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(54) **INFANT SLEEP SLING**

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(57) **ABSTRACT**

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A sling for supporting an infant comprises a harness element attachable to a carrier and an infant supporting element attachable to the harness. The support element receives and supports the infant such that the longitudinal axes of the infant and the carrier are substantially aligned and the infant lies at an angle above the horizontal in a range which allows the infant and the carrier to engage eye contact.

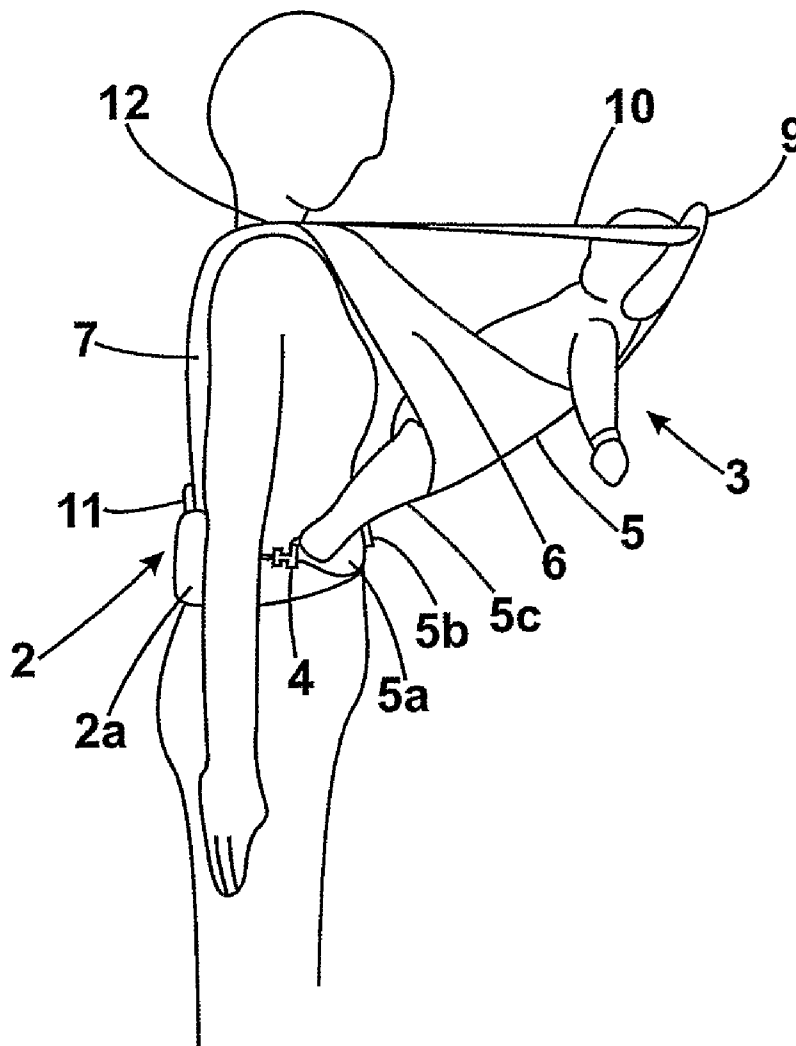




Fig. 1

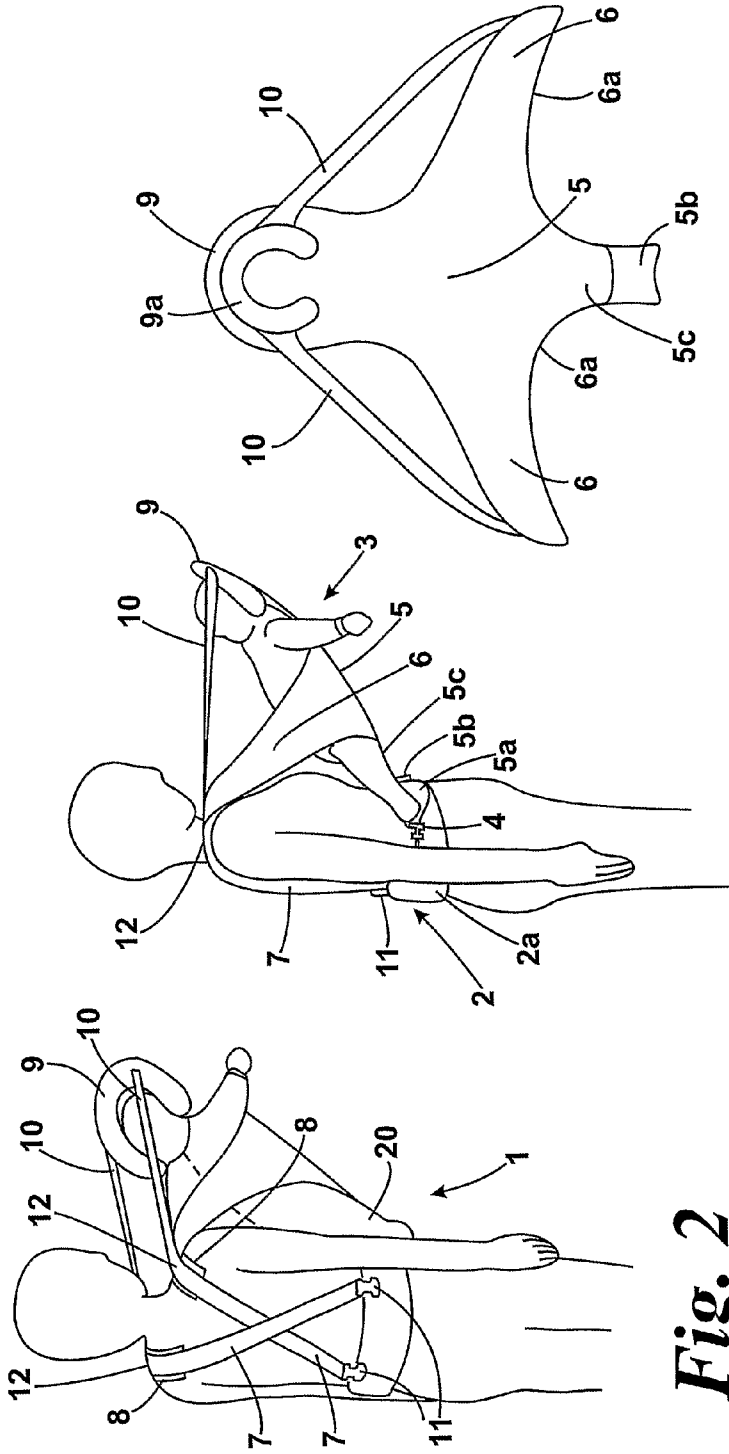


Fig. 2

Fig. 3

Fig. 4

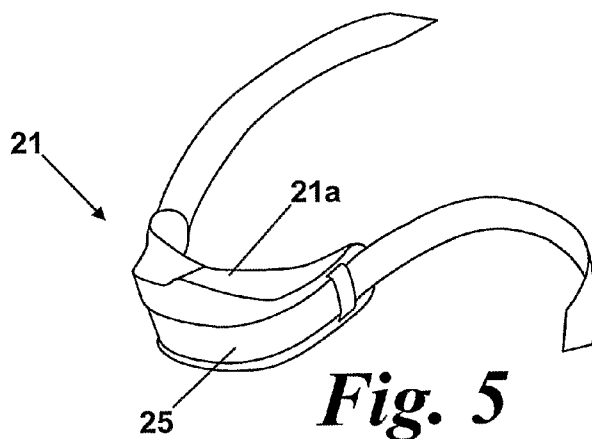


Fig. 5

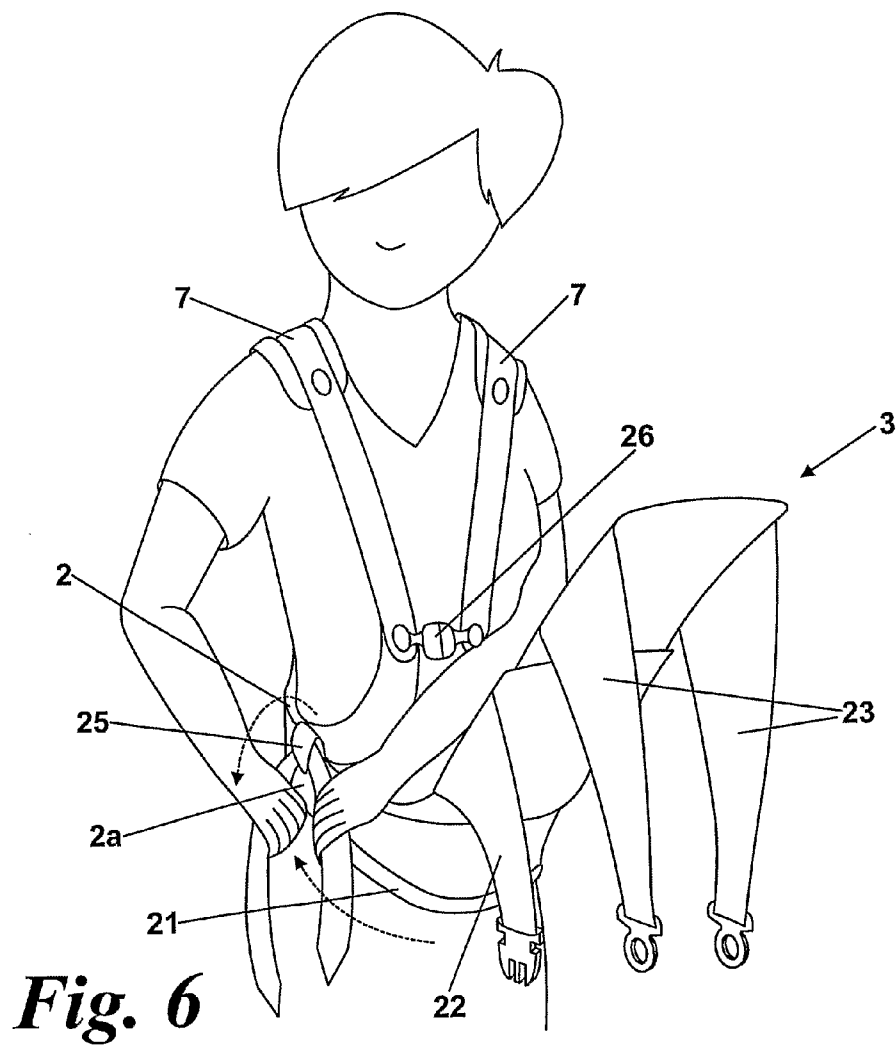


Fig. 6

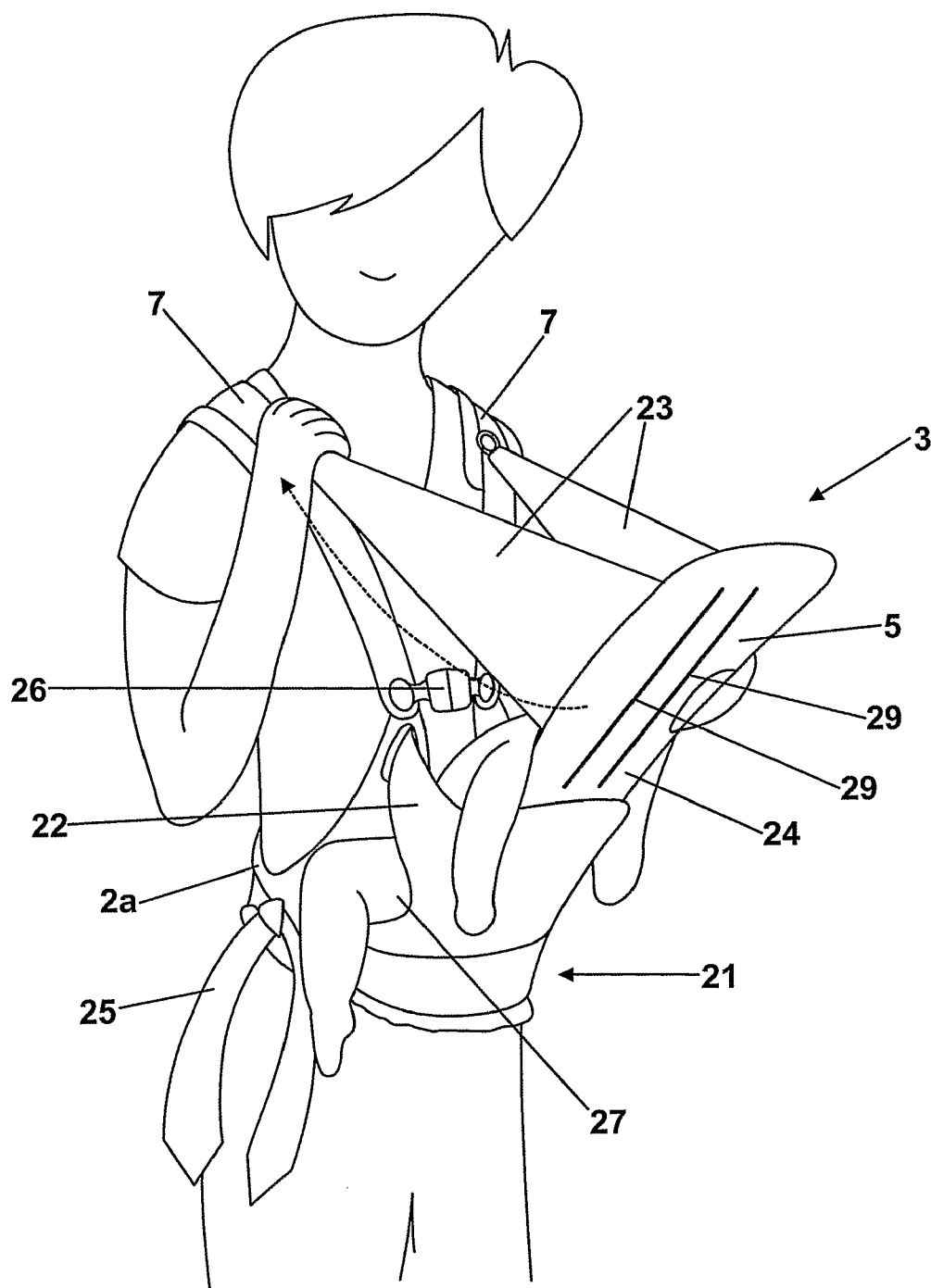


Fig. 7

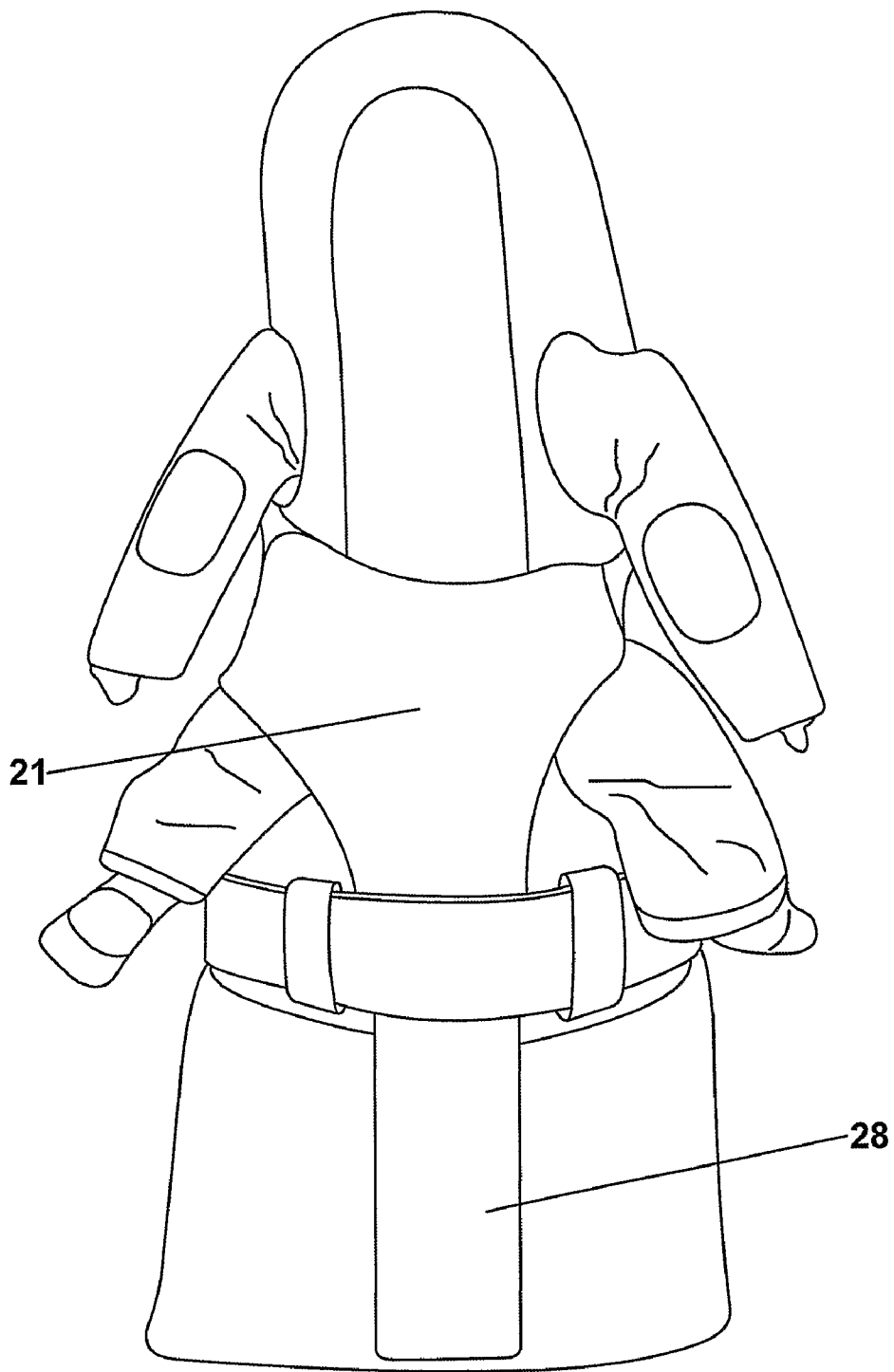


Fig. 8

INFANT SLEEP SLING

FIELD OF THE INVENTION

[0001] The present invention relates to a sling for supporting an infant, and in particular to a sling which is adapted to support an infant in a position which is conducive to induce sleep in the infant.

BACKGROUND OF THE INVENTION

[0002] Many infants experience a condition known as "colic". The condition is not well understood and is used to describe stomach and intestinal pain with no other obvious cause. Colic affects infants most between 6 to 12 weeks of age. It is reported that over 70% of infants between these ages experience substantial colic pain. In addition to experiencing pain, an infant suffering from colic will find it difficult to sleep. The period between 6 and 12 weeks of age coincides with the period when a child's sleep patterns are formed. Colic pain often disrupts sleep patterns. Such disruption in the 6 to 12 week old age range can result in disrupted sleep patterns throughout infancy and the preschool years.

[0003] In addition to colic preventing infants from sleeping, in the period between 6 to 12 weeks of age, infants are increasingly awake during the day, which can lead to them becoming over tired in the evening, when the parent wants the infant to sleep. This over tiredness can prevent the infant from being able to get to sleep, which is manifested by the infant crying excessively and needing to be held. It is reported that 42% of parents with a child in the age range of 6 to 12 weeks need to hold their child for over one hour in order to induce sleep. This can give rise to back pain, fatigue and stress in the parent.

[0004] Research also shows that infants suffering from colic are more likely to be abused or not well cared for, owing to parental depression resulting from lack of sleep of the parents.

[0005] The problems outlined above are widely acknowledged and hence many solutions have already been proposed.

[0006] One proposed solution is a device sold under the name Sleep Tight ® infant soother. This device emulates the motion and sound experienced by an infant when travelling in a car.

[0007] One well tried remedy is to offer the infant a substance commonly referred to as "gripe water".

[0008] An apparatus for treating colic in infants is described in U.S. Pat. No 5,518,009 and comprises a belt like device which is secured around the infant's lower torso to apply warmth and slight pressure to the belly button region. According to the patent, discomfort in the infant is alleviated.

[0009] Another apparatus proposed to alleviate the symptoms of colic is described in U.S. 2005/0125895. This device is a swaddling blanket which is used to hold the arms of the infant against its torso. According to this document, holding an infant in such a manner alleviates the symptoms of colic.

[0010] It has been found that if an infant is supported in a certain position a condition known as trachea malacia and/or gastro-intestinal reflux may be alleviated. A device has been developed to support an infant in such a position. The device is described in U.S. Pat. No. 5,800,368 and comprises a foam wedge having a surface with lies at an angle on which the infant is supported lying on its side. However, whilst this device supports the infant in a position which alleviates the symptoms of two conditions which fall under the broad term

"colic", it does not assist the infant to go to sleep, where the inability to go to sleep is caused by something other than colic. Further, for the infant with colic, the device of U.S. Pat. No. 5,800,368 does not provide for the infant to be rocked. Rocking of an infant is a technique widely used by parents to assist in comforting infants.

[0011] Whilst numerous approaches to alleviating colic have been pursued, many parents simply resort to holding their infants, sometimes in a particular way to alleviate the symptoms of colic, and at other times simply to comfort the infant. As mentioned above, between the ages of 6 and 12 weeks of age a large proportion of parents report holding their children for over one hour to get them off to sleep. As discussed above, holding an infant for an extended period of time may result in back pain in the person holding the infant, irrespective of the position in which the infant is being held. This is widely recognised and many slings are known from the prior art for transporting children, a selection of known slings being discussed below:

[0012] FR 2769818 describes a sling for carrying a baby where the harness which is attached to the person carrying the infant and the infant seat is detachable from the harness.

[0013] WO 84/04445 describes a horizontal ventral baby carrier which provides for an infant to be transported by a carrying person (for example a parent), with the baby lying substantially horizontally across the front of the carrying person.

[0014] U.S. Pat. No. 5,934,528 describes a waist bag usable as a baby holder. The top of the waist bag provides a seat for the baby, which is held in position on the waist bag by a harness. The baby may be placed on the seat such that it faces either towards or away from the wearer of the waist bag.

[0015] U.S. Pat. No. 6,415,969 describes a baby carrier in which a baby is supported in an upright position facing towards or away from the carrier.

[0016] U.S. Pat. No. 6,520,391 describes a baby shoulder cradle which may be carried on the back or front of the carrying person.

[0017] U.S. Pat. No. 6,666,361 describes a baby-carrying bag which is strapped to a carrier with a harness, and which places the bag to the front of the carrier, with the baby facing either forwards or backwards.

[0018] U.S. Pat. No. 6,866,174 describes another baby carrier in which the seat element thereof is supported on the harness by a swivel, thereby allowing the baby to twist and turn whilst in the harness.

[0019] EP 1767125 describes a baby sling which includes a base member which ensures the infant supported in the sling lies flat. The infant is held such that it lies across the front of the carrier, so that the carrier and child may make eye to eye contact.

[0020] Young infants exhibit a characteristic known as "sticky attention". For example, if an infant is in a room with a light and is being rocked, and if the light catches the infant's gaze it will follow the light with its eyes as it is rocked. This phenomenon is explained by the immaturity of the frontal cortex of the brain prior to around four months of age and means that the infant cannot disengage from stimuli, such as a bright light in a dark room by moving its gaze away from the stimuli. The infant's mechanism for disengaging is to close its eyes and go to sleep.

[0021] In addition to exhibiting "sticky attention" infants may also be over-stimulated if they receive too much information, such as light or sound. The infant's immature brain

cannot process all the information being received. Its mechanism for disengaging from the source of over-stimulation is to close its eyes and go to sleep. Over stimulation and sticky attention are inter-related phenomena.

[0022] Notwithstanding the widely recognised problems of colic and getting infants off to sleep, and associated with that an increased incidence of tiredness, depression and back pain in the parents of infants, and the wide availability of slings and the like for carrying babies, there is no sling available for supporting an infant in a position such that sleep is induced in the infant.

[0023] The present invention recognises factors known to aid infants in getting to sleep, be it colic or overtiredness which is preventing sleep, and embodies these in a sling which, when used to support an infant, can induce sleep in the infant.

SUMMARY OF THE INVENTION

[0024] According to one aspect of the invention there is provided a sling for supporting an infant as specified in claim 1.

[0025] The sling of the invention provides a number of advantages. The infant is supported in the sling in the same position as illustrated in FIG. 1 below, which means that the infant's legs lie to the side of the carrier and are effectively locked in this position against movement upward and backward (bending at the knee). This position elongates the stomach and has been found to relieve colic. If the infant's legs are not held in this position, it is likely that upon experiencing colic pain, the infant's legs will move upward and backward as described above. This is a reflex reaction to the pain experienced by the infant, but in fact worsens the colic symptoms. Further, the sling allows the infant's arms fall to the side upon falling asleep, opening up the infant's air ways and relaxing the infant. The sling supports the infant such that it faces the carrier, thereby allowing the eyes of the infant and carrier to engage with each other. Research has demonstrated that when a young infant is over stimulated, they react to such stimulation by going to sleep. Hence, for an overtired infant, sleep can be induced by supporting the infant in a position in which it is stimulated. The sling allows the carrier to support an infant in the position illustrated in FIG. 1 for a lengthy period of time without tiring or suffering from back pain.

[0026] The sling of the invention allows an infant supported therein to be rocked gently simply by the carrier swaying his hips. This technique can be used to take advantage of the phenomenon of sticky attention to assist in getting the infant to sleep. The infant's gaze may be caught by the eyes of the carrier, or a light or other object in a room. By rocking the infant, the infant's eyes are caused to move. The infant is not capable of disengaging its gaze and therefore its eyes must move in order to remain focused on the object.

[0027] Another advantage which may be provided by the sling of the invention is that the carrier may massage the back of the infant whilst it is supported in the sling. This requires at least a part of the sling to be fabricated of a soft material, or an opening to be provided in the sling.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] In the drawings, which illustrate a preferred embodiment of the invention and are by way of example:

[0029] FIG. 1 is an illustration of an infant being supported in a position which alleviates colic and induces sleep;

[0030] FIG. 2 is a schematic representation of the sling of the invention with an infant supported therein;

[0031] FIG. 3 is a side view of the sling illustrated in FIG. 2; and

[0032] FIG. 4 is an illustration of the sling in plan view.

[0033] FIG. 5 is a schematic representation of the seat portion of the sling.

[0034] FIG. 6 is a schematic representation of the sling of the invention with the harness portion worn by a carrier.

[0035] FIG. 7 is a schematic representation of the sling of the invention with an infant supported therein.

[0036] FIG. 8 is a schematic representation of the sling of the invention with an infant supported therein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0037] FIG. 1 illustrates an infant being supported by an adult carrier such that the infant's bottom rests on the abdomen of the carrier and the infant's legs rest to the sides of the carrier's abdomen. This is the position which has been found to both alleviate colic and induce sleep in over tired infants. However, holding an infant in the position shown in this Figure, even a 6 week old infant, would result in tiredness in the adult after a relatively short time. Further, the carrier may begin to experience back pain and cannot utilise their hands in any other way than holding the infant.

[0038] Referring now to FIGS. 2 and 3, there is shown a sling 1 which comprises a harness 2 for attachment to a carrier. The harness 2 comprises a belt 2a for attachment to the waist of the carrier and shoulder straps 7, which are attached to the rear of the belt 2a by clips 11 and to the front of the belt either by stitching or clips similar to clips 11. At the point where the shoulder straps pass over the shoulders padding 8 is provided to prevent discomfort to the carrier.

[0039] An element 3 comprises a support element 5 made from a soft material, an attachment element 5a, which attaches to the belt 2a by means of clips 4. The support element 5 is attached to the attachment element 5a by means of a panel 5b which is stitched or otherwise attached to the front of the attachment element 5a. Extending from the support element 5 are side panels 6, which extend outwardly from each side of the support element and terminate at a free end, which is provided with one part of a clip 12, the other part of the clip 12 being attached to a shoulder strap 7. The provision of clips 4 and 12 provides for the element 3, and hence an infant supported therein, to be removed from the carrier without removing the harness from the carrier. This allows the carrier to put a sleeping infant to bed for instance without disturbance.

[0040] The length of the side panels 6 and the straps 10 are selected such that the support element 5 lies at an angle above the horizontal. In order to alleviate colic it is important that the infant be supported at an angle above the horizontal so that the infant may pass wind. In addition the angle of the support element to the horizontal is limited by two other factors, both related to inducing sleep in over tired infants who do not suffer from colic. In order for the infant to be stimulated by engaging eye contact with the carrier, the infant may not be supported below a first angle above the horizontal and above a second angle above the horizontal, for example supporting the infant so that it lies inclined between 45 to 65 degrees from the vertical should ensure that the infant and carrier can engage eye contact. This angle of incline puts the infant in a position where the distance between the eyes of the infant and

the eyes of the carrier is in the range of 30 to 40 cm. These angles and distance will in fact change depending on the size of the infant and the size and shape of the carrier. Advantageously, the side panels 6 and straps 10 are configured to be adjustable in length, thereby providing for adjustment of the angle of the support element to the horizontal.

[0041] The support element 5 also includes a head support 9 which is braced by a pair of straps 10. The straps 10 each extend between and are attached to the head support and one of the side panels 6.

[0042] FIG. 2 illustrates the sling of the invention with an infant supported therein. As can be seen, the infant's legs 20 lie to the side of the carrier. With the legs 20 held in this position the infant cannot raise them towards the torso, an action which makes the symptoms of colic worse. The infant supported in the sling in FIG. 2 is asleep, and his arms 21 have fallen downward.

[0043] By fabricating the support element 5 from a soft material the carrier may massage the back of the infant in the sling. Such massaging can in itself alleviate colic, and for an infant who is simply overtired may comfort and calm him. Other prior art slings suggest that a soft support element is not desirable as the infant's back becomes curved. In the present invention, the length of the side panels 6 and straps 10 cause the infant to lie with his back substantially flat. If the base of the support element were hard, it would not be possible to massage the infant's back whilst in the sling.

[0044] The sling of the invention is provided with additional adjustment means for the side panels 6 and straps 10 in order that the sling of the invention may be used as a baby carrier of the type well known in the art for transporting an infant.

[0045] FIG. 4 illustrates the element 3 detached from the harness 2. The side panels 6 present a curved bottom edge 6a. The curved edges 6a terminate at a bottom central part 5c. It is the curved bottom edge 6a which, in use, provides the opening between the side panel 6 and the body of the carrier through which the leg 20 of the infant extends. Also shown in FIG. 4 is a head restraint 9a, which restrains movement of the infant's head and provides additional safety for the head.

[0046] In the embodiment shown in FIGS. 5 to 7 the element 3 includes a seat 21 which is fastened to the belt 2a of the harness 2 by panels 22 and strap 25.

[0047] Wide straps 23 are attachable to the shoulder straps 7 of the harness 2.

[0048] The support element 5 and head support (not shown) are adjustable with respect to the seat 21 for infants of different lengths. The support element 5 comprises a slidable panel 24, which may include a head support 9 on its inner surface. This allows the head support 9 to be fastened at the correct distance from the seat 21, depending on the size of the infant.

[0049] The seat 21 and strap 25 are shown in more detail in FIG. 5. The contoured surface 21a of the seat 21 provides weight distribution and comfort to the infant and assists in moving the infant in and out of the harness 2.

[0050] In use, the carrier puts on the harness 2 with the shoulder straps 7 over the shoulders and the belt 2a around the carrier's waist. The belt 2a and harness 2 is adjusted to fit the carrier and then fastened at the front with a front buckle or clip 26. The element 3 is then pulled towards the carrier into position as shown in FIG. 6. FIG. 6 shows the carrier fastening the strap 25 to secure the seat 21 in the correct position on the carrier's abdomen. The element 3 with seat portion 21 is

adjusted and tightened into the preferred position such that it fits securely around the carrier's waist.

[0051] The infant is placed in the element 3 with the infant's bottom on the seat 21 and its legs either side of the carrier's torso. The infant's head and back may be supported by one arm of the carrier during this operation.

[0052] The panels 22 are then fastened to the harness 2 below the front clip 26, as shown in FIG. 7. Panels 22 help to support the infant at the infant's waist. The panels 22 have adjustable tabs such that the angle of the infant with respect to the carrier may be adjusted. Adjustment of the panels 22 also raises or lowers the infant's stomach and increases or decreases the curvature of the infant's back. The infant's legs are pass through openings 27 underneath the panels 22.

[0053] As shown in FIG. 7, the straps 23 are fastened to the shoulder straps 7. The straps 23 may be adjusted to adjust the angle of support of the infant's head. The slidable panel 24 can be moved and secured at a position that provides support the infant's head at the correct height. The slidable panel 24 may be adjusted even when the sling 1 is occupied by the infant. The slidable panel may include a tab portion 28, as shown in FIG. 8, which extends below the seat 21. The tab portion may extend between the seat 21 and the strap 25. It may be secured in position by the strap 25 and or clips.

[0054] As shown in FIG. 7, the support element 5 includes reinforcing ribs 29 extending along the support element 5. In a preferred embodiment, the support element 5 has two ribs 29, each extending along the support element 5 in a position corresponding to the side of the infant's spine. Each rib 29 is close to the infant's spine. Reinforcement of the sling at these positions causes the infant's arms to fall back which opens the infant's chest and helps to alleviate the symptoms of colic. The support element 5 may include mixed foam panels to add some rigidity and prevent creasing.

1. A sling for supporting an infant, the sling comprising a harness attachable to a carrier and an infant support element attachable to the harness, and wherein the support element receives and supports the infant such that the longitudinal axes of the infant and the carrier are substantially aligned and the infant lies at an angle above the horizontal in a range which allows the infant and the carrier to engage eye contact.

2. A sling according to claim 1, comprising a side panel extending from each side of the support element, a free end of each side panel being attachable to the harness.

3. A sling according to claim 2, wherein when the free ends of the side panels are attached to the harness openings are provided between an edge of each side panel proximal the carrier and the carrier, and with the infant supported in the sling the infant's legs pass through the said openings, and wherein movement of the infant's legs upward and backward is prevented by engagement of the said legs with the carrier.

4. A sling according to claim 1, wherein the support element includes a head support.

5. A sling according to claim 1, wherein the support element when attached to the harness provides a surface which is substantially planar in the longitudinal direction of the infant.

6. A sling according to claim 1, wherein the support element is detachable from the harness.

7. A sling according to claim 4, wherein the head support is braced by straps extending between the support element and the harness.

8. A sling according to claim 1, wherein the angle of inclination of the support element is adjustable.

9. A sling according to claim 1, wherein the angle of incline of the support to the vertical is between 45 and 60 degrees.

10. A sling according to claim 1, wherein the sling is configured to support an infant therein such that the distance between the eyes of the infant and the eyes of the person carrying the infant in the sling is between 30 and 40 cm.

11. A sling according to claim 1, wherein the length of the support element is adjustable.

12. A sling according to claim 11, wherein the length of the support element is adjustable when an infant is supported in the sling.

13. A sling according to claim 11, wherein the support element comprises a slidable panel.

14. A sling according to claim 1, wherein in use, the side panels are positioned in the region of an infant's waist.

15. A sling according to claim 1, wherein the support element further comprises at least one reinforcing rib.

16. A sling according to claim 15, wherein at least one reinforcing rib extends along the support element at a position that in use is adjacent to an infant's spine.

17. A sling according to claim 1, further comprising a seat element.

18. A sling according to claim 17, wherein the seat element is semi-rigid.

19. A sling according to claim 17, wherein the seat element comprises a contoured seat surface.

20. (canceled)

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