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(54) Title: GARMENT FOR SOOTHING COLIC AND SUPPRESSING STARTLE REFLEX

(57) Abstract: A new or alternative swaddling garment that assists in relieving the symptoms of colic by applying pressure around at least part of the abdomen area while also calming a baby’s startle reflex. The garment includes weighted and non-weighted portions. The weighted portion(s) apply pressure where required for a soothing effect. The non-weighted portion(s) reduce the risk of overheating and also allow some movement for baby’s comfort. Tension created where a non-weighted portion meets a weighted portion and the difference in rigidity between non-weighted and weighted portions gives additional colic relief.
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TITLE: GARMENT FOR SOOTHING COLIC AND SUPPRESSING STARTLE REFLEX

TECHNICAL FIELD

The present invention relates to garments for infants, and in particular to swaddle garments.

5

The invention has been developed primarily for use as a garment to assist in relieving the symptoms of colic, while also providing a swaddling effect. However, it will be appreciated that the invention is not restricted to this particular use.

BACKGROUND

Medical studies have shown that infants who sleep on their backs have a reduced risk of dying suddenly from Sudden infant Death Syndrome (SIDS), compared to infants who sleep on their stomachs. However, babies tend to sleep better on their tummies than on their backs.

15

Swaddling has been found to assist infants sleep more comfortably on their backs and to assist in easing colic (particularly if swaddled with a little added tightness around the belly region for gentle pressure on or around the belly), which also improves sleep.

20 There are swaddle blankets available that claim to soothe colic. However, these known swaddle blankets achieve their benefit for colic through wrapping - for example, the swaddle blankets of U.S. 6,868,566 and U.S. 7,043,785 each have more than one fabric layer to wrap round the infant
from opposite directions, and the blanket of US 7,076,819 relies on traditional swaddling method of wrapping the infant neatly but with lengths of fabric to allow size and tightness adjustments and also allowing tying or tucking to prevent unravelling.

All of these swaddle blankets share the disadvantage of traditional swaddle blankets in that they still ultimately rely on wrapping technique and can be cumbersome to use, with various flaps of fabric for wrapping, tying or tucking, it would be useful to have a swaddle garment that avoids the need to rely on wrapping technique and that also assists to relieve the symptoms of colic.

US 8,943,615 describes a sleep suit for infants that claims to reduce neurological reflexive twitching and provide a swaddling effect in infants. It claims to achieve this through having at least a portion of the anterior portion of the suit including weighting. The weighting in the suit may be achieved by varying the thickness of the materials and/or quantities of layers of materials used in the anterior portion of the suit, or by adding specific weighted items to the suit. The weighting may be distributed uniformly throughout the suit, the anterior portion of the suit or at proprioceptive target points along the anterior portion of the suit, US 8,943,615 defines the proprioceptive target areas as the primary joint areas - namely, the shoulder girdle area and/or the hip area. However, the garment of US 8,943,615 does not actually restrict movement of the arms (e.g., flailing of the arms as occurs in the "startle" reflex that occurs in newborns). The garment is a one-piece sleep garment that applies pressure to the joints, but does not simulate the practice of "swaddling", which is the practice of wrapping
infants tightly in a blanket or cloth so that movement of the limbs is restricted to suppress the startle reflex. The tightness of the wrapping using traditional swaddling blankets also stimulates proprioceptors and provides sensory feedback that calms the infant. Accordingly, the garment of US 8,943,615 lacks the advantage of traditional swaddles in that the actual movement of limbs, including the arms, is not restricted in any way.

US 20060016005 describes a swaddling blanket that is weighted to provide an enhanced sense of security and comfort to a baby wrapped within. The weighting involves compartments within the blanket for housing removable pellet bags. The blanket is designed to swaddle an infant in place on a surface such as a crib. The blanket of US 20060016005 is cumbersome because it relies on removable pellet bags and is used to hold a baby in place on, say, a crib surface. This blanket has the added disadvantage that it cannot achieve its effect if the baby is being held in a carer's arms, for example, rather than lying on a surface. The effect of essentially weighing down the baby in place could also be counterproductive and cause the infant discomfort, or compress the chest (making it difficult to breathe) or another body part, leading to pressure points that are painful or even distress the infant if it is unable to move at all. Swaddles wrap infants to restrict movement but still allow some movement (which is why they often break "free" from swaddle blankets).

It would be an advantage to have a swaddle garment that could swaddle an infant without wrapping and that can also assist in relieving the symptoms of colic - e.g. by applying gentle
pressure to the torso around the abdomen area - without attaching pressure accessories (e.g. containers or pellet bags).

it would be a further advantage if the swaddling features of the garment suppress the startle reflex (i.e. to swaddle an infant), yet still affords sufficient movement for comfort and so that infants can get their hand(s) to their mouth for non-nutritive sucking, if desired. Allowing sufficient movement of the hands so baby can place the hands in the mouth for non-nutritive sucking would improve the calming effect of the swaddling garment, since research indicates that multiple simultaneous measures such as swaddling and sucking have an additive calming effect on crying infants.

The present invention provides a new or alternative garment that adds gentle pressure around the torso to assist in easing colic, while also providing a swaddling effect to suppress the startle reflex. An advantage of the garment is that in restraining arm movement, it still allows some movement for comfort and so the infant can move hands to mouth for non-nutritive sucking.
SUMMARY OF THE INVENTION

According to an aspect of the invention there is provided a garment for swaddling an infant, including:

- a weighted portion and a non-weighted portion, wherein the non-weighted portion is configured to swaddle an infant's arms and hands in a single layer of fabric while allowing movement for comfort; and
- wherein the weighted portion is configured to apply pressure to at least part of an infant torso enclosed within the garment, the weighted portion being of a greater thermal weight than the non-weighted portion such that the weighted portion is semi-rigid relative to the non-weighted portion,
- wherein a difference between rigidity of a non-weighted portion and a weighted portion assists to create further pressure to at least part of an infant's torso at a junction where the non-weighted portion and the weighted portion meet,

According to another aspect of the invention there is provided a method for assisting to relieve colic including the step of inserting an infant into a garment, said garment including a weighted portion and a non-weighted portion, wherein the non-weighted portion is configured to suppress a startle reflex in an infant enclosed within, and wherein the weighted portion is configured to apply pressure at least at a part of the garment corresponding to an infant's abdomen.
The invention thus provides a new or alternative garment and method that assist to relieve the symptoms of colic by applying gentle pressure around the torso and specifically around a horizontal plane of the garment that corresponds with part or all of the abdomen area, and that also swaddles an infant to suppress the startle reflex, yet allow movement for comfort and so that the hand can reach the mouth for non-nutritive sucking.

For a better understanding of the invention and to show how it may be performed, preferred embodiments will now be described, by way of non-limiting example only, with reference to the accompanying drawings and example.

**FIGURE 1** shows front and back views of a swaddling garment according to a preferred embodiment, as well as cross sections across a series of horizontal planes along the garment. The weighted portions are shown in cross-hatching.

**FIGURE 1A** is a front view of the embodiment.

**FIGURE 1B** is a back view of the embodiment.

**FIGURE 1C** is a cross section of the embodiment, taken along line F-F.

**FIGURE 1D** is a cross section of the embodiment, taken along line G-G.

**FIGURE 1E** is a cross section of the embodiment, taken along line H-H.

**FIGURE 2** is a series of exemplary front views of a swaddling garment according to the embodiment of Figure 1, showing different arrangements of the lower portion. The weighted portions are shown in cross-hatching.
FIGURE 2A shows a front view of an embodiment in which the lower portion tapers in at the lowermost periphery,
FIGURE 2B shows a front view of an embodiment in which the lower portion widens below the waistline,
FIGURE 2C shows a front view of an embodiment in which the lower portion comprises pants.
FIGURE 2D shows a front view of an embodiment in which the lower portion is open below the waistline.
FIGURE 2E shows a front view of an embodiment in which the lower portion includes leg holes and a closeable opening at the lowermost periphery.
FIGURE 2F shows a front view of an embodiment in which the lower portion includes shorts.

FIGURE 3 shows yet another arrangement of the embodiments of Figure 1 and 2, the garment having a lower portion that widens significantly below the waistline. The figures depict various arrangements of weighted portions on a front view of the embodiments of Figures 1 and 2. The weighted portions are shown in cross-hatching.

FIGURE 3A shows a front panel of the embodiment (with a lower portion that widens significantly below the waistline), with the weighted portion configured in a semi-circular shape at the top, to sit over the round of the belly (upper abdomen) - that is, around part or all of the abdomen.
FIGURE 3B shows a front panel of the embodiment (with a lower portion that widens significantly below the waistline), with the weighted portion configured in a horizontal plane over the front of part or all of the abdomen.
FIGURE 3C shows a front panel of the embodiment, with the weighted portion configured in an oval shape sitting over the front of part or all of the abdomen. FIGURE 3D shows a front panel of the embodiment, with the weighted portion configured in a rectangular shape sitting over the front of part or all of the abdomen.

FIGURE 3E shows a front panel of the embodiment, with the weighted portion configured in a first shape (drawn as rectangle) sitting over the front of part or all of the abdomen and a second weighted portion further down the lower portion of the garment. FIGURE 3F is an inset showing various exemplary non-stretch stitch patterns in the weighted portion of any of the embodiments.

FIGURE 4 shows front and back views of a swaddling garment according to the embodiment of Figures 1 to 3, with the back view shown in smaller scale than the front view. The figures show the swaddling features of the embodiments. The weighted and non-weighted portions are not illustrated.

Figure 4A is a front view of the embodiment. Figure 4B is a back view of the embodiment.

FIGURE 5 shows front and back views of an alternative arrangement of the swaddling features of the embodiment shown in Figure 4, with the back view shown in smaller scale than the front view. The swaddling features of the embodiments are shown. The weighted and non-weighted portions are not shown. Figure 5A is a front view of the embodiment.
Figure 6B is a back view of the embodiment.

FIGURE 6 shows front and back views of a swaddling garment according to an alternative embodiment, with detachable wing portions. The back view is smaller scale than the front view. The swaddling features of the embodiments are shown. The weighted and non-weighted portions are not shown.

Figure 6A is a front view of the embodiment.

Figure 6S is a back view of the embodiment.

FIGURE 7 shows a front view of the embodiment of Figure 6, showing the detachable wing portions attached. The swaddling features of the embodiments are shown. The weighted and non-weighted portions are not shown.

FIGURE 8 shows front and back views of a swaddling garment according to yet another embodiment, showing tension pouches intermediate the wing portions and the bodice portion. The back view shown in smaller scale than the front view. The swaddling features of the embodiments are shown. The weighted and non-weighted portions are not shown.

Figure 8A is a front view of the embodiment.

Figure 8B is a back view of the embodiment.

EXAMPLE 1 is a method of swaddling an infant.
DESCRIPTION OF PREFERRED EMBODIMENTS

The invention provides a new or alternative garment that assists in relieving the symptoms of colic - e.g. by applying gentle pressure to the torso around the abdomen area while safely swaddling an infant, the garment suppresses the startle reflex (i.e. to swaddle an infant), yet affords sufficient movement for comfort and so that infants can get their hand(s) to their mouth for non-nutritive sucking. The garment improves the calming effect of swaddling, with multiple simultaneous measures (swaddling, gentle pressure and facilitating non-nutritive sucking of the hands) to provide an additive calming effect, in this way, the swaddling garment offers advantages over other swaddling garments or swaddling blankets.

The garment assists in relieving the symptoms of colic by applying pressure around at least part of the abdomen area while also calming a baby's startle reflex. The garment includes weighted and non-weighted portions. The weighted portion(s) apply pressure where required for a soothing effect. The non-weighted portion(s) reduce the risk of overheating and also allow some movement for baby's comfort and to let the baby put hand to mouth for non-nutritive sucking. Tension created where a non-weighted portion meets a weighted portion gives additional colic relief by helping to create further pressure or pressure perception around an infant's torso.
in embodiments, the garment can be considered as rotationally divided into sections:

1. A "top" section that acts as a swaddle by calming a baby's startle reflex. The garment achieves its swaddle effect by keeping the hands in the upper portion (the garment narrows at or near the waistline to prevent passage of the infant's arms below the waist - e.g. refer Figures 3A to 3E). The upper portion is dosed, meaning that the arms and hands cannot escape out of the garment (e.g. out through armhole) when used for swaddling effect. This creates a womb-like effect in the sense that baby's hands will always be met by fabric if the arm is stretched out (e.g. as in the startle reflex). The fabric acts as a "stop" to limit movement. This effect is increased by fabric tension resisting full outstretching of the arms and hands. A single layer of fabric is sufficient to achieve this calming effect. By constructing the upper portion of the garment using a single layer of fabric, this also helps reduce the risk of overheating and also allows sufficient "stretch" for movement and comfort,

2. A "centre" that applies pressure to the infant's abdomen, which helps to relieve colic. So it is where the single layer of fabric (as discussed above in relation to the "top") and the multi layers of the weighted portion around the infant's torso (as discussed below) meet that gives additional colic relief. The junction or meeting of the stretch area of the garment (the single-layer or non-weighted portion) with the non-stretch area of the garment (the weighted portion) and the difference in rigidity between these areas that helps create the 'pressure' or pressure perception required for a soothing effect.

3. A "bottom" that is weighted. In this context we are referring to the garment the chest down to the bottom or lowermost section of the garment. Weighting of this section increases the
soothing effect by applying pressure from the chest (where it meets upper abdomen) down
to at least the hip line or, in some embodiments, right down to the feet.

Figures 1 to 3 show various embodiments of a garment that assists to relieve the symptoms of
colic by incorporating one or more weighted portions or areas (shown in cross-hatching) to
apply gentle pressure to the torso, and in particular to part or all of the abdomen area. This is
achieved by the indusion of one or more weighted portions or areas (shown in cross-hatching
in Figures 1 to 3) in the garment that correspond to parts or all of the abdomen. In
embodiments, the garment may further include additional weighted portions that extend lower
to other parts of the lower torso and/or legs, as gentle pressure around hips and legs may
provide further soothing and calming effects to the infant.

Children who are too heavily restricted in movement can become uncomfortable (e.g. if they
want to wriggle, or if there is a pressure point causing discomfort or pain). The garment avoids
pressure points by applying gentle pressure around the torso (through use of patches or areas
of greater thermal weight or material thickness). The garment also provides comfort by
interspersing weighted portions, with non-weighted portions. Tension caused by a difference in
rigidity between weighted and non-weighted portions enhances pressure and proprioceptive
feedback (pressure perception) to calm and soothe a baby.
The non-weighted portions comprise a single layer of fabric and are flexible, being made in at least some embodiments from material that has two-way stretch, allowing significant flexibility to the fabric for comfort. Examples include fabric including elasticated yarn, such as cotton elastane or a cotton stretch knit. This allows the baby significant movement but still suppresses the startle reflex, because the non-weighted top portion of the garment is closed to constrain the arm and hand from becoming fully outstretched.

The size, positioning and weight of the weighted portions make them semi-rigid, and also make the parts of the garment that bear weighted portions semi-rigid. The alternating areas of flexibility and semi-rigidity provide tension that helps increase pressure applied to the infant clothed in the garment and also facilitates the activation of proprioception, giving sensory feedback (including pressure perception) to the infant, which may further assist to calm and soothe the infant. The weighted portions included or attached to the fabric of the garment apply pressure through the thermal weight or material thickness of the material. The semi-rigidity of the weighted portions may be achieved and/or enhanced through:

(a) the material used in the weighted portions (material without two-way stretch);

(b) including a plurality of layers, with or without an intervening layer of insulation (making the weighted portion quilt-like in structure);

(c) incorporating non-stretch stitching in the weighted portions. Non-stretch stitching can be achieved through the yarn used and/or the stitch pattern, such as any form of cross-stitching or parallel stitching. Exemplary stitch patterns are shown in Figure 3F. Persons skilled in the art would appreciate that non-stretch stitching could also be achieved
using other stitch patterns - for example, any stitching that has stitches running at an angle to other stitches, as may also be used in applique techniques.

The use of contrasting areas of weighted and non-weighted portions may be employed in any garment to achieve the effect of applying pressure around the torso while keeping the infant comfortable. Swaddling further enhances this effect, by applying further pressure to part or all of the abdomen through appropriate wrapping, fit (shape, cut and tightness to create fabric tension) and/or resilience of the material. Shown in Figures 1 to 3 are embodiments of a swaddle garment that combine the features of:

(a) contrasting weighted and non-weighted portions to apply pressure to the torso, around the parts of the garment that correspond to all or part of the abdomen;

(b) swaddling to restrict movement of the arms (to suppress the startle reflex) while allowing some movement for comfort and to allow hands to reach the mouth for non-nutritive sucking,

figures 4 to 8 illustrate different exemplary embodiments for a garment that achieves a swaddling benefit while retaining access to hands for non-nutritive sucking. The weighted/non-weighted portions that provide gentle pressure and flexibility where needed, for comfort, are not shown in these figures but may be combined in various arrangements with any of these exemplary embodiments to provide a swaddle garment that assists to ease the symptoms of colic.
Referring to Figures 1A and IB, front and back views of a preferred embodiment are shown. This embodiment includes weighted portions or areas (cross-hatched) to apply pressure on or around all or part of the belly region to assist in relieving the symptoms of colic. This feature (applying gentle pressure around the horizontal plane of the garment that corresponds with at least part of or all of the abdomen area) is achieved through the addition or inclusion of weighted portions (areas shown with cross-hatching in Figures 1A and 1B, and 2A to 2F) in, on or around the parts of the garment 600 that sit around the part or all of abdomen.

Tapering in of the garment 600 below the wing portions 140 at the garment waistline (demarcated by line "γ") so that the garment is narrower around the abdomen area than between the wing portions 140 enhances the degree of pressure applied as the garment hugs the infant around the abdomen area. Narrowing near the garment waistline also prevents the arms escaping down into the lower portions of the garment where it becomes difficult for baby to move hands to mouth.

The embodiment of Figures 1 and 2 includes the wing portions 140, which provide the swaddling benefit of the embodiments of Figures 4 to 8 (and described in more detail in relation to Figures 4 to 8). The wing portions 140 are shown extending laterally from each side of the bodice portion 130 (the bodice portion 130 is the part of the garment for accommodating the infant's torso). The lower portion may take various forms - from a sack-like shape for accommodating both legs (tapered in or out, as shown by way of example in Figures 2A and 2B), to an open portion so that the garment 600 takes the form of an elongated
swaddling jacket (Figure 2D), or a "onesie"-style garment with leg openings (Figure 2E), short pants (Figure 2F) or long pants (Figure 2C - shown as footed pants, but could also be open at the feet). Figures 3A and 3B show other exemplary arrangements in which the lower portion is significantly wider than the waist of the garment. In Figure 3A, the lower portion widens below the garment waistline and the remains approximately the same width to the lowermost portion of the garment, in Figure 3B, the lower portion is shaped like a flared skirt (although closed at the bottom), widening outwards below the garment waistline and being widest at the lowermost portion of the garment.

The weighted portions (Figures 3A to 3D) are configured to apply gentle pressure to the part or all of abdomen, to help soothe a colicky infant. This is through the semi-rigid nature of the weighted portion and the positioning of the weighted portion(s) over the portions of the garment that correspond to part or all of the abdomen - on both the front panel 210 and back panel 220 of the garment 600. The precise positioning, size and shape of the weighted portions can vary (e.g. see Figures 2 and 3), as can the precise stitch pattern used on the weighted portion (e.g. see Figure 3F).

Taking the embodiment shown in Figures 2A to 2F, 3A to 3E as examples, the weighted portion rises up over the round of the belly - reflecting the shape of where the upper abdomen meets the lower ribs. This can be seen from the figures - the junction between the weighted and non-weighted portions around the garment waistline forms a notional triangle with the vertex
pointing down toward the lowermost edge of the garment (see the shaded triangle demarcated "X" in Figures 2C and BE).

The flexible, single-layered non-weighted portion extends down around the round of the belly along both sides of the weighted portion - following the lines of the lower ribs. This assists with garment fit by allowing stretch and flexibility at the sides of the garment, and pulling the weighted portion taut around the upper abdomen (the "round" of the belly). The non-weighted portion hugs the infant's waistline between the lower ribs and the hip bone but has relatively little flexibility (i.e. is semi-rigid) and so applies pressure around at least part of the abdomen (depending on the positioning of the weighted portion).

In the embodiment of Figure 38, the single-layered, non-weighted portion also hugs the infant's body and brings the weighted portion in around the waistline, even though the non-weighted portion does not extend down along the sides of the weighted portion to contour the weighted portion around the "round" of the belly.

Cross-sections of the embodiment of Figure 1 are shown in Figures 1C to 1E, Figures 1A, 1B and 3A to 3E show that the weighted portions may extend up over the garment waistline to just under the diaphragm, and down to the lowermost periphery / edge of the garment (demarcated by line "B"). As can be seen from the cross-sections in Figures 1C to 1E, the part of the upper portion 110 of the garment including the wing portions 140 is made of a single layer of fabric - for comfort. This single layered portion is a non-weighted portion and provides
flexibility for comfort. The contrasting areas of weighted and non-weighted portions enhance
comfort of the infant, in some embodiments, the non-weighted portions may be confined to
the upper portion 110 (e.g., Figure 1A, 1B, 2A to 2F and 3A). In other embodiments, the non-
weighted portion may extend to part of the lower portion (e.g., in Figures 3B and 3C, there are
non-weighted portions along the lateral parts of the lower portion, and in Figure 3D the
garment has non-weighted portions also sitting laterally across the garment so that the
weighted portions are broken into discrete areas).

The wing portions 140 secure the infant's arms but the relative flexibility of the non-weighted
portion of the upper portion of the garment (where the wing portions are provided) allow
access to the hands for non-nutritive sucking. By contrast, the weighted portions (the cross-
hatched areas) are made from material without two-way stretch (i.e. limited stretch /
flexibility), being made from material with a higher thermal or material weight than the non-
weighted portions. As such, the weighted portion(s) form semi-rigid portion(s) of the garment
compared with the wing portions 140.

This semi-rigid portion applies gentle pressure to part or all of the abdomen areas of an infant
within the garment 600, but without the discomfort and risk of "point pressure" of prior art
swaddles that attach weighted containers to blankets, and without the discomfort of overly
restricting movement. The weighted portion may be made of a material with a greater thermal
weight than the non-weighted portion or, as illustrated in Figures 1C to 1E, include two or more
layers of fabric. In an arrangement, the weighted portion further includes a layer of insulation
between two of the layers of fabric so that the weighted portions form an in-built quilted portion of the garment.

The weighted portions also include non-stretch stitching that further limit stretch or flexibility of the material / fabric of the weighted portion. Non-stretch stitching can be achieved through the yarn used and/or the stitch pattern, such as any form of cross-stitching or parallel stitching. Exemplary non-stretch stitch patterns are shown in Figure 3E. Persons skilled in the art would appreciate that non-stretch stitching could also be achieved using other stitch patterns than those depicted - for example, any stitching that has stitches running at an angle to other stitches, as may also be used in applique techniques, or parallel lines of stitching. The stitching can also be useful to prevent movement of insulation between other layers of fabric in the weighted portion.

Figures 3A to 3E show that the precise shape and arrangement of weighted portions may vary. The shape of the weighted portion may be parabolic or semi-circular across the upper abdomen (as shown in Figures 1A and 1B), a gentle curve corresponding to shape of the lower ribs (see Figure 3A), straight across the horizontal plane of the upper abdomen (see Figure 3B), or a 2D shape sitting over the abdomen and extending down to the lower portion (e.g. an oval as in Figure 3C, or a rectangle as in Figures 3D and 3E).

The weighted portions may be made in any suitable 2D shape and in any size that applies the desired amount of weighting (this may vary depending on the material or weighting desired).
Further the weighted portion on a single panel (front panel 210 or back panel 220) may be made up of more than one shape (e.g. as shown in Figure 3E in which a first weighted portion sits over part or all of the abdomen and a second weighted portion sits lower down the lower portion - for warmth), with a non-weighted portion positioned between the two, for comfort.

The weighted portions (cross-hatched areas of Figures 1 to 3) have higher thermal weight and/or material weight than the non-weighted portions (the areas not shaded in Figures 1 to 3). The weighted portions are configured to sit over part or all of the abdomen area on the front panel 210 and back panel 220 of the garment 600, and to apply pressure through the weight of the fabric to the infant within.

For comfort, the garment 600 includes areas of different thermal (or material) weight, with:

(a) weighted portions of the garment (cross-hatched areas in Figures 1 to 3) that are semi-rigid relative to the non-weighted portions, to apply gentle pressure to part or all of the abdomen area to comfort and soothe the infant; and

(b) non-weighted portions (areas not cross-hatched in Figures 1 to 3) that are flexible relative to the weighted portions, for comfort and to allow movement / access of the hand to the mouth for non-nutritive sucking.

As can be seen from Figures 1 to 3, the uppermost portion of the upper portion 110 (including the wing portions 140 and the part of the bodice portion 130 between the wing portions 140) do not include weighted portions. This can be seen from Figure 1C (as shown in cross section
across line F-F). This allows the non-weighted areas of the garment 600 to be more flexible relative to the part(s) of the garment that include weighted portions. For similar reason, the garment includes areas of lighter thermal weight for comfort at the sides of the garment - as can be seen in Figures 1 to 3. The areas of lighter thermal weight may be only around the wing portions (e.g. Figures 1A to 1E, 3A), along the sides of the garment from the uppermost to lowermost peripheries (e.g. Figures 3c, 3D and 3E), or additionally also in parts of the lower portion (e.g. Figure 3F).

As can be seen from Figures 1D and 1E, the garment 600 applies gentle pressure equally around part or all of the abdomen area. This is achieved by having the same thermal weight or material weight in the front panel 210 and back panel 220. Accordingly, as can be seen from Figures 1D and 1E, one or more areas of greater thermal weight (each area being a "weighted portion") placed centrally on the abdomen in the front panel is countered by a weighted portion of equivalent thermal weight positioned correspondingly in the back panel. The precise shape, positioning and size of the weighted portion area(s) can vary. The figures contain exemplary positions, sizes and shapes only.

The garment (in all embodiments) is designed to fit snugly around the contours of an infant and in this way applies pressure around the abdomen area of an infant enclosed therein - in addition to the weighted portions. In the embodiments depicted in figures 1 and 2, the garment waist line demarcated by line "Y" represents a notional division between the upper portion and lower portion of the garments. As with the embodiments in Figures 4 to 8, the
garment tapers in below the wing portions to hug the torso around the abdomen area (the part of the garment nationally corresponding to the region between the thorax and the pelvis).

Referring to Figure 4, front and back views are shown of an embodiment of the swaddling suit / garment 100 (see Figures 4A and 4B, respectively). The swaddling garment 100 includes an upper portion 110 for at least partially enclosing the infant's upper body. As shown in Figure 4, the garment 100 has an uppermost periphery at the uppermost end of the upper portion (the end indicated by the line marked "A") and a lowermost periphery at the lowermost end of the lower portion (the end of the garment indicated by the line marked "B"). Persons skilled in the art will appreciate that the uppermost and lowermost peripheries are not linear but follow the top and bottom edges of the garment respectively (the lines marked "A" and "B" are indicative only of the "uppermost" and "lowermost" ends of the garment, respectively). Features bearing the same number or letter designations in any of the embodiments illustrated are the same as described in relation to any other embodiment.

As shown in Figure 4A, the garment 100 is notionally divided into an upper portion 110 and a lower portion 120 by a garment waistline (demarcated by fine “Y”). The waistline ‘Y’ of garment 100 notionally corresponds to the natural waist (as depicted in the drawings) but persons skilled in the art will appreciate that a garment waistline may vary in position from just below the bustline to just below the hipline. The upper portion (indicated by the bracket labelled 110 in the Figures 4 to 8) is for enclosing the infant's upper body, with the infant's torso more or less in the bodice portion 130 and the arms and hands in the wing portions 140.
Extending laterally away from the midline on each side of the bodice portion 130 is a wing portion 140, as can be seen in Figure 4A. The wing portion 140 is the part of the upper portion lateral to the line marked "C" on each side of the garment 100. As shown in Figure 4A and 5A (for example), each wing portion 140 is large enough to completely surround and retain the infant's arm, and extends in length:

(a) from the uppermost periphery of the garment (the edge of the garment near the end marked by line "A" - refer Figures 4 to 8);

(b) substantially to the garment waistline (demarcated by line "Y" in Figures 4 to 8).

The wing portions 140 restrict movement of the arms away from the bodice portion 130 (that is, away from the infant's torso, in the opposite direction than depicted by the arrow marked "D" in the figures). This restriction in arm movement is achieved by the proportions of the wing portions, better understood by reference to Figures 4A, 5A, 6A, 7A and 8A. The line marked "E" in each of Figures 4 to 8 represents a vertical plane corresponding to the most lateral part of the wing portion. The wing portions are of a dimension (measured to the most lateral part of the wing portion (at line "E") that prevents full extension of the arm. In an embodiment, by way of example only, this may be achieved by making the dimension from the most lateral part of the wing portion (at line "E") to the garment waistline smaller than the distance as measured from the uppermost periphery of the garment to the garment waistline (e.g. refer Figures 4 to 7). These dimensions reflect the relative proportions of what would be reflected in a conventional garment, respectively, as:
(a) the distance from the shoulder seam to the end of the sleeve; and

(b) the length of the underarm seam.

The wing portion 140 prevents full extension of an arm enclosed therein, by being "shortened" relative to the length of an arm contained within the wing portion (whether achieved through the relative proportions of the wing portion to other parts of the garment, as illustrated in Figures 4 to 7 and described in the preceding paragraphs, or by other means, such as shortening of the "underarm "seam" (or equivalent) or the "shoulder seam" (or equivalent ~ as depicted in Figure 8). Fabric tension restricts arm movement in a direction away from the bodice portion 130 so that an arm encased within the wing portion is prevented from extending out fully. Tapering in of the wing portion 130 at the garment waistline (demarcated by line "Y") prevents the arm from escaping out of the wing portion into the rest of the garment 100 (the same applies for embodiments 200 and 300). Slight resistance in the wing portions and retention of the whole arm and hand within the wing portion assists babies to feel their "edges", simulating the enclosed, comforting environment of the womb. The wing tip ISO acts like a "corner" (edge) to the environment to cover the hands. The feeling of fabric on the hand and the covering of the hand activates proprioception, giving feedback to the infant, As discussed below, the restriction in arm movement suppresses the startle reflex but still allows movement of the hand towards the mouth, so that baby can suck the hands for self-soothing.

The bodice portion 130 may be continuous or integral with the wing portions 140 (e.g. refer to Figures 4A and 4B, 5A and 5B, and 8A and 8B). Alternatively, the wing portions 140 may be
discrete but connected to the bodice portion. In an embodiment, the most lateral part of the
wing portion 140 is removable (see Figures 6A, 6B, 7A and 7B).

in all embodiments, the wing portions 140 restrict movement of the arms away from the
bodice portion and prevent full extension of the arm, but permit arm movement towards the
bodice portion 130 (in the direction depicted by the arrow marked "D" in Figures 4, 5, 7 and 8),
thereby allowing access of hands to the mouth for non-nutritive sucking.

As can be seen from Figures 4, 5, 7 and 8, the garment is greater in width between the wing
portions 140 than at the garment waistline (demarcated by line "γ"). Referring to in Figures 4 to
7, the garment may be rounded in shape, following the contours of an infant, with the wing
portions 140 extending laterally from the bodice portion 130 also being rounded, as can be
seen in Figures 4, 5, 6 and 7. Alternatively, referring to Figure 8, the wing portions may be
geometric (e.g. oblong-like as shown in Figure 8, or triangular) rather than rounded in shape.

The common feature in all embodiments of the swaddle aspects of the garment illustrated in
Figures 4 to 8 is that the wing portions 140 extend laterally (i.e. outwardly) away from the
midline to form the most lateral and widest portion of the swaddling garment 100. As depicted
in the drawings, the wing portions 140 extend from approximately the waist line (demarcated
by line "γ") of the garment 100 to the uppermost periphery of the garment 100 (at the
uppermost end of the garment, demarcated by line "A").
The wing portion 140 acts as a position-restricting means to maintain the hands in position relative to the face by virtue of the following:

1. as can be seen from Figure 4, each wing portion 140 is designed to completely surround and retain one of the infant's arms, with the hands accessible to the mouth, with wing tips for receiving the hands being positioned near or toward the horizontal plane of the shoulder line (e.g. as seen in Figure 4) or above (e.g. as seen in Figure 5) the horizontal plane of the shoulder line;

2. the wing portion 140 fits snugly around the arm thereby hugging the arm towards the bodice portion in the aforementioned position thereby maintaining the hands up near the face; and

3. the wing portion 140 is shaped to taper in towards the bodice portion near the garment waist line (refer line "Y" in Figure 1) under the bent elbow, thereby cupping the bent elbow and further assisting to support the hands up near the face and to restrict the infant from moving the hands away from the face, by preventing passage of the arm out of the wing portion.

As can be seen in Figures 4A, 5A, 6A, 7A and 8A, the wing portion 140 includes a wing tip 150 at its outermost (most lateral) portion, to receive the infant's raised hand (refer Figures). The wing tip ISO assists to further secure the hand and retain it in place once in position. In one arrangement, the wing portion is resilient, the resilience further assisting to hug the arms towards the body and maintain the hand in position at the wing tip. The shape of the uppermost part of the upper portion also prevents the hands from travelling into the neck hole.
165 (see inset. Figure 6A), which can pose a choking risk to infants by restricting the neck hole 165,

In some arrangements, the wing portion 140 may include an internal pocket. The pocket may enclose the lower arm and hand, or just the hand in a glove-like fashion. This further assists in retaining the hand relative to the face.

The swaddling garment 100 facilitates non-nutritive sucking by the swaddled infant (and hence assists the infant to self-soothe by sucking the hands or the fabric of the swaddling garment near the hands) in the following ways:

1. the swaddling garment 100 makes the infant's hands accessible to the mouth by retaining the infant's hands in position relative to the face yet allowing the arms to move between adducted and abducted positions; and

2. the wing tip is configured so that it is able to brush or touch the infant's own cheek or the corner of his or her mouth when so moving the arm[s] and/or turning the head, thereby triggering the infant's rooting and/or hand-to-mouth reflexes.

By retaining the hand(s) near the mouth while allowing the infant to move the hand toward the mouth by adducting the arm and/or turning the head, the garment enables sucking of the hand(s) or fabric of the swaddling garment near the hands for self-soothing (through non-nutritive sucking). The swaddling garment 100 has an advantage over many prior art swaddling garments that deny access of hands to the mouth. This benefit is achieved by the shape of the
wing portions. Taking Figure 5A as an example, tapering in of the upper portion 110 at or near the garment waistline (demarcated by line "Y") prevents the arm (which is wholly contained within the wing portion 140) from escaping out of the wing portion 140. The lateral dimension of the wing portion (from the line "C" to line "E") is configured to prevent full extension of the arm while allowing movement in direction designated by arrow D so that the hands remain accessible to the mouth for non-nutritive sucking. These features also apply to the other embodiments illustrated in Figures 4, 7 and 8).

A further advantage of the garment being greater in width between wing portions 140 than at the garment waistline Y, (as seen in Figure 4A) with the wing portions retaining the arms and hands on both sides of the bodice portion is that the swaddled Infant laid supine (on the back) for sleep is hindered from roiling over the arms into the prone (face down) position. This is further protective against the risk of SIDS.

Rolling is restricted by the positioning of the arms with elbows bent and hands up towards (Figure 4) or above (e.g. Figure 5) the shoulder line and to the side of the bodice portion (by virtue of the wing portions being lateral to the bodice portion). However, if babies do manage to roll onto their front then they can use their arms to push up off the mattress, turn their head and keep breathing, minimising suffocation risk. Stronger babies have the advantage of being able to push themselves back to the supine position, Known swaddle garments bind the arms to the chest, preventing the infant from being able to use the arms to push up off the mattress,
The tower portion 120 of the swaddling garment 100 includes a pouch 135 for enclosing the infant's legs. The swaddling garment 100 tapers in towards the garment midline at or near the waist line, just below the wing portion 140 (as can be seen in Figure 4). The garment 100 then widens to accommodate hip width and the lower portion 120 remains substantially the same width from around the hip down to the lowermost part (where the feet are enclosed). This is to ensure an even, snug fit of the swaddling garment 100 along the length of the infant.

The garment applies compressive pressure around the body, causing the garment 100 to hug the infant's contours. The compressive force assists to press the infant's arms towards the body. This provides resistance against full extension, thereby restricting movement of the infant's arms away from the body. In newborns, this wrapping of the infant's arms towards the body suppresses the full extensor startle response to loud noise or sudden movement. The startle response is the instinct of infants aged up to around 6 months to startle upon a loud noise or sudden movement, causing them to quickly spread out (extend) their limbs then draw (flex) them back in towards the body.

Thus the swaddling garment 100 confines the arms with hands accessible to the mouth (see Figures 4 to 8). The garment 100 also hugs the contours of the baby to further inhibit the startle response. The pressure applied by the swaddling garment 100 as it hugs the infant's contours also provides somatosensory (including proprioceptive) feedback to infants, assisting with infant's touch, movement and balance perception. In the embodiments of Figures 1 to 3, this somatosensory feedback is enhanced through the use of contrasting weighted (semi-rigid)
and non-weighted (flexible) portions, the change in material or thermal weight activating proprioception (providing further "edges" for the baby to feel in their environment) to further calm and soothe babies.

In one arrangement, the swaddling garment 100 shown in Figure 4 is made of a resilient material with two-way stretch (that is, resilience in both warp and weft directions). In one arrangement, the material is a fabric containing a percentage of elasticated yarn such as cotton spandex. However, the swaddling garment can be made using any suitable material for wrapping an infant, so long as the configuration of parts and shape of the wing portions secure the arms in a position such that the hands are accessible to the mouth even when arm movement is otherwise restricted (to suppress the startle reflex).

Extension of the limbs requires the infant to push against the compressive force applied by the garment 100 as it wraps around the infant. Where the garment 100 is made of resilient material, the resilience assists in tending the limbs towards the body by resisting full extension of the limbs while allowing the limbs to move between adducted and abducted positions (toward and away from the sagittal or longitudinal midline plane of the body). This further facilitates hand-to-mouth access by the infant. This is because the resilience further assists to maintain the hand accessible to the mouth while permitting hand movement to the mouth.

Where the garment is not made of a resilient material, fabric tension (achieved by the relative proportions, cut, shape and fit of the garment) prevents the arms from full extension (or
moving away from the bodice portion) but movement of the hand toward the mouth is still allowed.

The swaddling garment 100 has an opening 160 to allow insertion of an infant into the garment. The opening 160 is closable by any suitable closure means, including hook and loop fasteners, zipper means, buttons or any other method of fastening the opposing sides of the opening together, in the preferred embodiment, the opening 160 extends longitudinally along the swaddling garment 100, from the upper portion to the lower portion (see Figure 4A). However, in some arrangements, the opening 160 may be shorter than is illustrated or be positioned elsewhere such as along a side seam or running along the lowermost seam of the lower portion 120.

In a preferred embodiment, the closure means is a two-way zipper extending along the opening, allowing the opening 160 to be partially openable from either end. Any other closure means (e.g. buttons, press studs) that allows partial opening from either end can also be used. When opened from the lower portion end, the opening 160 provides access to the infant's lower body (e.g. for changing nappies or using a child restraint in a car or pram) while the upper body remains swaddled. Alternatively, the closure means does not provide two-way access (not illustrated) but the opening is positioned such that access to the lower body is possible while the upper body remains swaddled (e.g. by positioning the opening with closure means along a seam).
in a preferred embodiment, the swaddling garment 100 comprises a front panel (Figure 4A) secured to a back panel (Figure 4B). The front panel is configured to cover the front of an infant enclosed within the garment, and the back panel is configured to cover the back of the infant. In some arrangements, the upper portion and lower portion are continuous, formed by front and back panels that extend the full length of the swaddling garment 100, as illustrated. In other arrangements, the front and/or back panels comprise adjoining subpanels that collectively extend the full length of the swaddling garment (not illustrated).

In the preferred embodiment, the opening 160 is positioned on the front panel of the swaddling garment 100 for example, as shown in Figure 4A, extending lengthways along the centre of the front panel from the neck hole 165 to the lower portion of the garment 100. The opening can also be positioned off-centre or along a side seam.

Referring to Figure 4B, a slot 170 allows passage of a child restraint belt (e.g. car seatbelt) through the garment 100. The slot 170 enables the belt to pass through the internal volume and exit through a corresponding portion of the opening 160. As the opening 160 can be partially opened, it can remain substantially closed while allowing the belt passage through the garment. This allows the infant to be secured for transportation while remaining swaddled.

Referring to Figure 5, an alternative arrangement of the swaddling aspects of the embodiment illustrated in Figure 1 is shown, in which the swaddling garment 100 has wing tips 150 that clearly extend above the shoulder line (the approximate position of the shoulder line is
demafeated by the dashed line labelled X in Figure 2). It can be seen by comparing Figures 4 and 5 that the wing tip 150 (i.e. the most lateral portion of the wing portion 140) may be shaped to accommodate the hands to the sides of the bodice portion 130 (Figures 4 and 5) as well as substantially near the shoulder line (Figure 4) or above the shoulder line (Figure 5). The embodiment of Figure 5 otherwise retains the same features as the embodiment depicted in Figure 4.

Referring to Figures 6 and 7, an alternative embodiment 200 is shown in which at least part of each wing portion 140 is detachable from the bodice portion 130. Figure 6 shows the wing portions 140 detached while Figure 7 shows the wing portions 140 attached. The detachable wing portions 140 can be fastened to the bodice portion using any suitable fastening means, such as the hook and loop fasteners shown in Figure 6 labelled item 185 or a zipper means.

Removal of the wing portions 140 leaves an arm opening 180 on either side of the bodice portion 130 (see Figure 6). An infant wearing the swaddling garment 200 is able to become unswaddled by extending one or both arms laterally out from the garment through the opening(s) 180. This embodiment 200 assists parents to transition the infant out of swaddling by removing a first wing portion 140 and leaving the second wing portion attached so that one of the infant’s arms is still maintained in the elbows-bent-and-hands-raised position. The swaddling garment 200 is used in this manner for a transition period (e.g. a few weeks) to allow the infant to accommodate to having one arm completely out and free to move. The next step
is to remove the second wing portion, in which case the infant is no longer swaddled and the garment 200 acts like a sleeping bag.

Figures 2A to 2F show various arrangements for lower portions for any of the illustrated embodiments of Figures i to 8. In the embodiment 200 shown in Figures 6 and 7, the lower portion 120 is shaped so that it is wider at its lowermost end than around the waist. This is in contrast to the embodiment 100 of Figures 4 and 5, in which the lower portion tapers in below the wing portion then expands to accommodate the hip and then remains substantially the same width down to the feet. The shape of the lower portion 120 of the embodiment 200 of Figures 6 and 7 allows a greater degree of freedom of movement of the lower limbs than the first embodiment, which reflects use of this embodiment 200 in infants being prepared for transition out of swaddling. Similarly, embodiments that have lower portions as depicted in any of Figures 2C (lower portion are pants), 2D (garment is open at the lower portion), 2E (lower portion has leg openings only) and 2F (lower portion are shorts) allow the legs to move freely.

The embodiments of Figures 6 and 7 otherwise retain the same features of the embodiment 100 described in relation to Figures 4 and 5. Items bearing the same item label in different figures depict the same feature in different arrangements/embodiments. The features of embodiment 200 are otherwise as described for embodiment 100 illustrated in Figures 4A and 4B.

Referring to Figure 8, a third embodiment 300 of the swaddling feature of the garment is shown, in which the hands are retained accessible to the mouth by virtue of;
1. wing portions 140 configured to receive the arms in a hand-raised position, with the hands raised near, towards or above the shoulder fine; and

2. a tension pouch 190 intermediate each wing portion 140 and the bodice portion 130, near or towards the horizontal plane of the shoulder line (indicated by line "X" in Figure 8),

In this embodiment 300, the most lateral part of the wing portions 140 act like sleeves to receive the lower arms. The "ends" (most lateral part) of the wing portions 140 may be open, allowing the hands to extend through the open end. Alternatively, the ends of the wing portions 140 may be closed so that the hands are retained within the wing portions 140. The embodiment 300 of Figure 8 relies on the tension pouches 190 to resist the arms and hands moving away from the bodice portion. When the wing portions 140 are open, the arms may extend up through the wing portion resulting in the elbow being extended (which may be useful in transitioning out of the swaddle). However, the hand is still retained accessible to the mouth by virtue of the tension pouch 190. The embodiment of Figure 8 otherwise retains the same features as the embodiment depicted in Figure 4.

Method of assisting to soothe colic in an infant

The invention also provides a new or alternative method of assisting to soothe colic in an infant using a garment that assists to relieve the symptoms of colic while also swaddling the infant.

A specific example is provided below.
EXAMPLE 1

The example relies on a garment that includes a weighted portion and a non-weighted portion as depicted in Figures 1A and 1B, 2A to 2F, or 3A to 3E. The garment is configured to suppress the startle reflex (and so to deliver the advantages of swaddling), while allowing baby some movement of the arms and hands for comfort and to allow non-nutritive sucking of the hand(s).

Using the embodiments 600 illustrated in Figures 3A to 3E, the method includes a step of inserting an infant into a garment that includes a weighted portion and a non-weighted portion, wherein the non-weighted portion is configured to suppress a startle reflex in an infant enclosed within, and wherein the weighted portion is configured to apply pressure at least at a part of the garment corresponding to an infant's abdomen position at least part of the infant's torso in the top portion of the garment.

The method may also include the further step of inserting an arm into a wing portion.

The method may also include the additional steps of:

- Tucking an infant's hand into a wing tip; and/or
- Inserting a lower torso into a lower portion (e.g. legs through leg openings in the garment of Figure 2E or into a pouch such as in the garment of Figure 2A or 2B).
An advantage of any of the preferred embodiments is that the swaddling garment applies gentle pressure around the infant’s torso (to at least part of the abdomen area) as it swaddles, to help relieve the symptoms of colic and help calm and soothe a baby within. The difference in rigidity between weighted and non-weighted portions provides extra tension to increase the pressure applied and also gives somatosensory and proprioceptive feedback that further assists to soothe a colicky infant. The garment further soothes infants by sufficiently restraining movement of the arms to suppress the startle reflex, yet keeping enough movement / flexibility in the non-weighted portions for comfort the hands accessible to the mouth for non-nutritive sucking.

The relative difference in rigidity between the weighted and non-weighted portions also allows pressure to be applied differentially to some areas of the body (e.g. abdomen) but not others (e.g. chest and arms), without causing discomfort through over-restriction of movement or over-weighting of parts of the body, or by limiting access to mouth for non-nutritive sucking.

Another advantage of the swaddling garment is that the arms are semi-restrained in a position that reduces the risk of the swaddled infant rolling over into the prone position from the supine position – this is achieved by the garment being wider between the wing portions than around the garment waistline. If the infant does roll onto his or her front, the hands are positioned so they are available to the infant (rather than being bound to the body) to push him- or herself...
up at least so the infant can lift the head and turn it to the side, or even to push him- or herself back into a supine position, thereby minimising the risk of suffocation. This is further protective against the risk of SIDS.

The garment has been developed primarily to assist in relieving the symptoms of colic, while also providing a swaddling effect and sufficient movement for comfort and to give access of the mouth to the hands, to further soothe a colicky baby. However, it will be appreciated that the invention is not restricted to these particular fields of use and that it is not limited to particular embodiments or applications described herein.
CLAIMS

1. A garment for swaddling an infant, including:

   a weighted portion and a non-weighted portion,

   wherein the non-weighted portion is configured to swaddle an infant’s arms and hands in a single layer of fabric while allowing movement for comfort and to allow movement of hands to mouth for non-nutritive sucking;

   wherein the weighted portion is configured to apply pressure to at least part of an infant torso enclosed within the garment, the weighted portion being of a greater thermal weight than the non-weighted portion such that the weighted portion is semi-rigid relative to the non-weighted portion; and

   wherein a difference between rigidity of a non-weighted portion and a weighted portion assists to create further pressure to at least part of an infant’s torso at a junction where the non-weighted portion and the weighted portion meet.

2. A swaddling garment according to claim 1, wherein the garment further includes a front panel and a back panel, each of said front panel and said back panel including a weighted portion such that the garment is configured to apply pressure around a horizontal plane of the garment corresponding to at least part of an infant’s abdomen.

3. A swaddling garment according to claim 1 or claim 2, wherein the weighted portion comprises one or more areas of greater thermal weight of any suitable shape positioned at a part of the garment corresponding to at least part of an infant’s abdomen,
4. A swaddling garment according to claim any one of claim 1 to claim 3, wherein the weighted portion includes two or more layers of fabric.

5. A swaddling garment according to claim 4, wherein the weighted portion further includes a layer of insulation between two of the layers of fabric.

6. A swaddling garment according to any one of claim 1 to claim 5, wherein the weighted portion further includes non-stretch stitching.

7. A swaddling garment according to claim 1, wherein the garment further includes an upper portion comprising:

   (a) a bodice portion for accommodating an infant's torso; and

   (b) a wing portion extending laterally away from each side of the bodice portion, wherein each wing portion is sufficiently large to completely surround and retain an infant's arm and hand with the hand accessible to the mouth while preventing full extension of an arm so retained,

8. A swaddling garment according to claim 7 wherein each said wing portion includes a wing tip at an uppermost and most lateral portion of the wing portion.

9. A swaddling garment according to claim 8, wherein the garment is tapered in at a garment waist line below said wing portion to restrict movement of the infant's arms out of the
wing portions and maintain the infant's hand in position accessible to the infant's mouth for non-nutritive sucking.

10. A swaddling garment according to claim 8 or claim 9, further including a lower portion, for receiving at least part of an infant's lower body,

11. A swaddling garment according to claim 10, wherein the non-weighted portion is substantially confined to the upper portion of the garment,

12. A swaddling garment according to claim 11, wherein the non-weighted portion extends to at least part of the lower portion of the garment,

13. A swaddling garment according to claim 10 wherein the garment is notionally demarcated into upper and lower portions by a garment waistline,

wherein the garment has an uppermost periphery at an uppermost end of the upper portion, and a lowermost periphery at a lowermost end of the lower portion,

wherein the wing portion extends in length substantially from the uppermost periphery to the garment waistline, and

wherein a distance as measured from a most lateral part of the wing portion to the garment waistline is smaller than a distance as measured from the uppermost periphery of the garment to the garment waistline, such that each wing portion prevents full extension of the infant's arm while allowing movement of the infant's hand towards the infant's mouth for non-nutritive sucking.
14. A swaddling garment according to claim 7 wherein the upper portion further includes a tension pouch intermediate each wing portion and the bodice portion near a horizontal plane corresponding to a garment shoulder line, wherein the tension pouch biases the infant's arm toward the bodice portion such that the hand is retained in a position accessible to the mouth.

15. A swaddling garment according to claim 13 wherein a width of the garment between the wing portions is greater than a width of the garment at the garment waistline, thereby assisting to inhibit movement of the swaddled infant from a supine position to a prone position.

16. A swaddling garment according to claim 7 wherein the garment is rounded to follow contours of an infant.

17. A swaddling garment according to claim 7 wherein each wing portion is detachable from the bodice portion, wherein detaching a wing portion leaves an opening at a side of the bodice portion, through which an infant is able to extend an arm out of the garment.

18. A swaddling garment according to claim 7 wherein each wing portion further includes a pocket, wherein the pocket encloses an infant's hand in a glove-like manner.

19. A swaddling garment according to claim 7 wherein the pocket encloses an infant's lower arm and hand in a glove-like manner.
20. A swaddling garment according to any of the preceding claims wherein the garment is made of a material comprising elasticated yarn.

21. A swaddling garment according to claim 7 wherein the wing portion is resilient to bias the infant's arm toward the bodice portion such that the resilient wing portion further assists in maintaining the hand near the face.

22. The swaddling garment as defined in claim 13 wherein the upper portion tapers in at the garment waistline below said wing portions preventing passage of an arm out of a wing portion such that the infant's hand is retained in a position accessible to the mouth.

23. A method for assisting to relieve colic including the step of inserting an infant into a garment, said garment including a weighted portion and a non-weighted portion, wherein the non-weighted portion is configured to suppress a startle reflex in an infant enclosed within, and wherein the weighted portion is configured to apply pressure at least at a part of the garment corresponding to an infant's abdomen.

24. A method for swaddling an infant according to claim 23, wherein the weighted portion is of a greater thermal weight than the non-weighted portion such that the weighted portion is semi-rigid relative to the non-weighted portion, and wherein a difference between rigidity of a non-weighted portion and a weighted portion assists to create further pressure to at least part of an infant's torso.
25. A method for swaddling an infant according to claim 23 or claim 24, wherein the
garment further includes one wing portion on one side of the bodice portion and another wing
portion on another side of the bodice portion, said one wing portion and said another wing
portion extending laterally from the bodice portion at an uppermost portion of the garment-
each of said one wing portion and said another wing portion having a wing tip at an
uppermost and most lateral portion of each of the wing portions,
each of said wing portions being large enough to completely surround and retain an
infant's arm and hand with the hand accessible to the mouth, and
said swaddling garment being tapered in at a garment waist line below said wing portion
to restrict movement of the infant's arms out of the wing portions and maintain the infant's
hand in position accessible to the infant's mouth for non-nutritive sucking.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

<table>
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<th>Code</th>
<th>Description</th>
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<tr>
<td>A41B 13/06 (2006.01)</td>
<td>Infant, colic, weight, layers, abdomen, torso and like terms</td>
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<tr>
<td>A61F 5/37 (2006.01)</td>
<td>Swaddle, pressure, infant, blanket, garment</td>
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<td>A47G 9/08 (2006.01)</td>
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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)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPIAP: CPC/IPC (A41B13/06, A61F3/37, A47G9/08, A47G9/083); Keywords (swaddle, pressure, infant, blanket, garment, colic, weight, layers, abdomen, torso and like terms);

Google Patents and Google Scholar: Keywords (swaddle, pressure, infant, blanket, colic, weight, layers, abdomen, torso and like terms).

Applicant/inventor (KRAWCHUK, Hana-Lia).


AUSPAT and internal databases provided by IP Australia: Applicant/inventor search ("KRAWCHUK, Hana-Lia" IN AP) OR ("KRAWCHUK, Hana-Lia" IN INV).

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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Documents are listed in the continuation of Box C

Further documents are listed in the continuation of Box C

See patent family annex

Date of the actual completion of the international search

31 May 2016

Date of mailing of the international search report

31 May 2016

Name and mailing address of the ISA/AU

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<td>Y</td>
<td>US 2011/01 80079 A1 (KRAWCHUK) 28 July 2011 abstract, para 70-76, 83, 85, 86, 90, 99-100; Figs 1-5, items 120, 130, 140, 150, 190</td>
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<td>X</td>
<td>US 8863329 B2 (GANGAN et al.) 21 October 2014 Fig 4, items 110, 120, 130; items 130; col 2, In 1-19</td>
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