described above.

Embodiments of the present invention may also include pockets for receiving and containing waste, spacers which provide voids for waste, barriers for limiting the movement of waste in the article, compartments or voids which accept and contain waste materials deposited in the diaper 20, and the like, or any combinations thereof. Examples of pockets and spacers for use in absorbent products are described in U.S. Patent 5,514,121 issued to Roe et al. on May 7, 1996, entitled "Diaper Halving Expulsive Spacer"; U.S. Patent 5,171,236 issued to Dreier et al. on December 15, 1992 entitled "Disposable Absorbent Article Having Core Spacers"; U.S. Patent 5,397,318 issued to Dreier on March 14, 1995 entitled "Absorbent Article Having A Pocket Cuff"; U.S. Patent 5,540,671 issued to Dreier on July 30, 1996 entitled "Absorbent Article Having A Pocket Cuff With An Apex"; U.S. Patent No. 6,168,584 entitled "Spacers For Use In Hygienic Absorbent Articles And Disposable Absorbent Articles Having Such Spacer" issued to Allen et al. on January 2, 2001; U.S. Patent 5,306,266 entitled "Flexible Spacers For Use In Disposable Absorbent Articles" issued to Freeland on April 26, 1994; and U.S. Patent 5,997,520 entitled "Disposable Absorbent Article With Selectively Expandable or Inflatable Component" issued to Ahr et al. on December 7, 1999. Examples of compartments or voids are disclosed in U.S. Patent 4,968,312 entitled "Disposable Fecal Compartmenting Diaper" issued to Khan on November 6, 1990; U.S. Patent 4,990,147 entitled "Absorbent Article With Elastic Liner For Waste Material Isolation" issued to Freeland on February 5, 1991; U.S. Patent 5,062,840, entitled "Disposable Diapers" issued to Holt et al. on November 5, 1991; and U.S. Patent 5,269,755 entitled "Trisection Topsheets For Disposable Absorbent Articles And Disposable Absorbent Articles Having Such Trisection Topsheets" issued to Freeland et al. on December 14, 1993. Examples of suitable transverse barriers are described in U.S. Pat. No. 5,554,142 entitled "Absorbent Article Having Multiple Effective Height Transverse Partition" issued September 10, 1996 in the name of Dreier et al.; PCT Patent WO 94/14395 entitled "Absorbent Article Having An Upstanding Transverse Partition" published July 7, 1994 in the name of Freeland, et al.; and U.S. Patent No. 5,653,703 Absorbent Article Having Angular Upstanding Trans-

[0031] As shown in Figures 1-3 in diaper 20 of the present invention, the pocket 64 is provided to enable an indication of the condition of the wearer of the article that is easily viewable from the outside of the diaper since it may be disposed on an exterior surface of any one of the first waist, second waist, or crotch regions. In certain embodiments, a pocket is disposed on the first and second waist regions. This indication is made apparent by the insertion of a non-electronic temperature sensor 54 that is useful for determining changes in body temperature and/or environmental temperature. The pocket has two opposing sides, i.e., an external facing surface 56 and an internal facing surface 58. In an embodiment that is not shown, the pocket may be joined to an exterior surface of the article at the waistband and the pocket may be movable such that it can be flipped over an edge of the waistband and placed on the interior surface of the article such that the sensor can measure the appropriate condition of the infant. Alternatively, the pocket may be joined to an interior surface of the article or diaper at the waistband and the pocket may be like wise adjusted or moved to be placed adjacent to an exterior surface of the diaper such that the sensor can be useful for measuring a condition detailed above.

[0032] The sensor of the present invention comprises one or more thermochromic materials selected from the group consisting of thermochromic liquid crystalline materials, thermochromic inks, thermochromic dyes, and combinations thereof. The materials are intended to serve as temperature indication mechanisms within the sensor. As used herein "thermochromic" means materials/inks/dyes that change their reflected color as a function of temperature when illuminated by white light. In particular, thermochromic dyes that can change color are called leuco dyes and such can be directly mixed in films, nonwovens, and elastics and are commercially available from I-WW Sands Corp in Jupiter FL and Color Change Corp in Streamwood IL. In any instance, however, suitable thermochromic liquid crystalline materials may be either temperature sensitive or temperature insensitive and chiral or cholesteric in nature. The thermochromic inks are commercially available from Chromatic Technologies, Inc. under the tradename Dynacolor® as body temperature or high temperature inks or from Sun Chemical's AIC subsidiary of France under the name ThennaSOFT®. Additional suitable thermochromic inks are detailed in US Patents 4121011, 4826550, 5389093, and 5221228. The thermochromic materials used can be in the form of fine pigments particles, microencapsulated materials, molecular materials and the like.

[0033] The one or more materials may be is applied in an application method selected from the group consisting of spraying, printing, coating, ultraviolet printing, painting, and combinations thereof. Suitable printing methods include, but are not limited to gravure, flexo, inkjet, slot, and screen printing.

[0034] In certain instances, the temperature insensitive thermochromic liquid crystalline material is colored at room temperature and normal human body temperatures and changes to clear in appearance in response to a noticeable increase in human body temperature. However, there are other suitable types of thermochromic liquid crystalline materials (temperature sensitive) that turn from colorless to red to orange to yellow to green to blue to violet and then back to colorless as the temperature is increased. Suitable materials for use in the sensor of the present invention materials include chiral and/or cholesteric thermochromic liquid crystalline materials like those incorporated into patches sold by Hallcrest Incorporated (Glenview, IL), Kaz Inc. (Hudson, NY), Liquid Crystal Resources, LLC (Glenview, IL), Medical Indicators (Pennington, NY), Thermographic Measurements (Flintshire, UK), each of which make thermochromic liquid crystalline based patches for application to the skin in order to measure the core body temperature. Also, the thermochromic liquid crystalline material may be incorporated into a multi-layered sensor beneath which is disposed an underlayment layer 58. In most instances, this layer comprises a polymeric material selected from the group consisting of polyolefin, polyester, polyvinylchloride, or a combination thereof. In particular, the polyolefin material may be selected from the group consisting of polyethylene, polypropylene, and combinations thereof. This underlayment layer is typically printed black to enhance the appearance of the thermochromic liquid crystalline material phase transformations but this underlayment layer may also be printed to be colored such that this underlayment layer becomes visible in the sensor through the thermochromic liquid crystalline material as it becomes transparent or translucent in appearance. Alternatively, the underlayment layer may also comprise photochromic ink. Photochromic inks change color in response to the presence of ultraviolet or other wavelengths of radiation. In most cases, the photochromic inks change from invisible or clear to a humanly perceivable color upon exposure to a particular range of wavelengths. Additionally, an overlay layer may be used on an opposing surface of the sensor from the underlayment layer to aid in the containment of the thermochromic material. This contributes to the removability of the sensor from the window for even easier viewing. The overlay layer may be made from the same materials as the underlayment layer. Further detail of a sensor that is suitable for incorporation into the present invention is described in US provisional application serial no. 60/756237 filed on January 3, 2006 in the names of Klofka et al.

[0035] Depending on the form the sensor takes, it may also include an adhesive on at least one surface to ensure prolonged placement and stability within the pocket once inserted therein. Both the pocket 64 and the non-elec-
tronic temperature sensor 54 may take a variety of shapes within the article and both elements need not necessarily be the same shape. For instance, the elements can be circular, square, elliptical, triangular, rectangular, or in the form of a graphic of some sort. An external facing surface 56 of the pocket faces the wearer’s outergarments and is translucent or transparent to facilitate viewing of the sensor. Suitable materials for this external facing surface may be selected from the group consisting of polyethylene, polypropylene, polyester, polystyrene, polyvinyl chloride, polyurethane, polycarbonate, polyacrylate, PTFE, and combinations thereof. An internal facing surface 58 of the pocket is adjacent the wearer’s skin when the article is donned. This surface 58 may be translucent or transparent but may also be made of any other material that allows for minimal obstruction between the skin of the wearer and the sensor. Suitable materials for this internal facing surface 58 include those useful for the external facing surface as well as opaque films, nonwovens, laminates, or even other parts of the diaper. The pocket 64 of the present invention may also be removably obstructed with a cover or flap.

[0036] The article of the present invention may be delivered to a consumer in a variety of forms. One manner for delivery is in the form of a kit for visually detecting an infant’s health status. The kit comprises: a) one or more disposable absorbent articles suitable for receiving and containing bodily exudates, said article comprising a first waist region, a second waist region and a crotch region disposed between said first and second waist regions, each region having two opposing longitudinal edges, and wherein said article further comprises a pocket for a non-electronic temperature sensor wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides; b) one or more non-electronic temperature sensors that are suitable for insertion into said pocket.

[0037] The present invention further relates to various methods of using the articles of the invention. For instance, one method is that of visually detecting an infant’s health status, said method comprising the steps of: a) providing a caregiver with a disposable absorbent article suitable for receiving and containing bodily exudates, said article comprising a first waist region, a second waist region and a crotch region disposed between said first and second waist regions, each region having two opposing longitudinal edges, and wherein said article further comprises a pocket for a non-electronic temperature sensor wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides; b) donning said article onto an infant; and c) inserting said sensor into said pocket.

Example

[0038] An absorbent article of the present invention is prepared by providing a diaper chassis as disclosed in any one of US Patent Nos. 3860003, 4636207, 4695278, 4704115, 4795454, 4900317, 4909803 (Reissued as USRE34920), 5085654, 5492751, 6476288, 6627787, 550776, 5609587, 5635191, 5643588, 6118041 and SIR H1630. The sensor is a includes a thermochromic liquid crystalline material that is commercially available from Liquid Crystal Resources, LLC as “Unsealed Cholesteric Liquid Crystal Clearing Point Formulation with Hysteresis”. This thermochromic liquid crystalline material is temperature insensitive formula and is coated onto the underlayment layer via a slot coater. The thermochromic liquid crystalline material exhibits the follow characteristics upon application to the underlayment layer:

1. Type - cholesteric compounds, temperature insensitive (aka “clearing point” liquid crystalline materials)
2. Preparation of thermochromic liquid crystalline material - Not encapsulated
3. Application thickness - about 50 um (2 mil)
4. Trigger temperature - about 37.8°C or 100.0°F
5. Accuracy - about ±0.1°C (0.2°F)
6. Repeatability - less than about ±0.05°C (0.1°F)
7. Transition span (color to clear) - about 0.3°C (0.6°F)
8. Hysteresis or delay (aka time that temperature is above or below trigger temperature before thermochromic liquid crystalline material transitions) - 30 seconds

[0039] The thermochromic liquid crystalline material is designed to reflect a green wavelength of light at temperature below about 37.8°C or 100°F (i.e., appear green) and become transparent at temperatures above about 37.8°C or 100°F. The thermochromic liquid crystalline material may be altered to reflect other parts of the visible light spectrum such as red or blue and to function at alternative temperature set points ranging from 37.6°C or 99.5°F to 38.5°C or 102°F. Other parameters such as the delay, accuracy or precision can deviate from what is specified above and the sensor may also satisfactorily function as a skin temperature measurement device. Alternatively chiral thermochromic liquid crystal formula such as those that are commercially available from Liquid Crystal Resource, LLC can also be used.

[0040] The thermochromic liquid crystalline material may be applied to a substrate at uniform thickness in a circular pattern 1.5 cm. in diameter. The thermochromic liquid crystalline material is disposed on the underlayment layer in such a way that when the overlayment layer is placed over the thermochromic liquid crystalline material, the material covers a circular area having about a 1.5 cm diameter on an underlayment layer. An indicia, e.g. a smiling face, is printed with black ink on the overlayment layer and an additional frowning face in green ink where the green ink matches the green of the thermochromic liquid crystalline material. The initial appearance of the indicia is a black printed smiling face on the overlayment layer, which is placed over the green ther-
mochromic liquid crystalline material. Those areas of the graphical indicia that are unprinted with black ink appear transparent initially over the thermochromic liquid crystalline material which is green in color. As designed, this sensor will change in appearance from the smiling face to a frowning face when an infant’s skin temperature of greater than about 100°F is detected.

This change in the graphical indicia is effected by the green color of the thermochromic liquid crystalline material changing to a transparent and uncolored appearance and revealing a printed black surface of the underlayment layer.

[0041] The overlayment layer is adhesively and/or heat sealed to the underlayment layer in such a way that the thermochromic Liquid crystalline material is undisturbed. The seal must be complete to prevent the degradation of the thermochromic liquid crystalline material due to long term exposure to oxygen. In addition, the seal protects the temperature sensing material from being contaminated with impurities that can negatively impact their performance. The substrate may be scaled to the cover using adhesives, heat sealing, clamping, ultrasonic bonding, or any other suitable method. The sensor is then disposed within a pocket made from two facing layers of polyethylene film that have been heat bonded around three of four peripheral edges of the layers. The free edges serve as an insertion and removal point for the sensor. One surface of one layer of the film pocket is then attached to the absorbent article. The attachment is achieved via adhesive bonding, hook and loop fasteners, etc. Once placed within the pocket, the sensor as shown in Figure 4, should have its center of located between a reasonable amount (e.g., 4-5 cm for Pampers size 2) below the front edge of the disposable diaper in the front waist region.

[0042] In another embodiment, the underlayment and overlayment layers may each be cut into 1.25" x 1.25" squares. The underlayment layer, which may be clear, has a 0.5 inch diameter black circle printed under it. A 0.5" square of liquid crystal material is slotted onto the underlayment layer. Then, a clear overlayment layer is bonded to the underlayment layer at the peripheral edges using adhesive. The part of the liquid crystal material over the black circle appears green at normal temperatures (the part that is over the clear or white appears colorless). When the temperature is elevated, the green liquid crystal becomes colorless and the black circle is observed.

Claims

1. A kit for visually detecting an infant’s health status, said kit comprising:

   a. disposable absorbent articles, each suitable for receiving and containing bodily exudates, and comprising a first waist region, a second waist region and a crotch region disposed between said first or second waist region, each region having two opposing longitudinal edges, and wherein each article further comprises a pocket suitable for a non-electronic temperature sensor wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides: and
   b. one or more non-electronic temperature sensors, placable in said pocket.

2. The kit according to claim 1, wherein said pocket is disposed on an exterior surface of any one of said regions.

3. The kit according to claim 2, wherein said pocket is disposed on an exterior surface of said first or second waist region.

4. The kit according to claim 1, wherein said pocket is disposed on an interior surface of any one of said regions.

5. The kit according to claim 4, wherein said pocket is disposed on an interior surface of said first or second waist region.

6. The kit according to claim 1, wherein said pocket is further disposed on a waist portion of said first or second waist region.

7. The kit according to any of the preceding claims, wherein at least one sidle of said pocket is translucent or transparent.

8. The kit according to any of the preceding claims, wherein at least one side of said pocket comprises a material selected from the group consisting of a film, a nonwoven, or combination thereof.

9. The article according to claim 1, wherein said sensor comprises a thermochromic material selected from the group consisting of thermochromic inks, liquid crystalline materials, thermochromic dyes, and combinations thereof.

10. The article according to claim 9, wherein said sensor further comprises an underlayment layer (58) onto which said thermochromic material is disposed.

11. The article according to claim 10, wherein said underlayment layer comprises a polymeric material selected from the group consisting of polyolefin, polyvinyl chloride, or combinations thereof.

12. The article according to claim 11, wherein said underlayment layer comprises a polymeric material selected from the group consisting of polyolefin, poly-
ester, polyvinyl chloride, or combinations thereof.

13. A method of visually detecting an infant’s health status, said method comprising the steps of:

a. providing a caregiver with a disposable absorbent article (20) suitable for receiving and containing bodily exudates, said article comprising a first waist region (36), a second waist region (38) and a crotch region (37) disposed between said first and second waist regions, each region having two opposing longitudinal edges (50), and wherein said article further comprises a pocket (64) for a non-electronic temperature sensor (54) wherein said pocket is disposed on any one of said regions and wherein said pocket has two opposing sides (56, 58);

b. donning said article onto an infant; and

c. inserting said sensor into said pocket.

Patentansprüche

1. Set zum visuellen Erkennen des Gesundheitszustands eines Kleinkindes, wobei das Set Folgendes umfasst:

a. Einwegabsorptionsartikel, die jeweils zum Aufnehmen und Einbehalten von Körperausscheidungen geeignet sind und einen ersten Taillenbereich, einen zweiten Taillenbereich und einen Schrittbereich, der zwischen dem ersten und dem zweiten Taillenbereich angeordnet ist, umfassen, wobei jeder Bereich zwei einander gegenüberliegende Längsränder aufweist und wobei jeder Artikel ferner eine Tasche für einen geeigneten nichtelektronischen Temperatursensor umfasst, wobei die Tasche auf einem der Bereiche angeordnet ist und wobei die Tasche zwei einander gegenüberliegende Seiten aufweist, und

b. einen oder mehrere nichtelektronische Temperatursensoren, die in die Tasche gegeben werden können.

2. Set nach Anspruch 1, wobei die Tasche an einer Außenoberfläche eines der Bereiche angeordnet ist.

3. Set nach Anspruch 2, wobei die Tasche an der Außenoberfläche des ersten oder zweiten Taillenbereichs angeordnet ist.

4. Set nach Anspruch 1, wobei die Tasche an einer Inneneoberfläche eines der Bereiche angeordnet ist.

5. Set nach Anspruch 4, wobei die Tasche an der Inneneoberfläche des ersten oder zweiten Taillenbereichs angeordnet ist.

6. Set nach Anspruch 5, wobei die Tasche ferner an einem Taillenabschnitt des ersten oder zweiten Taillenbereichs angeordnet ist.

7. Set nach einem der vorstehenden Ansprüche, wobei mindestens eine Seite der Tasche lichtdurchlässig oder transparent ist.

8. Set nach einem der vorstehenden Ansprüche, wobei mindestens eine Seite der Tasche ein Material umfasst, das ausgewählt ist aus der Gruppe, bestehend aus einer Folie, einem Vliesstoff oder Kombinationen davon.


10. Artikel nach Anspruch 9, wobei der Sensor ferner eine Unterlagen- schicht (58) umfasst, auf der das thermochrome Material angeordnet wird.

11. Artikel nach Anspruch 10, wobei die Unterlagen- schicht ein Polymermaterial umfasst, das ausgewählt ist aus der Gruppe, bestehend aus Polyolefin, Polyester, Polyvinylchlorid oder Kombinationen davon.

12. Artikel nach Anspruch 11, wobei die Unterlagen- schicht ein Polymermaterial umfasst, das ausgewählt ist aus der Gruppe, bestehend aus Polyolefin, Polyester, Polyvinylchlorid oder Kombinationen davon.

13. Verfahren zum visuellen Erkennen des Gesundheitszustands eines Kleinkinds, wobei das Verfahren die folgenden Schritte umfasst:

a. Bereitstellen eines Einwegabsorptionsartikels (20), der zum Aufnehmen und Einbehalten von Körperausscheidungen geeignet ist, für einen Betreuer, wobei der Artikel einen ersten Taillenbereich (36), einen zweiten Taillenbereich (38) und einen Schrittbereich (37), der zwischen dem ersten und dem zweiten Taillenbereich angeordnet ist, umfassen, wobei jeder Bereich zwei einander gegenüberliegende Längsränder (50) aufweist und wobei der Artikel ferner eine Tasche (64) für einen nichtelektronischen Temperatursensor (54) umfasst, wobei die Tasche an einem der Bereiche angeordnet ist und wobei die Tasche zwei einander gegenüberliegende Seiten (56, 58) aufweist,

b. Anlegen des Artikels an einem Kleinkind und

c. Einstecken des Sensors in die Tasche.
Revendications

1. Trousse pour détecter visuellement l’état de santé d’un nourrisson, ladite trousse comprenant :
   a. des articles absorbants jetables, appropriés chacun pour recevoir et contenir des exsudats corporels, et comprenant une première région de ceinture, une deuxième région de ceinture et une région d’entrejambe disposée entre lesdites première et deuxième régions de ceinture, chaque région ayant deux bords longitudinaux opposés ; et dans laquelle chaque article comprend en outre une poche pour un capteur de température non électronique approprié dans laquelle ladite poche est disposée sur l’une quelconque desdites régions et dans laquelle ladite poche a deux côtés opposés ; et
   b. un ou plusieurs capteurs de température non électroniques, pouvant être placés dans ladite poche.

2. Trousse selon la revendication 1, dans laquelle ladite poche est disposée sur une surface extérieure de l’une quelconque desdites régions.

3. Trousse selon la revendication 2, dans laquelle ladite poche est disposée sur la surface extérieure de ladite première ou deuxième région de ceinture.

4. Trousse selon la revendication 1, dans laquelle ladite poche est disposée sur une surface intérieure de l’une quelconque desdites régions.

5. Trousse selon la revendication 5, dans laquelle ladite poche est disposée sur une surface intérieure de ladite première ou deuxième région de ceinture.

6. Trousse selon la revendication 4, dans laquelle ladite poche est disposée sur une surface intérieure de ladite première ou deuxième région de ceinture.

7. Trousse selon l’une quelconque des revendications précédentes, dans laquelle au moins un côté de ladite poche est translucide ou transparent.

8. Trousse selon l’une quelconque des revendications précédentes, dans laquelle au moins un côté de ladite poche comprend un matériau choisi dans le groupe constitué d’un film, un non-tissé, ou une de leur combinaison.

9. Article selon la revendication 1, dans lequel ledit capteur comprend un matériau thermochromique choisi dans le groupe constitué d’encres thermochromiques, matériaux cristallins liquides, teintures thermochromiques, et leurs combinaisons.

10. Article selon la revendication 9, dans lequel ledit capteur comprend en outre une sous-couche (58) sur laquelle ledit matériau thermochromique est disposé.

11. Article selon la revendication 10, dans lequel ladite sous-couche comprend un matériau polymère choisi dans le groupe constitué d’une polyoléfine, un polyéster, un chlorure de polyvinyle, ou leurs combinaisons.

12. Article selon la revendication 11, dans lequel ladite sous-couche comprend un matériau polymère choisi dans le groupe constitué d’une polyoléfine, un polyéster, un chlorure de polyvinyle, ou leurs combinaisons.

13. Procédé pour détecter visuellement l’état de santé d’un nourrisson, ledit procédé comprenant les étapes consistant à :
   a. fournir à un prestataire de soins un article absorbant jetable (20) approprié pour recevoir et contenir des exsudats corporels, ledit article comprenant une première région de ceinture (36), une deuxième région de ceinture (38) et une région d’entrejambe (37) disposée entre lesdites première et deuxième régions de ceinture, chaque région ayant deux bords longitudinaux opposés (50), et dans lequel ledit article comprend en outre une poche (64) pour un capteur de température non électronique (54) dans lequel ladite poche est disposée sur l’une quelconque desdites régions et dans lequel ladite poche a deux côtés opposés (56, 58) ;
   b. revêtir ledit article sur un nourrisson ; et
   c. insérer ledit capteur dans ladite poche.
REFERENCES CITED IN THE DESCRIPTION

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